STATE BOARD OF TECHNICAL EDUCATION AND TRAINING
Andhra Pradesh :: AMARAVATI

Globally Competitive

CURRICULUM (C-20)

For Polytechnic Diploma Courses
in Andhra Pradesh

3 YEAR

DIPLOMA IN
ANIMATION AND MULTIMEDIA ENGINEERING

CURRICULUM -2020

(C-20)

3 YEAR

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING

STATE BOARD OF TECHNICAL EDUCATION AND TRAINING
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CURRICULUM -2020
(C-20)
FOR DIPLOMA COURSES IN ANDHRA PRADESH CURRICULUM- C 20

PREAMBLE

The State Board of Technical Education and Training, Andhra Pradesh under the aegis of the Department of Technical Education, Andhra Pradesh generally reviews the Curricula once in every five years. However, recognizing the needs of the industries and enhancing the employability skills of Polytechnic students, the 57th Board Meeting of SBTET, AP held on 05-02-2019 vide item no: 18 resolved for Updation of Polytechnic Curriculum with the guidance of National Institute of Technical Teachers Training & Research (NITTTR), Extension Centre, Vijayawada (ECV). Preliminary Evaluation of C-16 Curriculum was started in the month of June-2019 and feedback has been collected from students, Lecturers, Senior Lecturers, Head of Sections and Principals for all branches in C-16 Curriculum. Preliminary workshops were conducted with subject experts and prepared draft curriculum. Workshop has been conducted on C-20 Curriculum revision with Subject experts and Industrialists on 04-01-2020 and the suggestions from Industrialists have also been incorporated in the curriculum. The new Curricula for the different diploma courses have been designed with the active participation of the members of the faculty teaching in the Polytechnics of Andhra Pradesh, besides reviewed by Expert Committee constituted with eminent academicians.

The primary objective of the curriculum change is to produce best technicians in the country by correlating growing needs of the industries with the academic input.

This curriculum is designed to meet the requirements of NBA Accreditation.

The revised New Curriculum i.e., Curriculum–2020 (C-20) is approved by BoG of SBTET for its implementation with effect from 2020-21.

Present system of C-20Curriculum:

1. Duration of course is either 3 years / 3½ years duration of Regular Academic Instruction.

2. The Curriculum is prepared in Semester Pattern. However, First Year is maintained as Year-wise pattern.

3. 6 Months is introduced for 3 years Diploma Courses and 1 year Industrial Training is introduced for 3 ½ years Sandwich Diploma courses.

4. Modern subjects relevant to the industry are introduced in all the Diploma courses.

5. CISCO course content has been incorporated into the ECE ,CME and CME allied courses those who are not getting Industrial Training Placement to get certification from CISCO along with Diploma.

6. The policy decisions taken at the State and Central level with regard to environmental science are implemented by including relevant topics in Chemistry. This is also in accordance with the Supreme Court guidelines issued in Sri Mehta's case.

7. Keeping in view the increased need of communication skills which is playing a major role in the success of Diploma Level students in the Industries, emphasis is given for learning and

acquiring listening, speaking, reading and writing skills in English. Further as emphasized in the meetings, Communication Skills lab and Life Skills lab are continuing for all the branches.

8. Modern topics relevant to the needs of the industry and global scenario suitable to be taught at Diploma level are also incorporated in the curriculum.

9. AutoCAD specific to the branch has been given more emphasis in the curriculum. Preparing drawings using CAD software has been given more importance.

10. Upon reviewing the existing C-16 curriculum, it is found that the theory content is found to have more weightage than the Practical content. In C-20 curriculum, more emphasis is given to the practical content of Laboratories and Workshops, thus strengthening the practical skills.

11. With increased emphasis for the student to acquire Practical skills, the course content in all the subjects is thoroughly reviewed and structured as outcome based than the conventional procedure based.

12. Curricula of Laboratory and Workshops have been thoroughly revised based on the suggestions received from the industry and faculty, for better utilization of the equipment available at the Polytechnics. The experiments /exercises that are chosen for the practical sessions are identified to confirm to the field requirements of industry.

13. A series of workshops in three phases were conducted by NITTTR, AP Extension Centre, Vijayawada involving faculty from Polytechnics, Premier Engineering Colleges & Industries to analyze the Previous C-16 Curriculum and to design C-20 Curriculum under the guidance of Dr C. R. Nagendra Rao, Professor & Head, NITTTR-ECV. The efforts & support extended by NITTTR to bring out final Curriculum C-20 by incorporating needs, aspiration & expectations of all stake holders is highly appreciated and gratefully acknowledged.

14. The Members of the working group are grateful to Sri M.M. Nayak, I.A.S., Special Commissioner of Technical Education & Chairman of SBTET, AP. and Sri. G. Anantha Ramu, I.A.S., Principal Secretary, Department of Skill development and Training for their guidance and valuable inputs in revising, modifying and updating the curriculum.

15. The Members acknowledge with thanks the cooperation and guidance provided by Sri. V.S. Dutt, Secretary, SBTET, Andhra Pradesh and other officials of Directorate of Technical Education and the State Board of Technical Education, Andhra Pradesh, experts from industry, academia from the universities and higher learning institutions and all teaching fraternity from the Polytechnics who are directly or indirectly involved in preparation of the curricula.

RULES AND REGULATIONS OF C-20 CURRICULUM

1   DURATION AND PATTERN OF THE COURSES

All the Diploma programs run at various institutions are of AICTE approved 3 years or 3½ years duration of academic instruction.

All the Diploma courses are run on year wise pattern in the first year, and the remaining two or two & half years are run in the semester pattern. In respect of few courses like Diploma in Bio-Medical course, the training will be in the seventh semester. Run-through system is adopted for all the Diploma Courses, subject to eligibility conditions.

2   PROCEDURE FOR ADMISSION INTO THE DIPLOMA COURSES:

Selection of candidates is governed by the Rules and regulations laid down in this regard from time to time.

a)   Candidates who wish to seek admission in any of the Diploma courses will have to appear for Common Entrance Test for admissions into Polytechnics (POLYCET) conducted by the State Board of Technical Education and Training, Andhra Pradesh, Vijayawada.

Only the candidates satisfying the following requirements will be eligible to appear for the Common Entrance Test for admissions into Polytechnics (POLYCET).

b)   The candidates seeking admission should have appeared for S.S.C examination, conducted by the Board of Secondary Education, Andhra Pradesh or equivalent examination thereto, at the time of making application to the Common Entrance Test for admissions into Polytechnics (POLYCET). In case of candidates whose results of their Qualifying Examinations is pending, their selection shall be subject to production of proof of their passing the qualifying examination in one attempt or compartmentally at the time of admission.

c)   Admissions are made based on the merit obtained in the Common Entrance Test (POLYCET) and the reservation rules stipulated by the Government of Andhra Pradesh from time to time.

d)   For admission into the following Diploma Courses for which entry qualification is 10+2, candidates need not appear for POLYCET. A separate notification will be issued for admission into these courses.
i). D.HMCT ii).D. Pharmacy

3   MEDIUM OF INSTRUCTION

The medium of instruction and examination shall be English.

4   PERMANENT IDENTIFICATION NUMBER (PIN)

A cumulative / academic record is to be maintained of the Marks secured in sessional work and end examination of each year for determining the eligibility for promotion etc., A Permanent Identification Number (PIN) will be allotted to each admitted candidate to maintain academic records.

5   NUMBER OF WORKING DAYS PER SEMESTER / YEAR:

   a). The Academic year for all the Courses shall be in accordance with the Academic Calendar.

   b). The Working days in a week shall be from Monday to Saturday

   c). There shall be 7 periods of 50 minutes duration on all working days.

   d). The minimum number of working days for each semester / year shall be 90 / 180 days excluding examination days. If this prescribed minimum is not achieved due to any reason, special arrangements shall be made to conduct classes to cover the syllabus.

6   ELIGIBILITY OF ATTENDANCE TO APPEAR FOR THE END EXAMINATION

   a). A candidate shall be permitted to appear for the end examination in all subjects, if he or she has attended a minimum of 75% of working days during the year/Semester.

   b). Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in each semester or 1st year may be granted on medical grounds.

   c). A stipulated fee shall be payable towards condonation for shortage of attendance.

   d). Candidates having less than 65% attendance shall be detained.

   e). Students whose shortage of attendance is not condoned in any semester / 1st year and not paid the condonation fee in time are not eligible to take their end examination of that class and their admissions shall stand cancelled. They may seek re-admission for that semester / 1st year when offered next subsequent academic semester/year.

7   READMISSION

   Readmission shall be granted to eligible candidates by the respective Principal/ Regional Joint Director.

   a) (i) Within 15 days after commencement of class work in any semester (Except Industrial Training).

   (ii) For Industrial Training: before commencement of the Industrial training.

   b) Within 30 days after commencement of class work in any year (including D. Pharmacy course or first year course in Engineering and Non Engineering Diploma streams).

   Otherwise such cases shall not be considered for readmission for that semester / year and are advised to seek readmission in the next subsequent eligible academic year.

   The percentage of attendance of the readmitted candidates shall be calculated from the first day of beginning of the regular class work for that year / Semester, as officially announced by CTE/SBTET but not from the day on which he/she has actually reported to the class work.

8   SCHEME OF EXAMINATION

  a) First Year

  THEORY EXAMINATION: Each Subject carries 80% marks with examination of 3 hours duration, along with 20% marks for internal evaluation. (Sessional marks). However, there are no minimum marks prescribed for sessionals.

  PRACTICAL EXAMINATION: There shall be 40% Marks for regular practical work done, i.e. sessional marks for each practical subject with an end examination of 3 hours duration carrying 60% marks. However, there are no minimum marks prescribed for sessionals.

  b) III, IV, V, VI and VII Semesters:

  THEORY EXAMINATION: Each subject carries usually 80 marks of 3hours duration, along with 20 marks for internal evaluation (sessional marks) respectively.

  PRACTICAL EXAMINATION: Each subject carry 60/30 marks of 3hours duration 40/20 sessional marks.

9   INTERNAL ASSESSMENT SCHEME

  a)   Theory Subjects: Theory Subjects carry 20% sessional marks, internal examinations will be conducted for awarding sessional marks on the dates specified. **Three unit tests will be conducted for I year students and two Unit Tests for semesters.** Average of marks obtained in all the prescribed tests will be considered for awarding the sessional marks.

  b)   Practical Subjects: For Engineering Drawing subjects out of 40 sessional marks, 20 marks is awarded by conducting 3 unit tests for first year drawing and 2 unit tests for semester drawings. Another 20 marks shall be awarded by evaluating drawing sheets from time to time during the academic year/semester.

         Student's performance in Laboratories / Workshop shall be assessed during the year/ semester of study for 40% marks in each practical subject. Allotment of marks should be discrete taking into consideration of the students' skills, accuracy, recording and performance of the task assigned to him / her. Each student has to write a record / log book for assessment purpose. In the subject of Drawing, which is also considered as a practical paper, the same rules hold good. Drawing exercises are to be filed in **seriatum.**

  c)   Internal assessment in Labs / workshops / Survey field work etc., during the course of study shall be done and sessional marks shall be awarded by the concerned Lecturer / Senior Lecturer / Workshop superintendent as the case may be.

  d)   For practical examinations, except in drawing, there shall be two examiners. External examiner shall be appointed by the Principal in consultation with respective Head of Section preferably choosing a qualified person from any local Industry/ nearby Government Polytechnic/ Local Government Organization. Internal examiner shall be

7

the person concerned with internal assessment as in (c) above. The end examination shall be held along with all theory papers in respect of drawing.

e) Question Paper for Practicals: Question paper should cover all the experiments / exercise prescribed to test various skills like handling, manipulating, testing, trouble shooting, repair, assembling and dismantling etc.

f) Records pertaining to internal assessment marks of both theory and practical subjects are to be maintained for official inspection.

g) **In case of Diploma courses *having* Industrial Training**, the training assessment shall be done and the marks are to be awarded in the following manner.

Industrial assessment	240 marks (in two spells of 120 marks each)
Final summative assessment at institution level: 1.Maintenance of log book/Training report	20 marks
2.Demonstration of any one of the skill listed in learning out comes	30 marks
3.Viva-voce	10 marks
TOTAL	**300 marks**

The final summative assessment at the institution level shall be done by three members, viz., External Examiner, Head of Section and Internal Faculty member, and be averaged.

10   MINIMUM PASS MARKS

THEORY EXAMINATION:

For passing a theory subject, a candidate has to secure a minimum of 35% in end examination and a combined minimum of 35% of both Sessional and end examination marks put together.

PRACTICAL EXAMINATION:

For passing a practical subject, a candidate has to secure a minimum of 50% in end examination and a combined minimum of 50% of both sessional and practical end examination marks put together. In case of D.C.C.P., the pass mark for typewriting and short hand is 45% in the end examination. There are no sessional marks for typewriting and Shorthand subjects of D.C.C.P course.

INDUSTRIAL ASSESSMENT:

Pass marks is 50% in assessment at Industry (I and II assessments put together) and also 50% in final summative assessment at institution level

11. **PROVISION FOR IMPROVEMENT**

Improvement is allowed only after he / she has completed all the subjects from First Year to Final semester of the Diploma.

a) Improvement is allowed in any 4 (Four) subjects of the Diploma.

b) The student can avail of this improvement chance **ONLY ONCE**, that too within the succeeding two examinations after the completion of Diploma. However, the duration including Improvement examination shall not exceed <u>FIVE</u> years from the year of first admission.

c) No improvement is allowed in Practical / Lab subjects or Project work or Industrial Training assessment. However, improvement in drawing subject(s) is allowed.

d) If improvement is not achieved, the marks obtained in previous Examinations hold good.

e) Improvement is not allowed in respect of the candidates who are punished under Mal-practice in any Examination.

f) Examination fee for improvement shall be paid as per the notification issued by State Board of Technical Education and Training from time to time.

g) All the candidates who wish to appear for improvement of performance shall deposit the original Marks Memos of all the years / Semesters and also original Diploma Certificate to the Board. If there is improvement in performance of the current examination, the revised Memorandum of marks and Original Diploma Certificate will be issued, else the submitted originals will be returned.

12. **RULES OF PROMOTION FROM 1ST YEAR TO 3,rd, 4,th 5th ,6th and 7th SEMESTERS:**

A) For Diploma Courses of 3 Years duration

i. A candidate shall be permitted to appear for first year examination provided he / she puts in 75% attendance (which can be condoned on Medical grounds upto 10%) i.e. attendance after condonation on Medical grounds should not be less than 65% and pay the examination fee.

ii. A candidate shall be promoted to 3rd semester if he/she puts the required percentage of attendance in the first year and pays the examination fee. A candidate who could not pay the first year examination fee has to pay the promotion fee as prescribed by State Board of Technical Education and Training, AP from time to time before commencement of 3rd semester.

iii. A candidate shall be promoted to 4th semester provided he/she puts the required percentage of attendance in the 3rd semester and pay the examination fee. A candidate, who could not pay the 3rd semester exam fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training AP from time to time before commencement of 4th semester.

A candidate is eligible to appear for the 4th semester examination if he/she

a) Puts the required percentage of attendance in the 4th semester
b) Should not have failed in more than four subjects in 1st year

For IVC & ITI Lateral Entry Students:

a) A candidate is eligible to appear for the 4th semester examination if he/she puts the required percentage of attendance in the 4th semester
b) A candidate is eligible to appear for the 4th semester examination if he/she clears at least two subjects in third semester.

iv) A candidate shall be promoted to 5th semester provided he / she puts the required percentage of attendance in the 4th semester and pays the examination fee. A candidate, who could not pay the 4th semester examination fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 5th semester.

A candidate is eligible to appear for the 5th semester examination if he/she

a) Puts the required percentage of attendance in the 5th semester
b) Should get eligibility to appear for 4th Semester examination.

The first backlog exam in 5th semester will be conducted only in instant/supplementary diploma examination.

For IVC& ITI Lateral Entry students:

a) Puts the required percentage of attendance in the 5th semester

v) A candidate shall be sent to Industrial training provided he/she puts in the required percentage of attendance in the 4th semester and pay the examination fee/ promotion fee as prescribed by SBTET.

A candidate is eligible to appear for Industrial Training assessment (Seminar/Viva-voce)

a) Puts the required percentage of attendance, ie., 90% in 6th semester Industrial Training

For IVC & ITI Lateral Entry students:

a) Puts the required percentage of attendance, ie., 90% in 6th semester Industrial Training.
b) should get eligibility to appear for 5th Semester Examination.

B) **For Diploma Courses of 3 ½ Years duration (MET/ CH/ CHPP/ CHPC/ CHOT/ TT):**

i. A candidate shall be permitted to appear for 1st year examination provided he / she puts in 75% attendance (which can be condoned on Medical grounds upto 10%) i.e. attendance after condonation on Medical grounds should not be less than 65% and pay the examination fee.

ii. A candidate shall be promoted to 3rd semester if he/she puts the required percentage of attendance in the 1st year and pays the examination fee. A candidate who could not pay the 1st year examination fee has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 3rd semester.

iii. A candidate shall be promoted to 4th semester provided he/she puts the required percentage of attendance in the 3rd semester and pay the examination fee. A candidate, who could not pay the 3rd semester exam fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 4th semester.

A candidate is eligible to appear for the 4th semester exam if he/she
  a). Puts the required percentage of attendance in the 4th semester
  b). Should not have failed in more than <u>Four backlog subjects of 1st year.</u>

<u>**For IVC & ITI Lateral Entry students**</u>:

a) Puts the required percentage of attendance in the 4th semester

iv. A candidate shall be promoted to 5th semester industrial training provided he / she puts the required percentage of attendance in the 4th semester and pays the examination fee. A candidate, who could not pay the 4th semester examination fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 5th semester.

v. Promotion from 5th to 6th semester is automatic (i.e., from 1st spell of Industrial Training to 2nd spell) provided he/she puts the required percentage of attendance, which in this case ie.,90 % of attendance and attends for the VIVA-VOCE examination at the end of training.

vi. A candidate shall be promoted to 7th semester provided he / she puts the required percentage of attendance in the 6th semester and pays the examination fee. A candidate, who could not pay the 6th semester examination fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 7th semester.

vii. A candidate shall be promoted to 7th semester of the course provided he/she has successfully completed both the spells of Industrial Training.

A candidate is eligible to appear for 7th semester examination if he/she

  a) Puts the required percentage of attendance in the 7th semester
  b) Should get eligibility to appear for 4th semester Examination.

For IVC & ITI Lateral Entry students:

  a) Puts the required percentage of attendance in the 7th semester
  b) Should not have failed more than four backlog subjects of 3rd Semester

C) For Diploma Courses of 3 ½ Years duration (BM):

The same rules which are applicable for conventional courses also apply for this course. The industrial training in respect of this course is restricted to one semester (6 months) after the 6th semester (3 years) of the course.

  i. A candidate shall be permitted to appear for first year examination provided he / she puts in 75% attendance (which can be condoned on Medical grounds upto 10%) i.e. attendance after condonation on Medical grounds should not be less than 65% and pay the examination fee.

  ii. A candidate shall be promoted to 3rd semester if he/she puts the required percentage of attendance in the first year and pays the examination fee. A candidate who could not pay the first year examination fee has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 3rd semester.

  iii. A candidate shall be promoted to 4th semester provided he/she puts the required percentage of attendance in the 3rd semester and pay the examination fee. A candidate who could not pay the 3rd semester examination fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 4th semester.

  A candidate is eligible to appear for the 4th semester examination if he/she

  a) Puts the required percentage of attendance in the 4th semester
  b) Should not have failed in more than Four backlog subjects of 1st year

For IVC & ITI Lateral Entry Students:

  A candidate is eligible to appear for the 4th semester examination if he/she puts the required percentage of attendance in the 4th semester

  iv. A candidate shall be promoted to 5th semester provided he / she puts the required percentage of attendance in the 4th semester and pays the examination fee. A candidate, who could not pay the 4th semester examination fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 5th semester.

  A candidate is eligible to appear for the 5th semester exam if he/she

a) Puts the required percentage of attendance in the 5th semester.
b) Should get eligibility to appear for 4th Semester examination.

For IVC & ITI Lateral Entry students:

a) Puts the required percentage of attendance in the 5th semester.
b) Should not have failed in more than Four backlog subjects of 3rd Semester.

v. A candidate shall be promoted to 6th semester provided he/she puts in the required percentage of attendance in the 5th semester and pays the examination fee.

A candidate who could not pay the 5th semester examination fee, has to pay the promotion fee as prescribed by State Board of Technical Education and Training from time to time before commencement of 6th semester.

A candidate is eligible to appear for 6th semester examination

a) Puts the required percentage of attendance in 6th semester and
b) should get eligibility to appear for 4th Semester Examination.

For IVC & ITI Lateral Entry students:

a) Puts the required percentage of attendance in 6th semester.
b) Should get eligibility to appear for 5th Semester Examination.

vi. A candidate shall be promoted to 7th semester provided he/she puts the required percentage of attendance in 6th semester and pay the examination fee. A candidate, who could not pay the 6th semester examination fee, has to pay the promotion fee prescribed by SBTET from time to time before commencement of the 7th semester (Industrial Training).

A candidate is eligible to appear for 7th semester Industrial Training assessment (Seminar/Viva-voce) if he/she

a) Puts the required percentage of attendance, ie., 90% in 7th semester Industrial Training
b) Should get eligibility to appear for 4th Semester Examination.

For IVC & ITI Lateral Entry students:

a) Puts the required percentage of attendance, ie., 90% in 7th semester Industrial Training.
b) Should get eligibility to appear for 5th Semester Examination.

Important Note:

Seminar/Viva-voce should not be conducted for Not-Eligible Candidates, till the candidate gets eligibility. However, the record of internal Assessment for Industrial Training for 260 marks shall be maintained at Institution Level for all candidates and the data is to be uploaded only for eligible candidates. For not eligible candidates the data is to be uploaded as and when the candidate gets eligibility.

OTHER DETAILS

a) In case a candidate does not successfully complete the Industrial training, he / she will have to repeat the training at his / her own cost.

b) The First spell of Industrial training shall commence 10 days after the completion of the last theory examination of 4th Semester.

c) The Second spell of Industrial training shall commence within 10 days after the completion of first spell of Industrial training.

13. **STUDENTS PERFORMANCE EVALUATION**

Successful candidates shall be awarded the Diploma under the following divisions of pass.

a) First Class with Distinction shall be awarded to the candidates who secure an overall aggregate of 75% marks and above.

b) First Class shall be awarded to candidates who secure overall aggregate of 60% marks and above and below 75% marks.

c) Second Class shall be awarded to candidates who secure a pass with an overall aggregate of below 60%.

   i. The Weightage of marks for various year/Semesters which are taken for computing overall aggregate shall be 25% of I year marks + 100% of 3rd and subsequent Semesters.

   ii. In respect IVC & ITI Lateral Entry candidates who are admitted directly into diploma course at the 3rd semester (i.e., second year) level the aggregate of (100%) marks secured at the 3rd and subsequent semesters of study shall be taken into consideration for determining the overall percentage of marks secured by the candidates for award of class/division.

d) Second Class shall be awarded to all students, who fail to complete the Diploma in the regular 3 years/ 3 ½ years and four subsequent examinations, from the year of first admission.

14. **EXAMINATION FEE SCHEDULE:**

The examination fee should be as per the notification issued by State Board of Technical Education and Training, AP from time to time.

15. **STRUCTURE OF EXAMINATION QUESTION PAPER:**

I. Formative assessment (Internal examination)
a)For theory subjects three unit tests for first year and two unit tests for semesters shall be conducted with a duration of one and half an hour for each paper for 40 marks. It consists of part A and Part B. Part A contains five questions and carries 16 marks. Among these five questions first question consists of four objective/ short answer/fill-in the blanks/true or false etc with one mark for each question. The other four questions are short answer questions and carry three marks each. Part B carries 24 marks and consists of three internal choice questions, and each question carries 8 marks each.
The total of 3/2 unit test marks shall be reduced to 20 marks in each subject for assessment.

b) For Drawing subject, three unit tests for first year shall be conducted with a duration of one and half an hour for 40 marks. It consists of part A and Part B. Part A contains four questions and each question carries four marks (4×4 marks=16 marks). Part B carries 24 marks. It consists of five questions, and each question carries 8 marks each, out of five questions student has to answer any three questions (3×8 marks=24 marks).

The total of 3 unit test marks shall be reduced to 20 marks for assessment. Remaining 20 marks are awarded by the subject teacher based on the submission of drawing assignment sheets.

c) For Laboratory /workshop , 40% of total marks for the subject shall be awarded based on continuous assessment of the student in laboratory/workshop classes.

II. Summative assessment (End examination)
The question paper for theory examination is patterned in such a manner that the Weightage of periods/marks allotted for each of the topics for a particular subject be considered Examination paper is of 3/6/9 hours duration.

a) Each theory paper consists of Section 'A', 'B' and 'C'.

   Section 'A' contains 10 short answer questions. All questions are to be answered and each carries 3 marks.

   Max. Marks: 10 x 3 = 30.

   Section B contains 5 essay type questions including Numerical questions with internal choice, each carrying 8 marks.

   Max. Marks: 5 x 8 = 40.

Section C contains single essay type higher order question including Numerical questions without choice (without any divisions in the question), The question carrying

Max. Marks: 1 x 10 = 10.
Total Maximum Marks: 80.

b) For Engineering Drawing Subject (107) consist of section 'A' and section 'B'. Section 'A' contains four (4) questions. All questions in section 'A' are to be answered to the scale and each carries 5 marks. Max. Marks: 4 x 5=20. Section 'B' contains six (6) questions. Out of which four (4) questions to be answered and each question carries 10 Marks. Max. Marks 4 x 10 = 40.

c) **Practical Examinations**

For Workshop practice and Laboratory Examinations, Each student has to pick up a question paper distributed by Lottery System.

Max. Marks for an experiment / exercise   : 50%

Max. Marks for VIVA-VOCE   : 10%

Total   : 60% (of total marks for the subject)

In case of practical examinations with 50 marks, the marks will be worked out basing on the above ratio.

In case of any change in the pattern of question paper, the same shall be informed sufficiently in advance to the candidates.

Note: Evaluation for Laboratory Courses, other than Drawing courses:

i.   Instruction (teaching) in laboratory courses (except for the course on Drawing) hereafter shall be task/competency based as delineated in the Laboratory sheets, prepared by SBTET, AP and posted in its website.
ii. Internal assessment for Laboratory shall be done on basis of task/s performed by the student as delineated in the laboratory sheets, prepared by SBTET, AP and posted in its website.
iii. Question paper for End semester Evaluation shall be prepared as per SBTET rules in vogue.

16.   ISSUE OF MEMORONDUM OF MARKS

All candidates who appear for the end examination will be issued memorandum of marks without any payment of fee. However candidates who lose the original memorandum of marks have to pay the prescribed fee to the Secretary, State Board of Technical Education and Training, A.P. for each duplicate memo from time to time.

17.   MAXIMUM PERIOD FOR COMPLETION OF DIPLOMA COURSES:

16

Maximum period for completion of the diploma courses is twice the duration of the course from the date of First admission (includes the period of detention and discontinuation of studies by student etc) failing which they will have to forfeit the claim for qualifying for the award of Diploma (They will not be permitted to appear for examinations after that date). This rule applies for all Diploma courses of 3 years and 3 ½ years of engineering and non-engineering courses.

18. **ELIGIBILITY FOR AWARD OF DIPLOMA**
A candidate is eligible for award of Diploma Certificate if he / she fulfil the following academic regulations.

   i.   He / She pursued a course of study for not less than 3 / 3 ½ academic years & not more than 6 / 7 academic years.

   ii. He / she have completed all the subjects.
Students who fail to fulfil all the academic requirements for the award of the Diploma within 6 / 7 academic years from the year of admission shall forfeit their seat in the course & their seat shall stand cancelled.

For IVC & ITI Lateral Entry students:

   i.   He / She pursued a course of study for not less than 2 / 2 ½ academic years & not more than 4 / 5 academic years.

   ii. He / she has completed all the subjects.

Students who fail to fulfill all the academic requirements for the award of the Diploma within 4 / 5 academic years from the year of admission shall forfeit their seat in the course & their seat shall stand cancelled.

19. **ISSUE OF PHOTO COPY OF VALUED ANSWER SCRIPT, RECOUNTING& REVERIFICATION:**

A) FOR ISSUE OF PHOTO COPIES OF VALUED ANSWER SCRIPTS

   i.   A candidate desirous of applying for Photo copy of valued answer script/

scripts should apply within prescribed date from the date of the declaration

of the result.

   ii.   Photo copies of valued answer scripts will be issued to all theory subjects and

Drawing subject(s).

   iii.   The Photo copy of valued answer script will be dispatched to the concerned

candidate's address as mentioned in the application form by post.

   iv.   No application can be entertained from third parties.

B) FOR RE-COUNTING(RC) and RE-VERIFICATION(RV) OF THE VALUED ANSWER SCRIPT

i. A candidate desirous of applying for Re-verification of valued answer script should apply within prescribed date from the date of the declaration of the result.

ii. Re-verification of valued answer script shall be done for all theory subjects' and Drawing subject(s).

iii. The Re-verification committee constituted by the Secretary, SBTETAP with subject experts shall re-verify the answer scripts.

I. **RE-COUNTING**

The Officer of SBTET will verify the marks posted and recount them in the already valued answer script. The variations if any will be recorded separately, without making any changes on the already valued answer script. The marks awarded in the original answer script are maintained (hidden).

II. **RE-VERIFICATION**

(i) The Committee has to verify the intactness and genuineness of the answer script(s) placed for Re-verification.

(ii) Initially single member shall carry out the re-verification.

(iii) On re-verification by single member, if the variation is less than 12% of maximum marks, and if there is no change in the STATUS in the result of the candidate, such cases will not be referred to the next level ie., for 2-Tier evaluation.

(iv) On re-verification by a single member, if the variation is more than 12% of maximum marks, it will be referred to 2-Tier evaluation.

(v) If the 2-Tier evaluation confirms variation in marks as more than 12% of maximum marks, the variation is considered as follows:

a) If the candidate has already passed and obtains more than 12% of the maximum marks on Re-verification, then the variation is considered.

b) If the candidate is failed and obtains more than 12% of the maximum marks on Re-verification and secured pass marks on re-verification, then the status of the candidate changes to PASS.

c) If a candidate is failed and obtains more than 12% of the maximum marks on Re-verification and if the marks secured on re-verification are still less than the minimum pass marks, the status of the candidate remain FAIL only.

(vii) After Re-verification of valued answer script the same or change if any therein on Re-verification, will be communicated to the candidate.

(viii) On Re-verification of Valued Answer Script if the candidate's marks are revised, the fee paid by the candidate will be refunded or else the candidate has to forfeit the fee amount.

Note: No request for Photo copies/ Recounting /Re-verification of valued answer script would be entertained from a candidate who is reported to have resorted to Malpractice in that examination.

20.   MAL PRACTICE CASES:

If any candidate resorts to Mal Practice during examinations, he / she shall be booked and the Punishment shall be awarded as per SBTETAP rules and regulations in vogue.

21.   DISCREPANCIES/ PLEAS:

Any Discrepancy /Pleas regarding results etc., shall be represented to the SBTETAP within one month from the date of issue of results. Thereafter, no such cases shall be entertained in any manner.

22.   ISSUE OF DUPLICATE DIPLOMA

If a candidate loses his/her original Diploma Certificate and desires a duplicate to be issued he/she should produce written evidence to this effect. He / she may obtain a duplicate from the Secretary, State Board of Technical Education and Training, A.P., on payment of prescribed fee and on production of an affidavit signed   before a First Class Magistrate (Judicial) and *non-traceable certificate* from the Department of Police. In case of damage of original Diploma Certificate, he / she may obtain a duplicate certificate by surrendering the original damaged certificate on payment of prescribed fee to the State Board of Technical Education and Training, A.P.

In case the candidate cannot collect the original Diploma within 1 year from the date of issue of the certificate, the candidate has to pay the penalty prescribed by the SBTET AP from time to time.

23.   ISSUE OF MIGRATION CERTIFICATE AND TRANSCRIPTS:

The Board on payment of prescribed fee will issue these certificates for the candidates who intend to prosecute Higher Studies in India or Abroad.

24. GENERAL

i.   The Board may change or amend the academic rules and regulations or syllabi at any time and the changes or amendments made shall be applicable to all the students, for whom it is intended, with effect from the dates notified by the competent authority.

ii.   All legal matters pertaining to the State Board of Technical Education and Training, AP are within the jurisdiction of Vijayawada.

iii.   In case of any ambiguity in the interpretation of the above rules, the decision of the Secretary, SBTET, A.P is final.

ANIMATION AND MULTIMEDIA ENGINEERING

VISION

Develop Animation and Multimedia Engineers to be technologically adept, innovative, self-motivated and responsible citizen with human values , high quality skills and to contribute significantly towards ever changing Animation and Multimedia Technologies.

MISSION

M1	To provide opportunity to Diploma students who are capable of playing pivotal role in wide aspects of modern Animation and Multimedia Engineering.
M2	To make the students understand basic concepts underlie in Animation and Multimedia Engineering and able to apply them creatively in different fields of Engineering
M3	To train the student sensitive to the Environment, safety and economic context.
M4	To produce technically skilled students through intensive training in Animation and Multimedia Engineering tools and application and to prepare the students for professional career and further research.

PROGRAMME EDUCATIONAL OBJECTIVIES(PEOs)	
Animation and Multimedia Engineering programme is ever changing to transform to transform students ito competent professionals with qualities, ethics and human values . On completion of the integrated programme, the students should have acquired the following characteristics	
PEO1	**T**o produce best **DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING**technicians by correlating growing need of the industries in modern topics with the academic input and giving the technical knowledge for further learning.
PEO2	To prepare the students as productive Animation and Multimedia Engineers, possessing supportive and leadership skills in multidisciplinary domains, expertise in Practical orientation, Communication Skills and latest developments.
PEO3	To give the depth of related skills and expertise in a single field, and the ability to collaborate with other disciplines and work at the Supervisory cadre.
PEO4	To promote the students in professionalism, by successful completion of the **DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING**by emphasizing Field Practices in industry oriented activities.
PEO5	To sensitize the students on social and economic commitment and to inculcate

	a nature to guard the values of community and protect environment.

PROGRAMME SPECIFIC OUTCOME(PSOs)

PSO1	Foundation of Computer System: Ability to understand the principles and working of computer systems and can assess the hardware and software aspects of computer systems.
PSO2	Foundations of animation and Multimedia product development: Ability to understand the structure and development methodologies of Multimedia products. Possessprofessional skills and knowledge of Animation and Multimedia design process. Familiarity and practical competence with a broad range of animation and Multimedia software tools and open source platforms.
PSO3	Foundation of mathematical, Logical and design concepts: Ability to apply mathematical and logical concepts to develop and model real world Animation and Multimedia product design using appropriate software/hardware tools, advanced techniques and methodologies as well as apply them at customer site and in establishing new industries like print and electronic media, cartoon production, advertising , video gaming, film and television , e-learning , studio's and theaters in small scale with the help of experience gained as part of industrial training.

PROGRAM OUTCOMES (POs)

Students completing DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING are anticipated to have the following abilities	
PO1	Basic and Discipline specific knowledge: Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the engineering problems.
PO2	Problem analysis: Identify and analyse well-defined engineering problems using codified standard methods.
PO3	Design/ development of solutions: Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.
PO4	Engineering Tools, Experimentation and Testing: Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.
PO5	Engineering practices for society, sustainability and environment: Apply appropriate technology in context of society, sustainability, environment and ethical practices.
PO6	Project Management: Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.
PO7	Life-long learning: Ability to analyse individual needs and engage in updating in the context of technological changes.

MAPPING OF PEOs WITH MISSIONS

PEO	M1	M2	M3	M4
To produce best **DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING**technicians by correlating growing need of the industries in modern topics with the academic input and giving the technical knowledge for further learning.	✓	✓	✓	✓
To prepare the students as productive Computer Engineers, possessing supportive and leadership skills in multidisciplinary domains, expertise in Practical orientation, Communication Skills and latest developments.	✓	✓	✓	✓
To give the depth of related skills and expertise in a single field, and the ability to collaborate with other disciplines and work at the Supervisory cadre.	✓	✓	✓	✓
To promote the students in professionalism, by successful completion of the **DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING**by emphasizing Field Practices in industry oriented activities.	✓	✓	✓	✓
To sensitize the students on social and economic commitment and to inculcate a nature to guard the values of community and protect environment.	✓	✓	✓	✓

NOTE :

In some of the courses PO5,PO6 and PO7 strength is between 1 and 2,to strengthen them, the following remedial measures for all the coursesare suggested.

Short fall in PO	Remedial measures
PO5	By conducting 1)Guest lectures on motivational aspects and ethics 2) Concerned teacher will educate the students to follow ethics and morals in developing solutions 3)providing access to Online courses like Swayam program 4)seminars by senior students to the junior students to assimilate the methods followed by them to the juniors 5)Head of section will frequently visit and observe the activities being followed by the students to correct their behaviour and to inculcate morals and ethics
PO6	They can achieve this from **industrial training** module scheduled in 6th semester of this curriculum by observing, analyzing and applying the mathematical and scientific fundamentals in solving the real time problems that will arise in day to day activities in industry.
PO7	1. Providing access to Online courses like Swayam program 2. By utilizing Learning Management System(LMS) established by SBTET

	3. By subscribing e-magazines/ print magazines to the institute library and made them accessible to the students. 4. By arranging Guest lecturers from the technical experts.

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION

CURRICULUM-2020

(FIRST YEAR)

Sub Code	Name of the Subject	Instruction Periods/Week		Total Periods Per Year	Scheme Of Examinations			
		Theory	Practicals		Duration (hrs)	Sessional Marks	End Exam Marks	Total Marks
THEORY SUBJECTS								
AM-101	English-I	3	-	90	3	20	80	100
AM-102	Engineering Mathematics - I	5	-	150	3	20	80	100
AM-103	Engineering Physics	4	-	120	3	20	80	100
AM-104	Engineering Chemistry and Environmental studies	4	-	120	3	20	80	100
AM-105	Basics of Computers with **Animation and Multimedia**	3	-	90	3	20	80	100
AM-106	C and Graphics Programming	5	-	150	3	20	80	100
PRACTICAL SUBJECTS								
AM-107	Fundamentals of Art and Drawing		6	180	3	40	60	100
AM-108	C and Graphics Programming Lab		6	180	3	40	60	100
AM-109	Physics Lab				3	20	30	50
	Chemistry Lab				3	20	30	50
AM-110	Computer Fundamentals Lab		3	90	3	40	60	100
	Total	**24**	**18**		**-**	**280**	**720**	**1000**

AG-101,102,103,104,109,110 Common with all branches

AG-106,107,108 Common with DAG branch

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION

CURRICULUM-2020 (III Semester)

Sub Code	Name of the Subject	Instruction Periods/Week		Total Periods Per Semester	Scheme Of Examinations			
		Theory	Practicals		Duration (hrs)	Sessional Marks	End Exam Marks	Total Marks
THEORY SUBJECTS								
AM-301	Mathematics –II	4		60	3	20	80	100
AM-302	Multimedia	5	-	75	3	20	80	100
AM-303	Elements of Film Technology	5	-	60	3	20	80	100
AM-304	2D Digital Animation	5	-	90	3	20	80	100
AM-305	Digital Photography	5	-	90	3	20	80	100
PRACTICAL SUBJECTS								
AM-306	Multimedia Lab	-	3	45	3	40	60	100
AM-307	2D Digital Animation Lab	-	3	45	3	40	60	100
AM-308	Digital Photography Lab	-	3	45	3	40	60	100
AM-309	2D Graphics Lab		3	45	3	40	60	100
AM-310	Mini Project		**6**	**90**	**3**	**40**	**60**	**100**
	Total	**24**	**18**	**630**		**300**	**700**	**1000**

AM-301 Common with all branches

AM-303, 304,307,309,310 Common with DAG branch

AM-305 Common with AG-402

AM-308 Lab is common with AG-407

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION

CURRICULUM-2020

(IV Semester)

Sub Code	Name of the Subject	Instruction Periods/Week		Total Periods Per Semester	Scheme Of Examinations			
		Theory	Practicals		Duration (hrs)	Sessional Marks	End Exam Marks	Total Marks
THEORY SUBJECTS								
AM-401	Mathematics III	3	-	45	3	20	80	100
AM-402	Multimedia Design Principles	5	-	75	3	20	80	100
AM-403	3D Modelling and Texturing	5	-	75	3	20	80	100
AM-404	Web Designing	5	-	75	3	20	80	100
AM-405	3D Lighting and Rendering Techniques	5	-	75	3	20	80	100
PRACTICAL SUBJECTS								
AM-406	3D Modelling and Texturing lab	-	3	45	3	40	60	100
AM-407	3D Animation Lab	-	3	45	3	40	60	100
AM-408	Communication Skills	-	3	45	3	40	60	100
AM-409	3D Lighting and Rendering Techniques lab		3	45	3	40	60	100
AM-410	Networking and Web Designing Lab *Note: Develop a Mini project with Web Technologies	-	7	105	3	40	60	100
	Total	**23**	**19**	**630**	**-**	**300**	**700**	**1000**

AM-401&408 Common with all branches
AM-402,403,405,406,409,410 same as DAG

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION

CURRICULUM-2020

(V Semester)

Sub Code	Name of the Subject	Instruction Periods/Week Theory	Pract--icals	Total Periods Per Semester	Duration (hrs)	Sessio-nal Marks	End Exam Marks	Total Marks
					Scheme Of Examinations			
THEORY SUBJECTS								
AM-501	Industrial Management and Entrepreneurship	5	-	75	3	20	80	100
AM-502	3D Rigging AND Character animation	6	-	90	3	20	80	100
AM-503	Cinematography	4	-	60	3	20	80	100
AM-504	Audio Visual Production	4	-	60	3	20	80	100
AM-505	Visual EFX and Compositing Techniques	5	-	75	3	20	80	100
PRACTICAL SUBJECTS								
AM-506	3D Rigging AND Character animation lab	-	3	45	3	40	60	100
AM-507	Compositing Lab	_	3	45	3	40	60	100
AM-508	Life Skills	-	3	45	3	40	60	100
AM-509	Editing Lab		3	45	3	40	60	100
AM-510	Project work	-	6	90	3	40	60	100
	Total	**24**	**18**	**630**	**-**	**300**	**700**	**1000**

Note:AM-501 Common with DIT, DAM and DCME branch

AM-502,503,505,506,507,509 &510 common with DAG Branch

AM-508 common with all branches

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION

CURRICULUM-2020

(VI Semester)

AM-601 Industrial Training

SI.No.	Subject	Duration	Scheme of evaluation		
			Item	**Nature**	**Max. Marks**
1	AM-601: Industrial Training	**6 months**	**1.First Assessment at Industry (After 12 Weeks)**	Assessment of learning outcomes by both the faculty and training mentor of the industry	120
			2.Second Assessment at the Industry (After 20 weeks))	Assessment of learning outcomes by both the faculty and training mentor of the industry	120
			Final Summative assessment at institution level	Training Report	20
				Demonstration of any one of the skills listed in learning outcomes	30
				Viva Voce	10
TOTAL MARKS					**300**

The industrial training shall carry **300** marks and pass marks are **50**%.A candidate failing to secure the minimum marks should complete it at his own expenses.

During Industrial training the candidate shall put in a minimum of **90%**attendance.

FIRST YEAR

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION

CURRICULUM-2020

(FIRST YEAR)

Sub Code	Name of the Subject	Instruction Periods/Week		Total Periods Per Year	Scheme Of Examinations			
		Theory	Practicals		Duration (hrs)	Sessional Marks	End Exam Marks	Total Marks
THEORY SUBJECTS								
AM-101	English-I	3	-	90	3	20	80	100
AM-102	Engineering Mathematics - I	5	-	150	3	20	80	100
AM-103	Engineering Physics	4	-	120	3	20	80	100
AM-104	Engineering Chemistry and Environmental studies	4	-	120	3	20	80	100
AM-105	Basics of Computers with ANIMATION AND MULTIMEDIA	3	-	90	3	20	80	100
AM-106	C and Graphic Programming.	5	-	150	3	20	80	100
PRACTICAL SUBJECTS								
AM-107	Fundamentals of Art and Drawing	-	6	180	3	40	60	100
AM-108	C and Graphics programming Lab	-	6	180	3	40	60	100
AM-109	Physics Lab	-	3	90	1½	20	30	50
	Chemistry Lab	-	3	90	1½	20	30	50
AM-110	Computer Fundamentals Lab		3	90	3	40	60	100
	Total	**24**	**21**		**-**			**1000**

AM-101, 102, 103, 104,109,110 common with all branches,
AM-106, 107, 108 is common with Multimedia and Graphics

Course Code	Course Title	No. of Periods/Week	Total No. of Periods	Marks for FA	Marks for SA
AM-101	English	3	90	20	80

S. No.	Unit Title	No of Periods	COs Mapped
1	English for Employability	8	CO1, CO2, CO3, CO4
2	Living in Harmony	8	CO1, CO2, CO3, CO4
3	Connect with Care	8	CO1, CO2, CO3, CO4
4	Humour for Happiness	8	CO1, CO2, CO3, CO4
5	Never Ever Give Up!	8	CO1, CO2, CO3, CO4
6	Preserve or Perish	9	CO1, CO2, CO3, CO4
7	The Rainbow of Diversity	8	CO1, CO2, CO3, CO4
8	New Challenges- Newer Ideas	8	CO1, CO2, CO3, CO4
9	The End Point First!	8	CO1, CO2, CO3, CO4
10	The Equal Halves	8	CO1, CO2, CO3, CO4
11	Dealing with Disaster	9	CO1, CO2, CO3, CO4
Total Periods		**90**	

Course Objectives	To improve the skills of English Language use by enriching vocabulary and learning accurate structures for effective communication.
	To comprehend themes for value based living in professional and personal settings.

CO No.	Course Outcomes
CO1	Applies perceptions of themes related to societal responsibility of adolescents towards their surroundings.
CO2	Demonstrates knowledge of form and function of 'grammar items' and use them in both academic and everyday situations.
CO3	Demonstrates effective English communication skills with competence in listening, speaking, reading and writing in academic, professional and everyday contexts.
CO4	Displays positivity and values of harmonious living in personal and professional spheres as reflected through communication.

CO-PO Matrix

Course Code CME-101	Course Title: English Number of Course Outcomes: 4			No. of Periods: 90	
POs	Mapped with CO No.	CO Periods Addressing PO in Column 1		Level of Mapping (1,2,3)	Remarks
		Number	Percentage		
PO1		Not directly Applicable for English course, however activities that use content from science and technology relevant to the Programme taken up by the student shall be exploited for communication in the Course.			
PO2					
PO3					
PO4					
PO5	CO1, CO2, CO3, CO4	20	22		>50%: Level 3
PO6	CO1, CO2, CO3, CO4	52	58		21-50%: Level 2
PO7	CO1, CO2, CO3, CO4	18	20		Up to 20%: Level 1

Level 3 – Strongly Mapped
Level 2- Moderately Mapped
Level 1- Slightly Mapped

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO 1					✓	✓	✓
CO 2					✓	✓	✓
CO3					✓	✓	✓
CO 4					✓	✓	✓

NOTE:CO-PO groups shall be fulfilled through activities that use content from science and technology relevant to the Programme taken up by the student shall be exploited for communication in the Course.

PO5:   Appropriate quiz programme may be conducted at intervals and duration as decided by concerned teacher.

PO6:   Seminars on applications of mathematics in various engineering disciplines are to be planned and conducted.

PO7:   Such activities are to be planned that students visit library to refer standard books on Mathematics and latest updates in reputed national and international journals, attending seminars, learning mathematical software tools.

Blue Print of Question Paper:

S. No.	Name of the Unit	Periods Allocated	Weightage Allocated	Marks Wise Distribution of Weightage				Question Wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	English for Employability	8	17	3				1				CO1, CO2, CO3, CO4
2	Living in Harmony	8		3				1	1*	1*		CO1, CO2, CO3, CO4
3	Connect with Care	8			8*	3						CO1, CO2, CO3, CO4
4	Humour for Happiness	8	14		3				1	1*		CO1, CO2, CO3, CO4
5	Never Ever Give Up!	8			3	8*			1			CO1, CO2, CO3, CO4
6	Preserve or Perish	9	14		8*	3			1*	1		CO1, CO2, CO3, CO4
7	The Rainbow of Diversity	8				3				1		CO1, CO2, CO3, CO4
8	New Challenges - Newer Ideas	8	35			8*+3+3+3			1*	4	1*	CO1, CO2, CO3, CO4
9	The End Point First!	8			8*							CO1, CO2, CO3, CO4
10	The Equal Halves	8										CO1, CO2, CO3, CO4
11	Dealing with Disasters	9					10*					CO1, CO2, CO3, CO4
	TOTAL	**90**	**80**	**6**	**30**	**34**	**10**	**2**	**5**	**8**	**1**	

PART-A: 10 Questions 3 marks each =30 Marks   All Questions are compulsory   : 60 minutes

PART-B: 5 Questions 8 marks each =40 Marks   Internal choice   : 90 minutes

Part-C: 1 Question 10 marks   =10 Marks

(Higher Order Question)   No choice, one compulsory question   : 30 minutes

NOTE: * indicates questions can be given from any of the corresponding lessons in the blue print.
Question Paper Pattern for Unit Tests

Part A: 16 marks: 4 questions with 1 mark each (FIB, True/false, one word/phrase, etc.)
                          4 questions with 3 marks each (short answer/ descriptive/ applicative questions)
Part B: 24 marks: 3 questions 8 marks each with internal choice

Learning Outcomes

1. English for Employability

   1.1. Explain the need for improving communication in English for employability
   1.2. Use adjectives and articles effectively while speaking and in writing
   1.3. Write simple sentences

2. Living in Harmony

   2.1. Develop positive self-esteem for harmonious relationships
   2.2. Use affixation to form new words
   2.3. Use prepositions and use a few phrasal verbs contextually

3. Connect with Care

   3.1. Use social media with discretion
   3.2. Speak about abilities and possibilities
   3.3. Make requests and express obligations
   3.4. Use modal verbs and main verbs in appropriate form
   3.5. Write short dialogues for everyday situations

4. Humour for Happiness

   4.1. Explain the importance of humour for a healthy living
   4.2. Improve vocabulary related to the theme
   4.3. Display reading and speaking skills
   4.4. Frame sentences with proper Subject – Verb agreement
   4.5. Explain the features of a good paragraph and learn how to gather ideas as a preliminary step
     for writing a good paragraph.

5. Never Ever Give Up!

5.1. Practice to deal with failures in life

5.2. Use the present tense form for various every day communicative functions such as speaking and writing about routines, professions, scientific descriptions and sports commentary

5.3. Write paragraphs with coherence and other necessary skills

6. Preserve or Perish

6.1. Describe the ecological challenges that we face today and act to save the environment.

6.2. Narrate / Report past events

6.3. Develop vocabulary related to environment

6.4. Write e-mails

7. The Rainbow of Diversity

7.1. Illustrate and value other cultures for a happy living in multi-cultural workspace

7.2. use different types of sentences

7.3. Ask for or give directions, information, instructions

7.4. Use language to express emotions in various situations

7.5. Write letters in various real life situations

8. New Challenges – Newer Ideas

8.1. Explain the functional difference between Active Voice and Passive Voice

8.2. Use Passive Voice to speak and write in various contexts

8.3. List the major parts and salient features of an essay

8.4. Explain latest innovations and get motivated

9. The End Point First!

9.1. Illustrate the importance of setting a goal in life

9.2. Report about what others have said both in speaking and writing

9.3. Write an essay following the structure in a cohesive and comprehensive manner

9.4. Apply the words related to Goal Setting in conversations and in life

10. The Equal Halves

10.1. Value the other genders and develop a gender-balanced view towards life

10.2. Identify the use of different conjunctions in synthesising sentences

10.3. Write various types of sentences to compare and contrast the ideas

10.4. Apply the knowledge of sentence synthesis in revising and rewriting short essays

10.5. Develop discourses in speech and writing

11. Dealing with Disasters

11.1. Speak and write about different kinds of disasters and the concept of disaster management

11.2. Generate vocabulary relevant to disaster management and use it in sentences

11.3. Analyze an error in a sentence and correct it

11.4. write different kinds of reports

Textbook: INTERACT (A Textbook for I Year English) - Published by SBTET, AP

Reference Books:

Martin Hewings	: Advanced Grammar in Use, Cambridge University Press
Murphy, Raymond	: English Grammar in Use,Cambridge University Press
Sidney Greenbaum	: Oxford English Grammar, Oxford University Press
Wren and Martin (Revised byN.D.V. Prasad Rao)	: English Grammar and Composition, Blackie ELT Books, S. Chand and Co.
Sarah Freeman	: Strengthen Your Writing, Macmillan

Model Question Paper

C20-COMMON-101- ENGLISH

Time: 3hrs   Max.Marks:80

PART-A   **10X3=30 Marks**

Instructions: Answer all the questions. Each question carries Three marks.

1. a) Fill in the blanks with suitable articles:

    I have seen _____ European at _____local market.
   b) Fill in with proper form of adjective given in the bracket:

    China is the _____country in the world. (populous, more populous, most populous)
   c) i) Choose the synonym from the following for the word : 'filthy'

    dirty / clean / hygienic / tidy
    ii) Choose the antonym from the following for the word: 'exterior'

    external / internal / open / interior

*(Question1 : Remembering- Mapping with CO2 & CO3)

2. a) i) Give prefix for the word: 'popular'
    ii)   Write suffix for the word : 'king'
   b) He was married _____ her _____ January 2015. (Fill in with appropriate preposition)
   c) Match the words in column A with their corresponding meanings in column B:

Column-A	Column-B
i) Dynamic	a) tasty
ii) Gloomy	b) active
c) sad	
d) proud	

*(Question 2 : Remembering- Mapping with CO2 & CO3)

3. a) The old man *hunted* for his spectacles. (Give the contextual meaning of the word in italics)
   b) The committee / have submitted / its report / to the President. (identify the part which contains an error)
   c) recently has a scooter purchased Shanthi. (Rearrange the jumbled words to make a meaningful sentence.)

*(Question 3 : Understanding- Mapping with CO2 & CO3)

4. a) Use the following primary auxiliary verb in sentence of your own:

    ' does'
   b) Fill in the blank with proper modal auxiliary verb based on the clue in the bracket:

    Harish _____ speak four languages. (ability)
c) Rakesh wants two hundred rupees from his father. (Write the sentence how he requests his father)

*(Question 4 : Applying - Mapping with CO2 & CO3)

5. Fill in the blanks with suitable form of the verb given in brackets:

    a) He _____ (go) for a walk daily.

b) The bus _____ (arrive) just now.

c) We _____ (live) in Chennai since 2005.

*(Question 5 : Applicative- Mapping with CO2 & CO3)

6. Change the voice of the following sentences:

a) English is spoken all over the world.

b) They watched a movie yesterday.

c) The Chief Minister will inaugurate the exhibition.

*(Question 6 : Applicative- Mapping with CO2 & CO3)

7. a) It is a beautiful rainbow. (Change into an exclamatory sentence)

 b) C.V. Raman won the Nobel Prize in 1930. (Frame a question using 'When')

 c) He can swim across the river. (change into 'Yes / No' question)

*(Question 7 : Applicative- Mapping with CO2 & CO3)

8. Change the speech of the following:

a) He said, "I will go to Delhi tomorrow."

b) Ravi said to Ashok, " Where are you going?"

c) She told him to mind his own business.

*(Question 8 : Applicative- Mapping with CO2 & CO3)

9. Rewrite as directed:

a) In spite of being busy he attended the meeting. (Rewrite the sentence using 'though')

b) She is poor. She is honest. (combine the two sentences using 'but')

c) On seeing the tiger, he climbed a tree. (split into two simple sentences)

*(Question 9 : Applicative- Mapping with CO2 & CO3)

10. Rewrite the following sentences after making necessary corrections:

a) We have gone to picnic yesterday.

b) Suresh watched T.V when I went to his house.

c) They left Gujarat before the earthquake occurred.

*(Question 10 : Applicative- Mapping with CO2 & CO3)

PART-B

5X8=40

Instructions: Answer the following questions. Each question carries EIGHT marks.

11. Write a paragraph in about 100 words on what you do daily.

OR

Write a paragraph in about 100 words on the uses and misuses of social media.

*(Question 11 : Understanding - Mapping with CO1, CO3 & CO4)

12. Construct a dialogue of at least five turns between an American and you about places worth visiting in your city.

OR

Compose a dialogue of at least five turns between two friends, one favouring homemade food and the other, fast food.

*(Question 12 : Applying - Mapping with CO1, CO3 & CO4)

13. Write a letter to your parents about your preparation for year-end examinations.

OR

Write a letter to the editor of a newspaper about the inconvenience caused due to loud speakers in your area.

*(Question 13 : Understanding - Mapping with CO1, CO3 & CO4)

14. Write an essay in about 120 words on measures to prevent water pollution.

OR

Write an essay in about 120 words on importance of gender equality.

*(Question 14 : Applying - Mapping with CO1, CO3 & CO4)

15. Read the following passage and answer the questions that follow:

A farmer in ancient China had a neighbour who was a hunter, and who owned ferocious and poorly trained hunting dogs. They jumped over the fence frequently and chased the farmer's lambs. The farmer asked his neighbour to keep his dogs in check, but this fell on deaf ears. One day the dogs again jumped the fence, attacked and severely injured several of the lambs.

The farmer had had enough, and went to town to consult a judge who listened carefully to the story and said: "I could punish the hunter and instruct him to keep his dogs chained or lock them up. But you would lose a friend and gain an enemy. Which would you rather have, friend or foe for a neighbour?" The farmer replied that he preferred a friend. "Alright, I will offer you a solution that keeps your lambs safe, and which will keep your a neighbour a friend." Having heard the judge's solution, the farmer agreed.

Once at home, the farmer immediately put the judge's suggestions to the test. He took three of his best lambs and presented them to his neighbour's three small sons, who were beside themselves with joy and began to play with them. To protect his son's newly acquired playthings, the hunter built a strong kennel for his dogs. Since then, the dogs never again bothered the farmer's lambs. Out of gratitude for the farmer's generosity toward his sons, the hunter often shared the game he had hunted with the farmer. The farmer reciprocated by sending the hunter the cheese he had made. Within a short time the neighbours became good friends.

   a)   What kind of dogs does the neighbor have?

   b)   When did the farmer consult the judge?

   c)   What would be the consequence if the judge punished the neighbor?

   d)   What was the solution suggested by the judge?

   e)   What did the neighbour's sons do with the gifts they received?

   f)   How did the dogs stop bothering the farmer's lambs?

   g)   What items are exchanged happily between the two neighbours?

   h)   Pick the word from the passage that would mean: 'a closed shelter for dogs'.

OR

Read the following short poem and answer the questions that follow:
Crisp in the winter's morning,
Softly all through the night,
What is this without warning,
Falling and white?

I have never seen snow,
But I can imagine it quite –
Not how it tastes, but I know,
It falls and is white.

One morning I'll open the door,
To bring in the morning's milk,
And all around there'll be snow –
Fallen and still.

How I'll roll in the stuff!
How I'll tumble and spin!
Until the neighbours cry,
Enough!And send me back in.

Q.1. What is the poem about?
2. How does snow fall?
3. Did you ever touch snow? How did you feel?
4. a) Pick the word from the poem that means 'slip and fall'
   b) Write the antonym for the word 'soft'

*(Question 15 : Understanding - Mapping with CO1, CO3 & CO4)

SECTION – C   1X10=10 Marks

16. Write a report on the blood donation camp organized by International Red Cross Society in your college.
       Use the following clues: date, time, place, arrangements, donors, equipment, doctors, response,
       sponsors, snacks, volunteers, help others, save lives…etc.

*(Question 16 : Applying - Mapping with CO1, CO3 & CO4)

STATE BOARD OF TECHNICAL EDUCATION –A.P
C20-COMMON-101-ENGLISH
UNIT TEST-1

Time: 90 minutes   **Max. Marks: 40**

PART-A   4X4= 16 marks

Instructions: Answer all the questions. Each question carries FOUR Marks.

1. Rewrite / Fill in the blank as directed. Each question carries ½ Mark.**(CO1,CO2)**

   a) Write the antonym of 'cruel' **CO2**

b) Write the synonym of 'love' **CO2**

c) Give prefix to 'adventure'.   **CO2**

d) Give suffix to ' liberate' **CO2**

e) It is _____ universal truth. (Fill in with suitable article)**CO1**

f) The boy is fond _____ ice-cream. (Fill in the blank with proper preposition) **CO1**

 g) He _____not like sweets. (Fill in the blank with correct primary auxiliary verb.) **CO1**

 h) We _____ respect our national flag. (Fill in with a proper modal verb) **CO1**

2. Rewrite the sentences as directed. Each question carries One mark. 4X1=4 Marks**CO1**

   a) No other metal is so useful as iron. (Change into superlative degree)

 b) Very few students are so clever as Ramesh. (Change into comparative degree)

 c) Guess the contextual meaning of the italicized word in the following sentence.

    "The CBI officer has *interrogated* the bank employees in connection with the scam."

 d) only sings plays Prasanth not also well but cricket. (Rearrange the jumbled words)

3. Fill in the blanks with proper form of the verb given in brackets. 4X1 = 4 marks**CO1**

The IPSGM _____(hold) in our college last month. Nearly all the colleges in our zone _____(participate) in the event. The prizes _____ (distribute) by the district collector.

Next year, Government Polytechnic, Vijayawada _____ (conduct) the games meet.

4. Rewrite the following sentences after making necessary corrections: 4X 1= 4 Marks**CO1**

a) The police has arrested the culprit.

b) Three hundred miles are a long distance.

c) The Principal along with the Heads of Sections have visited the laboratories.

d) Either he or I is to blame.

 PART-B   3X8=24 Marks

Instructions: Answer all the questions and each question carries EIGHT marks.

5. Write a dialogue of at least five turns between a shopkeeper and customer about buying a mobile phone. **CO3**

6. Make an analysis and write a paragraph in around 100 words about your strengths and weaknesses in learning and using English and also the measures to improve it. **CO3**

7. Write a paragraph in about 100 words on how to overcome low esteem and negativity. **CO3**

C20-COMMON-101-ENGLISH
UNIT TEST-II

Time: 90 minutes   Max. Marks: 40

PART-A   4X4= 16 Marks

Instructions: Answer all the questions. Each question carries FOUR marks.

1. Match the words in column A with their corresponding meanings in column B**CO2**

Column A	Column B
a) Deserve	i) continuous
b) hidden	ii) protect
c) Preserve	iii) worthy
d) Incessant	iv) praise
	v) unseen
	vi) affection

2. Rewrite as directed: **CO1**

   a)   You ask your Mom to give you another chocolate. (Change into a request)

   b)   The baby fell down and got injured. (Change into an exclamatory sentence)

   c)   The match was very interesting. (Frame a question using 'how')

   d)   Hemanth submitted his project report last week. (Frame Yes-No question)

3. Fill in the blanks with appropriate forms of verbs given in brackets: **CO1**

   a)   The Sun _____ (set) in the west.

   b)   Balu _____ (sing) for over fifty years in the films.

   c)   We _____ (see) a camel on the road yesterday.

   d)   They _____(enter) the stadium before the gates were closed.

4. Change the voice of the following: **CO1**

   a)   Marconi invented the radio.

   b)   Sravanthi has been offered a job.

   c)   Pragathi can type the letter.

   d)   The Chief Guest will be received by the Final year students.

Answer all the questions. Each question carries EIGHT marks. CO3

5. Write a letter to your younger brother motivating him to deal with failures and hurdles in life.

6. Write an essay in around120 words on the role of robots in the modern world.

7. Read the following passage and answer the questions that follow:

The greatest enemy of mankind, as people have discovered, is not science, but war. Science merely reflects the social forces by which it is surrounded. It was found that when there is peace, science is constructive when there is war, science is perverted to destructive end. The weapons which science gives us do not necessarily create war. These make war increasingly more terrible. Until now, it has brought us on the doorstep of doom. Our main problem, therefore, is not to curb science, but to substitute law for force, and international government for anarchy in the relations of one nation with another. That is a job in which everybody must participate, including the scientists. Now we are face to face with these urgent questions: Can education and tolerance, understanding and creative intelligence run fast enough to keep us side by side without our mounting capacity to destroy? That is the question which we shall have to answer, one way or the other, in this generation. Science must help us in the answer, but the main decision lies within ourselves. The hour is late and our work has scarcely begun.

a.   What is the chief enemy of man?

b.   What does science reflect?

c.   When is science perverted?

d.   What makes war more terrible?

e.   Why do we need international government?

f.   What are the four aspects that may stop destruction?

g.   Have we really started our work to fight the problem discussed?

h. Pick the word from the passage that would mean: 'replace with other one'

STATE BOARD OF TECHNICAL EDUCATION –A.P
C20-COMMON-101-ENGLISH
UNIT TEST-III

Time: 90 minutes   **Max. Marks: 40**

PART-A   **4X4 = 16 Marks**

Instructions: Answer all the questions. Each question caries Four marks.

1.   Give the meaning of the word in italics:**CO1 CO2**
   a) When the girls laughed in the class, the teacher was *furious.*
   b) He was *rusticated* from the school for his misbehavior.
   c) Vikramaditya was a *benevolent* Indian King.
   d) We should not show any *discrimination* between boys and girls.

   2. Change the speech of the following: **CO2**
      a)   He said, "I am sorry."
      b)   The teacher said to the boys, "Why are you late?"
      c)   Sushma said that she had submitted her report recently.
      d)   Pratap requested Priya to give him her pen.

   3. Rewrite as directed: **CO2**
      a)   Though he was weak, he took the test. (change into a simple sentence)
      b)   You must work hard to achieve success. (change into a complex sentence)
      c)   If you run fast, you will catch the bus. (change into a compound sentence)
      d)   The fog disappeared when the Sun rose. (Split into two simple sentences)

   4. Locate eight errors from the following passage and correct them.**CO3, CO1**

      Once upon a time there live a king who was very kind to his people. In his council of ministers, there is a wise man. He had a son called Sumanth who was a educated and highly learned. Once the wise minister fall sick. All the physicists in the country could not heal him. Then Sumanth will go in search of medicine in Himalayas. He bring the special medicinal roots to cure his father's sickness. Sumanth looked before his father carefully and healed him. The king rewarded Sumanth with rich gifts.

PART- B   **3X8 = 24 Marks**

Instructions: Answer all the questions and each one carries eight marks. CO3

5. Read the following paragraph and make notes first and then its summary.

Astronauts are people who travel on space ships. They need to have a very clean home. They travel far from Earth. We need clean kitchens everywhere on earth and in space. Astronauts have to solve two problems: how to get food and how to keep their spaceship clean. Here is how they solved the food problem. At first, the astronauts took tubes of food with them into space. They would squeeze a tube and eat semi-liquid food. It did not taste great, but since they did not need to take dishes or silverware with them, they had no dishes to wash. Today's spaceships have a bigger menu. Astronauts can eat from bowls. In fact, they take cereal and other standard foods with them. The foods are packaged in special containers to keep them fresh. They use knives, forks, and spoons. One unusual item on their table is a pair of scissors. They use the scissors to open the food packages. They can eat right from the package. They have a kitchen on the spaceship. Its oven can heat food to 170 degrees. The kitchen has water and sets of meals that come on trays. The astronauts choose their menu before they go into space. They take a lot of food with them. The astronauts keep bread and fresh fruits and vegetables in a special food locker. How do they keep the kitchen clean? They do not have to worry about mice or other rodents. They make sure that there are no rodents before the ship leaves. But sometimes mice travel on the ship. Those mice are part of experiments. They live in cages. How do astronauts keep their trays clean? That is another health problem the astronauts solve. They need to stay healthy in space. To carry a lot of water to wash trays would be a lot of extra weight. They pack wet wipes in plastic bags. They use them to clean trays. So, their kitchen is clean and they stay healthy.

6. Write an essay in about 120 words on the importance of goal setting and your short and long term goals.

7. Write a report about the bush fire that raged in Australia recently by using the following clues: forest, natural disaster, wild fire, dried leaves, no rain fall, wild animals, burnt alive, loss of flora and fauna, fire fighters, uncontrollable, moderate rains, environmental pollution, measures to protect...etc.

ENGINEERING MATHEMATICS-I

Course Code	Course Title	No. of Periods/week	Total No. of periods	Marks for FA	Marks for SA
AM-102	Engineering Mathematics-I	5	150	20	80

S.No.	Unit Title	No. of periods	COs mapped
1	Algebra	31	CO1
2	Trigonometry	44	CO2
3	Co-ordinate Geometry	23	CO3
4	Differential Calculus	33	CO4
5	Applications of Differentiation	19	CO4, CO5
	Total Periods	150	

Course Objectives	(i) To apply the principles of Algebra, Trigonometry and Co-Ordinate Geometry to real-time problems in engineering. (ii) To comprehend and apply the concept of Differential Calculus in engineering applications.

Course Outcomes	CO1	Identify various functions, resolve partial fractions and solve problems on matrices.
	CO2	Solve problems using the concept of trigonometric functions, their inverses and complex numbers.
	CO3	Find the equations and properties of straight lines, circles and conic sections in coordinate system.
	CO4	Evaluate the limits and derivatives of various functions.
	CO5	Evaluate solutions for engineering problems using differentiation.

ENGINEERING MATHEMATICS – I

COMMON TO ALL BRANCHES

Learning Outcomes

UNIT - I

C.O. 1 Identify various functions, resolve partial fractions and solve problems on matrices.

L.O. 1.1 Define Set, ordered pairs and Cartesian product - examples.

1.2 Explain Relations and functions – examples

1.3 Find Domain & Range of functions – simple examples.

1.4 Classify types of functions (into, many-to-one, one-one, onto and bijective).

1.5 Define inverse functions - examples.

1.6 Define rational, proper and improper fractions of polynomials.

1.7 Explain the procedure of resolving rational fractions of the type mentioned
        below into partial fractions

$i)$ $\dfrac{f(x)}{(ax+b)(cx+d)}$ $ii)$ $\dfrac{f(x)}{(ax+b)^2(cx+d)}$

    $iii)$ $\dfrac{f(x)}{(x^2+a^2)(bx+c)}$ $iv)$ $\dfrac{f(x)}{(x^2+a^2)(x^2+b^2)}$

1.8 Define a matrix and order of a matrix

1.9 State various types of matrices with examples (emphasis on 3rd order square
      matrices).

1.10 Compute sum, scalar multiplication and product of matrices. Illustrate the
        properties of these operations such as associative, distributive,
      commutative
        properties with examples and counter examples.

1.11 Define the transpose of a matrix and write its properties;

1.12 Define symmetric and skew-symmetric matrices with examples   Resolve square
      matrix into a sum of a symmetric and skew- symmetric matrices and provide
      examples.

1.13 Define determinant of a square matrix, minor, co-factor of an element of a

   3x3 square matrix with examples. Expand the determinant of a 3 x 3 matrix

   using Laplace expansion formula. State and apply the properties of determinants
   to solve problems.

1.14   Distinguish singular and non-singular matrices. Define multiplicative inverse of
   a matrix and list properties of adjoint and inverse. Compute adjoint and
   multiplicative inverse of a square matrix.

1.15   Solve system of 3 linear equations in 3 unknowns using Cramer's rule and
   matrix inversion method

UNIT - II

**C.O.2 Solve problems using the concept of trigonometric functions, their inverses and
   complex numbers.**

   L.O. 2.1 Define trigonometric ratios of any angle.

   2.2 List the values of trigonometric ratios at specified values.

   2.3 Draw graphs of trigonometric functions

   2.4 Explain periodicity of trigonometric functions.

   2.5 Define compound angles and state the formulae of sin(A±B), cos(A±B),

       tan(A±B) and cot(A±B)

   2.6 Give simple examples on compound angles to derive the values of $\sin 15^0$,

       $\cos 15^0$, $\sin 75^0$, $\cos 75^0$, $\tan 15^0$, $\tan 75^0$ etc.

   2.7 Derive identities like sin(A+B) sin(A-B) = $\sin^2 A - \sin^2 B$ etc.

   2.8 Solve simple problems on compound angles.

   2.9 Derive the formulae of multiple angles 2A, 3A etc and sub multiple angles

       A/2 in terms of angle A of trigonometric functions.

   2.10 Derive useful allied formulas like $\sin^2 A = (1 - \cos 2A)/2$ etc.

   2.11 Solve simple problems using the above formulae

> Syllabus for Unit test-I completed

2.12   Derive the formulae on transforming sum or difference of two trigonometric ratios into a product and vice versa, examples on these formulae.

2.13   Solve problems by applying these formulae to sum or difference or product of three or more terms.

2.14   Explain the concept of the inverse of a trigonometric function by selecting an appropriate domain and range.

2.15 Define inverses of six trigonometric functions along with their domains and ranges.

2.16   Derive relations between inverse trigonometric functions so that given A= $\sin^{-1}$x, express angle A in terms of other inverse trigonometric functions with examples.

2.17   State various properties of inverse trigonometric functions and identities like

$\sin^{-1}$x+$\cos^{-1}$ x = $\dfrac{\pi}{2}$ etc.

2.18   Apply formulae like $\tan^{-1} x + \tan^{-1} y = \tan^{-1}\left(\dfrac{x+y}{1-xy}\right), \quad where \ x \ge 0, y \ge 0, xy < 1$ etc., to solve Simple problems

2.19   Explain what is meant by solutions of trigonometric equations and find the general solutions of sin x=k, cos x =k and tan x=k with appropriate examples.

2.20   Solve models of the type a $\sin^2$ x + b sin x +c=0, a cos x + b sin x=c etc., and problems using simple transformations.

2.21   State sine rule, cosine rule, tangent rule and projection rule.

2.22   Explain the formulae for sin A/2, cos A/2, tan A/2 and cot A/2 in terms of semi-perimeter s and sides a,b,c and solve problems.

2.23   List various formulae for the area of a triangle.

2.24   Solve problems using the above formulae.

2.25   Define Sinh x, cosh x and tanh x and list the hyperbolic identities.

2.26 Represent inverse hyperbolic functions in terms of logarithms.

2.27 Define complex number, its modulus, conjugate and list their properties.

2.28 Define the operations on complex numbers with examples.

2.29 Define amplitude of a complex number

2.30 Represent the complex number in various forms like modulus-amplitude
(polar) form, Exponential (Euler) form with examples.

2.31 Write DeMoivre's theorem (without proof) and illustrate with simple
examples.

UNIT - III

Coordinate Geometry

C.O. 3 Find the equations and properties of straight lines, circles and conic sections in coordinate system.

L.O. 3.1 Write the different forms of a straight line – general form, point-slope form,
slope- intercept form, two-point form, intercept form and normal form or
perpendicular form.

3.2 Solve simple problems on the above forms

3.3 Find distance of a point from a line, acute angle between two lines,
intersection of two non parallel lines and distance between two parallel
lines.

3.4 Define locus of a point and define a circle.

3.5 Write the general equation of a circle and find the centre and radius.

3.6 Find the equation of a circle given (i) centre and radius, (ii) two ends of a
diameter (iii) Centre and a point on the circumference (iv) three non collinear
points.

3.7. Define a conic section.

3.8 Explain the terms focus, directrix, eccentricity, axes and latus rectum of a
conic with illustrations.

3.9 Find the equation of a conic when focus, directrix and eccentricity are given

3.10 Describe the properties of Parabola, Ellipse and Hyperbola in standard forms
whose axes are along co-ordinate axes and solve simple examples on above.

Syllabus for Unit test-II completed

49

C.O.4   Evaluate the limits and derivatives of various functions.

L.O. 4.1 Explain the concept of limit and meaning of $\lim\limits_{x \to a} f(x) = l$ and state the

properties of limits .

4.2 Evaluate the limits of the type $\lim\limits_{x \to l} \dfrac{f(x)}{g(x)}$ and $\lim\limits_{x \to \infty} \dfrac{f(x)}{g(x)}$

4.3 Mention the Standard limits $\lim\limits_{x \to a} \dfrac{x^n - a^n}{x - a}$, $\lim\limits_{x \to 0} \dfrac{\sin x}{x}$, $\lim\limits_{x \to 0} \dfrac{\tan x}{x}$, $\lim\limits_{x \to 0} \dfrac{a^x - 1}{x}$,

$\lim\limits_{x \to 0} \dfrac{e^x - 1}{x}$, $\lim\limits_{x \to 0} (1 + x)^{\frac{1}{x}}$, $\lim\limits_{x \to \infty} \left(1 + \dfrac{1}{x}\right)^x$ (without proof) and solve the problems
using these standard limits.

4.4 Explain the concept of continuity of a function at a point and on an interval
with some examples whether a given function is continuous or not.

4.5 State the concept of derivative of a function y = f(x) – definition, first principle
as $\lim\limits_{h \to 0} \dfrac{f(x+h) - f(x)}{h}$ and also provide standard notations to denote the
derivative of a function.

4.6 State the significance of derivative in scientific and engineering applications.

4.7 Find the derivatives of elementary functions like x^n, a^x, e^x, log x, sin x, cos x,
tanx,Secx,Cosecx and Cot x using the first principles.

4.8 Find the derivatives of simple functions from the first principle.

4.9 State the rules of differentiation of sum, difference, scalar multiplication,
product and quotient of functions with illustrative and simple examples.

4.10 Explain the method of differentiation of a function of a function (Chain rule)
with illustrative examples.

4.11 Find the derivatives of Inverse Trigonometric functions and examples using the
Trigonometric transformations.

4.12 Explain the method of differentiation of a function with respect to another
function and also differentiation of parametric functions with examples.

4.13 Find the derivatives of hyperbolic functions.

4.14 Explain the procedures for finding the derivatives of implicit function with
examples.

4.15 Explain the need of taking logarithms for differentiating some functions with examples like $[f(x)]^{g(x)}$.

4.16 Explain the concept of finding the higher order derivatives of second and third order with examples.

4.17 Explain the concept of functions of several variables, partial derivatives and difference between the ordinary and partial derivatives with simple examples.

4.18 Explain the definition of Homogenous function of degree n

4.19 Explain Euler's theorem for homogeneous functions with applications to simple problems.

C.O. 5 Evaluate solutions for engineering problems using differentiation.

L.O. 5.1 State the geometrical meaning of the derivative as the slope of the tangent to the curve y=f(x) at any point on the curve.

5.2 Explain the concept of derivative to find the slope of tangent and to find the equation of tangent and normal to the curve y=f(x) at any point on it.

5.3 Find the lengths of tangent, normal, sub-tangent and sub normal at any point on the curve y=f(x) .

5.4 Explain the derivative as a rate of change in distance-time relations to find the velocity and acceleration of a moving particle with examples.

5.5 Explain the derivative as a rate measurer in the problems where the quantities like volumes, areas vary with respect to time- illustrative examples.

5.6 Define the concept of increasing and decreasing functions.

5.7 Explain the conditions to find points where the given function is increasing or decreasing with illustrative examples.

5.8 Explain the procedure to find the extreme values (maxima or minima) of a function of single variable- simple problems yielding maxima and minima.

5.9 Solve problems on maxima and minima in applications like finding areas, volumes etc.

5.10 Apply the concept of derivatives to find the errors and approximations in simple problems.

Syllabus for Unit test-III completed

51

Engineering Mathematics – I

CO/PO – Mapping

AM-102	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	2	1	2				3	2	3
CO2	3	3	3	2				3	3	1
CO3	3	2	2	1				3	2	2
CO4	3	3	2	2				3	2	1
CO5	3	3	3	3				3	3	3
Avg	3	2.6	2.5	2				3	2.4	2

3 = Strongly mapped (High), **2 =** Moderately mapped (Medium), **1 =** Slightly mapped (Low)

Note:

PO5: Appropriate quiz programme may be conducted at intervals and duration as decided by concerned teacher.

PO6: Seminars on applications of mathematics in various engineering disciplines are to be planned and conducted.

PO7: Such activities are to be planned that students visit library to refer standard books on Mathematics and latest updates in reputed national and international journals, attending seminars, learning mathematical software tools.

PSO1: An ability to understand the concepts of basic mathematical concepts and to apply them in various areas like computer programming, civil constructions, fluid dynamics, electrical and electronic systems and all concerned engineering disciplines.

PSO2: An ability to solve the Engineering problems using latest software tool, along with analytical skills to arrive at faster and appropriate solutions.

PSO3: Wisdom of social and environmental awareness along with ethical responsibility to have a successful career as an engineer and to sustain passion and zeal for real world technological applications.

Engineering Mathematics – I

PO- CO – Mapping strength

PO no	Mapped with CO no	CO periods addressing PO in column I		Level (1,2 or 3)	Remarks
		No	%		
1	CO1, CO2, CO3,CO4,CO5	150	100%	3	>40% Level 3 Highly addressed
2	CO1, CO2, CO3,CO4,CO5	138	92%	3	
3	CO1, CO2, CO3,CO4,CO5	133	88.6%	3	
4	CO1, CO2, CO3,CO4,CO5	120	80%	3	25% to 40% Level 2 Moderately addressed
PSO 1	CO1, CO2, CO3,CO4,CO5	150	100%	3	
PSO 2	CO1, CO2, CO3,CO4,CO5	135	90%	3	5% to 25% Level 1 Low addressed
PSO 3	CO1, CO2, CO3,CO4,CO5	125	83.3%	3	<5% Not addressed

ENGINEERING MATHEMATICS – I

COMMON TO ALL BRANCHES

COURSE CONTENT

Unit-I

Algebra

1. Relations and Functions:

Define Set, Ordered pairs, Cartesian product, Relations, functions, domain & range of functions. Describe types of functions (in-to, many-to-one, one-one, onto and bijective) and inverse functions – examples.

2. Partial Fractions:

Define rational, proper and improper fractions of polynomials. Resolve rational fractions in to their partial fractions covering the types mentioned below.

$$i) \quad \frac{f(x)}{(ax+b)(cx+d)} \quad ii) \quad \frac{f(x)}{(ax+b)^2(cx+d)}$$

$$iii) \quad \frac{f(x)}{(x^2+a^2)(bx+c)} \quad iv) \quad \frac{f(x)}{(x^2+a^2)(x^2+b^2)}$$

3. Matrices:

Definition of a matrix, types of matrices-examples, algebra of matrices-equality of two matrices, sum, scalar multiplication and product of matrices. Transpose of a matrix-Symmetric, skew symmetric matrices-Minor, cofactor of an element-Determinant of a square matrix-Laplace's expansion, properties of determinants. Singular and non singular matrices-Adjoint and multiplicative inverse of a square matrix- examples-System of linear equations in 3 variables-Solutions by Cramers's rule and Matrix inversion method-examples.

Unit-II

Trigonometry

4.Trigonometric ratios:

Definition of trigonometric ratios of any angle, values of trigonometric ratios at specified values, draw graphs of trigonometric functions, periodicity of trigonometric functions.

5. Compound angles:

Formulas of sin(A±B), cos(A±B), tan(A±B),cot(A±B),and related identities with problems.

6. Multiple and sub multiple angles:

Formulae for trigonometric ratios of multiple angles 2A,3A and submultiple angle A/2

with problems.

7.Transformations of products into sums or differences and vice versa simple problems

8. Inverse trigonometric functions:

Definition, domains and ranges-basic properties- problems.

9. Trigonometric equations:

Concept of a solution, principal value and general solution of trigonometric equations :

sinx =k , cosx= k, tanx =k, where k is a constant. Solutions of simple quadratic equations, equations involving usage of transformations- problems.

10.Properties of triangles:

Relation between sides and angles of a triangle- sine rule, cosine rule, tangent rule and projection rule-area of a triangle- problems.

11. Hyperbolic functions:

Definitions of hyperbolic functions, identities of hyperbolic functions, inverse hyperbolic

functions and expression of inverse hyperbolic functions in terms of logarithms.

12. Complex Numbers:

Definition of a complex number, Modulus and conjugate of a complex number, Arithmetic operations on complex numbers, Modulus- Amplitue (polar) form , Exponential form (Euler form) of a complex number- Problems. DeMoivre's theorem.

UNIT-III

Coordinate geometry

13 Straight lines: various forms of straight lines, angle between lines, perpendicular distance from a point, distance between parallel lines-examples.

14. Circle: locus of a point, Circle, definition-Circle equation given (i) centre and radius, (ii) two ends of a diameter (iii) centre and a point on the circumference (iv) three non collinear points - general equation of a circle – finding centre, radius.

15. Definition of a conic section, equation of a conic when focus directrix and eccentricity are given. properties of parabola, ellipse and hyperbola in standard forms.

UNIT-IV

Differential Calculus

16. Concept of Limit- Definition- Properties of Limits and Standard Limits -Simple Problems-Continuity of a function at a point- Simple Examples only.

17. Concept of derivative- Definition (first principle)- different notations-derivatives of elementary functions- problems. Derivatives of sum, product, quotient, scalar multiplication of functions - problems. Chain rule, derivatives of inverse trigonometric functions, derivative of a function with respect to another function, derivative of parametric functions, derivative of hyperbolic, implicit functions, logarithmic differentiation – problems in each case. Higher order derivatives - examples – functions of several variables - partial differentiation, Euler's theorem-simple problems.

UNIT-V

Applications of Derivatives:

18. Geometrical meaning of the derivative, equations of Tangent and normal to a curve at any point. Lengths of tangent, normal, subtangent and subnormal to the curve at any point - problems.

19. Physical applications of the derivative – velocity, acceleration, derivative as a rate measure –Problems.

20. Applications of the derivative to find the extreme values – Increasing and decreasing functions, finding the maxima and minima of simple functions - problems leading to applications of maxima and minima.

21. Using the concept of derivative of a function of single variable, find the absolute error, relative and percentage errors and approximate values due to errors in measuring.

Textbook:

Engineering Mathematics-I, a textbook for first year diploma courses, prepared & prescribed by SBTET, AP.

Reference Books:

1. Shanti Narayan, A Textbook of matrices, S.Chand&Co.

2. Robert E. Moyer & Frank Ayers Jr., Schaum's Outline of Trigonometry, 4th Edition, Schaum's Series

3. M.Vygodsky, Mathematical Handbook, Mir Publishers, Moscow.

4. Frank Ayers & Elliott Mendelson, Schaum's Outline of Calculus, Schaum's Series

C-20 Curriculum

Engineering Mathematics – I

Blue print

S. No	Chapter/ Unit title	No of Periods		Weightage Allotted	Marks wise distribution of weightage				Question wise distribution of weightage				COs mapped
		Theory	Practice		R	U	Ap	An	R	U	Ap	An	
	Unit - I : Algebra												
1	Relations and Functions	4	2	3	0	3	0	0	0	1	0	0	CO 1
2	Partial Fractions	3	2	3	0	3	0	0	0	1	0	0	CO 1
3	Matrices and Determinants	10	10	11	3	0	8	0	1	0	1	0	CO 1
	Unit - II : Trigonometry												
4	Trigonometric Ratios	1	1	0	0	0	0	0	0	0	0	0	CO2
5	Compound Angles	3	2	3	3	0	0	0	1	0	0	0	CO2
6	Multiple and Submultiple angles	4	4	3	0	3	0	0	0	1	0	0	CO2
7	Transformations	3	3										
8	Inverse Trigonometric Functions	3	2	8	0	8	0	0	0	1	0	0	CO2
9	Trigonometric Equations	3	2										
10	Properties of triangles	3	2	8	0	0	8	0	0	0	1	0	CO2
11	Hyperbolic Functions	1	1	0	0	0	0	0	0	0	0	0	CO2
12	Complex Numbers	4	2	3	3	0	0	0	1	0	0	0	CO2
	Unit III : Co-ordinate Geometry												
13	Straight Lines	4	2	3	3	0	0	0	1	0	0	0	CO3
14	Circle	3	2	8	0	8	0	0	0	1	0	0	CO3
15	Conic Sections	8	4										
	Unit – IV : Differential Calculus												
16	Limits and Continuity	4	2	3	0	3	0	0	0	1	0	0	CO4
17	Differentiation	17	10	14	3	11	0	0	1	2	0	0	CO4
	Unit - V : Applications of Differentiation												
18	Geometrical Applications	3	2	10	0	0	0	10	0	0	0	1	CO5

58

No	Topic												
19	Physical Applications	2	2	59									
20	Maxima and Minima	3	4										
21	Errors and Approximations	2	1										
Total		**89**	**61**	**80**	**15**	**39**	**16**	**10**	**5**	**8**	**2**	**1**	

R: Remembering Type   : 15 Marks

U: understanding Type   : 39 Marks

Ap: Application Type   : 16 Marks

An: Analysing Type   : 10 Marks

Engineering Mathematics – I

Unit Test Syllabus

Unit Test	Syllabus
Unit Test-I	From L.O. 1.1 to L.O. 2.11
Unit Test-II	From L.O. 2.12 to L.O. 3.10
Unit Test-III	From L.O.4.1 to L.O. 5.10

Unit Test I   **C –20, AM-102**

State Board of Technical Education and Training, A. P

First Year

Subject name: **Engineering Mathematics-I**

Sub Code: **AM-102**

Time : 90 minutes   **Max.marks:40**

_____

Part-A   **16Marks**

Instructions: **(1) Answer all questions.**

(2) First question carries four marks and the remaining questions carry three marks each.

1.   Answer the following.

   a.   If $f(x) = x^2$ and domain $= \{-1, 0, 1\}$, then find range. (CO1)

   b.   If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$, then find 3A. (CO1)

   c.   Write the value of $Sin120^0$ (CO2)

   d.   Write the formula for $\tan 2A$ in terms of $\tan A$ (CO2)

2.   If $f : R \rightarrow R$ is defined by $f(x) = 3x - 5$, then prove that $f(x)$ is onto. (CO1)

3. If $A = \begin{bmatrix} 1 & 3 \\ 4 & -9 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 4 \\ -3 & 1 \end{bmatrix}$ then find $2A + 3B$ (CO1)

4. Prove that $Sin^2 45^0 - Sin^2 15^0 = \dfrac{\sqrt{3}}{4}$ (CO2)

5. Prove that $\dfrac{\sin 2A}{1 - \cos 2A} = \cot A$ (CO2)

Part-B   3×8=24

Instructions: **(1) Answer all questions.**

               (2) Each question carries eight marks

               (3) Answer should be comprehensive and the criterion for valuation

               is the content but not the length of the answer.

6. A) Resolve $\dfrac{2x}{(x-1)(x-3)}$ into partial fractions.(CO1)

             or

   B) Resolve $\dfrac{x+4}{x^2 - 3x + 2}$ into partial fractions.(CO1)

7. A) Using cramer's rule to solve

$x - y + z = 2, 2x + 3y - 4z = -4, 3x + y + z = 8$ (CO1)

             or

   B) Prove that $\begin{vmatrix} bc & b+c & 1 \\ ca & c+a & 1 \\ ab & a+b & 1 \end{vmatrix} = (a-b)(b-c)(c-a)$ (CO1)

8.   A)   Find the adjoint of Matrix $\begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 5 \\ 2 & 7 & -4 \end{bmatrix}$ (CO1)

or

   B)   If $A = \begin{bmatrix} 2 & 3 & 4 \\ 5 & 7 & 9 \\ -2 & 1 & 3 \end{bmatrix}$; $B = \begin{bmatrix} 3 & 1 & -5 \\ 2 & 1 & 4 \\ 0 & 3 & 1 \end{bmatrix}$, find AB and BA and verify if $AB = BA$.

   (CO1)

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State Board of Technical Education and Training, A. P

First Year

Subject name: **Engineering Mathematics-I**

Sub Code: **CM - 102**

Time : 90 minutes   **Max.marks:40**

Part-A   **16Marks**

Instructions: **(1) Answer all questions.**

(2) First question carries four marks and the remaining questions carry three marks each

1.   Answer the following.

   a. $\sin C + \sin D = 2\cos\left(\dfrac{C+D}{2}\right)\sin\left(\dfrac{C-D}{2}\right)$: State TRUE/FALSE (CO2)

   b.   If $z = 2+3i$, then find $|z|$ (CO2)

   c. $\sinh x = \dfrac{e^x - e^{-x}}{2}$: State TRUE/FALSE   (CO2)

   d.   Write the eccentricity of rectangular hyperbola.   (CO3)

2.   Express $(3-4i)(7+2i)$ in terms of $a+ib$ (CO2)

3.   Find the perpendicular distance from $(1,1)$ to the line $2x+3y-1=0$ (CO3)

4.   Find the angle between lines $2x-y+3=0$ and $x+y-2=0$ (CO3)

5.   Find the centre and radius of the circle $x^2 + y^2 - 2x + 4y - 4 = 0$ (CO3)

Instructions: **(1) Answer all questions.**

(2) Each question carries eight marks

(3) Answer should be comprehensive and the criterion for valuation

is the content but not the length of the answer.

6.   A)   Prove that $\dfrac{\sin 2\theta + \sin 4\theta + \sin 6\theta}{\cos 2\theta + \cos 4\theta + \cos 6\theta} = \tan 4\theta$.(CO2)

or

B)   Prove that $\tan^{-1}\dfrac{1}{2} + \tan^{-1}\dfrac{1}{5} + \tan^{-1}\dfrac{1}{8} = \dfrac{\pi}{4}$ (CO2)

7.   A)   Solve $2\sin^2\theta - \sin\theta - 1 = 0$ (CO2)

or

B)   In any ΔABC , If $\underline{|B} = 60^0$ then $\dfrac{c}{a+b} + \dfrac{a}{b+c} = 1$ (CO2)

8.   A) Find the equation of circle with $(2,3)$ and $(6,9)$ as the end points of diameter and
     also find centre and radius of circle.   (CO3)

or

A) Find the equation of ellipse whose focus is $(1,-1)$, directrix is $x - y + 3 = 0$ and
     eccentricity is 1/2.(CO3)

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State Board of Technical Education and Training, A. P

First Year

Subject name: Engineering Mathematics-I
Sub Code: AM-102

Time : 90 minutes   **Max.marks:40**

_____

Part-A   **16Marks**

Instructions: **(1) Answer all questions.**

(2) First question carries four marks and the remaining questions carry three marks each

1.   Answer the following.

a.   Find $\lim\limits_{x\to 1}\dfrac{x^2+1}{x+5}$ (CO4)

b. $\lim\limits_{\theta\to 0}\dfrac{\sin 2\theta}{\theta}=2$: State TRUE/FALSE (CO4)

c. $\dfrac{d}{dx}\left(3\tan^{-1}x\right)=?$ (CO4)

d.   Formula for percentage error in x is _____ . (CO5)

2.   Evaluate $\lim\limits_{x\to 2}\dfrac{x^5-32}{x^2-4}$ (CO4)

3.   Find the derivative of $3\tan x-4\log x+7^x$ w.r.t. x (CO4)

4.   Differentiate $x^2\sin x$ w.r.t. x (CO4)

5.   Find the derivative of $\dfrac{2x+3}{3x+4}$ (CO4)

Instructions: **(1) Answer all questions.**

(2) Each question carries eight marks

(3) Answer should be comprehensive and the criterion for valuation

is the content but not the length of the answer.

6.   A)   Find the derivative of $\sin^{-1}\left(\dfrac{2x}{1+x^2}\right)$ w.r.t. $\tan^{-1}\left(\dfrac{2x}{1-x^2}\right)$. (CO4)

or

B)   Find $\dfrac{dy}{dx}$ if $y = x^{\cos x}$ (CO4)

7.   A)   Verify Euler's theorem when $u(x, y) = \dfrac{x^4 + y^4}{x - y}$ (CO4)

or

B)   Find the equation of tangent and normal to the curve $3y = x^2 - 6x + 17$ at $(4,3)$

(CO5)

8.   A)   Circular patch of oil spreads on water and the area is growing at the rate of $8\,sqcm/\min$.

How fast is the radius increasing when radius is $5\,cm$. (CO5)

or

B)   Find the maxima and minima values of $f(x) = x^3 - 6x^2 + 9x + 15$. (CO5)

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STATE BOARD OF TECHNICAL EDUCATION, A.P

ENGINEERING MATHEMATICS CM- 102

TIME : 3 HOURS   **MODEL PAPER- I**   **MAX.MARKS : 80M**

PART-A

Answer All questions. Each question carries THREE marks.   **10x3=30M**

1. If $A=\left\{0,\dfrac{\pi}{6},\dfrac{\pi}{4},\dfrac{\pi}{3},\dfrac{\pi}{2}\right\}$ and $f:A\to B$ is a function such that $f(x)=\cos x,$ then find the range of f.**CO 1**

2. Resolve the function $\dfrac{x}{(x-1)(x-2)}$ into partial fractions.   **CO 1**

3. If $A=\begin{bmatrix}3 & 9 & 0\\1 & 8 & -2\end{bmatrix}$ and $B=\begin{bmatrix}4 & 0 & 2\\7 & 1 & 4\end{bmatrix}$, find $A+B$ and $A-B$.**CO1**

4. Show that $\dfrac{\cos16^0+\sin16^0}{\cos16^0-\sin16^0}=\tan61^0.$ **CO2**

5. Prove that $\dfrac{\sin2\theta}{1-\cos2\theta}=\cot\theta.$ **CO2**

6. Find the modulus of the complex number $\left(\dfrac{1-i}{2+i}\right).$ **CO2**

7. Find the distance between parallel lines $x+2y+3=0$ and $x+2y+8=0.$**CO3**

8. Find $\lim\limits_{x\to0}\dfrac{\sin77x}{\sin11x}.$ **CO4**

9. Differentiate $3\tan x-4\log x-7x^2$ w.r.t. x.**CO4**

10. If $x=at^2, y=2at,$ then find $\dfrac{dy}{dx}.$ **CO4**

Answer All questions. Each question carries EIGHT marks.   **5x8=40M**

11 A) Find the inverse of the matrix $\begin{bmatrix} 3 & -3 & 4 \\ 2 & -3 & 4 \\ 0 & -1 & 1 \end{bmatrix}$. **CO1**

Or

B) Solve the system of equations $x+y+z=6, x-y+z=2$ and $2x-y+3z=9$ by

Cramer's rule.   **CO1**

12 A) If $\cos x+\cos y=\dfrac{3}{5}$ and $\cos x-\cos y=\dfrac{2}{7},$ then show that   **CO2**

$$21\tan\left(\frac{x-y}{2}\right)+10\cot\left(\frac{x+y}{2}\right)=0.$$

Or

B) If $\tan^{-1}x+\tan^{-1}y+\tan^{-1}z=\pi$ then show that $x+y+z=xyz.$ **CO2**

13 A) Solve $\sqrt{3}\cos\theta-\sin\theta=1.$ **CO2**

Or

B)   In any $\triangle ABC,$ Show that $\cot\dfrac{A}{2}+\cot\dfrac{B}{2}+\cot\dfrac{C}{2}=\dfrac{s^2}{\Delta}.$ **CO2**

14 A) Find the equation of the circle with $(4,2)$ and $(1,5)$ as the two ends of its

diameter and also find its centre and radius.   **CO 3**

Or

B) Find the centre, vertices, equation of axes, lengths of axes, eccentricity, foci, equations

of directrices and length of latus rectum of the ellipse $4x^2+16y^2=1.$**CO 3**

15 A) Find the derivative of $\sin^{-1}\left(\dfrac{2x}{1+x^2}\right)$ w.r.t. $\tan^{-1}\left(\dfrac{2x}{1-x^2}\right)$ **CO4**

<div align="center">Or</div>

B) If $u = \tan^{-1}\left(\dfrac{x^3 - y^3}{x+y}\right)$, then prove that $x\dfrac{\partial u}{\partial x} + y\dfrac{\partial u}{\partial y} = \sin 2u$. **CO4**

<div align="center">

PART-C

</div>

Answer the following question. Question carries TEN marks.   **1x10=10M**

16. The sum of two numbers is 24. Find them so that the sum of their squares is minimum.

CO 5

ENGINEERING MATHEMATICS CM- 102

TIME : 3 HOURS   MODEL PAPER- II   MAX.MARKS : 80M

PART-A

Answer All questions. Each question carries THREE marks.   **10x3=30M**

1. If $f : R \rightarrow R$ is a bijective function such that $f(x) = ax + b,$ then find $f^{-1}(x).$ **CO 1**

2. Resolve the function $\dfrac{1}{(x+1)(x-2)}$ into partial fractions.   **CO 1**

3. If $A = \begin{bmatrix} 0 & -1 & 3 \\ 1 & 0 & 7 \\ -3 & x & 0 \end{bmatrix}$ is a skew-symmetric matrix, find the value of $x.$ **CO 1**

4. Find the value of $\sin^2 82\frac{1}{2}^0 - \sin^2 22\frac{1}{2}^0.$ **CO2**

5. Prove that $\dfrac{\cos 3A}{2\cos 2A - 1} = \cos A.$ **CO2**

6. Find the conjugate of the complex number $(3 - 2i).(4 + 7i)$ **CO2**

7. Find the equation of the line passing through the points $(1, 2)$ and $(3, -4).$ **CO3**

8. Find $\lim\limits_{x \to 2} \dfrac{x^5 - 32}{x - 2}.$ **CO4**

9. Differentiate $\sqrt{x} - \sec x + \log x$ w.r.t. $x.$ **CO4**

10. If $u(x, y) = x^3 - 3axy + y^3,$ then find $\dfrac{\partial u}{\partial x}$ and $\dfrac{\partial u}{\partial y}.$ **CO4**

PART-B

Answer All questions. Each question carries EIGHT marks. 5x8=40M

11 A) Show that $\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix} = (a-b)(b-c)(c-a).$ **CO1**

Or

B) Solve the system of equations $x+2y+3z=6, 3x-2y+4z=5$ and $x-y-z=-1$ using

matrix inversion method. **CO1**

12   A) Prove that $\dfrac{\sin 2\theta + \sin 4\theta + \sin 6\theta}{\cos 2\theta + \cos 4\theta + \cos 6\theta} = \tan 4\theta.$ **CO2**

Or

B) Prove that $\tan^{-1}\dfrac{1}{3} + \tan^{-1}\dfrac{1}{5} + \tan^{-1}\dfrac{1}{7} + \tan^{-1}\dfrac{1}{8} = \dfrac{\pi}{4}.$ **CO2**

13   A) Solve $2\cos^2\theta - 3\cos\theta + 1 = 0.$ **CO2**

Or

B) In any $\triangle ABC$, Show that $\sum a^3 \cos(B-C) = 3abc.$ **CO2**

14 A) Find the equation of the circle passing through the points $(0,0), (6,0)$ and $(0,8).$ **CO3**

Or

B) Find the equation of the rectangular hyperbola whose focus is $(1,2)$ and directrix is

$3x+4y-5=0.$ **CO3**

15 A) If $\sin y = x\sin(a+y)$, then prove that $\dfrac{dy}{dx} = \dfrac{\sin^2(a+y)}{\sin a}$. **CO4**

Or

B) If $y = \tan^{-1} x$, then prove that $(1+x^2)y_2 + 2xy_1 = 0$. **CO4**

PART-C

Answer the following question. Question carries TEN marks. 1x10=10M

16 Show that the semi-vertical angle of the cone of maximum volume and of given slant height is $\tan^{-1}\sqrt{2}$.

CO4

Course code	Course Title	No. of Periods per week	Total No. of Periods	Marks for FA	Marks for SA
AM-103	Engineering Physics	4	120	20	80

S.No	Unit Title/Chapter	No of Periods	COs Mapped
1	Units and Dimensions	08	CO1
2	Elements of Vectors	12	CO1
3	Dynamics	12	CO2
4	Friction	10	CO2
5	Work, Power and Energy	12	CO3
6	Simple harmonic motion	12	CO3
7	Heat and Thermodynamics	12	CO4
8	Sound	10	CO4
9	Properties of matter	10	CO5
10	Electricity and Magnetism	12	CO5
11	Modern physics	10	CO5
Total		**120**	

➢ **Course Objectives**

Course Title: Engineering Physics	
Course Objectives	1. To familiarize with the concepts of Physics involved in the process of various Engineering, Industrial and Daily life Applications. 2. To understand and apply the basic principles of physics in the field of engineering and technology to familiarize certain natural phenomenon occurring in the day to day life 3. To reinforce theoretical concepts by conducting relevant experiments/exercises

➢ **Course outcomes**

Course Outcomes	CO1	Explain S.I units and dimensions of different physical quantities, basic operations among vector quantities.
	CO2	Explain the motion of objects moving in one dimensions and two dimensions, the causes of motion and hindrance to the motion of the objects especially with respect to friction.
	CO3	Explain the mechanical energy of bodies like PE, KE and conservation law of energy, the properties of simple harmonic motion.
	CO4	Explain gas laws, ideal gas equation, Isothermal and adiabatic processes, Specific heats, to study the laws of thermodynamics. Causes, consequences and methods to minimise noise pollution, explain beats, Doppler effect, Reverberation, echoes.
	CO5	Explain certain properties of solids, liquids like elastic properties, viscosity and surface tension. Explain Ohm's law, to study Kirchoff's laws, to study the principle of Wheatstone's bridge and its application to meter bridge. To study the magnetic force and understand magnetic field. To compute magnetic field strength on axial and equatorial lines of a bar magnet. To familiarise with modern topics like photoelectric effect, optical fibres, superconductivity and nanotechnology.

➢ **Learning Outcome**
➢ **COs-POs mapping strength (as per given table)**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3					1				
CO2	3		2					2		
CO3	3		2						1	
CO4	3	2			2			2		
CO5	3			2			2			2

3 = strongly mapped   2= moderately mapped 1= slightly mapped

> **Model Blue Print with weightages for Blooms category and questions for chapter and Cos mapped**

S.No	Unit Title/Chapter	No of Periods	Weight age of marks	Marks wise distribution of weightage				Question wise distribution of weightage				Mapped with CO
				R	U	Ap	An	R	U	Ap	An	
1	Units and Dimensions	08	03	3	0	0	0	1	0	0	0	CO1
2	Elements of Vectors	12	11	3	8	0	0	1	1	0	0	CO1
3	Dynamics	12	11	3	8	0	0	1	1	0	*	CO2
4	Friction	10	11	3	0	8	0	1	0	1	0	CO2
5	Work, Power and Energy	12	11	3	8	0	0	1	1	0	0	CO3
6	Simple harmonic motion	12	11	3	8	0	0	1	1	0	*	CO3
7	Heat and Thermodynamics	12	11	0	8	3	0	0	1	1	*	CO4
8	Sound	10	11	0	8	3	0	0	1	1	0	CO4
9	Properties of matter	10	08	0	8	0	0	0	1	0	0	CO5
10	Electricity and Magnetism	12	14	6	0	8	0	2	0	1	0	CO5
11	Modern physics	10	08	0	8	0	0	0	1	0	0	CO5
	Total	**120**	**110**	**24**	**64**	**22**	**0**	**8**	**8**	**4**	***10**	

*One question of HOTs for 10 marks from any of the unit title 3 or 6 or 7

Learning Outcomes

1.0 Concept of Units and dimensions

1.1 Explain the concept of Units , Physical quantity, Fundamental physical quantities and Derived physical quantities

1.2 Define unit, fundamental units and derived units, State SI units with symbols

1.3 State Multiples and submultiples in SI system, State Rules of writing S.I.units, State advantages of SI units

1.4 Define Dimensions, Write Dimensional formulae of physical quantities

1.5 List dimensional constants and dimensionless quantities

1.6 State the principle of Homogeneity of Dimensions

1.7 State the applications and limitations of Dimension alanalysis

1.8 Errors in measurement, Absolute error, relative error, percentage error, significant figures

1.9 Solve problems

2.0 Concept of Elements of Vectors

2.1 Explain the concept of scalars, Vectors and give examples

2.2 Represent vectors graphically, Classify the Vectors, Resolve the vectors

2.3 Determine the resultant of a vector by component method, represent a vector in

Space using unit vectors (i,j,k)

2.4 State and explain triangle law, parallelogram law, polygon law of addition of

vectors

2.5 Define Dot product of two vectors with examples (Work done, Power), Mention the

Properties of dot product

2.6 Define cross products of two vectors with examples (Torque, Linear velocity)

Mention the properties of Cross product.

2.7 Solve the related numerical problems

3.0   Concept of Dynamics

    3.1   Write the equations of motion in a straight line Explain the acceleration due to

       gravity

    3.2   Explain vertical motion of a body and derive expressions for a) Maximum Height,

        b) time of ascent, c) time of descent, and d) time of flight

    3.3   Derive height of at ower when a body projected vertically upwards from the top of

       a tower.

    3.4   Explain projectile motion with examples

    3.5   Explain Horizontal projection and Derive an expression for the path of a projectile in
horizontall projection

    3.6   Explain oblique projection and derive an expression for it. Derive formulae for

a) Maximum Height, b) time of ascent, c) time of descent, and d) time of flight

       e) Horizontal Range, f) Maximum range

    3.7   Define force, momentum, angular displacement, angular velocity, angular
acceleration, angular momentum, moment of inertia, torque

    3.8   Solve the related numerical problems

4.0   Concept of Friction

    4.1   Define friction and classify the types of friction.

    4.2   Explain the concept to f Normal reaction

    4.3   State the laws of friction

    4.4   Define coefficients of friction, Angle of friction and Angle of repose

    4.5   Derive expressions for acceleration of a body on a rough inclined plane (upwards
and
       downwards)

    4.6   List the Advantages and Disadvantages of friction

    4.7   Mention the methods of minimizing friction

    4.8   Explain why it is easy to pull a lawn roller than to push it

    4.9   Solve the related numerical problems

5.0   Concepts of Work, Power, and Energy

5.1   Define the terms Work, Power and Energy. State SI units and dimensional

formulae

5.2   Define potential energy and give examples, derive an expression for P.E

5.3   Define Kinetic energy and give examples, derive an expression for K.E

5.4   State and derive Work-Energy theorem

5.5   Derive the relation between Kinetic energy and momentum

5.6   State the law of conservation of energy and Verify it in the case of a freely

Falling body

5.7   Solve the related numerical problems

6.0   Concepts of Simple harmonic motion

6.1   Define Simple harmonic motion, Give examples, State the conditions

6.2   Explanation of uniform circular motion of a particle is a combination of two

perpendicular SHMs.

6.3   Derive expressions for displacement, velocity, acceleration, Frequency, Time

period of a particle executing SHM.

6.4   Define phase of SHM

6.5   Define Ideal simple pendulum and derive expression for Time period of simple
pendulum

6.6   State the laws of motion of simple pendulum

6.7   Solve the related numerical problems

7.0   Concept of Heat and thermodynamics

7.1   Explain the concept of expansion of gases

7.2   State and explain Boyle's and Charles laws.

7.3   Define absolute zero temperature, absolute scale of temperature

7.4   Define ideal gas and distinguish from real gas

7.5   Derive Ideal gas equation. Define Specific gas constant and Universal gas

Constant, write S.I unit and Dimensional Formula. Calculate the value of R.

7.6   Explain why universal gas constant is same for all gases

7.7   State and Explain Isothermal process and adiabatic process

7.8   State first and second laws of thermodynamics and state applications

7.9   Define specific heats & molar specific heats of a gas, Derive $C_P - C_V = R$

7.10   Solve the relevant numerical problems

8.0   Concept of Sound

8.1   Concept of the sound, Wave motion (longitudinal and transverse wave)

8.2   Distinguish between musical sound and noise

8.3   Explain noise pollution and state SI unit for intensity level of sound

8.4   Explain causes, effects and methods of minimizing of noisepollution

8.5   Explain the phenomenon of beats State the applications

8.6   Define Doppler effect, List the Applications

8.7   Define reverberation and reverberation time and Write Sabine's formula

8.8   Define and Explain echoes state its applications

8.9   State conditions of good auditorium

8.10   Solve the related numerical problems

9.0   Concepts of properties of matter

9.1   Explain the terms Elasticity, stress, strain and types of Stress and Strain

9.2   State and explain Hooke's law

9.3   Definitions of Modulus of elasticity, Young's modulus(Y), Bulk modulus (K),

Rigidity modulus (n),Poisson's ratio (σ),

9.4   Define surface tension and give examples

9.5   Explain Surface tension with reference to molecular theory

9.6   Define angle of contact and capillarity and write formula for Surface Tension

9.7   Explain the concept of Viscosity; give examples, Write Newton's formula.

79

9.8 Define co-efficient of viscosity and write its units and dimensional formula and

State Poiseulle's equation for Co-efficient of viscosity

9.9 Explain the effect of temperature on viscosity of liquids and gases

9.10 Solve the related numerical problems

10. Concepts of Electricity and Magnetism

10.1 Explain Ohm's law in electricity and write the formula

10.2 Define specific resistance, conductance and state their units

10.3 Explain Kichoff's laws

10.4 Describe Wheat stone's bridge with legible sketch

10.5 Describe Meter Bridge for the determination of resistivity with a circuit diagram

10.6 Explain the concept of magnetism. State the Coulomb's inverse square law of

magnetism

10.7 Define magnetic field and magnetic lines of force and write the properties of magnetic lines of force

10.8 Derive an expression for the moment of couple on a bar magnet placed in a uniform magnetic field

10.9 Derive equations for Magnetic induction field strength at a point on the axial line

and on the equatorial line of a bar magnet.

10.10 Solve the related numerical problems

11.0 Concepts of Modern physics

11.1 State and Explain Photo-electric effect and Write Einstein's photoelectric

equation

11.2 State laws of photo electric effect

11.3 Explain the Working of photo electric cell, write its applications.

11.4 Recapitulatere fraction of light and its laws, criticalangle, TotalInternal

Reflection

11.5 Explain the principle and working of Optical Fiber, mention different types of

Optical Fibre, state the applications

11.6   Define super conductor and superconductivity and mention examples

11.7   State the properties of super conductingmaterials and list the applications

11.8   Nanotechnology definition, non materials, applications

COURSECONTENT

1.   Units and Dimensions:

Introduction – Physical quantity – Fundamental and Derived quantities – Fundamental and Derived units- SI units –Multiples and Sub multiples – Rules for writing S.I. units- Advantages of SI units – Dimensions and Dimensional formulae- Dimensional constants and Dimensionless quantities- Principle of Homogeneity- Advantages and limitations of Dimension alanalysis-Errors in measurement, Absolute error, relative error, percentage error, significant figures-Problems.

2.   Elements of Vectors:

Scalars and Vectors–Types of vectors(Proper Vector, NullVector,UnitVector,Equal, Negative Vector, Like Vectors, Co-Initial Vectors, Co-planar Vectors and Position Vector).Addition of vectors-Representation of vectors- Resolution of vectors - Parallelogram, Triangle and Polygon laws of vectors–Subtraction of vectors- Dot and Cross products of vectors-Problems

3.   Dynamics

Introduction-Concept of acceleration due to gravity-Equations of motion for a freely falling body and for a body thrown up vertically- Projectiles- Horizontal and Oblique projections- Expressions for maximum height, time of flight, range-Define force, momentum, angular displacement, angular velocity, angular acceleration, angular momentum, moment of inertia, torque–problems

4.   Friction:

Introduction to friction- Causes- Types of friction- Laws of friction- Angle of repose-Angle of friction- rough inclined plane- Advantages and disadvantages of friction-Methods of reducing friction–Problems

5.   **Work, Power and Energy:**

Work, Power and Energy- Definitions and explanation- potential energy- kinetic energy- Derivations of Potential and Kinetic energies-K.E and Momentum relation - Work-Energy theorem- Law of Conservation of energy- Problems

6.   **Simple Harmonic Motion:**

Introduction- Conditions of SHM- Definition- Examples- Expressions for displacement, velocity, acceleration, Time period, frequency and phase in SHM- Time period of a simple pendulum- Laws of simple pendulum-seconds pendulum-Problems

7.   **Heat and Thermodynamics:**

Expansion of Gases-Boyle's law-Absolute scale of temperature- Charles laws- Ideal gas equation- Universal gas constant- Differences between r and R-Isothermal and adiabatic processes- Laws of thermodynamics- Specific heats - molar specific heats of a gas -Different modes of transmission of heat Laws of thermal conductivity, Coefficient of thermal conductivity-Problems

8.   **Sound:**

Sound- Nature of sound- Types of wave motion -musical sound and noise- Noise pollution – Causes &effects- Methods of reducing noise pollution- Beats- Doppler effect- Echo-Reverberation-Reverberation time-Sabine 's formula-Conditions of good auditorium-Problems

9.   **Properties of matter**

Definition of Elasticity –Definition of stress and strain -the units and dimensional formulae for stress and strain -The Hooke's law-Definitions of Modulus of elasticity, Young's modulus(Y), Bulk modulus(K), Rigidity modulus (n),Poisson's ratio (σ), relation between Y, K, n and σ(equations only no derivation)

Definition of surface tension-Explanation of Surface tension with reference to molecular theory - Definition of angle of contact -Definition of capillarity -The formula for surface tension based on capillarity - Explanation of concept of Viscosity - Examples for surface tension and Viscosity - Newton's formula for viscous force- Definition of co-efficient of viscosity- The effect of temperature on viscosity of liquids and gases - Poiseuille's equation for Co-efficient of viscosity- The related numerical problems

10.   Electricity & Magnetism:

Ohm's law and explanation-Specific resistance-Kirchoff's laws- Wheat stone's bridge-Meter bridge-Coulomb's inverse square law magnetic field- magnetic lines of force-Magnetic induction field strength- magnetic induction field strength at a point on the axial line - magnetic induction field strength at a point on the equatorial line–problems.

11.   Modern Physics;

Photoelectric effect –Einstein's photoelectric equation-laws of photoelectric effect-photo electric cell–Applications of photo electric effect- Total internal reflection- fiber optics- -principle and working of an optical fiber -types of optical fibers - Applications of optical fibers- superconductivity–applications-Nanotechnology definition, non materials, applications

REFERENCEBOOKS

1. Telugu Academy (English version)	Intermediate physics Volume-I & 2
2. Dr. S .L Guptha and Sanjeev Guptha	Unified physics Volume 1,2,3 and 4
3.Resnick& Holiday	Text book of physics Volume I
4. Dhanpath Roy	Text book of applied physics
5. D.A Hill	Fibre optics
6. XI & XII Standard	NCERT Text Books

➢ **Table specifying the scope of syllabus to be covered for Unit Tests**

Unit Test	Learning outcomes to be covered
Unit Test – 1	**From 1.1 to 4.9**
Unit Test – 2	**From 5.1 to 8.10**
Unit Test – 3	**From 9.1 to 11.8**

UNIT TEST –I

Model Question Paper (C-20)

ENGINEERING PHYSICS (103)

TIME: 90 minutes   Total Marks:40

PART-A   **16 Marks**

Instructions: (1) Answer all questions.
 (2) First question carries 4 marks and others carry 3 marks each.
 (3) Answers for Question Numbers 2 to 5 should be brief and straight to

The point and shall not exceed five simple sentences.

1. i) The dimensional formula of force is _____ (CO1)
    ii) which of the following is a scalar (CO1)   [   ]

        a) force b) work   c) displacement d) velocity
    iii) we can add a scalar to a vector (Yes / No) (CO1)

    iv) Friction is a self-adjusting force.   [True / False] (CO2)

2. Define dot product. Give one example. (CO1)

3. A force of 150 N acts on a particle at an angle of 30° to the horizontal. Find

   the horizontal and vertical components of force (CO1)

4. Define projectile. Give two examples.(CO2)

5. It is easier to pull a lawn roller than to push it. Explain (CO2)

PART—B   **3x8=24**

Instructions: (1) Answer all questions. Each question carries 8marks.

 (2) Answer should be comprehensive and the criteria for

 evaluation is content but not the length of the answer.

6) (A)Derive an expression for magnitude and direction of resultant of two

   vectors using parallelogram law of vectors (CO1)

OR

  (B) Write any four properties of dot product and any four properties of

   cross product (CO1)

84

7) (A) Show that path of a projectile is a parabola in case of oblique

Projection. (CO2)

OR

(B) Derive the expression for range and time of flight of a projectile (CO2)

8) (A) State and explain polygon law of vector addition with a neat diagram (CO1)

OR

(B) Derive the equation for acceleration of a body on a rough inclined plane (CO2)

BOARD DIPLOMA EXAMINATION, (C–20)

FIRST YEAR EXAMINATION

Common–103, ENGINEERING PHYSICS

Time : 3 hours]   [Total Marks : 80

PART—A   **3×10=30**

Instructions :   (1) Answer all questions.

(2) Each question carries three marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple

sentences.

1.   Write the dimensional formula of the following physical quantities (CO1)

(a) Velocity   (b) Force   (c) Angular momentum

2.   Write any three properties of scalar product.(CO1)

3.   Define projectile. Give two examples.(CO2)

4.   It is easier to pull a lawn roller than to push it. Explain.(CO2)

5.   Define potential energy and kinetic energy. (CO3)

6.   For a body in simple harmonic motion velocity at mean position is 4m/s, if the time period is

3.14 s, find its amplitude. (CO3)

7.   State first and second laws of thermodynamics. (CO4)

8.   Write any three conditions of good auditorium (CO4)

9.   Define ohmic and non-ohmic conductors.(CO5)

10.   State Coulomb's inverse square law of magnetism.(CO5)

PART—B   **8 ×5= 40**

Instructions :   (1) Each question carries eight marks.

(2) Answers should be comprehensive and the criterion for valuation is the
content but not the length of the answer.

11. A) Derive an expression for magnitude and direction of the resultant of twovectors using

parallelogram law of vectors. (CO1)

OR

B) Show that path of a projectile is parabola in case of oblique projection and derive
expression for maximum height.(CO2)

12. A) Derive expression for acceleration of a body sliding downwards on a rough inclined
plane.(CO2)

OR

B) Verify the law of conservation of energy in case of a freely falling body.(CO3)

13. A) Derive an expression for velocity and acceleration of a particle performing simple
harmonic   motion. (CO3)

OR

B) Define ideal gas and derive ideal gas equation.(CO4)

14. A) Two tuning forks A and B produce 4 beats per second. On loading B with wax 6
beats are produced. If the quantity of wax is reduced the number of beats drops to 4.
If the frequency of A is 326 Hz, find the frequency of B.(CO4)

OR

B) Explain surface tension based on molecular theory. Write three examples of
surface tension.   (CO5)

15. A) Derive an expression for balancing condition of Wheat stone's bridge with a neat
circuit diagram.(CO5)

OR

B) Explain principle and working of optical fibers. Write any three applications (CO5).

PART C   **1 x 10 = 10**

16) Derive relationship between C_p and C_v and hence show that C_p is greater than C_v. (CO4)

Course code	Course Title	No. of Periods per week	Total No. of Periods	Marks for FA	Marks for SA
AM-104	Engineering Chemistry and Environmental Studies	4	120	20	80

S.No	Unit Title/Chapter	No of Periods	COs Mapped
1	Fundamentals of Chemistry	18	CO1
2	Solutions	10	CO1
3	Acids and bases	10	CO1
4	Principles of Metallurgy	8	CO1
5	Electrochemistry	16	CO2
6	Corrosion	8	CO2
7	Water Treatment	10	CO3
8	Polymers	12	CO4
9	Fuels	6	CO4
10	Chemistry in daily life	6	CO4
11	Environmental Studies	16	CO5
	Total	120	

➢ **Course Objectives**

Course Title: Engineering Chemistry & Environmental Studies	
Course Objectives	4. To familiarize with the concepts of chemistry involved in the process of various Engineering Industrial Applications. 5. To know the various natural and man-made environmental issues and concerns with an interdisciplinary approach that include physical, chemical, biological and socio cultural aspects of environment. 6. to reinforce theoretical concepts by conducting relevant experiments/exercises

➢ **Course outcomes**

Course Outcomes	CO1	Explain Bohr`s atomic model, chemical bonding, mole concept, acids and bases,P^H metallurgical process and alloys
	CO2	Explain electrolysis, Galvanic cell,emf and corrosion
	CO3	Synthesise of Plastics and rubber and industrial applications of fuels
	CO4	Describe the methods of treatment of water and give the information about chemical compounds used in our daily life
	CO5	Explain the causes, effects and control methods of air and water pollution and measures to protect the environment

➢ **COs-POs mapping strength (as per given table)**

AM-104	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	1	2					3		
CO2	3			2				2	1	
CO3	3		2							
CO4	3				2	2				
CO5	3				3					3

3 = strongly mapped

2= moderately mapped

1= slightly mapped

> **Model Blue Print with weightages for Blooms category and questions for each chapter and COs mapped**

S.No	Unit Title/Chapter	No of Periods	Weightage of marks	Marks wise distribution of Weightage				Question wise distribution of Weightage				Mapped with CO
				R	U	Ap	An	R	U	Ap	An	
1	Fundamentals of Chemistry	18	19	8	8	3		1	1	1		CO1
2	Solutions	10	11	0	0	8	3			1	1	CO1
3	Acids and bases	10	11	0	8	0	3		1		1	CO1
4	Principles of Metallurgy	8	8	8	0	0		1				CO1
5	Electrochemistry	16	11	8	3	0		1	1		*	CO2
6	Corrosion	8	8	0	8	0			1			CO2
7	Water Treatment	10	11	8	3	0		1	1			CO3
8	Polymers	12	11	3	8	0		1	1		*	CO4
9	Fuels	6	3	3	0	0		1				CO4
10	Chemistry in daily life	6	3	0	0	3				1		CO4
11	Environmental Studies	16	14	3	11	0		1	2			CO5
	Total	120	110	12	6	6	6	20	35	5	*10	

*One question of HOTs for 10 marks from any of the unit title 5 or 8

Upon completion of the course the student shall be able to learn out

ENGINEERINGCHEMISTRY AND ENVIRONMENTAL STUDIES

1.0 Atomic structure

1.1   Explain the charge, mass of fundamental particles of an atom (electron, proton and neutron) and the concept of atomic number and mass number.

1.2   State the Postulates of Bohr's atomic theory and its limitations.

1.3   Explain the significance of four Quantum numbers.

1.4   Explain 1.Aufbau principle, 2 Pauli's exclusion principle 3 Hund's rule.

1.5   Define Orbital of an atom , draw the shapes of s,pandd- Orbitals and draw the shapes of s ,p and d-Orbitals.

1.6   Write the electronic configuration of elements up to atomic number 30

1.7   Explain the significance of chemical bonding

1.8   Explain the Postulates of Electronic theory of valency.

1.9   Define and explain Ionic and Covalent bonds with examples of NaCl ,MgO, *H_2,*O_2 and *N_2.(* Lewis dot method)

1.10   List out the Properties of Ionic compounds and covalent compounds and distinguish between their properties.

1.11   Structures of ionic solids-define a) Unit cell b) co-ordination number and the structures of NaCl and CsCl unit cells.

2.0   Solutions

2.1   Define the terms 1.Solution, 2.Soluteand 3.Solvent

2.2   Classify solutions based on physical state and solubility

2.3   Define mole and problems on mole concept.

2.4   Define the terms 1. Atomic weight, 2. Molecular weight and 3. Equivalent weight and

calculate Molecular weight and Equivalent weight of the given acids.(HCl,H_2SO_4,H_3PO_4)Bases (NaOH, Ca(OH)$_2$, Al(OH)$_3$) and Salts (NaCl, Na$_2$CO$_3$, CaCO$_3$)

2.5   Define molarity and normality and numerical problems on molarity and normality

a) Calculate the Molarity or Normality if weight of solute and volume of solution are

   given

b) Calculate the weight of solute if Molarity or normality with volume of solution are given

c) Problems on dilution to convert high concentrated solutions to low concentrated

   solutions

3.0   Acids and bases

3.1   Explain Arrhenius theory of Acids and Bases and give the limitations of Arrhenius theory of Acids and Bases.

3.2   Explain Bronsted– Lowry theory of acids and bases and give the limitations of Bronsted– Lowry theory of acids and bases.

3.3   Explain Lewis theory of acids and bases and give the limitations of Lew is theory of acids and bases.

3.4   Explain the Ionic product of water

3.5   Define pH and explain P^H scale and solve the Numerical problems on pH(Strong Acids and Bases)

3.6   Define and explain buffer solution and give the examples of buffer solutions.

3.7   State the application of buffer solutions

4.0   Principles of Metallurgy

4.1   List out the Characteristics of Metals and non-metals

4.2   Distinguish between Metals and Non-metals

4.3   Define the terms 1.Mineral, 2.Ore, 3. Gangue, 4.Flux 5.Slag

4.4   Describe the methods of concentration of Ore; 1.Handpicking, 2.Levigation and 3. Froth

   Floatation

4.5   Describe the methods involved in extraction of crude metal- Roasting, Calcination and Smelting.

4.6   Explain the purification of Copper by Electrolytic Refining

4.7   Define an Alloy and Write the composition and uses of the following alloys.

1. Brass

2. Germen silver

3. Nichrome.

5.0   Electrochemistry

5.1   Define the terms1. Conductor

2. Semiconductor

3. Insulator

4. Electrolyte

5. Non–electrolyte. Give two examples each.

5.2   Distinguish between metallic conduction and Electrolytic conduction

5.3   Explain electrolysis by taking example used NaCl

5.4   Explain Faraday's laws of electrolysis

5.5   Define 1. Chemical equivalent (E) 2. Electrochemicalequivalent (e) and their relation.

5.6   Solve the Numerical problems on Faraday's laws of electrolysis and applications of electrolysis (Electro plating)

5.7   Define Galvanic cell and explain the construction and working of Galvanic cell.

5.8   Distinguish between electrolytic cell and galvanic cell

5.9   Explain the electrode potentials and standard electrode potentials

5.10   Explain the electro chemical series and its significance

5.11   Explain the emf of a cell and solve the numerical problem s the cell based on standard electrode potentials.

6.0   Corrosion

6.1   Define the term corrosion.

6.2   state the Factor sin fluencing the rate of corrosion

6.3   Describe the formation of a) composition cell b)stress cell c)concentration cell during corrosion.

6.4   Define rusting of iron and explain theme chanism of rusting of iron.

6.5   Explain the methods of prevention of corrosion

a)Protective coatings (anodic and cathodic coatings)

b) Cathodic protection (Sacrificial anode process and Impressed–voltage process)

7. 0 Water Treatment

7.1   Define soft water and hard water with respect to soap action.

7.2   Define and Classify the hardness of water.

7.3   List out the salts that causing hardness of water (with Formulae)

7.4   State the disadvantages of using hard water in industries.

7.5   Define Degree of hardness and units of hardness (mg/L) or(ppm).

7.6   Explain the method so f softening of hard water: a) Ion-exchange process, b)Permuted process or zeolite process

7.7   State the essential qualities of drinking water.

7.8   Chemistry involved in treatment of water (Coagulation, Chlorination, deflouridation)

7.9   Explain Osmosis and Reverse Osmosis with examples.

7.10 State the applications of Reverse Osmosis.

8.0   Polymers

8.1   Explain the concept of polymerization

8.2   Describe the methods of polymerization a) additionpolymerization of ethylene b)condensation polymerization of Bakelite(Only flowchart)

8.3   Define the term plastic and classify the plastics with examples.

8.4   Distinguish between thermo plastics and the rmo setting plastics

8.5   List the Characteristics of plastics and state the disadvantages of using plastics.

8.6   State the advantages of plastics over traditional materials.

8.7   Explain the methods of preparation and uses of the following plastics:

1. PVC, 2.Teflon, 3. Polystyrene 4. Nylon 6,6

8.8   Explain processing of Natural rubber and write the structural formula of Natural rubber.

8.9   List the Characteristics of raw rubber

8.10   Define and explain Vulcanization and List out the Characteristics of Vulcanized rubber.

8.11 Define the term Elastomer and describe the preparation and uses of the following synthetic rubbers a) Buna-s and b)Neoprene rubber.

9.0 Fuels

9.1 Define the term fuel

9.2 Classify the fuels based on physical state and based on occurrence.

9.3 List the characteristics of good fuel.

9.4 State the composition and uses of gaseous fuels.

a)water gas b)producer gas, c)natural gas, d) Coal gas, e)Biogas.

10.0 Chemistry in daily life

10. Give the basic chemical composition, applications, health aspects and pollution impacts of

a) soaps, and detergents

b)vinegar

c) Insect repellent sand

d) activated charcoal

e) Soft drinks

11.0 ENVIRONMENTALSTUDIES

11.1 Define the term environment and explain the scope and importance of environmental studies

11.2 Define the segments of environment 1).Lithosphere, 2).Hydrosphere, 3).Atmosphere, 4).Biosphere,

11.3 Define the following terms 1)Pollutant, 2).Pollution, 3).Contaminant, 4)receptor, 5)sink, 6) particulates, 7)dissolved oxygen (DO), 8)Threshold limit value (TLV), 9).BOD,10).COD 11) eco system12)Producers13)Consumers 14) Decomposers with examples

11.4 State the renewable and non renewable energy sources with examples.

11.5 Explain biodiversity and threats to biodiversity

11.6 Define air pollution and classify the air pollutants-based on origin and physical state of matter.

11.7 Explain the causes, effects of air pollution on human beings, plants and animals and control methods of air pollution.

11.8   State the uses of forest resources.

11.9   State the deforestation and its causes and effects.

11.10 Explain the 1.) Green house effect , 2) Ozone layer depletion and 3) Acidrain

11.11 Define Water pollution, explain the causes, effects and control methods of Water pollution.

COURSE CONTENT

ENGINEERING CHEMISTRY AND ENVIRONMENTAL STUDIES

1.   Fundamentals of Chemistry

Atomic Structure: Introduction - Fundamental particles – Bohr's theory – Quantum numbers –Aufbau principle - Hund's rule - Pauli's exclusion Principle- Orbitals, shapes of s, p and d orbitals - Electronic configurations of elements

Chemical Bonding: Introduction – types of chemical bonds – Ionic and covalentbondwithexamples–Properties of Ionic and Covalent compounds- structures of ionic crystals (NaCl and CsCl).

2.   Solutions

Introduction of concentration methods – mole concept, molarity and normality – Numerical problems on mole, molarity and normality.

3.   Acids and Bases

Introduction – Theories ofacids and bases and limitations – Arrhenius theory-Bronsted – Lowry theory – Lewis acid base theory – Ionic product of water- pH related numerical problems–Buffer solutions, action of buffer and its applications.

4.   Principles of Metallurgy

Characteristics of Metals and non-metals –Distinguish between Metals and Non-metals, Define the terms i) Metallurgy ii) ore iii) Gangue iv) flux v) Slag - Concentration of Ore –Hand picking, Levigation, Froth floatation – Methods of Extraction of crude Metal – Roasting, Calcination, Smelting – Alloys – Composition and uses of brass, German silver andni chrome.

5.   Electrochemistry

Conductors, semiconductors, insulators, electrolytes and non-electrolytes – electrolysis – Faraday's laws of electrolysis-application of electrolysis(electroplating) -numerical problems on Faraday's laws – Galvanic cell – standard electrode potential – electrochemical series–emf and numerical problems on emf of a cell .

6. **Corrosion**

   Introduction - factors influencing corrosion - composition, stress and concentration cells–rustingofiron and its mechanism – prevention of corrosion by coating methods, cathodic protection methods.

7. **Water technology**

   Introduction–soft and hard water–causes of hardness–types of hardness

   –disadvantages of hard water – degree of hardness (ppm and mg/lit) – softening methods – per mutit process – ion exchange process– qualities of drinking water –Chemistry involved in treatment of water (Coagulation, Chlorination, deflouridation) - Osmosis, Reverse Osmosis – Applications of Reverse osmosis.

8. **Polymers**

   Introduction – polymerization – types of polymerization – addition, condensation with examples – plastics – types of plastics – advantages of plastics over traditional materials- Disadvantages of using plastics – Preparation and uses of the following plastics i).PVC ii) Teflon iii) Polystyrene iv) .Nylonn 6,6 –Processing of natural rubber - Vulcanization – Elastomers- Preparation and applications of Buna-s, Neoprene rubbers.

9. **Fuels**

   Definition and classification of fuels–characteristics of good fuel-composition and uses of gaseous fuels.

10. **Chemistry in daily life**

    Basic composition, applications, health aspects and pollution impacts of soaps and detergents, vinegar, insect repellants, soft drinks, activated charcoal.

11. **ENVIRONMENTALSTUDIES**

    Introduction– environment –scope and importance of environmental studies – important terms related to environment– renewable and non-renewable energy sources–Concept of ecosystem – Biotic components –Forest resources – Deforestation -Biodiversity and its threats-Air pollution – causes-effects–Global environmental issues – control measures – Water pollution – causes – effects – control measures.

Table specifying the scope of syllabus to be covered for unit test 1, unit test 2 and unit test 3

Unit Test	Learning outcomes to be covered
Unit Test - 1	**From 1.1 to 4.7**
Unit Test - 2	**From 5.1 to 8.11**
Unit Test - 3	**From 9.1 to 11.11**

REFERENCE BOOKS

1.   Telugu Academy   Intermediate chemistry Vol 1&2

2.   Jain & Jain   Engineering Chemistry

3.   O.P. Agarwal, Hi- Tech.   Engineering Chemistry

4.   Sharma   Engineering Chemistry

5.   A.K. De   Engineering Chemistry

➢ **Model question paper for Unit Test with Cos mapped**

UNIT TEST –I

Model Question Paper (C-20)

ENGINEERING CHEMISTRY & ENVIRONMENTAL STUDIES (104)

TIME: 90 minutes   **Total Marks:40**

PART-A

                                                   16 Marks

Instructions: (1) Answer all questions.
                    (2) First question carries 4 marks and each of rest carries 3 marks.
                    (3) Answers for Q.No. 2 to 5 should be brief and straight to the point and
                         shall not exceed five simple sentences.

1.   a. Number of neutrons in $_{11}Na^{23}$ is ----------(CO1)
     b. The molarity and normality of HCl is the same (True or False)(CO1)
     c. What is the p^H range of base?(CO1)
     d. Graphite is a good conductor of electricity (Yes or No)(CO1)
2. Define Covalent bond. Explain the formation of covalent bond in Oxygen and Nitrogen molecules.(CO1)
3. Define mole. Calculate the number of moles present in 50 gm of $CaCO_3$ and 9.8 gm of H_2SO_4.(CO1)
4. Define P^H. Calculate the P^H of 0.001M HCl and 0.01M NaOH solution.(CO1)
5. Write the composition and applications of German silver and Nichrome.(CO1)

PART – B

                                   3x8M = 24M

Answer either (A) or (B) from each questions from Part-B.
Each question carries 8 marks.

6. A) Explain Postulations of Bhor's atomic theory. Give its limitations.(CO1)

                            (OR)

   B) Explain the significance of Quantum numbers.(CO1)

7. A) Express molarity normality with mathematical equation. Calculate the molarity and normality of 10gm of NaOH present in 500 ml solution.(CO1)
                           (OR)
   B) Explain Bronsted-Lowry theory of acids and bases. Give its limitations.(CO1)

8. A) Explain Froth floatation process.(CO1)

(OR)

B) Explain Electrolytic refining processing of copper.(C01)

Model Question Paper (C-20)

ENGINEERING CHEMISTRY & ENVIRONMENTAL STUDIES (104)

TIME: 3hrs   **Total Marks:80**

PART-A

Instructions: (1)Answer all questions.
                   (2) each question carries 3 marks.

Answer all questions. Each question carries three marks.   **3x10=30M**

1. Draw the shapes of s and p orbitals.   (CO1)
2. Define mole. Find the mole number of 10 g of $CaCO_3$ (CO1)
3. Define Buffer solution.. Give any two examples.   (CO1)
4. Define chemical equivalent and electrochemical equivalent. Give their relation.
                                                                                                           (CO2)
5. State name of the salts and their formulae that cause hardness.   (CO3)
6. Write any three disadvantages of using plastics.   (CO4)
7. Classify the fuels based on their occurrence.   (CO4)
8. Mention the basic chemical composition and applications of vinegar.   (CO4)
9. List out any three threats to biodiversity.   (CO5)
10. Define pollutant and contaminant. Give an example each.   (CO5)

PART – B
Each question carries eight marks.   **8x5=40M**

11. A) Explain Bhor's atomic theory and give its limitations. (CO1)

(OR)

  B) Explain ionic bond formation and covalent bond formation with one example
     each(CO1)

12. A) Calculate the molarity and normality of 250 ml of sodium carbonate solution
       that contains 10.6 gm of sodium carbonate.   (CO1)

(OR)

  B) Explain Bronstead and Lowry theory of acids and bases. Give its limitations.(CO1)

13. A) Explain froth floatation and electrolytic refining of copper with neat diagrams.(CO1)
                                   (OR)
  B) Explain the construction and working of galvanic cell. (CO2)
14. A) Explain Cathode protection methods.   (CO2)
                                   (OR)
   B) Explain ion-exchange of softening of hard water with a neat diagram. (CO3)

101

15. A) Explain addition and condensation polymerisation with an example each.(CO4)

   (OR)

   B) Explain the causes and effects of air pollution.   (CO5)

   Question carries ten marks   **10x1 =10M**

16.   Describe methods of preparation and applications of Polystyrene and Teflon. (CO4)

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-105	**Basics of Computers with ANIMATION AND MULTIMEDIA**	3	90	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	Fundamentals of Computers	15	CO1,CO3,CO4
2.	Programming Methodology	10	CO2
3.	Operating System basics	20	CO1,CO3
4.	Computer Hardware and Networking Basics	25	CO1,CO4,CO5
5.	Basics of Multimedia and Animation	20	CO2,CO6,C07
	Total Periods	90	

Course Objectives	i)To know the fundamentals of Computers ii)To familiarize programming methodologies like algorithms and flowcharts iii)To understand Operating system basics iv)To familiarize basics of Animation And Multimedia

	At the end of the course the student able to learn following:		
	CO1	AM-105.1	Explain computer fundamentals
	CO2	AM-105.2	Explain various flowchart, algorithm methods
	CO3	AM-105.3	Explain the importance of Basic Computer operating systems
Course Outcomes	CO4	AM-105.4	Analyse functioning of various Hardware components
	CO5	AM-105.5	Explain Networking process in computers
	CO6	AM-105.6	Explain basics of multimedia, multimedia products and animation concepts with examples.

CO-PO/PSO Matrix:

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-105.1	3							3	1	1
AM-105.2	1	2	2	1		3		1	3	1
AM-105.3	3	1		1		1	1	3	1	1
AM-105.4	3		2	2	1		1	2	1	2
AM-105.5	3		2		1	1	1	2	1	2
AM-105.6	3			1	2		2	2	2	1
Average	2.7	1.5	2	1.25	1.3	1.7	1.25	2.2	1.3	1.3

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

Learning Outcomes:

1.0 Fundamentals of Digital Computer
1.1.   Define various terms related to computers – Computer, Hardware , Software, Firmware, High Level Language , Low Level Language
1.2.   Draw and explain block diagram of a Computer in detail
1.3.   Describe the current family of CPUs used in Computers.
1.4.   State the use of storage devices used in a Computer.
1.5.   List the two types of memory used in a Computer.
1.6.   State the importance of cache memory.
1.7.   Explain the generations of computers.
1.8.   Classification of computers - based on a) size, b) processor.
1.9.   State the importance of binary number system for use in Digital Computers

2.0 Implement Programming Methodology.
2.1.   State the different steps involved in problem solving.
2.2.   Define algorithm.
2.3.   List four characteristics of algorithm.
2.4.   Define a program
2.5.   Differentiate between program and algorithm.
2.6.   State the steps involved in algorithm development.
2.7.   Differentiate between algorithm and flowchart.
2.8.   Develop algorithms for simple problems.
2.9.   Draw the symbols used in flowcharts.
2.10.   Draw flowcharts for simple problems.

3.0 Operating Systems basics
3.1.   Describe the need for an operating system.
3.2.   List the various operating systems used presently.
3.3.   List and explain
        3.3.1.Types of dos commands
        3.3.2.Any 10 Internal Commands
        3.3.3.Any 5 External Commands
        3.3.4.Features of Windows desktop.
        3.3.5.Components of a Window.
3.4.   State the function of each component of a Window.
3.5.   Describe the Method of starting a program using start button
3.6.   Explain usage of maximize, minimize, restore down and close buttons.
3.7.   State the meaning of a file ,folder.

3.8.   Describe the Method of viewing the contents of hard disk drive using Explorer

3.9.   Describe the Method of finding a file using search option.

3.10.   Use control panel for

        3.10.1. installing and uninstalling software

        3.10.2. installing and uninstalling hardware

        3.10.3. Changing the system date and time

        3.10.4. Installing a printer

3.11.   ExplainDrive space using system tool option of Accessories group

3.12.   Explain Disk defragmentation using System tools

3.13.   Explain the procedure for changing resolution, color, appearance, screensaver options of the display

4.0 Computer Hardware and Networking Basics

4.1 Hardware Basics

    4.1.1   Identify hardware used for I/P, O/P & inside computer case, system board components used for communication among devices

    4.1.2   Software - 3 types of Software:ROM BIOS, OS, application software

    4.1.3   Explain Functions of BIOS

    4.1.4   Explain boot process

    4.1.5   Explain POST and important beep codes

    4.1.6   Describe about different connectors.

4.2 Networking Basics

    4.1.1.Explain meaning of a computer network.

    4.1.2.Describe the concept of a Local Area Network,Wide Area Network

    4.1.3.Compare Internet and Intranet

    4.1.4.Describe about internet service provider.

    4.1.5.Explain the role of a modem in accessing the Internet.

    4.1.6.Describe address format and IP address

    4.1.7.What is browser and List various browsers

    4.1.8.Explain the role of search engines with examples.

    4.1.9.Explain Internet Security.

5.0 Basics of Multimedia and Animation

5.1. Multimedia

    5.1.1. Definition.

    5.1.2. Explain different components of multimedia in details

    5.1.3. Discuss the history of Multimedia.

    5.1.4. What is Hypermedia?

    5.1.5. List and explain various software used for multimedia

    5.1.6. List and explainvarious hardware tools used for multimedia

    5.1.7. Explain the applications of Multimedia.

    5.1.8. List and explain Multimedia products.

5.2. Animation

    5.2.1. Define animation

    5.2.2. Define Computer animation.

5.2.3. Discuss about History of animation.

5.2.4. List and explain types of animations.

5.2.5. List and explain various terminologies used in animation.

5.2.6. List and explain principles of animation with examples.

5.2.7. List various software used for Computer animation

5.2.8. State the minimum hardware specifications required for computer animation.

5.2.9. List basic tools required for computer animation.

5.2.10. Explain applications of Computer Animation.

5.2.11. Explain the animation process and illustrate with an example like creation of animated video

COURSE CONTENT

1.0 Fundamentals of Digital Computer

Block diagram of a digital computer, functional parameters of CPU, Clock speed and word length, Functional blocks of a CPU: ALU and Control unit, types of memory RAM, ROM, purpose of cache memory

2.0 Programming Methodology.

Steps involved in problem solving - Define algorithm , Program - Characteristics of algorithm - Differentiate between program and algorithm- Steps involved in algorithm development - Differentiate algorithm and flowchart - Algorithms for simple problems - Symbols used in flowcharts -Flowcharts for simple problems.

3.0 Understand Operating Systems

Need for an operating system - List the various operating systems - Types of commands, Internal & External Commands   Features of Windows desktop - Components of a Window - Function of each component of a Window - Method of starting a program using start button - Maximize, minimize, restore down and close buttons- Meaning of a file and flolder -Viewing the contents of hard disk drive using explorer -Finding a file - Formatting a floppy disk using explore option -   Installing and uninstalling new software using control panel -   installing and un inistalling a new hardware using control panel - Drive space - disk defragmentation - Installing a printer - Changing resolution, colour, appearance and screensaver options of the display - Changing the system date and time

4.0 Computer Hardware and Networking Basics

Hardware Basics- I/P, O/P - inside computer case- system board   components - 3 types of Software - BIOS- boot process - POST - different connectors. Networking Basics - computer network - Local Area Network - Wide Area Network - Compare Internet and Intranet - internet service provider - role of a modem - address format and IP address - browser - search engines with examples - Describe Internet Security.

5.0 Basics of Multimedia and Animation.

Multimedia- Definition - Components of Multimedia, History of Multimedia- Hypermedia, Overview of Multimedia software, Hardware tools-Applications of Multimedia-Multimedia Products.

Animation- Definition, Computer Animation, History of animation, Types of animations, Animation terminology, Principles of animation, Software available for computer animation, Hardware requirements for Computer animation, Basic Tools for Computer animation, applications of computer animations, illustrate the process of creating animated video.

REFERENCE BOOKS

1. Information Technology   - Curtin.
2. Computer Science Theory & Application   - E. Balaguruswamy, B. Sushila
3. Introduction to Computers (Special Indian Edition)   - Peter Norton
4. Fundamentals of Multimedia.-Ze – Nian li and Mark S Drew, Pearson Education,2004
5. Multimedia Basics.   - Morse, Thomson Course Technology.
6. Handbook of Multimedia and Animation - AS Shukla

Model Blue Print:

S.No.	Chapter/Unit title	No.of periods	Weightage Allocated	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	Fundamentals of Digital Computers	15	14	3	11			1	2			CO1,CO3,CO4
2	Programming Methodologies	10	14	3	3	8	10	1	1	1	*	CO2
3	Operating system basics	20	14	3	3	8		1	1	1		CO1,CO3
4	Computer Hardware and Networking Basics	25	14	3	11		10	1	2		*	CO1,CO4,CO5
5	Basics of Computers with ANIMATION AND MULTIMEDIA	20	14	6	8			2	1	Engi	*	CO2,CO6.CO6
	Total	**90**	**70 + 10(*)**					**6**	**7**	**2**		

Note: Part-C: 10 marks single analytical question may be chosen from any or combination of starred chapters

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 3.3
Unit test-2	From 3.4 to 4.1
Unit test-3	From 4.2 to 5.11

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER
Basics of COMPUTERS with ANIMATION AND MULTIMEDIA
UNIT TEST-1
SCHEME:C-20 :: SUB CODE:AM-105

MAX MARKS:40   **TIME: 90Minutes**

PART-A

16Marks

Instructions: 1) Answer all questions
   2) First question carries 4marks, and each question of remaining carries 3marks.

1.a)All computer physical components are treated as software(True/False)   (CO1)

   b) --------------------is the fastest memory in the computer   (CO2)

   c)Step by step procedure to solve problem is ---------------------   (CO2)

   d)Which one of the following is not an internal command [   ]   (CO3)

      i)FORMAT   II)RD   III)COPY IV)CLS

2) State the importance of binary number system for use in Digital Computers   (CO1)
3)List different steps involved in problem solving   (CO2)
4) What is the need for an operating system?   (CO3)
5)Write about analog computers.   (CO1)

PART-B   3X8=24Marks
Instructions:1) Answer all questions
   2) Each question carries 8 Marks
   3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

6. a)Draw and explain block diagram of computer in detail   (CO1)
                              Or
   b)Explain various generation of computers   (CO1)

7. a) Draw the flow chart to find biggest of three numbers   (CO2)
                              Or
   b) Write an algorithm to find the area of triangle when base and height are given.(CO2)
8. a) Explain any three external commands in detail   (CO3)
                              Or
   b) Explain components of a window.   (CO3)

BOARD DIPLOMA EXAMINATIONS
DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER – YEAR END EXAMINATION
BASICS OF COMPUTERS with ANIMATION AND MULTIMEDIA

SCHEME:C-20 :: SUB CODE:AM-105

MAX MARKS:80   **TIME: 3HOURS**

PART-A

10X3=30Marks

Note: Answer all questions

1. Define terms Hardware and Software.   (CO1)

2. State the importance of binary system usage in Digital Computers   (CO1)

3. Define algorithm   (CO2)

4. State the different steps involved in problem solving   (CO2)

5. List the features of Windows desktop   (CO3)

6 . State the meaning of a file and folder   (CO3)

7. What is intranet?   (CO5)

8. List various browsers   (CO5)

9. Define Multimedia and list any two multimedia components   (CO6)

10. List any three animation software   (CO6)

PART-B

Note: Answer all questions

11. A.Explain the generations of computers?   (CO1)

OR

11.B i) State the use of storage devices used in a Computer.   (CO1)

    ii) State the importance of cache memory.   (CO1)

12.A.Differentiate algorithm and flowchart with suitable examples?   (CO2)

OR

12.B. Explain in detail the characteristics of an algorithm.   (CO2)

13.A.Explain about atleast 10 Internal Commands and 5 External Commands.   (CO3)
OR

13.B. Explain the procedure for changing resolution, color, appearance, screensaver options of the display.   (CO3)

14.A.Explain 3 types of Software in detail.   (CO4)
OR

14.BExplain Internet Security.   (CO5)

15.A.Explain any four types of Animations.   (CO6)

OR

15.B.Explain any four multimedia products.   (CO6)

PART-C

1X10=10Marks

16.   Write an Algorithm to find the area of triangle if and only if a triangle is formed with the given three sides.   (CO2)

111

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-106	C and Graphics Programming.	5	150	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	Introduction to C Language	20(10,10)	CO1,CO2
2.	Input and output statements, Operators and Expressions inC.	25(8,12, 5)	CO1,CO2,C3
3.	Decision making, iterative and other control statements	40(5,20,15)	CO1,CO2,CO3
4.	Arrays and strings, Structures and Unions	30(5,15,10)	CO1,CO2,CO3
5.	User defined functions and Graphics Programming	35(10,25)	CO1,CO2,CO3,CO4,CO5
	Total Periods	150	

Course Objectives	- To Relate basics of programming language constructs using C Language - To classify and implement datatypes, derived data types, pointers, files, statements - To analyse and develop effective modularprogramming - To construct mathematical, logical and scientific problems and real time applications using Clanguage - To develop simple programs with graphical elements and animation .

CO NO		COURSE OUTCOMES
CO1	AM-106.1	Develop, compile and debug programs using C- fundamentals anddifferent programming statements in C language.
CO2	AM-106.2	Evaluate various operations using primary and derived data types inC.
CO3	AM-106.3	Analyse programs using predefined functions, modules and recursive techniques
CO4	AM-106.4	Write scientific and logical programs using pointers, file pointers
CO5	AM-106.5	Develop programs using information passing and graphics functions

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-106.1	3		2	2				3	2	
AM-106.2				2				3	3	
AM-106.3		2	3	3				3	1	2
AM-106.4	3		1	1	2			3	2	2
AM-106.5			2	2		2	2	3	2	3
Average	3	2	2	2	2	2	2	3	2	2.3

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

Learning Outcomes

1.0 Introduction to C-Language

1.1 Describe the history of C-language, structure of C-language program
1.2 Describe the programming style of Clanguage
1.3 Explain the steps involved in Editing, compiling ,executing and debugging of Cprogram
1.4 Describe character set, C-Tokens, Keywords, Identifiers, Constants, Variables
1.5 Define DataType
1.6 Classify Data Types and explain them withexamples.
1.7 Explain declaration of constants and variables
1.8 Explain initializing values tovariables in declaration
1.9 Explain about user defined data types with a simple program
1.10 Explain the usage of type qualifiers

2.0 Input and output statements, Operators and ExpressionsinC
2.1 Explain the importance of Pre-processor Directive#include
2.2 Illustrate 1)   Reading a character usinggetch(),getche() and getchar()
    2)   writing a character usingputch(), putchar()
    3)   Formatted input usingscanf()& write sample programs using it.
    4)   Formatted output usingprintf()& write sample programs using it.
2.3 Explain character functions
2.4 Define an operator, an expression
2.5 Explain 1) Various arithmetic operators and explain the evaluation of arithmetic
     expressions with example.
    2) Various relational operators and discuss evaluation of relational expressions
    3) Various logical operators and discuss evaluation of logical expressions
2.6 Explain the difference between unary and binary operators
2.7 Describe various assignment operators, increment and decrement operators
2.8 Illustrate nested assignment
2.9 Explain conditional operators with an example
2.10 Explain 1) Bit-wise operators and explain each with an example
     2) Special operators with examples
    3) Precedence and Associativity of operators

2.11 Describe evaluation of compound expression
2.12 Illustrate type conversion techniques
2.13 Write sample programs by using all the operators

3.0 Decision making, iterative and other control statements

3.1 Explain decision making statements and its need in programming
3.2 Explain
    1. Simple if and if-else statement with syntax and sample program
    2. Nested if. Else statements with syntax and sample program
    3. if-else-if ladder with syntax and sample program
    4. switch statement with syntax and sample program
3.3 State the importance of break statement with switch and illustrate
3.4 Compare
    1. Conditionaloperator with if-else statement
    2. if-else with switch statement
3.5 Definelooping or iteration
3.6 List and explain iterative statements with syntax and examples
3.7 Compare different loopstatements
3.8 What is nested loop and illustrate.
3.9 Explain the usage of goto, break and continue statements with loop statements
3.10 Differentiate break and continue statements.
3.11 Define structuredprogramming.

4.0 **Arrays,strings, Structures and Unions**
4.1 Define Array
4.2 Describe
    1. Declaration and initialization of One Dimensional(1D) Array with syntax and sample programs.
    2. Accessing the elements in 1D-Array with sample programs.
    3. Reordering an array in ascending order.
4.3 Explain declaration and initialization and usage of two Dimensional(2D)Arrays.
4.4 Illustrate the concept of arrays with sample programs on matrix addition, subtraction and matrix multiplication
4.5 Define String
4.6 Describe
    1. Declare and initialize of String variables.
    2. gets() and puts()
    3. Reading and displaying of strings from terminal with sample programs.
    4. Explain about various String handling functions with sample programs.
4.7 Explain Character arithmetic.
4.8 Define a structure.
4.9 Explain
    1. Initializing structure, Declaring structure, Declaring Structure Variables.
    2. Accessing of the structuremembers
    3. Structureassignment.
    4. How to find size of astructure.
    5. Nested structureconcept.
    6. Structures containing arrays
    7. Array ofstructures
4.10 Define Union, declare, initialize and use of union.
4.11 Distinguish between Structures andUnions
4.12 Write sample programs for all the concepts of structures and unions

5.0 User definedfunctions, Graphics programming in C
5.1 Explain
    1. Need of user definedfunctions

2. Advantages of thefunctions
3. Elements offunction
4. Return values and theirtypes

5.2 Define a functioncall, functionprototype

5.3 Explain
1. **Function declaration inprograms**
2. **Functions with no arguments and no return values with sample programs**
3. **Functions with arguments with no return values with sample programs**
4. **Functions with arguments with return values with sample programs**
5. **Functions with no arguments with return values with sample programs**
6. **Functions that return multiple values with sampleprograms**
7. **Recursion with sampleprograms**
8. **Passing arrays to functions with sampleprograms**
9. **Structure as function arguments and structures as functionvalues.**
10. **Structures containingpointers.**
11. **Self-referential structures withexamples.**
12. **Storage classes-auto, register,static, extern**
13. **Scope, visibility and lifetime of variables infunctions**

5.4 Differentiate Local and Externalvariables

5.5 Define Globalvariable

5.6 Discuss passing the global variables as parameters using sampleprograms

5.7 Graphics Programming.
1. State the importance of graphics.h
2. Know the coordinate system used in C.
3. Know the color codes used in C
4. Know the syntax of initgraph() function and the meaning and usage of its parameters.
5. Explain closegraph() function.
6. Importance of Setcolor() function in C.
7. Explain and use various Shape functions like line, lineto,rectangle,circle, ellipse,fillellipse(), fillpoly(), floodfill()setlinestyle(), setfillstyle(), bar(),bar3d(),pieslice(),arc()
8. Explain and use various Text functions: outext, outtextxy, textheight, textwidth, settextstyle
9. Explain Cursor functions: moveto(),gotoxy(),getmaxx(), getmaxy()
10. Know the usage of delay function().
11. Know the working of function cleardevice().
12. Know the importance of kbhit() function.
13. Develop simple programs to display text and various shapes.
14. Develop simple animation programs with text and shapes.

COURSE CONTENT

1. **Introduction to CLanguage**: History of C language - importance of C Define language - structure of C language - programming style of C language - steps involved in executing the C program-Character set - C Tokens - Keywords and Identifiers- Constants and Variables - Data Types and classification - declaration of constants and variables-initializing values to

variables-user defined data types-usage of type qualifiers.

2. **Input and output statements, Operators and Expressions inC:**importance of Pre-processor #include-reading and writing asingle character functions- formatted input and output statements-operators-classification of operators-operator precedence and associativity-expressions and expression evaluation-type conversion techniques.

3. **Understand Decisionmaking, iterative and other control statements:simpleif,if-else, if else** ladder, nested if-else-switch statement   - else if, nested if , else if ladder, switchstatements-Classification of various loop statements- while statement – do.. while statement ram - for loop statement - nesting of loops- Comparisons of different loop statements –goto statement-break and continue statements –concept of structuredprogramming

4. **UnderstandArrays and strings , basics of Structures and Unions:** Arrays -One Dimensional Arrays – array programs -two Dimensional Arrays- programs on matrix - Strings –- String handling functions - Structure- Array of structures - Nested structures- pointer to structure Self referential structures - Union and illustrate use of a union – difference between Structures and Union

5. **Understand User definedfunctions and Graphics Programming:** Function – user defined functions – Advantages - Recursion concept - parameter passing –storage classes - scope, visibility and lifetime of variables in functions- Local and External variables -Global variable- -

   Graphics Programming: Graphics.h - co-ordinate system-color codes- Initgraph-closegraph- graphic functions to draw various shapes- text handling functions - delay-cleardevice—kbhit() function - animation

REFERENCE BOOKS

1   Programming inANSI C   E.Balaguruswamy   TataMcGrawHill
2   Programming with C   Gottfried   Tata McGraw Hill
3   C Thecomplete Reference   Schildt   Tata McGrawHill
4   Computer Graphics, C Version (2nd Edition) , Donald Hearn, M. Pauline Baker - Prentice Hall
5   Computer Graphics: A Programming Approach, Steven Harrington, McGraw-Hill

Model Blue print

S.No.	Chapter/Unit title	No.of periods	Weightage Allocatd	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	Introduction to C Language	20	14	6	8			2	1			CO1,CO2
2	Input and output statements,	25	14		6	8	*		2	1	*	CO1,CO2,C3

	Operators and Expressions in C .											
3	Decision making, iterative and other control statements	40	14		6	8	*		2	1	*	CO1,CO2,CO3
4	Arrays and strings , Structures and Unions	30	14	3	3	8	*	1	1	1	*	CO1,CO2,CO3
5	User defined functions and Graphics Programming	35	14	3	3	8	*	1	1	1	*	CO1,CO2,CO3,CO4,CO5
	Total *	**150**	**70 +10(*)**	**1 2**	**2 6**	**32**	**10**	**4**	**7**	**4**	**1**	CO1,CO2,CO3,CO4

Note: Part-C: 10 marks single analytical question may be chosen from any or combination of starred chapters

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 2.13
Unit test-2	From 3.1 to 4.6
Unit test-3	From 4.7 to 5.13

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER
C AND GRAPHICS PROGRAMMING
UNIT TEST-1

SCHEME: C-20   **SUBJ CODE:AM-106**
MAX MARKS:40   **TIME: 90Minutes**

PART-A   16Marks

Instructions:1) Answer all questions
2) First question carries 4marks, and each question of remaining carries 3marks

1. a)Int is a Data type in C language.(True/False)   (CO1)
   b) 'a' is an example for _____ constant.   (CO1)
   c)scanf() is used for _____.   (CO2)
   d) Which one of the following is aRelationaloperator [   ]   (CO2)
      I)+   II)-   III)*   IV)>=
2) List any three data types of C language.   (CO1)
3) Define a)Keyword b) Identifier c) Constant   (CO1)
4) Write a sample program using Conditional operator?   (CO2)
5)Distinguish between pre-increment and post-increment operators.   (CO2)

PART-B   3X8=24Marks

Instructions:1) Answer all questions
2)Each question carries 8 Marks
3)Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer

6.a)Write the C-Programming structure and explain each part of it   (CO1)
               (Or)
b)Explain various generation of computers   (CO1)

7.a) Explain Arithemetic, Relational, Logical operators with examples.   (CO2)
                    (Or)
b) Evaluate the following C-Expression and write the final value   (CO2)
      X= ((2 + 6 / 2 + 3 * 6) – ((4 + 6) / 2 +5) /10) + 1) / 5.0

8. a) Illustrate Type Conversion techniques in detail   (CO2)
                    Or
   b) Write the C-program using formatted input and output functions.   (CO2)

BOARD DIPLOMA EXAMINATIONS
DIPLOMA IN ANIMATION AND MULTIMEDIAENGINEERING
MODEL PAPER - END EXAMINATION
C AND GRAPHICS PROGRAMMING

SCHEME: C-20   **SUBJ CODE:AM-106**
MAX MARKS:80   **TIME: 3HOURS**
                                    PART-A

Note: Answer all questions. Each question carries 3 marks   **10 X 3=30M**

1.	Define an identifier and write two valid identifiers	1+2	CO1
2.	Write a short note on type qualifiers	3	CO1
3.	Write the syntax of formatted output statement	3	CO1
4.	Write a program to print the biggest of two numbers using conditional operators	3	CO3
5.	Differentiate between break and continue	3	CO3
6	What is nesting? Give an example.	3	CO2
7	What is an array? how to declare an array?	1+2	CO2
8	List any three sting functions	3	CO2
9	Give the syntax and examples for delay() and kbhit() functions .	1.5+1.5	CO5
10	State the importance of "void"	3	CO4

PART-B
Note: 1. Answer all the question and making use of internal choice.
        2. Each question carries 8 marks   **5 X 8=40M**

11(a).Write the C-Programming structure and explain each part of it   4+4   C-01
                                    OR
11(b).List and explain different data types supported by C-Language   8   CO1

12(a).Explain all the operators supported by C-language with examples   8   CO2
                                    OR
12(b).Evaluate the following C-Expression and write the final value   8   CO2

   X= ((2 + 6 / 2 + 3 * 6) − ((4 + 6) / 2 +5) /10) + 1) / 5.0

13(a).Write a program to print the following pattern　　　　　　　　　　8　　　　　CO3

```
          1
      1   2   1
  1   2   3   2   1
" "  up to nth level
```

OR

13. a) Explain any four control statements in C-language.　　　　　　6　　　　　CO3

14(a).Write eight differences between structures and unions　　　　　8　　　　　CO3

(OR)

14(b). Write a C-program to input 3X4 matrix and print in the form of matrix　　8　　　　CO3

15(a). Write a program to calculate the factorial of a function using recursive concept with the help
of parameter passing and return value　　　　　　　　　　　8　　　　CO3 &
CO5

(OR)

15(b). Explain any two graphic functions related to draw shapes.　　　　2X4=8　　　CO5

PART-C

Note: Answer the following question, This question carries 10 Marks   1 X10=10M

16. Write C-Program to animate the car from left to right in the middle of the screen till a key on
keyboard is pressed - 10M　　　　　　　　　　　　　　　　　　　　CO5

FUNDAMENTALS OF ART AND DRAWING

Subject Code	Subject Title	Periods/Week	Periods Per Year
AM-107	Fundamentals of Art and Drawing	06	180

TIME SCHEDULE

S.No	Major Topics	No. Of Periods	Marks to be awarded	Short Answer Questions	Essay type Questions
1	Importance of Art and Drawing	06	-	-	-
2	Art and Drawing Instruments And Study of Colors	18	-	-	-
3	Basic Elements And Principles In Picture Composition	30	15	1	1
4	Perspective Drawing	27	15	1	1
5	Human Anatomy	27	15	1	1
6	Animal Anatomy	27	15	1	1
7	Cartoon Characters	21	10		1
8	Classical Animated Cartoons	24	10		1
Total		**180**	**80**	**04**	**06**

Course Objectives and Course Outcomes

Course Objectives			Upon completion of the course the student shall able to understand the basic Art and Drawing skills and use them in preparation of Animation drawings, their reading and interpretation.
Course Outcomes	**CO1**	AM-107.1	Practice the use of Art and Drawing instruments, materials and tools
	CO2	AM-107.2	Familiarise with the usAMe of various surfaces, paints, brushes, inks, notations, colors of Art and Drawing.
	CO3	AM -107.3	Construct the i) basic elements and geometrical shapes and forms ii) Compositional techniques

121

	CO4	AM -107.4	Visualise and draw the Perspective
	CO5	AM -107.5	Visualise and draw the Human and Animal Anatomy
	CO6	AM -107.6	Draw the development of cartoon characters and Cartoon animations

PO-CO Mapping

Course Code :AM-107	Course Title: ENGINEERING DRAWING Number of Course Outcomes: 06				No. of Periods: 180
POs	**Mapped with CO No.**	**CO Periods addressing PO in Column 1**		**Level (1,2,3)**	**Remarks**
		No	**%**		
PO1	CO2, CO3, CO4, CO5, CO6	50	42	3	**>40% Level 3 Highly addressed25% to 40% Level 2 Moderately Addressed5 to 25% Level 1 Low addressed <5% Not addressed**
PO2	CO1, CO2, CO3, CO4, CO5, CO6	30	25	2	
PO3	CO1, CO2, CO3, CO4, CO5, CO6	30	25	2	
PO4					
PO5					
PO6					
PO7	CO1, CO2, CO3, CO4, CO5, CO6	10	08	1	

AM-107	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	2	2	2				2	2	1
CO2	3	2	2	2				2	2	2
CO3	3	2	2				1	2	3	1
CO4	3	2	2				1	2	3	1
CO5	3	2	2				1	2	3	1
CO6	3	2	2				1	2	3	1
Average	3	2	2				1	2	2.6	1

3: High, 2: Moderate,1: Low

LEARNING OUTCOMES
   Upon completion of the course the student shall able to

1. Importance of Art and Drawing

1.1. Know the Brief History Of Art and Drawing.

1.2. Know the importance of Caveman Classical art.

1.3. Know the importance of Renaissance Art.

1.4. Know the importance of Modern Art.

1.5. Understand linkage between Caveman Classical art, Renaissance art and Modern Art with Animation.

2. Art and Drawing Instruments :

2.1. Know various types of Dry Media materials and tools with examples.

2.2. Know Why and when to choose Dry Media materials and tools.

2.3. Know various types of Wet Media materials and tools with examples.

2.4. Know Why and when to choose Wet Media materials and tools.

2.5. Know the significance of Markers and Brushes.

2.6. Understand different types of Markers and Brushes.

2.7. Know the importance of Different Inks and their usage.

2.8. Know the importance of Different Paints and their usage.

2.9. Know different types of Drawing Paper Surfaces.

2.10. Know How to handle Different Drawing Paper Surfaces.

2.11. Know Non-paper Drawing Surfaces like Scrachboards.

2.12. List the tools for erasing and Sharpening like palettes, knives and Easels.

2.13. Study about color wheel.

2.14. Know about Color Hormony.

2.15. Write about color theory principles.

2.16. Know about Primary and Secondary Colors.

2.17. Know about Complementary Colors.

2.18. Know about Warm or Cool colors.

2.19. Know the value of Colors.

2.20. Know the Usage of various brushes.

2.21. Know the usage of Various Colors of Light and Shade.

2.22. Understand and Practice the Process of Painting.

3. Basic Elements And Principles In Picture Composition:

3.1. Practice Drawing Lines with different sizes, colors, brushes and paints.

3.2. Practice Drawing Circles with different sizes, colors, brushes and paints.

3.3. Practice Drawing Ovals with different sizes, colors, brushes and paints.

3.4. Practice Drawing Scribbles with different sizes, colors, brushes and paints.

3.5. Practice Drawing Patterns with different sizes, colors, brushes and paints.

3.6 Practice various drawings observing the surroundings like window, fan, chair etc..

3.7. Draw Doodling and Noodling Images or Pictures.

3.8. Practice drawing Straight lines.

3.9. Practice Freehand drawing to surrounding images near you.

3.10. Practice Holding the pencil .

3.11. Draw lines with different angles.

3.12. Practice drawing various shapes like rectangle, square, polygon, etc.. in different forms.

3.13. Practice Drawing with Grids.

3.14. Study of light and shade in pencil of still life object

3.15. Study and Understand Rule of Thirds, Rule of Odds and Rule of Space and Simplification Compositional Techniques.

3.16. Drawing still life objects in outline by pen and pencil by applying Compositional Techniques.

3.17. Draw still life objects in pen and ink to trace the light and shade by applying Compositional Techniques.

3.18. Construct a scene for a background of animation/film/graphic novel etc and preparing a sketch according to a conception with suitable Compositional Techniques.

3.19. Drawing in details different objects and attributes of the scene in pencil and with light and shade and with suitable Compositional Techniques

3.20. Creating a panorama view of a composition in details with perspectives and proper light and shade , texture, contrast and with suitable Compositional Techniques

4. Perspective Drawing :
4.1. Practice one point perspective drawings.
4.2. Practice two point perspective drawings.
4.3. Learn and Practice three point perspective drawings.

4.4. Practice Multi Point Perspective Drawings.

4.5. Practice drawing with overlapping and intersection of Objects and Shapes in one point Perspective

4.6. Practice drawing with overlapping and intersection of Objects and Shapes in two point Perspective

4.7. Practice drawing with overlapping and intersection of Objects and Shapes in three point Perspective

4.8. Practice drawing with overlapping and intersection of Objects and Shapes in Multi point Perspective

4.9. Drawing outdoor scenes showing one point perspective

4.10. Drawing outdoor scenes showing two point perspective
4.11. Drawing outdoor scenes showing three point perspective

4.12. Drawing indoor/architectural scenes showing one point perspective
4.13. Drawing indoor/architectural scenes showing two point perspective
4.14. Drawing indoor/architectural scenes showing three point perspective
4.15. Drawing a complete scene as a background for an animation/film scene/graphic novel etc. having different perspective views and light and shade
4.16. Drawing any object in 3d style of drawing by following the light and shade
4.17. Drawing any object in 3d style of drawing by following the geometric planes.

5. Human Anatomy:

5.1. Understand the basic proportions of Human antomy like age, gender,Skeletal, Muscle systems, Body structure, face , eyes, ears , nose, hair , etc..
5.2. Drawing the male figure with proper proportion (like baby, teen, adult)
5.3. Drawing the female figure with proper proportion (like baby, teen, adult)
5.4. Drawing the male face with proper proportion (like baby, teen, adult)
5.5. Drawing the female face with proper proportion (like baby, teen, adult)
5.6. Drawing the hands and legs with proper proportion (like baby, teen, adult)
5.7. Drawing male figure with clothes understanding the folds in basic postures
5.8. Drawing female figure with clothes understanding the folds in basic postures
5.9. Drawing the human figure as stick figure in different postures and gestures
5.10. Tracing the movement of the stick figure from sports and fashion magazine postures
5.11.Drawing the stick figure tracing the movements from life study in outdoor.

6. Animal Anatomy.

6.1. Understand the animal anatomy like body structure, parts, Motion, Grace, Legs, Tails of different animals, Birds,Reptiles,Insects etc..
6.2. Drawing simple animal figures (dogs, cat, horse, elephants etc) in proper proportion
6.3. Drawing simple Birds figures (Parrots, Peacock, Swan, Duck, Eagle, Hen, Cock etc) in proper proportion

6.4. Drawing simple Reptiles figures (Snakes, Frogs, Crocodile, Tortoise, Squirrel etc..) Eagle, Hen etc) in proper proportion

6.5. Drawing simple Insects figures (Butterfly, Bees, Scorpion , Grasshopper etc) in proper proportion

6.6. Draw parts of Animals like legs, teeth, face, tails, Horns with proper proportions.

6.7. Draw parts of Birds   like Wings of Peacock, Swan Neck and Head and Face of Cock, eggs, teeth, face, tails, Horns with proper proportions.

6.8. Draw parts of Reptiles   like head, Half body, Tail etc with proper proportions.

7.Cartoon Characters:

7.1. Study of different types of cartoon character

7.2. Practice Constructing Basic Cartoons .

7.3. Practice Character Development from cartoons.

7.4. Practice developing cartoons from basic shapes. (From Ellipse, Cross, Parallelogram, Heptagon, Octagon, Heart, Arrow, Polygon etcc..As shown below)

7.5. Practice Distortions of Proportions (Widening, lengthening, Shrinking, bending various parts of a body   like Faces, Eyes, Mouths, Hairs, Nose, Hands, Feet - Facial Expressions)

8. Classic Animated Cartoons

8.1. Discuss various types of characters.

8.2. Creating cartoon character in reference to existing cartoon character and changing them to create characters of owns idea.

8.3. Creating a group of character for a given story or sequence

8.4. Create different types of Animated cartoons characters like Cute,Screwball, Goffy etc.

8.5. Create different types of Animated Human cartoons characters for a given story or a sequence.

8.6. Create different types of Animated Animal cartoons characters for a given story or sequence

8.7. Create different types of Animated Birds cartoons characters for a given story or sequence

.

8.8. Create different types of Animated Reptile cartoons characters for a given story or sequence

.

8.9. Create different types of animated cartoons consisting of Elves.

8.10. Create different types of animated cartoons consisting Fairy tale characters (Gnomes. Elves, Dwarfs, Witches)

COURSE CONTENTS:
Note: Appropriate Drawing Surfaces are to be chosen based on the topic with appropriate Tools, materials, paints, brushes, ink etc.

1.Importance of Art and Drawing :A Brief History Of Art and Drawing: – importance of Cavemen, Classical Art, Renaissance, Modern Art Etc.

2.Art and Drawing Instruments : Drawing Materials And Tools - Dry Media – (Pencils, Charcoals, Chalks, Crayons – Pastels, Erasers, Smudging Tools) - Wet Media – (Dip Pens, Disposable And Cartridge Pens) – Markers – Brushes – Inks (Water Based, Alcohol Based, Indian/Chinese Ink) – Paints (Water Based, Acrylic, Oil)

Drawing Surfaces – (Papers – Newsprint – Vellum - Bristol Board - Rag/Cotton Paper - Watercolor Paper - Charcoal Paper - Colored Paper - Rice Paper – How To Handle These Papers) - Other Drawing Surfaces – (Scratchboards) - Tools For Erasing And Sharpening – Palettes – Knives- Easels .

Study of Colors: The Color Wheel – Primary Colors – Secondary colors- Complementary colors- Warm or cool colors – Value of Colors- Usages of Brushes, Colors of light and shade – process of painting.

3. Basic Elements And Principles In Picture Composition: Drawing Lines, Circles, Ovals, Scribbles, Patterns Etc. - Drawing From Observation, Doodling And Noodling – Drawing Straight Lines –Free Hand Drawing – Holding The Pencil – Angle And Direction Of Lines - Shapes And Forms – Drawing With Grids - Compositional Techniques - Rule Of Thirds - Rule Of Odds - Rule Of Space – Simplification.

4. Perspective Drawing : Vanishing Points – Orthogonal Lines – Horizon –Eye Level – One Point Perspective – Two Point Perspective - Three Point Perspective – Multi- Point Perspective - Overlapping And Intersection Of Shapes In One Point, Two Point And Three Point Perspective Views - Objects And Shapes In Perspective With Light And Shade –Foreshortening —– Basic 3D dimensional light set up- 3d shades – 3D planes

5.Human Anatomy: Anatomy Of Different Age Groups – Babies, Children, Teens, Young Adults, Aged - Basic Proportions – Basic Understanding Of The Skeletal And Muscle System – Human Forms In Perspective.

Male And Female Anatomy - Body Structure, Proportion And Construction Of Body Parts, Torso, Face, Eyes, Nose, Ears, Mouth, Hand, Feet , clothes, ornaments Etc.

6.Animal Anatomy: Body Structure, Proportion And Construction Of Body Parts, Basic Forms, Understanding Motion And Grace, Face, Legs, Tails - Use Of Perspectives While Drawing Animals, Birds, Reptiles And Insects.

7. Cartoon Characters: -Understanding Cartoon Characters - Cartoon Constructions – Character Development - Drawing From Basic Shapes - Distortion Of Proportions - Cartoon Faces, Eyes, Mouths, Hairs, Nose, Hands, Feet - Facial Expressions

8. Classic Animated Cartoons: Discuss various types of   Characters – Cute – Screwball – Goofy – Heavy, Pugnacious – Humans, Animals, Birds, Reptiles Characters – Fairy Tale Characters – Gnomes – Elves – Dwarfs –Witches

REFERENCE BOOKS

1. Social History Of Art : ArnoldHauser
2. Encyclopaedia Of World Art (Vol.I&II): Mcgraw HillPublication
3. The Art Of Pictorial Composition :Wolehonok
4. Exploring The Elements Of Design : Mark A. Thomas, PoppyEvans
5. The Art Of Composition : MichaelJacobs
6. Complete Books Of Artist Techniques : Dr. KurtHerbers
7. Drawing For The Absolute And Utter Beginner: Claire WatsonGarcia
8. Perspective Made Easy: Ernest RNorling
9. Perspective Drawing Handbook: JosephD'Amelio
10. Layout And Composition For Animation: EdGhertner
11. Animation Background Layout: Mike S Flower
12. Drawing For Animation: PaulWells

13. How To Draw What You See: Rudy DeReyna
14. "Figure study made easy", Aditya Chari, 2nd edition, Grace Prakashan, 2014
15. "Cartooning: the ultimate character design book" Chris Hart, 6th edition, 2014
16. The Fundamentals of Animation. Wells, P. AVA Publishing, 2012

BOARD DIPLOMA EXAMINATIONS
MODEL QUESTION PAPER
DAME – I-YEAR
FUNDAMENTALS OF ART AND DRAWING

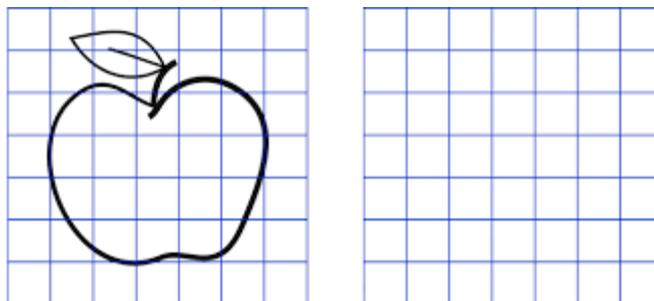**Instructions:01. Due weightage will be given for the neatness and usage of proper tools and materials**

PART – A   **05 x 04=20**
01.   Answer all the questions
02.   Each question carries FIVE marks

01. Draw the following image using Grid

02. Draw an example image with one point perspective view.
03. Draw face and head of a teen girl.
04. Draw the Figure of horse with proper texture , lighting and shading.

PART – B   **10 X 04 = 40**
01.   Answer any FOUR of the following questions
02.   Each question carries TEN marks

05.   Create a panorama view of a composition of your exam hall in details with perspectives and proper light and shade , texture, contrast and with suitable Compositional Techniques

06.   Draw an image with overlapping and intersection of Objects and Shapes in three point Perspective.

07. Draw the human figure as stick figure in different postures and gestures.

08. Drawing Parrot image while eating ripened Mango at evening 4 o clock in proper proportion

09. Draw the Crocodile anatomy from the basic shapes a). Ellipse b). Heart

10. Assume a man is trying to feed grains to the group of 5 different birds resting on a roof. Construct animated scene in 5 steps showing the birds flying away from the man into the sky with proper background and colors.

REQUIREMENTS OF FUNDAMENTALS OF ART AND DRAWING LAB EQUIPMENTS

SLNO.	EQUIPMENTS
1.	**Drawing Stands With Boards**
2.	**Drawing sheets (A3)**
3.	**Drawing Mannequin**
4.	**Drawing Tool Kit(Paints, Inks , Brushes ,Colors,….etc.)**

Course Code	Course title	No of periods/week	Total no of periods	Marks for FA	Marks for SA
AM-108	C and Graphics programming Lab	06	180	40	60

S No	Chapter/ Unit Title	No. of Periods	COs Mapped
1.	Fundamentals and Input/Output statements	15	CO1,CO2
2.	Control statements	45	CO1,CO2,CO4
3.	Arrays, structures and unions	60	CO1,CO2,,CO3,CO4
4.	User defined functions, Graphics functions and animation	60	CO1,CO2,CO3,CO4,CO5
	Total	180	

COURSE **OBJECTIVES**	**Upon completion of the course the student shall be able to** 1. Edit, compile and debug execution of C-Programs 2. Learn the syntax of all the statements, keywords, user defied identifiers and usage of writing statements in C-Program. 3. Evaluate all the expressions using different primary types of data, derived data, operators and with their precedence, 4. Write C-programs using I/O statements, decision making statements. 5. Write structured and modular C-programs 6. Write C-programs to make use of graphics functions.. 7. Write C-programs to implement Animations.

	CO No	COURSE OUTCOMES
CO 1	AM-108.1	Perform Edit, compile and debug and execution of C-Programs(12)
CO 2	AM-108.2	Develop programs using different predefined functions, keywords, user defined identifiers(18)
CO 3	AM-108.3	Evaluate different expressions using available C-operators and valid data supported by C-language(24)
CO 4	AM-108.4	Develop C-programs using control statements, array's, structures, unions, files (90)
CO 5	AM-108.5	Develop C-programs using user defined Functions and recursion
C06	AM-108.6	Develop C-programs using graphics and animation techniques

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-108.1	2	2			1			2		
AM-108.2	2	3		2					2	2
AM-108.3					2			2		3
AM-108.4	2		3	2	3	3	2		2	2
AM-108.5	2			2	3	2			2	2
AM-108.6				2	3				2	2
Average	2	2.5	3	2	2.4	2.5	2	2	2	2.2

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

LEARNING OUTCOMES:

Fundamentals and Input / Output statements

1. Exercise on structure of C Program
2. Exercise on Keywords and identifiers
3. Exercise on constants and variables
4. Execution of simple C program
5. Exercise on operators and expressions
6. Exercise on special operators
7. Exercise on input and output of characters
8. Exercise on formatted input and output
9. Exercise on escape sequence characters

Control statements

(Note: Every statement must be repeated with at least 5 different applications)
10. Exercise on simple if statement
11. Exercise on if..else statement
12. Exercise on if..else..if ladder statement
13. Exercise on switch statement
14. Exercise on conditional operator comparing with if-else statement
15. Exercise on while statement
16. Exercise on for statement

17. Exercise on do. While statement

Arrays, structures and unions

18. Exercise on one dimensional arrays
19. Exercise on two dimensional arrays
20. Exercise on strings
21. Exercise on structure
22. Exercise on union
23. Exercise on array of structures

User defined functions AND Graphics

24. Exercise on user-defined function
25. Exercise on recursion
26. Exercise on lines with different colors and styles
27. Exercise on rectangles
28. Exercise on circles
29. Exercise on ellipses and arcs
30. Exercise on pie chart
31. Exercise on bar chart
32. Exercise on text
33. Exercise on text animation.
34. Exercise on bouncing ball till a key is pressed
35. Exercise on moving car till any key is pressed

The competencies and key competencies to be achieved by the student

S.No.	Name of the experiment	Objectives	Key Competencies
1	Exercise on structure of C program	For a given C program, identify the different building blocks	❖ Identify different building block in a C program
2	Exercise on Keywords and identifiers	For a given C program identify the keywords and identifiers	❖ Identify different keywords ❖ Check whether the keywords are in lowercase ❖ Differentiate identifiers and keywords
3	Exercise on constants and variables	For a given C program identify the constants and variables	❖ Identify the constants ❖ Identify the variables ❖ Declare variables with proper names ❖ Know the assignment of values to variables
4	Execution of simple C program	Execute a simple C program	❖ Acquaint with C program editing ❖ Compile the program ❖ Rectify the syntactical errors ❖ Execute the program

5	Exercise on operators and expressions	Write a C program that uses different arithmetic operators	❖ Identify different arithmetic operators ❖ Build arithmetic expressions ❖ Identify the priorities of operators ❖ Evaluate arithmetic expression ❖ Compile the program ❖ Rectify the syntactical errors ❖ Execute the program ❖ Check the output for its correctness
6	Exercise on special operators	Write a C program that uses special operators	❖ Identify different special operators ❖ Build expressions using special operators ❖ Compile the program ❖ Rectify the syntactical errors ❖ Execute the program ❖ Check the output for its correctness
7	Exercise on input and output of characters	Write a C program for reading and writing characters	❖ Know the use of get char() function ❖ Know the use of put char() function ❖ Compile the program ❖ Rectify the syntactical errors ❖ Execute the program ❖ Check whether the correct output is printed for the given input
8	Exercise on formatted input and output	Write a C program using formatted input and formatted output	❖ Know the use of format string for different types of data in scan f() function ❖ Know the use of format string for different types of data in print f() function ❖ Check whether the data is read in correct format ❖ Check whether the data is printed in correct format
9	Exercise on Escape Sequence Characters	Write a C program using Escape Sequence Characters	❖ Know the use of Escape sequence characters ❖ Use the Escape sequence characters ❖ Check whether the data is read in correct format ❖ Rectify the syntax errors ❖ Check the output for correctness
10	Exercise on simple if statement	Write a C program using simple if statement	❖ Build a relational expression ❖ Use the if statement for decision making ❖ Rectify the syntax errors ❖ Check the output for correctness
11	Exercise on if.. else statement	Write a C program using if.. else statement	❖ Build a relational expression ❖ Use the if.. else statement for decision making ❖ Rectify the syntax errors

			❖ Check the output for correctness
12	Exercise on else..if ladder statement	Write a C program using else..if ladder statement	❖ Use else.. if ladder statements with correct syntax ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check the output for correctness
13	Exercise on switch statement	Write a C program using switch statement	❖ Use switch statement with correct syntax ❖ Identify the differences between switch and else..if ladder ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check the output for correctness
14	Exercise on conditional operator	Write a C program using (**?** **:**) conditional operator	❖ Build the three expressions for conditional operator ❖ Use conditional operator with correct syntax ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Differentiate conditional operator and if..else statement
15	Exercise on while statement	Write a C program using while statement	❖ Build the termination condition for looping ❖ Use while statement with correct syntax ❖ Check whether correct number of iterations are performed by the while loop ❖ Rectify the syntax errors ❖ Debug logical errors
16	Exercise on **for** statement	Write a C program using for statement	❖ Build the initial, increment and termination conditions for looping ❖ Use for statement with correct syntax ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check whether correct number of iterations are performed by the **for** loop ❖ Differentiate **for** and **while** statements
17	Exercise on **do..while** statement	Write a C program using do statement	❖ Build the termination condition for looping ❖ Use do statement with correct syntax ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check whether correct number of iterations are performed by the while loop ❖ Differentiate **do..while, while** and **for** statements
18	Exercise on one dimensional arrays	Write a C program to create and access one	❖ Create a one dimensional array with correct syntax ❖ Store elements into array

		dimensional array	❖ Read elements from array ❖ Validate boundary conditions while accessing elements of array ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check for the correctness of output for the given input
19	Exercise on two dimensional arrays	Write a C program to create and access two dimensional array	❖ Create a two dimensional array with correct syntax ❖ Store elements into array ❖ Read elements from array ❖ Validate boundary conditions while accessing elements of array ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check for the correctness of output for the given input
20	Exercise on strings	Write a C program for reading and writing strings	❖ Declare and initialize string variables ❖ Read strings from keyboard ❖ Print strings to screen
21	Exercise on structure	Write a C program using structure	❖ Define a structure with correct syntax ❖ Identify different members of a structure ❖ Declare a structure variable ❖ Access different members of structure ❖ Observe the size of the structure ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check for the correctness of output for the given input
22	Exercise on union	Write a C program using union	❖ Define a union with correct syntax ❖ Identify different members of a union ❖ Declare a union variable ❖ Access different members of union ❖ Observe the size of the union ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check for the correctness of output for the given input
23	Exercise on array of structures	Write a C program to create an array of structures and store and retrieve data from that array	❖ Define a structure with correct syntax ❖ Identify different members of a structure ❖ Declare a structure variable ❖ Create an array of structure ❖ Access individual element of the array of structure ❖ Access different members of structure ❖ Rectify the syntax errors ❖ Debug logical errors

			❖ Check for the correctness of output for the given input
24	Exercise on user-defined function	Write a C program to define and call user-defined functions	❖ Identify the different parts of function declaration ❖ Define function with correct syntax ❖ Classify functions based on it parameters and return types ❖ Identify parameters passed ❖ Identify parameter passing method used ❖ Identify return value ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check for the correctness of output for the given input
25	Exercise on recursion	Write a C program using recursion	❖ Identify where recursive call is made in the function ❖ Validate the termination condition ❖ Rectify the syntax errors ❖ Debug logical errors ❖ Check for the correctness of output for the given input
26	Exercise on lines	Write a C program to draw different lines with different colors and with different styiles.	❖ Know the use of different graphics functions like line() , lineto() setcolor(),setlinestyle() ❖ Use the different graphics functions and initgraph() ❖ Rectify the syntax errors ❖ Check the output for correctness and effect of various graphic functions.
27	Exercise on rectangles	Write a C program to draw different rectangles with different colors and with different fill styles .	❖ Know the use of different graphics functions like rectangle(), fillpoly(), setcolor(), setfillstyle() ❖ Use the different graphics functions and initgraph() ❖ Rectify the syntax errors ❖ Check the output for correctness and effect of various graphic functions.
28	Exercise on circles	Write a C program to draw concentric circles with different colors and with different fill styles .	❖ Know the use of different graphics functions like circle(), arc(), setcolor(), setfillstyle() ❖ Use the different graphics functions and initgraph() ❖ Rectify the syntax errors ❖ Check the output for correctness and effect of various graphic functions.
29	Exercise on ellipses	Write a C program to draw different circles and arcs	❖ Know the use of different graphics functions like ellipse(), arc(), setcolor(), setfillstyle()

138

	and arcs	with different colors and with different fill styles .	❖ Use the different graphics functions and initgraph() ❖ Rectify the syntax errors ❖ Check the output for correctness and effect of various graphic functions.
30	Exercise on pie chart	Write a C program to draw piechart with different slices with different colors and with different fill styles .	❖ Know the use of different graphics functions like pieslice(), setcolor(), setfillstyle() ❖ Use the different graphics functions and initgraph() ❖ Rectify the syntax errors ❖ Check the output for correctness and effect of various graphic functions.
31	Exercise on bar chart	Write a C program to draw bar and 3d bar charts with different colors and with different fill styles .	❖ Know the use of different graphics functions like bar(), bar3d(), setcolor(), setfillstyle() ❖ Use the different graphics functions and initgraph() ❖ Rectify the syntax errors ❖ Check the output for correctness and effect of various graphic functions.
32	Exercise on text	Write a C program to display different texts with different fonts , styles and colors and sizes .	❖ Know the use of different graphics functions like outtext(), outtextxy(), setcolor(), settextstyle() , textheight(), textwidth() ❖ Use the different graphics functions and initgraph() ❖ Rectify the syntax errors ❖ Check the output for correctness and effect of various graphic functions.
33	Exercise on text Animation	Write a C program to animate Your name on screen	❖ Know the use of different graphics functions like outtext(), outtextxy(), setcolor(), settextstyle() , textheight(), textwidth(), cleardevice(), delay() ❖ Use the different graphics functions and initgraph() ❖ Rectify the syntax errors ❖ Check the output for correctness and effect of various graphic functions.
34	Exercise on Bouncing ball animation	Write a C program to animate bouncing ball till a key on keyboard is pressed	❖ Know the use of different graphics functions like outtext(), outtextxy(), setcolor(), settextstyle() , textheight(), textwidth(), cleardevice(), delay(), kbhit(), circle(), setfillstyle(). ❖ Use the different graphics functions and initgraph() ❖ Rectify the syntax errors ❖ Check the output for correctness and effect of various graphic functions.

35	Exercise on Car Animation	Write a C program to draw a car animate car movement in left to right on the screen till any key on the keyboard is pressed.	❖ Know the use of different graphics functions like all shape functions(),cleardevice(), delay(), kbhit(), circle(), setfillstyle(). ❖ Use the different graphics functions and initgraph() ❖ Rectify the syntax errors ❖ Check the output for correctness and effect of various graphic functions.

PHYSICS LAB PRACTICE

(C-20 CURRIUCULUM COMMON TO ALL BRANCHES)

SubjectTitle   :   **Physics Laboratory**

SubjectCode   :   **AM-109 A**

Periodsperweek   :   **03**

Totalperiodsperyear   :   **45**

TIMESCHEDULE

S.No	Name of the Experiment	No.of Periods
1.	Hands on practice on Vernier Calipers	03
2.	Hands on practice on Screw gauge	03
3.	Verification of Parallelogram law of forces and Triangle law of forces	03
4.	Simple pendulum	03
5.	Velocity of sound in air – (Resonance method)	03
6.	Focal length and Focal power of convex lens (Separate & Combination) (**Single lens only**)	03
7.	Refractive index of solid using traveling microscope	03
8.	Boyle's law verification	03
9.	Meter bridge	03
10.	Mapping of magnet lines of force and locate null points	03
	DEMONSTRATION EXPERIMENTS	
11.	Surface tension of liquid using traveling microscope	03
12.	Coefficient of viscosity by capillary method	03
	Revision	06
	Test	03
	Total:	**45**

Objectives:

Upon completion of the course the student shall be able to

1.0 Practice with Vernier calipers to determine the volumes and areas of a cylinder and sphere and their comparison etc .

2.0 Practice with Screw gauge to determine thickness of a glass plate, cross sectional area

of a wire and volumes of sphere and also their comparison etc

3.0 Verify the parallelogram law and Triangle law

4.0 Determine the value of acceleration due to gravity using Simple Pendulum

5.0 Determine the velocity of sound in air at room temperature and its value at zero degree centigrade

6.0 Calculate the Focal length and focal power of convex lenses using distant object method , U-V method , U-V graph and 1 / U – 1 / V

graph methods and their comparison.

7.0 Determine the refractive index of a solid using travelling microscope

8.0 Verify the Boyle's law employing a Quill tube

9.0 Determine the specific resistance of material of a wirel using Meter Bridge

10.0 Drawing magnetic lines of force under N-S and N-N methods and locate null points

11.0 Determine the surface tension of a liquid using travelling Microscope (**Demo)**

12.0 Determine the viscosity of a liquid using capillary method (**Demo)**

Competencies and Key competencies to be achieved by the student

Name of the Experiment (No of Periods)	Competencies	Key competencies
1. Hands on practice on Vernier Calipers(03)	• Find the Least count • Fix the specimen in posit • Read the scales • Calculate the physical quantities of given object	• Read the scales • Calculate the requisite physical quantities of given objects
2. Hands on practice on Screw gauge(03)	• Find the Least count • Fix the specimen in posit • Read the scales • Calculate thickness of glass place and cross section of wire and other quantities	• Read the scales • Calculate thickness of given glass plate • Calculate cross section of wire and other quantities
3. Verification of Parallelogram law of forces and Triangle law of forces(03)	• Fix suitable weights • Note the positions of threads on drawing sheet • Find the angle at equilibrium point • Construct parallelogram • Compare the measured diagonal • Construct triangle • Find the length of sides • Compare the ratios	• Find the angle at equilibrium point • Constructing parallelogram • Construct triangle • Compare the ratios of force and length
4. Simple pendulum(03)	• Fix the simple pendulum to the stand • Adjust the length of pendulum • Find the time for number of oscillations • Find the time period • Calculate the acceleration due to gravity • Draw l-T and l-T^2 graph	• Find the time for number of oscillations • Find the time period • Calculate the acceleration due to gravity • Draw l-T and l-T^2 graph

5. Velocity of sound in air –Resonance method (03)	• Arrange the resonance apparatus • Adjust the reservoir level for booming sound • Find the first and second resonanting lengths • Calculate velocity of sound	• Adjust the reservoir level • Find the first and second resonanting lengths • Calculate velocity of sound at room temperature • Calculate velocity of sound at 0^0 C
6. Focal length and Focal power of convex lens (Separate & Combination) (03)	• Fix the object distance • Find the Image distance • Calculate the focal length and power of convex lens and combination of convex lenses • Draw u-v and 1/u – 1/v graphs	• Calculate the focal length and power of convex lens • Draw u-v and 1/u – 1/v graphs
7. Refractive index of solid using traveling microscope(03)	• Find the least count of vernier on microscope • Place the graph paper below microscope • Read the scale • Calculate the refractive index of glass slab	• Read the scale • Calculate the refractive index of glass slab

8. Boyle's law verification (03)	• Note the atmospheric pressure • Fix the quill tube to retort stand • Find the length of air column • Find the pressure of enclosed air • Find and compare the	• Find the length of air column • Find the pressure of enclosed air • Find the value P x l
9. . Meter bridge(03)	• Make the circuit connections • Find the balancing length • Calculate unknown resistance • Find the radius of wire • Calculate the specific resistance	• Find the balancing length • Calculate unknown resistance • Calculate the specific resistance

10. Mapping of magnet lines of
 	
   force(03)
	• Draw magnetic meridian
	• Placed the bar magnet in NN and NS directions
	• Draw magnetic lines of force
	• Locate the neutral points along equatorial and axial lines
		• Draw magnetic lines of
		   force
		
		• Locate the neutral points
		   along equatorial and axial lines

11. Surface tension of liquid using traveling microscope(03)	• Find the least count of vernier on microscope • Focus the microscope to the lower meniscus & bent pin • Read the scale • Calculate height of liquid rise • Calculate the surface tension of water	• Read the scale • Calculate height of liquid rise • Calculate the surface tension of water

12.. Coefficient of viscosity by capillary method(03)	• Find the least count of vernier • Fix the capillary tube to aspiratory bottle • Find the mass of collected water • Find the pressure head • Calculate rate of volume of liquid collected • Find the radius of capillary tube • Calculate the viscosity of water using capillary method	• Find the pressure head • Calculate rate of volume of liquid collected • Find the radius of capillary tube • Calculate the viscosity of water

Scheme of Valuation for end Lab Practical Examination :

    A. Writing Aim, Apparatus, Formula, Graph, Precautions   carries   10 (Ten) Marks

    B. For Drawing the table, taking Readings, Calculation work,
        Drawing the graph, finding result carries   15 (Fifteen) Marks

    C. Viva Voice   05 (Five) Marks

        Total   **30 (Thirty) Marks**

CHEMISTRYLAB PRACTICE

(C-20 curriculum common to all Branches)

Subject Title	:	**Chemistry Laboratory**
Subject Code	:	**AM-109-B**
Periods per week	:	**03**
Total periods per year	:	**45**

CO1	Operate and practice volumetric apparatus and preparation of standard solution
CO2	Evaluate and judge the neutralization point in acid base titration
CO3	Evaluate the end point of reduction and oxidation reaction
CO4	Judge the stable end point of complex formation, stable precipitation
CO5	Judge operate and demonstrate and perform precise operations with instrument for investigation of water pollution parameters

TIMESCHEDULE

S.No	Name of the Experiment	No.of Periods	Mapped with COs
1.	a) Recognition of chemical substances and solutions used in the laboratory by senses. b) Familiarization of methods for Volumetric analysis	03	CO1
2.	Preparation of Std Na_2CO_3 and making solutions of different	03	CO1
3.	EstimationofHClsolutionusingStd.Na_2CO_3solution	03	CO2
4.	Estimation of NaO Husing Std. HCl solution	03	CO2

5.	Estimation of H_2SO_4 using Std.NaOH solution	03	CO2
6.	Estimation of Mohr's Salt using Std.$KMnO_4$	03	CO3
7.	Determination of acidity of water sample	03	CO2
8.	Determination of alkalinity of water sample	03	CO2
9.	Determination of total hardness of water using Std. EDTA	03	CO4
10.	Estimation of Chlorides present in water sample	03	CO4
11.	Estimation of Dissolved Oxygen(D.O)in water sample	03	CO5
12.	Determination of pH using pHmeter	03	CO5
13.	Determination of conductivity of water and adjusting ionic	03	CO5
14.	Determination of turbidity of water	03	CO5
15.	Estimation of total solids present in water sample	03	CO5
	Total:	**45**	

Objectives:

Upon completion of the course the student shall be able to

1.0   Practice volumetric measurements (using pipettes, measuring jars, volumetric flask, burettes) and gravimetric measurements (using different types of balances), making dilutions, etc To identify the chemical compounds and solutions by senses.

2.0   Practice making standard solutions with pre weighed salts and to make solutions of desired dilutions using appropriate techniques.

3.0   Conduct titrations adopting standard procedures and using Std. Na_2CO_3solutionfor estimation of HCl

4.0   Conduct titrations adopting standard procedures and using Std.HCl solution for estimation of NaOH

5.0   Conduct titrations adopting standard procedures and using Std. NaOH solution for estimation of H_2SO_4

6.0   Conduct titrations adopting standard procedures and using Std.$KMnO_4$solution for estimation of Mohr's Salt

7.0   Conduct titrations adopting standard procedures to determine the acidity of given samples of water (One ground water and one surface / tap water, and rain water if available)

8.0   Conduct titrations adopting standard procedures to determine the alkalinity of given samples of water (One ground water and one surface / tap water)

9.0   Conduct titrations adopting standard procedures to determine the total hardness of given samples of water (One ground water and one surface / tap water) using Std. EDTA solution

10.0   Conduct titrations adopting standard procedures to determine the chlorides present in the given samples of water and wastewater (One ground water and one surface / tap water)

11.0   Conduct the test using titrometric / electrometric method to determine Dissolved Oxygen (D.O) in given water samples (One sample from closed container and one from open container / tap water)

12.0   Conduct the test on given samples of water / solutions (like soft drinks, sewage, etc.) to determine their pH using standard pH meter

13.0   Conduct the test on given samples of water / solutions

   a)   To determine conductivity

   b)   To adjust the ionic strength of the sample to the desired value

14.0   Conduct the test on given samples of solutions (coloured and non coloured) to determine their turbidity in NTU

15.0   To determine the total solids present in given samples of water (One ground water and one surface / tap water)

Competencies and Key competencies to be achieved by the student

Name of the Experiment (No of Periods)	Competencies	Key competencies
Familiarization of methods for Volumetric analysis. Recognition of chemical substances And solutions (03)	-	--
Preparation of Std Na_2CO_3 and making solutions of different dilution(03)	▪ Weighing the salt to the accuracy of .01 mg ▪ Measuring the water with volumetric flask, measuring jar, volumetric pipette and graduated pipette ▪ Making appropriate dilutions	▪ Weighing the salt to the accuracy of .01 mg ▪ Measuring the water with volumetric flask, measuring jar, volumetric pipette and graduated pipette ▪ Making appropriate dilutions
Name of the Experiment (No of Periods)	**Competencies**	**Key competencies**
Estimation of HCl solution using Std. Na_2CO_3solution (03) Estimation of NaOH using Std. HCl solution (03) Estimation of H_2SO_4usingStd. NaOH solution (03) Estimation of Mohr's Salt usingStd.$KMnO_4$ (03)	▪ Cleaning the glassware and rinsing with appropriate solutions ▪ Making standard solutions ▪ Measuring accurately the standard solutions and titrants	▪ Making standard solutions ▪ Measuring accurately the standard solutions and titrants ▪ Effectively Controlling the flow of the titrant ▪ Identifying the end

Determination of acidity of water sample (03)	• Filling the burette with titrant	point • Making accurate observations
Determination of alkalinity of water sample (03)		
Determination of total hardness of water using Std. EDTA solution (03)	• Fixing the burette to the stand • Effectively Controlling the flow of the titrant • Identifying the end point • Making accurate observations	
Estimation of Dissolved Oxygen(D.O)in water sample (By titration method) (03)		
Estimation of Dissolved Oxygen(D.O)in water sample (By electrometric method) (03)	• Familiarize with instrument • Choose appropriate 'Mode' / 'Unit' • Prepare standard solutions / buffers, etc. • Standardize the instrument with appropriate standard solutions • Plot the standard	• Prepare standard solutions / buffers, etc. • Standardize the instrument with appropriate standard solutions • Plot the standard curve • Make measurements accurately
Determination of pH using pH meter (03)		
Determination of conductivity of water and adjusting ionic strength to required level (03)		

Name of the Experiment (No of Periods)	Competencies	Key competencies
Determination of turbidity of water (03)	curve ▪ Make measurements accurately ▪ Follow Safety precautions	

Estimation of total solids present in water sample (03)	- Measuring the accurate volume and weight of sample - Filtering and air drying without losing any filtrate - Accurately weighing the filter paper, crucible and filtrate - Drying the crucible in an oven	- Measuring the accurate volume and weight of sample - Filtering and air drying without losing any filtrate - Accurately weighing the filter paper, crucible and filtrate

SCHEME OF VALUATION

A) Writing Chemicals, apparatus ,principle and procedure   5M

B) Demonstrated competencies   20M

   Making standard solutions

   Measuring accurately the standard solutions and titrants

   Effectively Controlling the flow of the titrant

   Identifying the end point

   Making accurate observations

C) Viva-voce   5M

                                Total   30M

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-110 (common to all branches)	Computer Fundamentals Lab	3	90	40	60

Time schedule:

S.No.	Chapter/Unit Title	No. of sessions each of 3 periods duration	No.of Periods
1.	Computer hardware Basics	2	6
2.	Windows Operating System	2	6
3.	MS Word	8	24
4.	MS Excel	7	21
5.	MS PowerPoint	5	15
6.	Adobe Photoshop	6	18
	Total periods	**30**	**90**

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	Computer hardware Basics	6	CO1
2.	Windows Operating System	6	CO1
3.	MS Word	24	CO2
4.	MS Excel	21	CO3
5.	MS PowerPoint	15	CO4
6	Adobe Photoshop	18	CO5
	Total periods	**90**	

Course Objectives	i)To know Hardware Basics ii)To familiarize operating systems iii)To use MS Office effectively to enable to students use these skills in future courses iv) To use Adobe Photoshop in image editing.

154

	At the end of the course students will be able to		
	CO1	AM-110.1	Identify hardware and software components
	CO2	AM-110.2	Prepare documents with given specifications using word processing software
Course Outcomes	CO3	AM-110.3	Use Spread sheet software to make calculation and to draw various graphs / charts.
	CO4	AM-110.4	Use Power point software to develop effective presentation for a given theme or topic.
	CO5	AM-110.5	Edit digital or scanned images using Photoshop

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-110.1	3	3	3	3	3	3	3	3	2	3
AM-110.2	3	3	3	3	3	3	3	3	2	3
AM-110.3	3	3	3	3	3	3	3	3	2	3
AM-110.4	3	3	3	3	3	3	3	3	2	3
AM-110.5	3	3	3	3	3	3	3	3	2	3
Average	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2**	**3**

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

Learning Outcomes:

I. Computer Hardware Basics

1. a).To Familiarize with Computer system and hardware connections
    b).To Start and Shut down Computer correctly

    c).To check the software details of the computer

2. To check the hardware present in your computer

II. Windows's operating system

3. To Explore Windows Desktop

4. Working with Files and Folders

5. Windows Accessories: Calculator – Notepad – WordPad – MS Paint

III. Practice with MS-WORD

6. To familiarize with Ribbon layout of MS Word

   Home – Insert- Page layout – References – Review- View.

7. To practice Word Processing Basics

8. To practice Formatting techniques

9. To insert a table of required number of rows and columns

10. To insert Objects, Clipart and Hyperlinks

11. To use Mail Merge feature of MS Word

12. To use Equations and symbols features

IV. Practice with MS-EXCEL
13. To familiarize with MS-EXCEL layout
14. To access and enter data in the cells

15. To edit a spread sheet- Copy, Cut, Paste, and selecting Cells

16. To use built in functions and Formatting Data

17. To create Excel Functions, Filling Cells

18. To enter a Formula for automatic calculations

19. To sort and filter data in table.

20. To present data using Excel Graphs and Charts.

21. To develop lab reports of respective discipline.

22. To format a Worksheet in Excel, Page Setup and Print

V. Practice with MS-POWERPOINT
23. To familiarize with Ribbon layout features of PowerPoint 2007.

156

24. To create a simple PowerPoint Presentation

25. To set up a Master Slide in PowerPoint

26. To insert Text and Objects

27. To insert a Flow Charts

28. To insert a Table

29. To insert a Charts/Graphs

30. To insert video and audio

31. To practice Animating text and objects

32. To Review presentation

VI. Practice with Adobe Photoshop

33. To familiarize with standard toolbox

34. To edit a photograph.

35. To insert Borders around photograph.

36. To change Background of a Photograph.

37. To change colors of Photograph.

38. To prepare a cover page for the book in your subject area.

39. To adjust the brightness and contrast of the picture so that it gives an elegant look.

40. To type a word and apply the shadow emboss effects.

Key competencies:

Expt No	Name of Experiment	Competencies	Key competencies
1 (a).	To familiarize with Computer system and hardware connections	a. Identify the parts of a Computer system: i). CPU ii). Mother Board iii) Monitor iv) CD/DVD Drive v) Power Switch vi) Start Button vii) Reset Button b. Identify and connect various peripherals c. Identify and connect the cables used with computer system d. Identify various ports on CPU and connect Keyboard & Mouse	Connect cables to external hardware and operate the computer
(b).	To Start and Shut down Computer correctly	a. Log in using the password b. Start and shut down the computer c. Use Mouse and Key Board	a. Login and logout as per the standard procedure b. Operate mouse &Key Board
(c).	To Explore Windows Desktop	a. Familiarize with Start Menu, Taskbar, Icons and Shortcuts b. Access application programs using Start menu, Task manager c. Use Help support	a. Access application programs using Start menu b. Use taskbar and Task manager
2.	To check the software details of the computer	a. Find the details of Operating System being used b. Find the details of Service Pack installed	Access the properties of computer and find the details
3.	To check the hardware present in your computer	a. Find the CPU name and clock speed b. Find the details of RAM and Hard disk present c. Access Device manager using Control Panel and check the status of devices like mouse and key board d. Use My Computer to check the details of Hard drives and partitions e. Use the Taskbar	a. Access device manager and find the details b. Type /Navigate the correct path and Select icon related to the details required

158

4.	Working with Files and Folders	a. Create folders and organizing files in different folders b. Use copy / paste move commands to organize files and folders	a. Create files and folders Rename , arrange and search for the required folder/file
	Working with Files and Folders Continued....	c. Arrange icons – name wise, size, type, Modified d. Search a file or folder and find its path e. Create shortcut to files and folders (in other folders) on Desktop f. Familiarize with the use of My Documents g. Familiarize with the use of Recycle Bin	b. Restore deleted files from Recycle bin
5.	To use Windows Accessories: Calculator – Notepad – WordPad – MS Paint	a. Familiarize with the use of Calculator b. Access Calculator using Run command c. Create Text Files using Notepad and WordPad and observe the difference in file size d. Use MS paint and create .jpeg, .bmp files using MS Paint	a. Use windows accessories and select correct text editor based on the situation. b. Use MS pain to create /Edit pictures and save in the required format.
6.	To familiarize with Ribbon layout of MS word. – Home – Insert- page layout- References-Review-View	a. Create/Open a document b. Use Save and Save as features c. Work on two Word documents simultaneously d. Choose correct Paper size and Printing options	a. Create a Document and name appropriately and save b. Set paper size and print options
7.	To practice Word Processing Basics	a. Typing text b. Keyboard usage c. Use mouse (Left click / Right click / Scroll) d. Use Keyboard shortcuts e. Use Find and Replace features in MS- word f. Use Undo and Redo Features g. Use spell check to correct Spellings and Grammar	a. Use key board and mouse to enter/edit text in the document. b. Use shortcuts c. Use spell check/ Grammar features for auto corrections.
8.	To practice Formatting	a. Formatting Text	a. Format Text and

	techniques	b. Formatting Paragraphs c. Setting Tabs d. Formatting Pages e. The Styles of Word f. Insert bullets and numbers g. Themes and Templates h. Insert page numbers, header and footer	paragraphs and use various text styles. b. Use bullets and numbers to create lists c. Use Templates /Themes d. Insert page numbers date, headers and footers
9.	To insert a table of required number of rows and columns	a. Edit the table by adding the fields – Deleting rows and columns –inserting sub table – marking borders. Merging and splitting of cells in a Table b. Changing the background colour of the table c. Use table design tools d. Use auto fit – fixed row/ column height/length – Even distribution of rows / columns features e. Convert Text to table and Table to Text f. Use Sort feature of the Table to arrange data in ascending/descending order	a. Insert table in the word document and edit b. Use sort option for arranging data.
10.	To Insert objects, clipart and Hyperlinks	a. Create a 2-page document. &Insert hyperlinks and t Bookmarks. b. Create an organization chart c. Practice examples like preparing an Examination schedule notice with a hyperlink to Exam schedule table.	a. Insert hyperlinks &Bookmarks b. Create organization charts/flow charts
11.	To Use Mail merge feature of MS Word	a. Use mail merge to prepare individually addressed letters b. Use mail merge to print envelopes.	Use Mail merge feature
12.	To use Equations and symbols features.	a. Explore various symbols available in MS Word b. Insert a symbol in the text c. Insert mathematical equations in the document	Enter Mathematical symbols and Equations in the word document

13.	To Practice with MS-EXCEL	a. Open /create an MS Excel spreadsheet and familiarize with MS Excel 2007 layout like MS office Button- b. Use Quick Access Toolbar- Title Bar- Ribbon-Worksheets-Formula Bar-Status Bar	a. Familiarize with excel layout and use b. Use various features available in toolbar
14.	To access and Enter data in the cells	a. Move Around a Worksheets-Quick access -Select Cells b. Enter Data-Edit a Cell-Wrap Text-Delete a Cell Entry-Save a File-Close Excel	a. Access and select the required cells by various addressing methods b. Enter data and edit
15.	To edit spread sheet Copy, Cut, Paste, and selecting cells	a. Insert and Delete Columns and Rows-Create Borders-Merge and Center b. Add Background Color-Change the Font, Font Size, and Font Color c. Format text with Bold, Italicize, and Underline-Work with Long Text-Change a Column's Width	Format the excel sheet
16.	To use built in functions and Formatting Data	a. Perform Mathematical Calculations verify -AutoSum b. Perform Automatic Calculations-Align Cell Entries	Use built in functions in Excel
17.	To enter a Formula for automatic calculations	a. Enter formula b. Use Cell References in Formulae c. Use Automatic updating function of Excel Formulae d. Use Mathematical Operators in Formulae e. Use Excel Error Message and Help	Enter formula for automatic calculations
18.	To Create Excel Functions, Filling Cells	a. Use Reference Operators b. Work with sum, Sum if , Count and Count If Functions c. Fill Cells Automatically	a. Create Excel sheets involving cross references and equations b. Use the advanced

			functions for conditional calculations
19.	To sort and filter data in table	a. Sort data in multiple columns b. Sort data in a row c. Sort data using Custom order d. Filter data in work sheet	a. Refine the data in a worksheet and keep it organized b. Narrow a worksheet by selecting specific choice
20.	To Practice Excel Graphs and Charts	a. Produce an Excel Pie Chart b. Produce c. Excel Column Chart	a. Use data in Excel sheet to Create technical charts and graphs Produce Excel Line Graph b. Produce a Pictograph in Excel
21.	To develop lab reports of respective discipline	Create Lab reports using MS Word and Excel	a. Insert Practical subject name in Header and page numbers in Footer
22.	To format a Worksheet in Excel, page setup and print	a. Shade alternate rows of data b. Add currency and percentage symbols c. Change height of a row and width of a column d. Change data alignment e. Insert Headers and Footers f. Set Print Options and Print	a. Format Excel sheet b. Insert headers &footers and print
23.	To familiarize with Ribbon layout &features of PowerPoint 2007.	Use various options in PowerPoint a. Home b. Insert c. Design d. Animation e. Slideshow f. View g. Review	Access required options in the tool bar
24.	To create a simple PowerPoint Presentation	a. Insert a New Slide into PowerPoint b. Change the Title of a PowerPoint Slide c. PowerPoint Bullets d. Add an Image to a PowerPoint	a. Create simple PowerPoint presentation with photographs/ClipArt and text boxes b. Use bullets option

		Slide e. Add a Textbox to a PowerPoint slide	
25.	To Set up a Master Slide in PowerPoint and add notes	a. Create a PowerPoint Design Template b. Modify themes c. Switch between Slide master view and Normal view d. Format a Design Template Master Slide e. Add a Title Slide to a Design Template f. The Slide Show Footer in PowerPoint g. Add Notes to a PowerPoint Presentation	a. Setup Master slide and format b. Add notes
26.	To Insert Text and Objects	a. Insert Text and objects b. Set Indents and line spacing c. Insert pictures/ clipart d. Format pictures e. Insert shapes and word art f. Use 3d features g. Arrange objects	Insert Text and Objects Use 3d features
27.	To insert a Flow Chart / Organizational Charts	a. Create a Flow Chart in PowerPoint b. Group and Ungroup Shapes c. Use smart art	Create organizational charts and flow charts using smart art
28.	To insert a Table	a. PowerPoint Tables b. Format the Table Data c. Change Table Background d. Format Series Legend	Insert tables and format
29.	To insert a Charts/Graphs	a. Create 3D Bar Graphs in PowerPoint b. Work with the PowerPoint Datasheet c. Format a PowerPoint Chart Axis d. Format the Bars of a Chart e. Create PowerPoint Pie Charts f. Use Pie Chart Segments g. Create 2D Bar Charts in PowerPoint	Create charts and Bar graphs, Pie Charts and format.

		h. Format the 2D Chart e. Format a Chart Background	
30.	To Insert audio & video, Hyperlinks in a slide Add narration to the slide	a. Insert sounds in the slide and hide the audio symbol b. Adjust the volume in the settings c. Insert video file in the format supported by PowerPoint in a slide d. Use automatic and on click options e. Add narration to the slide f. Insert Hyperlinks	a. Insert Sounds and Video in appropriate format. b. Add narration to the slide c. Use hyperlinks to switch to different slides and files
31.	To Practice Animation effects	a. Apply transitions to slides b. To explore and practice special animation effects like Entrance, Emphasis, Motion Paths &Exit	Add animation effects
32.	Reviewing presentation	a. Checking spelling and grammar b. Previewing presentation c. Set up slide show d. Set up resolution e. Exercise with Rehearse Timings feature in PowerPoint f. Use PowerPoint Pen Tool during slide show g. Saving h. Printing presentation (a) Slides (b) Hand-out	a. Use Spell check and Grammar feature b. Setup slide show c. Add timing to the slides d. Setup automatic slide show

33	To familiarize with standard toolbox	a. Open Adobe Photoshop
		b. Use various tools such as
		  i. The Layer Tool
		  ii. The Color & Swatches Tool
		  iii. Custom Fonts & The Text Tool
		  iv. Brush Tool
		  v. The Select Tool
		  vi. The Move Tool
		  vii. The Zoom Tool
		  viii. The Eraser
		  ix. The Crop Tool
			Open a photograph and save it in Photoshop

		x. The Fill Tool	
34	To edit a photograph	a. Use the Crop tool b. Trim edges c. Change the shape and size of a photo d. Remove the part of photograph including graphics and text	a. Able to edit image by using corresponding tools.
35	To insert Borders around photograph	a. Start with a single background layer b. Bring the background forward c. Enlarge the canvas d. Create a border color e. Send the border color to the back f. Experiment with different colors	Able to create a border or frame around an image to add visual interest to a photo
36	To change Background of a Photograph	a. open the foreground and background image b. Use different selection tools to paint over the image c. Copy background image and paste it on the foreground. d. Resize and/or drag the background image to reposition. e. In the Layers panel, drag the background layer below the foreground image layer.	Able to swap background elements using the Select and Mask tool and layers.
37	To change colors of Photograph	a. Change colors using: i) Color Replacement tool ii) Hue/Saturation adjustment layer tool	Able to control color saturation
38	To prepare a cover page for the book in subject area	a. open a file with height 500 and width 400 for the cover page. b. apply two different colors to work area by dividing it into two parts using Rectangle tool. c. Copy any picture and place it on work area→ resize it using free transform tool. d. Type text and apply color and	Able to prepare cover page for the book

		style	
		e. Apply effects using blended options	
39	To adjust the brightness and contrast of picture to give an elegant look	a. open a file. b. Go to image→ adjustments→ Brightness/Contrast. c. adjust the brightness and contrast. d. save the image.	Able to control brightness/contrast.
40	To type a word and apply the shadow emboss effects	a. open a file b. Select the text tool and type text. c. Select the typed text go to layer→ layer style→ blended option→ drop shadow, inner shadow, bevel and emboss→ contour→ satin→ gradient overlay d. Save the image.	Able to apply shadow emboss effects

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1 to 8
Unit test-2	From 9 to 22
Unit test-3	From 23 to 40

I Year Internal Lab Examination

UNIT TEST - I
MODEL QUESTION PAPER
COMPUTER FUNDAMENTALS LAB

SCHEME: C-20   **SUBJ CODE: AM-110**
MAX MARKS:40   **Time:90Min**

1. Identify the internal hardware components of a PC and assemble them.
2. Identify the external components or peripherals of a PC and connect them.

3. Identify the components on motherboard.

4. Perform the process of placing processor on CPU slot.

5. Perform the process of removing and placing the RAM in the corresponding slot.

6. Identify the CMOS battery and test whether it is working it or not.

7. Find details of following:

   a) Operating System being used.

   b) Processor name

   c) RAM

   d) Hard disk

8.Create a folder by your name, search a file or folder and find its path.

9. Draw the National Flag using MS Paint.

10. Create a word document that contains TEN names of your classmates (boys-5 & girls-5) and perform the

   following tasks:

   a) Save the document to your desktop.

   b) Sort the names in each list alphabetically.

   c) Set line spacing to 1.15.

   d) Use bullet points for the names in both lists separately.

I Year Internal Lab Examination

UNIT TEST - II
MODEL QUESTION PAPER
COMPUTER FUNDAMENTALS LAB

SCHEME: C-20   **SUBJ   CODE:AM-110 MAX**
MARKS:40   **Time:90Min**

1. Write individually addressed letters to your friends about the Republic Day celebration
   using Mail Merge.
2. Create a Word document about your college and insert page numbers in footer and College Name in header.

3. Create your class time table using Tables in MS Word.

4. Create a 2-page document about your College& insert hyperlinks for courses offered in the college and insert Bookmarks next to College Name.

5. Write individually addressed letters to your friends (at least 5 members) to intimate the External Examination time table using Mail Merge.

6. Write an equation $\frac{(x+y)^2}{(x-y)^2} = \frac{x^2+2xy+y^2}{x^2-2xy+y^2}$ in MS word.

7. Create the organizational structure of your college in MS Word.

8. Create a spreadsheet by totaling marks of 3 or more subjects, then calculate percentage and hence find grade based on boundary conditions of FIVE students:

   Grades O >= 90%, A >=80%, B >=70%, C >=60%, D >=50%, E >=40%, F <40%

9. Create a Excel spreadsheet for the following data, making sure that the cell marked with Category (A1) is pasted in cell A1 in the spreadsheet and perform the questions below.

Category (A1)	Product Name	Quantity	Inventory	Price per Unit	Total Price
Office Supplies	Binder	2	20	12.99	25.98
Office Supplies	Pencil	20	20	0.99	
Electronics	Samsung 4K Smart TV	1	5	399.00	
Electronics	Bluetooth Speakers	4	5	44.49	
Computers	Lenovo X230 12in Laptop	2	2	279.90	

   a). Change the format of the "Total Price" column to "Currency" format.

   b) Calculate Total Price by writing formula.

   c) Turn on filtering for the table.

   d) Sort the table by column "Category" from A to Z.

10. Create a spreadsheet to calculate Cumulative monthly attendance for a period of Three months.

I Year Internal Lab Examination

UNIT TEST - III
MODEL QUESTION PAPER
COMPUTER FUNDAMENTALS LAB

SCHEME: C-20   **SUBJ CODE: AM-110**

1. Create a PowerPoint Presentation about your College in 5 slides only.

2. Create a PowerPoint Presentation on Computer Hardware in minimum 5 slides.

3. Create a PowerPoint Presentation on Computer Fundamentals with *Entrance, Emphasis* effects in minimum 5 slides.

4. Create a PowerPoint Presentation on any topic with special animation effects like *Entrance, Motion Paths &Exit.*

5. Resize the image using photoshop.

6. Change the background of a Photograph.

7. Edit an image by using

   a) Crop tool.

   b) Resize the image

   c) Save the new image with new name keeping original image as it is.

8. A Picture of two parrots (parrots.jpg) is given to you. Make anyone of one of the parrots in Black & White.

9. Convert a color image to monochrome and improve quality of photograph.

10. Copy three pictures and fit into the empty frames.
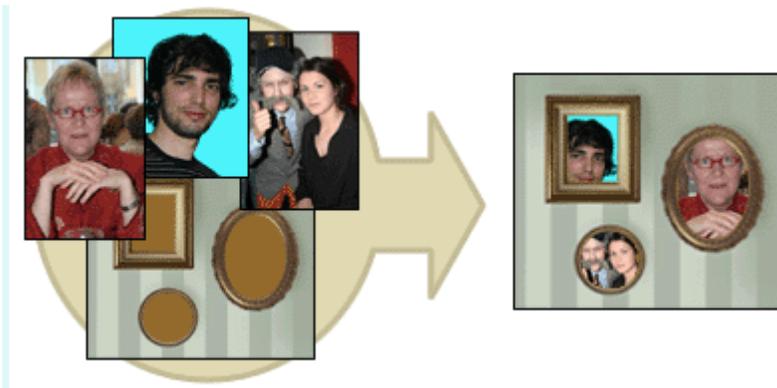
BOARD DIPLOMA EXAMINATIONS
DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PRACTICAL QUESTION PAPER-YEAR END EXAM
COMPUTER FUNDAMENTALS LAB

SCHEME: C-20   **SUBJ CODE:AM-110**
 MAX MARKS:60   **TIME: 3HOURS**

1.   Identify the internal hardware components of a PC and assemble them.
2.   Identify the external components or peripherals of a PC and connect them.
3.   Write the procedure to create the files and folders
4.   Write the procedure to access Calculator, Paint and Notepad application
5.   Write the procedure to perform the following in MS Word
        (a)   Change the Font Size
        (b)   Change the Font Style
        (c)   Change the Text Size
6.   Write the procedure to perform the following in MS Word
         (a)Change the Font Color.
         (b)Use Various Text Alignment Options.
         (c)Format text in Bold, Italicand Underline.
7.   Create the hierarchy of your family in MS Word.
8.   Write the procedure to perform the following in MS Word:
        (a)   Insert a Table
        (b)   Add a Row
        (c)   Add a column
        (d)   Delete a Row
        (e)   Delete a column
9.   Write the procedure to use Equation$\frac{(x+y)^2}{(x-y)^2} = \frac{x^2+2xy+y^2}{x^2-2xy+y^2}$ and Symbols.

10.   Write the procedure to perform the following in MS Excel
        (a)   To Modify Column Width
        (b)   To Modify Row Height
        (c)   Format text in Bold, Italic, and Underline.
11.   Write the procedure to create charts and Graphs in MS Excel
12.   Write the procedure to create simple Power Point Presentation on your college in Three slides.
13.   Write the procedure to perform Animation on Text and Objects in your presentation.
14.   Take a photographic image. Give a title for the image. Put the border. Write your names. Write the
        Name of Institution and Place.
15.   Prepare a cover page for the book in your subject area. Plan your own design.
16.   You are given a picture of a flower and associated background (Extract.jpg).Extract the Flower only
        from that and organize it on a background. Select your own background for organization.
17.   You are given a picture (BrightnessContrast.jpg). Adjust thebrightness and contrast of the picture so
        that it gives an elegant look.
18.   You are given a picture (position.jpg). Position the picture preferablyon a plain background of a color
        of your choice - Positioning includerotation and scaling.
19.   Remove the arrows and text from the given photographic image (Filename: photo.jpg).
20.   Type a word; apply the following effects. Shadow Emboss.

THIRD SEMESTER

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION

CURRICULUM-2020 (III Semester)

Sub Code	Name of the Subject	Instruction Periods/Week		Total Periods Per Semester	Scheme Of Examinations			
		Theory	Practicals		Duration (hrs)	Sessional Marks	End Exam Marks	Total Marks
THEORY SUBJECTS								
AM-301	Mathematics –II	4		60	3	20	80	100
AM-302	Multimedia	5	-	75	3	20	80	100
AM-303	Elements of Film Technology	5	-	75	3	20	80	100
AM-304	2D Digital Animation	5	-	90	3	20	80	100
AM-305	Digital Photography	5	-	90	3	20	80	100
PRACTICAL SUBJECTS								
AM-306	Multimedia Lab	-	3	45	3	40	60	100
AM-307	2D Digital Animation Lab	-	3	45	3	40	60	100
AM-308	Digital Photography Lab	-	3	45	3	40	60	100
AM-309	2D Graphics Lab		3	45	3	40	60	100
AM-310	Mini Project		6	90	3	40	60	100
	Total	24	18	630		300	700	1000

AM-301 Common with all branches

AM-303, 304,307,309,310 Common with DAG branch

AM-305 Common with AG-402

AM-308 Lab is common with AG-407

Engineering Mathematics – II

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-301	**ENGINEERING MATHEMATICS – II**	4	60	20	80

PO- CO – Mapping strength

PO no	Mapped with CO no	CO periods addressing PO in column I		Level (1,2 or 3)	Remarks
		Number	**%**		
1	CO1, CO2, CO3	60	100%	3	>40% Level 3 Highly addressed
2	CO1, CO2, CO3	60	100%	3	
3	CO1, CO2, CO3	60	100%	3	
4	CO2, CO3	38	63.3%	3	25% to 40% Level 2 Moderately addressed
5					
6					
7					
PSO 1	CO1, CO2, CO3	60	100%	3	5% to 25% Level 1 Low addressed
PSO 2	CO1, CO2, CO3	40	66.6%	3	
PSO 3	CO1, CO2, CO3	48	75%	3	<5% Not addressed

COURSE CONTENTS

Unit-I

Indefinite Integration .

1. Integration regarded as anti-derivative – Indefinite integrals of standard functions. Properties of indefinite integrals. Integration by substitution or change of variable. Integrals of tan x, cot x, sec x, cosec x. Integrals of the form $\int \sin^m x . \cos^n x \, dx$, where at least one of m and n is odd positive integers. Integrals of suitable powers of tanx. secx and cosecx.cotx by substitution.

Evaluation of integrals which are reducible to the following forms:

$$i) \frac{1}{a^2 + x^2}, \frac{1}{a^2 - x^2}, \frac{1}{x^2 - a^2}$$
$$ii) \frac{1}{\sqrt{a^2 + x^2}}, \frac{1}{\sqrt{a^2 - x^2}}, \frac{1}{\sqrt{x^2 - a^2}}$$
$$iii) \sqrt{x^2 - a^2}, \sqrt{x^2 + a^2}, \sqrt{a^2 - x^2}$$

Integration by decomposition of the integrand into simple rational, algebraic functions.

Integration by parts, Bernoulli's rule and integrals of the form $\int e^x [f(x) + f'(x)] \, dx$.

Unit-II

Definite Integral and its applications:

2. Definite integral-fundamental theorem of integral calculus, properties of definite integrals, evaluation of simple definite integrals. Definite integral as the limit of a sum. Area under plane curves – Area enclosed between two curves. Mean and RMS values of a function on a given interval Volumes of solids of revolution. Trapezoidal rule, Simpson's 1/3 rule to evaluate an approximate value of a define integral.

Unit -III

Differential Equations:

3. Definition of a differential equation-order and degree of a differential equation- formation of differential equations-solutions of differential equations of first order and first degree using methods, variables separable, homogeneous, exact, linear differential equation, Bernoulli's equation.

Textbook:

Engineering Mathematics-II, a textbook for third semester diploma courses, prepared & prescribed by SBTET, AP.

Reference Books:

1. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers.

2. Schaum's Outlines Differential Equations, Richard Bronson & Gabriel B. Costa

3. M.Vygodsky, Mathematical Handbook: Higher Mathematics, Mir Publishers, Moscow.

BLUE PRINT

S. No	Chapter/ Unit title	No of Periods	Weightage allotted	Marks wise distribution of weightage				Question wise distribution of weightage				COs mapped
				R	U	Ap	An	R	U	Ap	An	
1	Unit – I: Indefinite Integration	22	28	11	11	06	0	2	2	2	0	CO1
2	Unit – II: Definite Integration and its applications	24	33	11	03	11	08	2	1	2	1	CO2
3	Unit – III: Differential Equations of first order	14	19	03	03	03	10	1	1	1	1	CO3
	Total	60	80	25	17	20	18	5	4	5	2	

R: Remembering Type   : 25 Marks

U: understanding Type   : 17 Marks

Ap: Application Type   : 20 Marks

An: Analysing Type   : 18 Marks

C-20

Engineering Mathematics – II

Unit Test Syllabus

Unit Test	Syllabus
Unit Test-I	From L.O 1.1 to L.O 2.5
Unit Test-II	FromL.O 2.6 to L.O 3.9

UNIT TEST MODEL PAPERS

Unit Test I   **C –20, AM-301**

State Board of Technical Education and Training, A. P

First Year

Subject name: **Engineering Mathematics-II**
Sub Code: **AM-301**

Time : 90 minutes   Max.marks:40

Part-A   **16Marks**

Instructions: **(1) Answer all questions.**

(2) First question carries four marks and the remaining questions carry three marks each

1.   Answer the following.

   a.   Evaluate $\int x^8 dx$ (CO1)

   b.   Evaluate $\int \dfrac{1}{\sqrt{4-x^2}} dx.$ (CO1)

   c. $\int e^x \left(f(x) + f^{'}(x) \right) dx = e^x f(x) + c$ is true/false   (CO1)

   d.   Evaluate $\int_{0}^{\frac{\pi}{2}} \cos x dx$ (CO2)

2.   Evaluate $\int \left(3\cos ec^2 x - 2\tan x \sec x + \dfrac{1}{x} \right) dx.$ (CO1)

3.   Evaluate $\int \dfrac{\sin\left(\log x \right)}{x} dx.$ (CO1)

4. Evaluate $\int e^x \sin 2x dx.$ (CO1)

5. Evaluate $\int\limits_0^{\frac{\pi}{2}} \sin^2 x dx$ (CO2)

Part-B   3×8=24

Instructions: **(1) Answer all questions.**

(2) Each question carries eight marks

(3) Answer should be comprehensive and the criterion for valuation

is the content but not the length of the answer.

6. A) Evaluate $\int \dfrac{1}{5+4\cos x} dx.$ (CO1)

                    or

    B) Evaluate $\int \sin^4 x \cos^3 x dx.$ (CO1)

7. A) Evaluate $\int \cos^{-1}\left(\dfrac{1-x^2}{1+x^2}\right) dx.$ (CO1)

                    or

    B) Evaluate $\int x^4 e^{2x} dx.$ (CO1)

8. A) Evaluate $\int\limits_0^{\frac{\pi}{2}} \cos 4x \cos x dx$

                                                         (CO2)

                    or

    B) Evaluate $\int\limits_0^{\frac{\pi}{2}} \dfrac{\sin^{10} x}{\sin^{10} x + \cos^{10} x} dx$ (CO2)

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178

State Board of Technical Education and Training, A. P

First Year

Subject name: **Engineering Mathematics-II**
Sub Code: **AM-301**

Time : 90 minutes   **Max.marks:40**

_____

Part-A   **16Marks**

Instructions: **(1) Answer all questions.**

                    (2) First question carries four marks and the remaining questions carry three marks each

1.   Answer the following.

    a.   Volume of the curve $y = f(x)$ over the interval $[a,b]$ when rotated about X-axis is
          _____   (CO2)

    b.   Mean value of $f(x)$ over the interval $[a,b]$ is_____   (CO2)

    c.   Order of differential equation $\dfrac{d^2 y}{dx^2} + p^2 y = 0$ is_____   (CO3)

d. Integrating factor of $\dfrac{dy}{dx} + Py = Q$ is_____ (CO3)

2. Find the mean value of $x^2 + 2x + 1$ over the interval $[1,2]$ (CO2)

3. Find the area enclosed by curve $x^2 = 4y$ between the lines $x = 2$ and $x = 4$ (CO2)

4. Form the differential equation by eliminating the arbitrary constants from $y = A\cos 2x + B\sin 2x$. (CO3)

5. Solve $\dfrac{dy}{dx} = \sqrt{\dfrac{1-y^2}{1-x^2}}$. (CO3)

Part-B   3×8=24

Instructions: **(1) Answer all questions.**

                  (2) Each question carries eight marks

                  (3) Answer should be comprehensive and the criterion for valuation

                  is the content but not the length of the answer.

6. A) Find the area bounded between the curve $y = x^2 - 5x$ and the line $y = 4 - 2x$ (CO2)

            Or

     B) Find the R.M.S value of $\sqrt{\log x}$ between the lines $x = e$ to $x = e^2$ (CO2)

7. A) Find the volume of the solid obtained by revolving the ellipse $\dfrac{x^2}{16} + \dfrac{y^2}{25} = 1$ about x axis (CO2)

            or

     B) Calculate the approximate value of $\displaystyle\int_0^6 \dfrac{1}{1+x}\,dx$ by taking $n = 6$ using Trapezoidal rule (CO3)

8. A) Solve $\left(y^2 - 2xy\right)dx + \left(2xy + x^2\right)dy = 0$. (CO3)

            or

     B) Solve $x\dfrac{dy}{dx} + \dfrac{y}{x} = x^3 y^6$. (CO3)

END EXAM MODEL PAPERS

STATE BOARD OF TECHNICAL EDUCATION, A.P

ENGINEERING MATHEMATICS AM- 301

TIME : 3 HOURS   **MODEL PAPER- I**   **MAX.MARKS : 80M**

PART-A

Answer All questions. Each question carries THREE marks.   **10x3=30M**

1. Evaluate $\int \left(2\sin x - 3e^x + \dfrac{4}{1+x^2} \right) dx.$ **CO 1**

2. Evaluate $\int e^x \sin e^x dx.$ **CO 1**

3. Evaluate $\int \sin 3x \cos 2x dx.$ **CO 1**

4. Evaluate $\int xe^x dx.$ **CO1**

5. Evaluate $\int\limits_{0}^{1} \dfrac{1}{1+x^2} dx.$ **CO 2**

6. Find the mean value of $y = x^2$ from $x = 0$ to $x = 1$ **CO 2**

7. Find the area of the region bounded by the curve $y = \sin x$ from $x = 0$ to $x = \pi$

   CO 2

8. Find the order and degree of the differential equation $\left(\dfrac{d^3 y}{dx^3} \right)^2 - 3\left(\dfrac{dy}{dx} \right)^2 - x^2 = 1$

   CO3

9. Solve $\dfrac{dy}{dx} = \dfrac{1+y^2}{1+x^2}$ **CO3**

10. Solve $(x^2 + y)dx + (y^2 + x)dy = 0$. **CO3**

Answer All questions. Each question carries EIGHT marks.   **5x8=40M**

11. A) Evaluate $\int \dfrac{3x+1}{(x-1)(x+3)}\,dx$. **CO1**

          Or

    B) Evaluate $\int \dfrac{1}{5+4\cos x}\,dx$. **CO1**

12. A) Evaluate $\int x \sin 3x \cos x\,dx$. **CO1**

Or

    B) Evaluate $\int x^3 \cos x\,dx$. **CO1**

13. A) Evaluate $\int_{0}^{1} \dfrac{x^3}{1+x^8}\,dx$. **CO2**

        Or

    B) Evaluate $\int_{0}^{\frac{\pi}{2}} \dfrac{1}{1+\tan^3 x}\,dx$. **CO2**

14. A) Find the area of the region bounded by the curves $y^2 = 4x$ **and** $x^2 = 4y$.   **CO2**

Or

B) Find the R.M.S values of $\sqrt{27-4x^2}$ from $x=0$ to $x=3$ **CO2**

15. A) Find the volume of the solid generated by revolution of the ellipse $\dfrac{x^2}{16}+\dfrac{y^2}{25}=1$

about X-axis **CO2**

Or

B) Calculate the approximate value of $\displaystyle\int_{1}^{11} x^3 dx$ by using Simpson's $1/3^{\text{rd}}$ rule by

dividing the range into 10 equal parts. **CO2**

PART-C

Answer the following question. Question carries TEN marks. **1x10=10M**

16. Solve $2\sin x \dfrac{dy}{dx} - y\cos x = xy^3 e^x$. **CO3**

STATE BOARD OF TECHNICAL EDUCATION, A.P

ENGINEERING MATHEMATICS AM-301

TIME : 3 HOURS   **MODEL PAPER-II**   **MAX.MARKS : 80M**

PART-A

Answer All questions. Each question carries THREE marks.   **10x3=30M**

1. Evaluate $\int \left(3e^x - 2\cos x + \dfrac{3}{x} \right) dx.$ **CO 1**

2. Evaluate $\int \cos^2 2x\, dx.$ **CO 1**

3. Evaluate $\int \dfrac{\tan^{-1} x}{1+x^2} dx.$ **CO 1**

4. Evaluate $\int x \cos x\, dx.$ **CO1**

5. Evaluate $\int_0^2 \dfrac{1}{\sqrt{4-x^2}} dx.$ **CO2**

6. Find the mean value of $i = a\sin t$ over the complete wave. **CO2**

7. Find the volume generated by revolving the circle $x^2 + y^2 = 9$ from $x = 0$ to $x = 2$ about x-axis

    CO2

8. Obtain the differential equation by eliminating the arbitrary constants A and B

    from the curve $y = Ae^x + Be^{-x}$ **CO3**

9. Solve $\dfrac{dy}{dx} = e^{2x+y}$ **CO3**

10. Solve $\dfrac{dy}{dx} + \dfrac{y}{x} = x$ **CO3**

PART-B

Answer All questions. Each question carries EIGHT marks. 5x8=40M

11. A) Evaluate $\int \dfrac{1}{2x^2 + 3x + 5} dx$. **CO1**

Or

   B) Evaluate $\int \sin^3 x \cos^5 x dx$. **CO1**

12. A) Evaluate $\int e^x \left(\dfrac{2 + \sin 2x}{1 + \cos 2x} \right) dx$. **CO1**

Or

   B) Evaluate $\int e^{2x} x^4 dx$.   **CO1**

13. A) Evaluate $\int_0^1 \dfrac{\sec^2 x}{(1 + \tan x)^2} dx$. **CO2**

Or

   B) Evaluate $\int_0^{\frac{\pi}{2}} \log(1 + \tan\theta) d\theta$. **CO2**

14. A) Find the area bounded between the curves $y = x^2$ and the line $y = 3x + 4$.   **CO3**

Or

   B) Find the R.M.S value of $\sqrt{\log x}$ between the lines $x = e$ to $x = e^2$ **CO2**

15. A) Find the volume of right circular cone using integration. **CO2**

Or

B) Find the approximate value of π from $\int_0^1 \frac{1}{1+x^2} dx$ using Trapezoidal rule by dividing $[0,1]$

into 5 equal sub-intervals. **CO2**

PART-C

Answer the following question. Question carries TEN marks. **1x10=10M**

16. Solve $xy^2 dy - \left(x^3 + y^3\right) dx = 0$ **CO3**

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-302	Multimedia	5	75	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	Introduction to Multimedia	10	CO1
2.	Representation of Multimedia Objects	25	CO1,CO2
3.	Multimedia Editing and Compression technology	15	CO1,CO2,CO3
4.	Multimedia Application Design	10	CO1,CO2,CO3,CO4,CO5
5.	Multimedia Authoring and Publishing	15	CO1,CO2,CO3,CO4,CO5
	Total Periods	75	

Course Objectives	• Describe the components and features of Multimedia • Explain Multimedia file formats • Apply editing and compression techniques in multimedia application development • Analyse various design concepts in Multimedia application • Apply various Multimedia authoring and publishing tools

CO NO		COURSE OUTCOMES
CO1	**AM**-302.1	Explain components , features and requirements of Multimedia
CO2	**AM**-302.2	Explain different Multimedia file formats
CO3	**AM**-302.3	Applyimage editing and compression techniques
CO4	**AM**-302.4	Explain Multimedia application design concepts
CO5	**AM**-302.5	ApplyingMultimedia authoring and publishing tools

CO-PO/PSO Matrix:

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-302.1	3							3	1	1
AM-302.2	1	2	2	1		3		1	3	1
AM-302.3	3	1		1		1	1	3	1	1
AM-302.4	3		2	2	1		1	2	1	2
AM-302.5	3		2		1	1	1	2	1	2
Average	2.7	1.5	2	1.25	1.3	1.7	1.25	2.2	1.3	1.3

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

Learning Outcomes:
5.0 Introduction to Multimedia
    5.1. Define multimedia
    5.2. List the multimedia Objects.
    5.3. Define Hypertext and Hypermediaa
    5.4. List the applications of multimedia
    5.5. List the components of a Multimedia System
    5.6. State the Desirable features for a multimedia system.
    5.7. List the requirements of multimedia communication
6.0 Multimedia Objects.
    6.1.   Representation of Analog Signals
          2.1.1 Describe Analog to digital(A/D) Sampling
          2.1.2 Describe Analog to digital(A/D) quantization
    2.2   Text object
          2.2.1 Describe the measurement of font type
          2.2.2 Recognize the importance of word choice
          2.2.3 Describe the difference between a typeface and a font
          2.2.4 List at least three attributes of a font, for example, upper/lowercase, serif/sans serif, PostScript/TrueType/OpenType
          2.2.5 Discuss the importance of text and ways text can be leveraged in multimedia presentations
    2.3 Graphics object
          2.3.1 Explain Raster and Vector representations
          2.3.2 Describe aliasing problems
    2.4 Image object
          2.4.1 Define bitdepth
          2.4.2 Describe the resolution of an image
          2.4.3 Describe the use of colors (RGB, CMYK, HSB) in multimedia
          2.4.4 Explain popular image file formats BMP ,GIF,TIFF ,PNG , JPEG.
    2.5 Audio object
          2.5.1 Describe the difference between speech and wideband audio
          2.5.2 Define the terms sampling rate and aliasing
          2.5.3 State the importance of Quantisation
          2.5.4   Explain popular audio file formats MP3, WMA, WAV, MIDI.
    2.6 Video object
          2.6.1 Discuss the importance of frame rate and resolution

2.6.2 Compare interlaced and non-interlaced video

2.6.3 Explain colour planes (YCBCR, YUV).

2.6.4 Explain popular video broadcast standards PAL, NTSC, SECAM

2.6.5 Explain HD Video

2.6.6 State the importance of 3D TV

2.6.7 Explain video representation formats-AVI ,MPEG ,QuickTime ,real video(.rm).

7.0 Multimedia Editing and Compression Technology

3.1 Multimedia Editing

3.1.1　List and explain the software tools of Digital Audio

3.1.2　List and explain the software tools of Music Sequencing and Notation

3.1.3　List and explain the software tools of Image/Graphics Editing.

3.1.4　List and Explain the software tools of Video Editing(Linear,Non-Linear)

3.1.5　State the importance of Subtitling.

3.2 **Compression Technology**

3.2.1　Concept of lossy and lossless compression

3.2.1.1 Basics of information theory

3.2.1.2 Describe the difference between Run-length coding and Variable·length coding

3.2.1.3 Define distortion measure

3.2.1.4 Compare lossy and lossless compression

3.2.2　Illustrate the Rate-distortion theory

3.2.3　Basics of image compression

3.2.3.1 Define JPEG Standard

3.2.3.2 List the main Steps in JPEG Image Compression

3.2.3.3 List the various modes supported by JPEG standard

3.2.3.4 List the main Steps of JPEG2000 Image Compression(The EBCOT algorithm)

3.2.4　 Basics of audio compression

3.2.4.1 Describe the process of MP3 audio compression.

3.2.4.2 Describe the process of MP4 audio compression.

3.2.5　Basics of video compression

3.2.5.1 Describe the process of MPEG video compression.

3.2.5.2 Describe the process of H.264 video compression.

4. Multimedia Application Design

4.1 List and explain various ways for Content design effectively.

4.2 Explain the various issues in technical design

4.3 Explain various ways for effective visual design

4.4 Explain design metaphors with suitable examples

5. Multimedia Authoring and Publishing

5.1　Define Authoring System

5.2　List the uses of an Authoring System

5.3　DefineAuthoring Metaphor

5.4　Describe the functioning of Authoring Metaphor

5.5　List the different Metaphors

5.6　Explain Offline Publishing by using Flash with an example.

5.7　Explain Offline Publishing by using PowerPoint with an example.

5.8　Explain Online Publishingby usingHTML5 with an example.

5.9　Explain Online Publishingby usingDreamweaver with an example.

COURSE CONTENT

6. **Introduction to Multimedia**: Definition of Multimedia- Multimedia Objects-. Definition of Hypertext and Hypermedia- Applications- Components of a Multimedia System- Desirable features for a multimedia system- requirements of multimedia communication.

7. **Representation of Multimedia Objects:** Representation of **Analog Signals- A/D:**Sampling and quantization, Text:Font and their representation(bimap, truetype), **Graphics:**Raster and Vector representation, aliasing problems, **Image:** (bitdepth, resolution, color(RGB, CMYK, HSB), introduction to BMP, GIF, TIFF, PNG and JPEG Formats),**Audio:(**speech and wideband audio, sampling rate and aliasing, quantisation, introduction to MP3, WMA, WAV, MIDI etc. **Video:**(framerate and resolution, interlaced and non-interlace dvideo, colour planes(YCBCR, YUV), Video broadcast standards(PAL, ntsc, secam), HDVideo, 3D TV, Video representation-AVI, MPEG, QuickTime, real video(.rm).

8. **Multimedia Editing**:DigitalAudio-Music,Sequencing and Notation, Image/Graphics Editing-Video Editing(Linear,Non-Linear), Subtitling
Introduction   to   Compression Technology:Conceptoflossyandlosslesscompression,Conceptofrate   – distortioncharacteristics,Basicsofimagecompression,Basicsofaudiocompressionand Basicsofvideocompression.

9. **Multimedia Application Design:**Content design, technical design, visual design, design metaphors, example studies, and interactivity.

10. **Multimedia   Authoring   and   Publishing:** DefinitionofanAuthoringSystem,usesofanauthoringsystem,DefinitionandfunctioningofAuthoring Metaphor,DifferentMetaphorsOffline   Publishing-Flash,PowerPoint,   Online   Publishing-HTML5,Dreamweaver.

REFERENCE BOOKS

1. An Introduction to Multimedia Authoring, A. Eliens
2. Fundamentals of Multimedia, Prentice Hall/Pearson, Ze-Nion-Li & Mark S.Drew
3. Multimedia and Animation, V.K. Jain, Khanna Publishing House, Edition 2018
4. Fundamentals of Multimedia, Ramesh Bangia, Khanna Book Publishing Co., N. Delhi (2007)

Model Blue Print:

S.No.	Chapter/Unit title	No.of periods	Weightage Allocated	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	Introduction to Multimedia	10	6	3	3			1	1			CO1
2	Representation of Multimedia Objects	25	25	3	6	16	10	1	2	2	*	CO1,CO2

3	Multimedia Editing and Compression technology	15	14	3	11		10	1	2		*	CO1,CO2, CO3
4	Multimedia Application Design	10	11		3	8	10		1	1	*	CO1,CO2, CO3,CO4
5	Multimedia Authoring and Publishing	15	14	3	3	8	10	1	1	1	*	CO1,CO2, CO3,CO4, CO5
	Total	**75**	**70 + 10(*)**	**12**	**26**	**32**	***10**	**4**	**7**	**4**	**1**	

Note: Part-C: 10 marks single analytical question may be chosen from any or combination of starred chapters

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 2.6
Unit test-2	From 3.1 to 5.9

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER
MULTIMEDIA
UNIT TEST-1
SCHEME:C-20 :: SUB CODE:AM-302

MAX MARKS:40   **TIME: 90Minutes**
<div align="center">PART-A   16Marks</div>

Instructions: 1) Answer all questions
            2) First question carries 4marks, and each question of remaining carries
               3marks.

1.a) Hypertext and hypermedia both are same(True/False)   (CO1)

  b) _____ refers to the color information stored in an image   (CO2)

  c)_____ refers to how many pixels are displayed per inch of an image.   (CO2)

  d)Which one of the following is audio file format [   ]   (CO2)

      i)BMP ii),GIF,iii)MIDI iv) JPEG

2) State the desirable features for a multimedia system.   (CO1)
3)List at least four attributes of a font.   (CO2)
4) List the popular video broadcast standards   (CO2)
5) List the multimedia Objects.   (CO1)

<div align="center">PART-B   3X8=24Marks</div>
Instructions:1) Answer all questions
              2) Each question carries 8 Marks
              3) Answer should be comprehensive and the criterion for valuation is the
                 content but not the length of the answer.

6. a)Explain the applications of multimedia   (CO1)
<div align="center">Or</div>
  b)Describe the measurement of font type   (CO2)

7. a) Describe the use of colors (RGB, CMYK, HSB) in multimedia   (CO2)
<div align="center">Or</div>
b) Explain popular audio file formats MP3, WMA, WAV, MIDI.   (CO2)
8. a) Explain popular video broadcast standards PAL, NTSC, SECAM   (CO2)
<div align="center">Or</div>
  b) ExplainAnalog to digital(A/D) Sampling and quantization   (CO2)

BOARD DIPLOMA EXAMINATIONS
DIPLOMA IN ARTIFICIAL INTELLIGENCE ENGINEERING
MODEL PAPER – YEAR END EXAMINATION
MULTIMEDIA

SCHEME: C-20   **SUBJECT CODE:AI-302**
MAX MARKS:80   **TIME: 3HOURS**
....
PART-A
Note: Answer all questions. Each question carries 3 marks   10 X 3=30M

6.	Define the terms a) multimedia b) hypermedia c) hypertext	CO1
7.	List any three popular image file formats.	CO2
8.	Differentiate between typeface and font	CO2
9.	List any three popular audio file formats.	CO2
10.	List and explain the software tools of Image/Graphics Editing	CO3
11.	List the main Steps in JPEG Image Compression	CO3
12.	Differentiate between Run-length coding and Variable·length coding	CO3
13.	List and explain various ways for Content design effectively.	CO4
14.	List the different Metaphors	CO5
15.	State the importance of an Authoring System	CO5

PART-B
Note: 1. Answer all the question and making use of internal choice.
       2. Each question carries 8 marks   5 X 8=40M

11(a). Explain the applications of multimedia   8   CO1
                           OR
    11(b). Differentiate between Hypertext and Hypermedia8   CO1

   12(a). Explain Raster and Vector representationsof Graphics   8   CO2
                           OR
12(b). Explain popular video broadcast standards PAL, NTSC, SECAM   8   CO2

   13(a). explain the software tools of Music Sequencing and Notation   8   CO3
                       OR
   13(b).   Describe the process of MPEG video compression.   8   CO3

   14(a). Explain various ways for Content design effectively.   8   CO4
                       OR
   14(b). Explain design metaphors with suitable examples   8   CO4

15(a). Explain Offline Publishing by using Flash with an example.   8   CO5
                       OR
15(b). Explain Online Publishingby usingDreamweaver with an example.   8   CO5

PART-C   **1 X10=10M**

16. Write the steps to cut an unnecessary bit of a video by using Adobe Premiere Pro software   10M   CO3

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-303	Elements of Film Technology	5	75	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	VISUAL COMMUNICATION	15	CO1
2.	PRE SHOOTING	15	CO2
3.	PRODUCTION DESGIN	15	CO3
4.	SHOOTING	15	CO4
5.	POSTO SHOOTING	15	CO5
	Total Periods	75	

Course Objectives	• Understand the film history , • Apply Script writing techniques and story writing techniques • Able to make documentary films and short films • Able To Handle Production Unit • Expert in handling cameras & techniques and to play role of director.

CO NO		COURSE OUTCOMES
CO1	AM-303.1	Use various types of visual communication techniques and methods.
CO2	AM-303.2	Describe pre-shooting activities
CO3	AM-303.3	Apply the production design methodologies
CO4	AM-303.4	Apply the activities of shooting process
CO5	AM-303.5	Apply Post shooting activities.

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-303.1	1	2	2	1	2	1	2	1	2	2
AM-303.2	2	2	2	2	3	3	2	2	3	2
AM-303.3	2	3	3	3	3	2	2	2	3	3
AM-303.4	2	3	3	3	3	2	3	1	3	3
AM-303.5	2	3	3	3	3	3	3	2	3	3
Average	1.8	2.6	2.6	2.4	2.8	2.2	2.4	1.6	2.8	2.6

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

Learning Outcomes:
1. **VISUAL COMMUNICATION**
   a. Define communication.
   b. State the importance of human and visual communication.
   c. Explain basics of communication.
   d. List functions of communication.
   e. Explain functions of communication.
   f. List types of Communication.
   g. Explain types of Communication.
   h. Define the term visual communication.
   i. Describe verbal communication.
   j. Explain nonverbal communication.
   k. Explain inter personal relationships.
   l. What is mass communication.
   m. Describe mass communication.
   n. State the importance of Group communication.
   o. Explain group communication.
   p. Explain visual communications.
   q. List visual vocabulary.
   r. Explain visual vocabulary.
2. **Pre Shooting.**
   a. Define script
   b. List the characters of a good script.
   c. List and explain the elements of a script.
   d. Write a sample script.
   e. What is script analysis.
   f. Explain the process of script analysis.
   g. Classify the genre of the film.
   h. Explain various genre of film.
   i. Explain social or fantasy genre of film.
   j. Explain the process of genering

k.   Explain the process of assessing the characters based on profession and backgrounds.

l.   Explain the process of assessing the characters based on jeweler.

m.   Explain the process of assessing the characters based on costumes.

n.   Explain the process of assessing the characters based on transportation system.

o.   Explain the history (research) of assessing characters based on profession and background.

p.   Explain the history (research) of assessing characters based on jewels.

q.   Explain the history (research) of assessing characters based on costumes.

r.   Explain the history (research) of assessing characters based on transportation Systems.

s.   Explain the importance of visiting Museums, Libraries in pre-shooting.

t.   Explain the importance of Internet, old maps and films in pre shooting.

u.   Describe the channelizing the findings of visiting Museums, Libraries, Internet, old maps and films.

v.   Explain the concept of collection of materials.

w.   Define the term anachronism and artifact.

x.   Explain the process of avoiding anachronisms Important to discard artifacts non – pertaining to the periods and genre of the film

y.   Explain the process of assisting the director to finalize casting.

3. PRODUCTION DESGIN:

a.   Define the term location.

b.   List types of locations.

c.   State the purpose of location.

d.   What is location hunting.

e.   State the need of location hunting.

f.   State the roles of Film Director.

g.   State the roles of cinematographer.

h.   Explain Location hunting process with Director and cinematographer.

i.   Describe the Identification of location suitable to provide backdrop on the scenes .

j.   Define the terms Set and set erection.

k.   State the need of set erection.

l.   Describe the process of Erection of sets.

m.   Describe the process of surrealistic and dreamy sets for song sequences

n.   Define the terms Sketch and diagram.

o.   State the need of sketch.

p.   State the need of Diagram.

q.   Describe the preparations of sketches and diagrams.

r.   Define the terms color and tone of the film.
s.   Determining the color and tone of the film.
t.   Explain selection of properties in accordance with the tone and color of the films
u.   Define the Film Budget.
v.   State the purpose of the Film Budget.
w.   Explain Estimating the budget.

4. SHOOTING:

4.1. Define term Shooting.
4.2. Define the terms Backdrop.
4.4. List the properties of backdrop and scenes.
4.5. Explain Providing Backdrops and properties which enhance the mood of the scene to be shot
4.6. List narrative strategies.
4.7. Explain narrative strategies.
4.8. What is location scouting.
4.9. Explain the location scouting
4.10. Define the term casting actor.
4.11. Describe role of casting actors .
4.12. Define the term Motivating actor.
4.13. Describe the role of motivating actors.
4.14. Describe the process of getting the performance from actors.
4.15. How to use . cinematographer as Director's eye.
4.15. State the purpose of the dynamization of space and time .
4.16.Explain the process of dynamization of space and time.
4.19. List and explain various kinds of continuity.
4.20. Define the term shot.
4.21.Determining the field of each shot and creativity.
4.22. List latest technologies with regard to Graphics, Animation and special Effects.
4.24. Explain Blue/Green mat shooting.
4.25. State the purpose of miniature.
4.25. Explain the Preparationof miniatures.
4.26. State the purpose of plaster casts.
4.27. Explain the preparation of plaster casts.
4.28. State the purpose of clay models.
4.29. Explain the process of preparation of clay models.

5. POST SHOOTING:
    5.1. List the members of Post production team.

5.2.Explain the job roles of Post Production Team members.

5.3.LIST THE STAGES OF Post production.

5.4.Define Editing.

5.5.Explain the process of Editing.

5.6.Define Dubbing.

5.7.Explain the process of Dubbing.

5.8.Define Re-Recording.

5.9.Explain the process of Re-recording.

5.10. Define Mixing.

5.11. Explain the process of imposing Sound and Special effects.

5.12. Explain the process of Mixing.

5.13.   What is First copy and how to release First copy.

5.14. What is the is the role of Censorship body.

5.15. Explain the roles and responsibilities of Censorship .

5.16. Explain the tasks involved in making Release arrangements.

5.17. State the importance of maintaining relationship with media.

5.18. Explain the process of Maintaining relationship with media .

5.19. Define the terms publicity and promotion.

5.20. Explain the process of Publicity and promotion.

COURSE CONTENT

1. VISUAL COMMUNICATION : Basics of communication - functions and types of communication – verbal communication – nonverbal communication – Interpersonal relationships – Mass communication – Group communication – Visual communications– Visual vocabulary

2. PRE SHOOTING: Script analysis – Categorizing the genre of the film, social or fantasy – assessing the characters, their profession and backgrounds, jeweler, costumes, Transportation systems etc. – Research based on the above – visiting Museums, Libraries, Internet, old maps and films – Channelize the findings – collection of materials – Avoiding Anachronisms: Important to discard artifacts non – pertaining to the periods and genre of the film. Assisting

the Director to finalize casting

3. PRODUCTION DESGIN: Location hunting with Director and cinematographer – Identification of location suitable to provide backdrop on the scenes – Erection of sets wherever required – surrealistic and dreamy sets for song sequences – preparations of sketches and diagrams – Determining the color and tone of the film – selection of properties in accordance with the tone and color of the films – Estimating the budget.

4. SHOOTING: Providing Backdrops and properties which enhance the mood of the scene to be shot – Narrative strategies – location scouting – casting actors – motivating actors – getting the performance – cinematographer as Director's eye –dynamisation of space and time – various kinds of continuity– Determining the field of each shot and creatively.– Knowledge of latest technology with regard to Graphics, Animation and special Effects – Blue/Green mat shooting – Preparationof miniatures, plaster casts, clay models

5. POST SHOOTING: Editing, Dubbing, Re-recording, Sound, Special effects, Mixing etc. – First copy – Censorship – Release arrangements. Relationship with media – Publicity and promotion

Reference Books:
1. Directing Film techniques and Aesthetics, by Michael Rabiger, - Big picture media, 2010 5th edition
2. Shot By Shot, by Steven D.Katz, Columbia university press, 2006 3rd edition
3. Film Language, by Christian Metz , Chaplin book publishers 2002 2nd edition
Model Blue Print.

S.No.	Chapter/Unit title	No.of periods	Weightage Allocated	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	VISUAL COMMUNICATION	15	14	3	11			1	2			CO1
2	PRE SHOOTING	15	14	3	3	8	10	1	1	1	*	CO2
3	PRODUCTION DESGIN	15	14	3	3	8		1	1	1	*	CO3

4	SHOOTING	15	14	3	11		10	1	2	1	*	CO1
5	POSTO SHOOTING	15	14	6	8		10	2	1	1	*	CO5
	Total	75	70 + 10(*)					6	7	4		

Note: Part-C: 10 marks single analytical question may be chosen from any or combination of starred chapters

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 3.12
Unit test-2	From 3.13 to 5.14

DIPLOMA IN 3D ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER
Elements of Film Technology
UNIT TEST-1
SCHEME: C-20 SUBJ CODE:AM-303

MAX MARKS:40

TIME: 90Minutes

PART-A

16Marks

Instructions: 1) Answer all questions
2) First question carries 4marks, and each question of remaining carries 3marks.

1.a)**Communication** is simply the act of transferring information from one place, person

   or group to another. (True/False)   (CO1)

   b) The person who act as creative lead of the **film is called as** _____. (CO3)

   c)Step by step procedure to solve problem is --------------------- (CO2)

   d)Which one of the following is not a Script Element. [   ]   (CO2)

a)Scene headingb) action c) dialogue d) singing

2) List any three types of Communication   (CO1)
3) What is script analysis.   (CO2)
4) List any three genre of the film.?   (CO2)
5)Write about Location Hunting process..   (CO3)

<div align="center">PART-B   3X8=24Marks</div>
              Instructions:1) Answer all questions
                          2) Each question carries 8 Marks
                          3) Answer should be comprehensive and the criterion for valuation is
the
                          content but not the length of the answer.

6. a) Explain nonverbal Communication.   (CO1)
<div align="center">Or</div>
  b) Explain Mass communication.   (CO1)

7. a) Explain the process of assessing the characters   based on profession and backgrounds.
      (CO2)
<div align="center">Or</div>
b) Explain the process of assisting the director to finalize casting.   (CO2)
8. a) Describe the Identification of location suitable to provide backdrop on the scenes
      (CO3)
<div align="center">Or</div>
 b) Describe the process of surrealistic and dreamy sets for song sequences   (CO3)

<div align="center">
BOARD DIPLOMA EXAMINATIONS
DIPLOMA IN 3D ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER – YEAR END EXAMINATION
ELEMENTS OF FILM TECHNOLOGY
SCHEME: C-20   SUBJ CODE:AM-303
</div>
MAX MARKS:80   TIME:
3HOURS

PART-A

10X3=30Marks

Note: Answer all questions

1. What is communication.   (CO1)

2. List any three functions of communication.   (CO1)

3. Define Script.   (CO2)

4. List various genre of the film.   (CO2)

5. Define the terms sketch and diAMram.   (CO3)

6 . State the purpose of film budget.   (CO3)

7. What is backdrop?   (CO4)

8. State the purpose of Miniature.   (CO4)

9. Define Editing.   (CO5)

10. What is the is the role of Censorship body.   (CO5)

PART-B

5x8=40Marks

Note: Answer all questions

11. A.Explain interpersonal relationships.   (CO1)

<center>OR</center>

11.B Explain about Group Communication.   (CO1)

12.A.Explain the process of script analysis.   (CO2)

<center>OR</center>

12.B. Explain the process of assessing the characters based on profession and backgrounds.
(CO2)

13.A.Explain Location hunting process with Director and cinematographer..   (CO3)

<center>OR</center>

13.B. Explain selection of properties in accordance with the tone and color of the films   (CO3)

14.A.Explain Providing Backdrops and properties which enhance the mood of the scene to be shot
(CO4)

<center>OR</center>

14.B. Explain Blue/Green mat shooting.   (CO4)

15.A. Explain the process of Editing..   (CO5)

<center>OR</center>

15.B.Explain the process of imposing Sound and Special effects.   (CO5)

<center>PART-C</center>

<center>1X10=10Marks</center>

16.   Explain how to provide publicity and promotion to the short film created by you on traditional
marriages in India.   (CO2)

<center>204</center>

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-304	2D DigitalAnimation	5	75	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	FLASH INTRODUCTION	20	CO1
2.	DIGITAL CONVERSION	10	CO1,CO2

3.	INTRODUCTION TOANIMATION	15	CO1,CO2,CO3
4.	FLASH APPLICATIONS	15	CO1,CO2,CO3,CO4
5.	CHARACTER ANIMATION	15	CO1,CO2,CO3,CO4,CO5
	Total Periods	**75**	

Course Objectives	- describe the work flow of digital 2d animation - Handling various 2d software's like Flash with animation principles and color theory - Creating Background & layout - Handling scanning & processing along with Character design - Working with key roles of 2-D animation, composing and debugging - Describe animating using various characters designs

CO NO		COURSE OUTCOMES
CO1	AM-304.1	Explain IDE and tools of Flash and to work with color styles and drawing modes.
CO2	AM-304.2	Creating characters by applying various backgrounds and sequences
CO3	AM-304.3	Demonstrate timeline aspects , key frames and motions in producing animations.
CO4	AM-304.4	Applying Symbols and animation effects
CO5	AM-304.5	Animating various characters and exporting images and videos.

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	2	2	2	2			1	2	3	1
CO2	2		3	2				3	2	
CO3	2		2	2				3	3	
CO4		3	2	2	2	2	3	3	3	3
CO5		2	3	2	2		3	3		3
AVERAGE	2	2.3	2.4	2	2	2	2.3	2.8	2.75	2.3

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

Learning Outcomes

    1.0   Flash Introduction
        1.1   Introduction to Flash
        1.2   Explain the components of IDE
        1.3   Describe flash workspace
        1.4   State the usage of Tools panel
           1.4.1   selection (move),

1.4.2   free transform (scale, rotate),
1.4.3   line,
1.4.4   lasso,
1.4.5   magic wand,
1.4.6   shape,
1.4.7   fill,
1.4.8   gradient,
1.4.9   erase,
1.4.10 pencil,
1.4.11 pen,
1.4.12 brush and more.
1.5   Quote shortcut keys to select or perform various actions of tools
1.6   working with objects
   1.6.1   creating objects
   1.6.2   Modifying objects
    1.6.3 Moving objects
1.7   Explain the importance of flash timeline and its effects
1.8   Describe the features of timeline.
1.9   Describe library and its features
1.10   Discuss the uses and importance of color palette
1.11   Discuss about color mixing and its uses
1.12   Explain different solid colors
1.13   Explain menus
1.14   Explain the process of tracing an object
1.15   List various drawing modes
1.16   Explain drawing modes
1.17   Define color gradients or *color* transitions
1.18   Discuss about Gradient adjustment
1.19   Discuss about bitmap images .
1.20   Discus about creation of bitmap files.
1.21   Discuss the steps to create pattern
1.22   Describe the flash document settings.

2.0 Digital Conversion
2.1   Describe the terms scanning, import, import as sequence, cleanup, Quick Trace
2.2   Explain the usage of brush too with its properties - smooth, shape, size and color
2.3   Explain the usage of Paint Bucket tool with properties - stroke, style, scale, width and drag
    fill
2.4   Describe paint bucket cut-color
2.5   Explain the steps to create realistic effects.
2.6   Explain the process of adding lights and shadows to the scene.
2.7   Describe character designing and character build
2.8   Explain the process of creating background
2.9   Explain the process of creating environment lighting
2.10   Differentiate between grid and guide.
2.11   Define Perspective Grid and
2.12   Explain the steps to add perspective grids in flash animation file

3.0 Introduction to Animation
3.1   List the properties of timeline

3.2 Explain properties of timeline
3.3 List timeline menus.
3.4 Explain timeline menus.
3.5 Define the terms frame, key-frame, blank key frame and differentiate between them
3.6 Write the steps to insert key frame or blank key frame
3.7 Discuss about motion tween, shape motion Tween and differentiate
3.8 Describe layer with its importance
3.9 State the purpose of motion guide layer
3.10 Write the procedure to copy frame and motion
3.11 Describe how to do image scaling and squeezing in Flash.
3.12 Describe clip animation
3.13 Describe frame-by-frame animation
3.14 Write the procedure to create frame by frame animation   (5)
3.15 Describe tweening animation
3.16 Write the procedure to create tween based animation
3.17 Explain different editing modes
3.18 Describe primary and secondary action
3.19 Explain 12 principles of animation.

4.0 Flash Applications
4.1 Define symbol in flash
4.2 List various symbols
4.3 Differentiate among symbols
4.4 Explain different symbols and differentiate
4.5 Explain the procedure to edit a symbol in symbol-editing mode.
4.6 Write the steps to create graphic symbol in flash
4.7 Write the steps to create movie clip symbol in flash
4.8 Write the steps to create button symbol in flash
4.9 Write the steps to modify already existing symbol
4.10 Explain the steps to duplicate symbol
4.11 Explain the steps to swap symbol
4.12 Write the procedure to create symbol based animation
4.13 Describe the concept of creating multiple actions
4.14 List the effects that can be added to timeline and explain them
4.15 Explain the procedure to create timeline effects- Blur Effect, Transition Effect, Drop Shadow Effect, Expand Effect, Transform Effect, Drop Shadow Effect, Explode Effect
4.16 Explain the procedure to create timeline fade on and fade out effects

5.0 Character Animation
5.1 Describe the concept of character design
5.2 State the importance of character design
5.3 Write the steps to build a character
5.4 Explain the procedure to separate elements of a built character..
5.5 Explain the steps for adding posses in symbols
5.6 Describe the concept of rigging
5.7 Differentiate between rigging and animation.
5.8 Explain the procedure to apply character rigging constraints
    5.8.1 Joints
    5.8.2 Apply Constrains
    5.8.3 Shape hints

COURSE CONTENT

1. Flash Introduction

Introduction- IDE- Tools Panel – Uses of Tool and Properties - working with Objects — Timeline – Library – Color mixing– Different solid Colors– Menus –Object tracing -Drawing mode – Gradient adjustment – Bitmap – Pattern Creation – Document settings

2. Digital Conversion

Scanning – Import – Import as Sequence – Clean up – Quick Trace – Brush tool Properties – Smooth – Shape – Size – Color apply – Paint Bucket Properties – Cut Color – Realistic – Light and Shade – Character designing – Character Build – Back ground Creation – Environment Lighting – Perspective – Grid – Guide

3. Introduction to Animation

Time line Properties – Timeline Menus – Key frame – Insert Key frame – Blank Key Frame – Create Motion Tween – Shape Motion Tween –layer- Motion Guide Layer – Copy Frame and Motion – Clip Animation – Frame by frame animation – Different Edit Modes –primary and secondary avtions-12 principles of animation-

4. Flash Applications

Symbols Introduction – Types of symbols – Symbol Edit Mode – Create symbol – Re Modified Symbol – Duplicate Symbol – Swap Symbol – Symbol Based Animation – Create Multiple Action – Adding Effects to Time line – Transition – Blur – Glow – Fade On – FadeOut

5. Character Animation

Character Design – Character Build – Separate Elements - Adding Posses in Symbol – Rigging – Apply Joints – Apply Constrains – Shape hints – Ease In – Ease Out – Walk – Run – Jump – Push – Pull – Loop Action – Play Once – Select Frame – Facial Expressions – Eye Blink – Dialogue – Audio sync – Export as Image and Video – Export as Sequence – Export Settings – Take Output

REFERENCE BOOKS
1. Adobe flash professional cc class room book, by Adobe creative team, Adobe press, 2013 - First Edition

2. Adobe flash professional, by Adobe creative team, Adobe press, 2012 - First Edition

3. Action script 3.o adobe cs5 pro, by Adobe creative team, Adobe press, 2010 - First Edition

Blue print

S.No.	Chapter/Unit title	No.of	Weightage Allocated	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	FLASH INTRODUCTION	20	17	11	6			2	2			CO1
2	DIGITAL CONVERSION	10	11	3	8			1	1		*	CO1,CO2
3	INTRODUCTION TOANIMATION	15	14		3	11	10		1	2	*	CO1,CO2,CO3
4	FLASH APPLICATIONS	15	14		11	3	10		2	1	*	CO1,CO2,CO3,CO4
5	CHARACTER ANIMATION	15	14		6	8	10		2	1	*	CO1,CO2,CO3,CO4,CO5
	Total *	75	70 +10*	14	34	22	*10	4	7	4	1	

Note: Part-C: 10 marks single analytical question may be chosen from any or combination of starred chapters

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 3.9
Unit test-2	From 3.10 to 5.12

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER
2D DIGITAL ANIMATION
UNIT TEST-1

SCHEME: C-20   SUBJ CODE:AM-304
MAX MARKS:40   TIME: 90Minutes
……

PART-A   **16Marks**

Instructions:1) Answer all questions
            2) First question carries 4marks, and each question of remaining carries 3marks
1.   CO1
   A. **Lasso tool** too is useful for drawing freeform segments of a **selection** border.

   B. JPG stands for
         a) <u>Joint Photographic Experts Group</u>   b) Joint Photographic Group
         c) Joint Photo Graph   c) Joint Photo Group
   C. This area in Flash is similar to the clipboard in Microsoft Office applications.

211

a) Dashboard   b) Layers Panel
c) <u>Library Panel</u>   d) Property Inspector

D. These are frames that are signaficant. It is the basis for tweened animation.
a) <u>Keyframes</u>   b) Special Frames
c) Master Frame   None of the above

2. State the usage of Tools menu   CO1
3. Differentiate between GRID and GUIDE   CO1
4. List various Drawing modes   CO2
5. State the purpose of motion guide layer   CO2

<center>PART-B</center>   3X8=24Marks

Instructions: 1) Answer all questions
2)Each question carries 8 Marks
3)Answer should be comprehensive and the criterion for valuation is the content but not the
length of the answer

6. Explain the process to create pattern in flash   C05
Or
Explain the gradient tool with its types   CO2
7. Explain purpose of paint bucket with its options(Gap size option, Lock fill option, &**Transform   Fill**
option)   **CO3**
Or
What are the benefits of layers in flash? Explain in detail.   C04
8. Discuss the difference between shape tweening and motion tweening?   CO5
Or
Describe how to do image scaling and squeezing in Flash.

BOARD DIPLOMA EXAMINATIONS
DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER – YEAR END EXAMINATION
2D DIGITALANIMATION

SCHEME: C-20   SUBJ CODE:AM-304
MAX MARKS:80   TIME: 3HOURS
……………………………………………………………………………………
<center>**PART-A**</center>

Note: Answer all questions. Each question carries 3 marks   **10 X 3=30M**

16.	What are the components of flash workspace	3	CO1
17.	List any three functions of library	3	CO1
18.	List any three bitmap images	3	CO2
19.	State the importance of paint bucket	3	CO2
20.	Differentiate between primary and secondary actions	3	CO2

<center>212</center>

11	Define the term key frame with its importance.	3	CO4
12	List various symbols	3	CO5
13	Write the steps to duplicate symbol	3	CO5
14	Write the steps to reuse character design	3	CO3
15	Differentiate between rigging and animation	3	CO3

PART-B

Note: 1. Answer all the question and making use of internal choice.
2. Each question carries 8 marks   5 X 8=40M

11(a). Explain any four tools of tools panel with their properties   8   CO1
OR
11(b). Explain importance of timeline and its effects   8   CO1

12(a). Explain any the steps to create realistic effects   8   CO3
OR
12(b). Explain the steps to add perspective grids in flash animation file   8   CO3

13(a). Explain the procedure to create tween based animation   8   CO2
OR
13b). Explain the diffeebces between Motion tween and shape tween   8   CO2

14(a). List the effects that can be added to timeline and explain them   8   CO3
Or
14(b). Explain the procedure to create any two timeline effects   8   CO3

15(a). Explain the procedure to apply any four character rigging constrains   8   CO5
(OR)
15(b). Explain the process of exporting video as sequence of image   8   CO5
PART-C1 X10=10M

16. Write the steps to develop an tweening animation with different symbols for 20sec   10M
CO5

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-305	**DigitalPhotography**	5	75	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	**BASIC OF PHOTOGRAPHY**	15	CO1,CO2,CO5
2.	DIGITAL PHOTOGRAPHY	15	CO2,CO3
3.	IMAGE COMPOSITION	15	CO2,CO4,CO5
4.	DIGITAL IMAGING	15	CO1,CO2,CO3
5.	CONCEPT PHOTOGRAPHY	15	CO1,CO2,CO4
	Total Periods	**75**	

Course Objectives	• Describe Camera Mechanism and various equipment in digital photography • apply lighting techniques in handling various photo shoots along with projecting various styles in photo graphic • Analyse various image format handlings& uses • Apply Digital color correction &grading techniques • Printing & photo sharing

CO NO		COURSE OUTCOMES
CO1	AM-305.1	Distinguish the relationship between human eye and camera and basic principles of Photography.
CO2	AM-305.2	Practicing Digital camera Functions.
CO3	AM-305.3	Illustrate various image composing techniques.
CO4	AM-305.4	Explain digital imaging principles
CO5	AM-305.5	Explain industrial Applications of photography techniques and documentation.

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	2	1	2					2		
CO2	3	3	1	3				2		
CO3	2	2	3	2	3	2	2	2	2	2
CO4	2	2	2			2	2	2		2
CO5	3	3	1	3				2		
Avg	2	2	3	2	3	2	2	2		2

3=Strongly mapped, 2=moderately mapped, 1=slightly mapped

Learning Outcomes:

1. **Basic Photography**

a. Define the term Camera

b. Differentiate between Human Eye and Camera

c. Relate human eye and camera.

d. Define the term Photography.

e. Explain about history and development of Photography.

f. List different types of camera

g. state its importance of different camera.

h. State the purpose of Lens.

i. List different types of Lens

j. state their usage of lens

k.   State the importance of Light.

l.   List and explain different types of Lights.

m.   Define the term filter.

n.   State the need of filter.

o.   List different types of Filters and explain their usage.

p.   Define is film with its need

q.   List different types of Films.

r.   Explain the terms Speed, Size& Temperature with respect to film.

s.   What is reversal film?

t.   Describe Reversal Films.

u.   Explain about manipulation of Color

v.   Explain about manipulation of Light.

w.   Explain about Black and white Photography

x.   Explain about Color Photography

y.   Describe Negatives.

z.   List and explain Color materials.

aa.   Explain color Processing

bb.   ExplainPrinting.

2.   Digital Camera Functioning

a.   Define Digital Camera

b.   Define Digital Still Camera.

c.   Define Digital SLR Camera

d.   Explain operation of Digital SLR Camera

e.   Explain the functions and operation of Digital Camera

f.   Explain functions of major Components of Digital Camera with neat diagram

g.   List and explain modes of digital Camera.

h.   List and explain Advantages of digital camera.

i.   Describe Light Meter and explain its Usage.

j.   Describe Flash.

k.   List types of Flash

l.   Explain the purpose of flash

m.   State the importance of Electronic Flash

n.   Explain the process of selecting Flash Mode Setup for Digital Imaging

o.   List and explain Desktop Computer Components needed for Digital camera functioning.

p.   List and explain Data Storage and Transfer Options.

q.   List the Software used for Digital Processes.

r.   . Explain features of any two software used for digital process.

3.   IMAGE COMPOSITION

a.   List Basic Techniques for Better Image.

b.   Define Aperture and state it's Usage?

c.   Describe Shutter Speed?

d.   Explain Usage of shutter speed.

e.   Describe Depth of Field?

f.   Define Focal Length.

g.   Describe Exposure Meter

h.   Explain the terms Basic Lighting, Key Light and Fill Light.

i.   Define Low Key and High Key Picture.

j.   Describe Rule of Third.

k.   Describe Angle of View.

l.   Explain Different Angles of a Camera.

m.   List various Perspectives of camera angle?

n.   Explain Over the Shoulder Shot (OSS) picture format

o.   Describe the term lighting

p.   Explain indoor and outdoor lightening

q.   Describe the terms Exposing, Focusing.

r.   Explain the Types of lighting

s.   Describe about Controllinglights

4.   Digital Imaging

a.   Define the terms Light room ,Light Room Workspace and Palettes

b.   Explain Special effects techniques in digital imaging

c.   Describe about motion pictures.

d.   Define the terms manipulation of image, framing and trimming.

e.   Explain the process of Choosing Color and Color grading Brush Shape.

f.   Explain the Operations and Usage ofArt Marks tool and Art Layers,

g.   Explain the Operations and Usage of, Layer Mark andCreate Layer,

h.   Explain the Operations and Usage ofFill Tool and Trashcan

i.   Explain the Operations and Usage of Cloning,Clone Align and Art Filter

j.   Explain the Operations and Usage of Plug ins, Rule of Thumb and Kerning Leading.

k.   Explain about various Formats of Digital Image on VariousMedia.

5.   Concept Photography

a. Describe Photo journalism.

b. State the importance of Advertising Photography.

c. Explain about Industrial Photography

d. List and explain the Architectural Photography Documents

e. Explain about the Visual story telling

f. Explain Stop motion Photography Techniques

g. Explain the process of Creating Photography Albums

COURSE CONTENT

1. **BASIC OF PHOTOGRAPHY**

Human Eye and Camera - Basics of Camera - Define Photography. Brief History and Development of Photography. Camera –Types- Usage. Lens- Types Usage. Lights- Types- Usage. Filters –Types- Usage. Film – Types. Film- Speed and Size Temperature, Speed etc., Reversal Films.– Manipulation of Color and Light.– Black and White and Color Photography – Negatives – Color materials, Processing andPrinting.

2. **DIGTAL CAMERA FUNCTIONING**

Define -Digital- Digital Still Camera. Digital SLR Camera – () Camera operations Types. Working with Digital Camera – Major Components and Functions, Camera Operation, Mode, Advantages. Light Meter- Usage. Flash - Types-Usage- Electronic Flash – Selection of Right Flash Mode Setup for Digital Imaging-Windows. Desktop Computer Components- Data Storage and Transfer Options. Software for Digital Processes.

3. **IMAGE COMPOSITION**

Basic Techniques for Better Image. – Aperture-Usage. – Shutter- Speed- Usage. Depth of Field. – Focal Length.–Exposure Meters –Basic Lighting- Key Light-Fill Light.– Low Key and High Key Picture– Rule of Third. – Angle of View. Different Angles of a Camera – High Angle – Eye Level Angles – Low Angles - Long Shot (LS) – Medium Shot (MS) – Close-up (CU) – Perspectives – Over the Shoulder Shot (OSS Picture Format)– Understanding lighting-indoor and outdoor, – Exposing and Focusing, Types of lighting, – Natural and Artificial Lights, – Controllinglights,

4. **DIGITAL IMAGING**

Light room. Light Room Workspace. Palettes, Special effects techniques- motion pictures etc., manipulation of image, framing & trimming. Choosing Color, Color grading Brush Shape. Operations and Usage of Tools- Art Marks, Art Layers, – Layer Mark, Create Layer, – Fill Tool, Trashcan, Cloning, – Clone Align, Art Filter –, Plug ins, Rule of Thumb, Kerning Leading.– Image Various Formats Digital Image on VariousMedia.

5. **CONCEPT PHOTOGRAPHY**

Photo journalism, – Advertising Photography - Industrial Photography- Architectural Photography Documents- Visual story telling- Stop motion Photography Techniques- Creating Photography Albums

REFERENCE BOOKS
1. Understanding Exposure: How to Shoot Great Photographs with a Film or Digital Camera, by Bryan Peterson, Am photo Books, August 1st 2004 Second Edition

2. The Wonders of Photography, by Dennis P Curtin, Watson-Gustily, 2009 Fifth Edition

3. The Basic Photography Guide for Photograph, by Langfords , Courier Dover Publications, 2000 - First Edition

4. The Digital Photography, by Scott Kelby , Watson-Gustily , 2002- Second Edition

Model Blue Print:

S. N o.	Chapter/Unit title	No. of peri ods	Weighta ge Allocated	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	A p	A n	R	U	A p	A n	
1	**BASIC OF PHOTOGRAPHY**	20	17	3	14			1	3			CO1,CO2,CO5
2	DIGITAL PHOTOGRAPHY	15	14	3	11			1	2			CO2,CO3
3	IMAGE COMPOSITION	15	14		6	8	10		2	1	*	CO2,CO4,CO5
4	DIGITAL IMAGING	15	14	3	3	8	10	1	1	1	*	CO1,CO2,CO3
5	CONCEPT PHOTOGRAPHY	10	11		3	8	10		1	1	*	CO1,CO2,CO4
	Total	**75**	**70 + 10(*)**	**9**	**3 7**	**2 4**	**1 0**	**3**	**9**	**3**	**1**	

Note: Part-C: 10 marks single analytical question may be chosen from any or combination of starred chapters

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 3.2
Unit test-2	From 3.3 to 5.7

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING

MODEL PAPER
Digital Photography
UNIT TEST-1
SCHEME:C-20 :: SUB CODE:AM-305

MAX MARKS:40   **TIME: 90Minutes**

PART-A

16Marks

Instructions: 1) Answer all questions
2) First question carries 4marks, and each question of remaining carries 3marks.

1.a)A photograph is a type of raster image. (True/False)   (CO1)

b) --------------------------- is equipment that is used to record images.   (CO2)

c)The rule of thirds involves mentally dividing up your image using 2 horizontal lines and-------- vertical lines
(CO2)

d) Which is a memory device used with digital cameras?   (CO2)

   A. Sd card   B.Memory stick

   C. Floppy disk   D.All of the above

2) State the importance of Light.   (CO1)
3)List different modes of Digital Camera.   (CO2)
4) What is the need of Exposure Meter   (CO3)
5)Write about Negatives in Photography   (CO1)

PART-B   3X8=24Marks
Instructions:1) Answer all questions
2) Each question carries 8 Marks
3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

6. a)Explain about history and development of Photography.   (CO1)

Or
b)Explain about Black and white Photography   (CO1)

7. a) Draw and Explain functions of major Components of Digital Camera   (CO2)
Or
b)Explain the process of selecting Flash Mode Setup for Digital Imaging.   (CO2)
8. a) Explain Different Angles of a Camera.   (CO3)

Or
b) Explain the Types of lighting   (CO3)

220

BOARD DIPLOMA EXAMINATIONS
DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER – YEAR END EXAMINATION
DIGITAL PHOTOGRAPHY

SCHEME:C-20   **SUB CODE:AM-305**
MAX MARKS:80   **TIME: 3HOURS**

PART-A

10X3=30Marks

Note: Answer all questions

1. Define the term Camera   (CO1)

2.State the need of filter.   (CO1)

3.List different types of Lens   (CO1)

4. Define Digital Still Camera.   (CO2)

221

5.Describe Flash. (CO2)

6.What is Aperture and state it's Usage? (CO3)

7.Describe Exposure Meter (CO3)

8. Define the terms Light room, Light Room Workspace (CO4)

9.Describe about motion pictures. (CO4)

10. What is Photo journalism (CO5)

10. What is Advertising Photography (CO5)

PART-B

Note: Answer all questions**5x8=40Marks**

11. A.Explain about ColorPhotography (CO1)

OR

11.B. ExplainPrinting in Photography. (CO1)

12.A. Explain operation of Digital SLR Camera (CO2)

OR

12.B. Explain Desktop Computer Components needed for Digital camera functioning (CO2)

13.A.Explain Different Angles of a Camera. (CO3)

OR

13.B. Explain indoor and outdoor lightening. (CO3)

14.A.Explain about Special effects techniques in digital imaging (CO4)

OR

14.BExplain the process of Choosing Color and Color grading Brush Shape. (CO4)

15.A.Explain about Industrial Photography (CO5)

OR

15.B.Explain the process of Creating Photography Albums (CO5)

PART-C

1X10=10Marks

222

16.	Create a Photo Album from Digital Pictures Using FlipHTML5			(CO5)

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-306	Multimedia Lab	3	45	40	60

Required Infrastructure(Software, Hardware and other Equipment) to be procured as per C-20:

SNO	Hardware / Equipment Needed	Software Needed
1	**Desktop Systems:** Configuration: 1. Processor :: <u>AMD Ryzen 9 3900X</u> Or any other equivalent intel/Motorola etc.. processor or Above 2. Mother Board: AMD 400/500 or its equivalent or above 3. RAM: 8GB(or above) dual channel DDR4 4. HDD: 500GM (SSD)/1TB(or above) 5. Graphics Card: Aorus GeForce RTX 2080 Ti Xtreme (or equivalent) 6. Monitor: 17" or above 7. Multimedia Devices like Mic, Head Phones / Speakers , USB Web camera or USB Digital Video Camera 8. Color Photo Scanner and Printer	**1. Operating System:** Microsoft Windows 10 professional-64 bit (Minimum) 2.Multimedia Software Adobe CS 6.

	Upon completion of the course the student shall be able to
COURSE OBJECTIVES	1. Creating images 2. Applying tools to edit images 3. Working with layers and colors 4. Applying special effects to images 5. Applying properties of the tools and editing multiple images on different layers and merging them.

	CO No	COURSE OUTCOMES
CO 1	AM-306.1	Analysing tools
CO 2	AM-306.2	Applying layers in editing and merging of images
CO 3	AM-306.3	Editing images with tools and layers
CO 4	AM-306.4	Creating images and merging

CO 5	AM-306.5	Applying special effects to the images

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-306.1	3							2		
AM-306.2	2		2		2			2		
AM-306.3		2	2		2	2		2		
AM-306.4		2	2	3	2	3	2	2	3	2
AM-306.5		2	2	2	2	2	2		2	3
Average	**2.5**	**2**	**2**	**2.5**	**2**	**2.3**	**2**	**2**	**2.5**	**2.5**

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

LEARNING OUTCOMES:

Practical exercise
1. Scan images with digital scanner and save with appropriate image format.
2. Open Adobe Photoshop to practice with image editing tool, workspace-navigation, palettes, arranging document windows.
3. Crop and rotate an image, change image size, pixels and resolution, color Depth and apply the color modes- RGB, CMYK and Grayscale.
4. Edit image using bridge, brushes, choosing colors, sampling colors from an image, using Pantone colors, multiple undo and taking Snapshots, use the History palette.
5. Retouch to Fix images using the Clone Stamp.
6. Practice with Healing tools: The history brush, the Red-Eye and colour replacement tools.
7. Practice for selection techniques using the marquee and the lasso tools, the quick selection tool, working in quick mask mode, adding and subtracting selections, saving a selection
8. Printing- recognizing nonprintable colors, converting images to CMYK, saving for print, 3d (Menu), Color Correction (Adjustments), Smart Objects, Content Aware, Puppet Wrap Define(Brush, Pattern, Custom Shape).
9. Work with Palettes, i.e., layers palette, navigator palette, info palette, color palette, Swatches palette, Styles palette, History palette, Actions Palette, Tool preset palette, Channels Palette and Path Palette.
10. Work with the magic wand tool.
11. Work with the lasso tool.
12. Create images using Symbol Sprayer Tool.
13. Edit the images using options of Warp Tool.
14. Use Dodge tool, Burn tool, Sponge Tool and Clone Stamp Tool.
15. Edit Selections; create images and giving special effects using Filters.
16. Produce an image by mixing two or more different Layer.

The competencies and key competencies to be achieved by the student

S.No.	Name of the experiment	Objectives	Key Competencies

1	Exercise on scan images with digital scanner and save with appropriate image format.	Identify the different options in the digital scanner software and the different file formats	❖ Open the scanner software installed in the system. ❖ Put the image and scan it by selecting option scan. ❖ After scanning, choose the appropriate file format while ask for saving.
2	Exercise on open Adobe Photoshop to practice with image editing tool, workspace-navigation, palettes, arranging document windows.	Use adobe photoshop tools, color pallet, workspace	❖ Open the image in adobe photoshop ❖ Identify suitable tools for editing image ❖ Chose the color from pallet for applying on image at required areas ❖ Adjust the workspace as for visualise ❖ Club the individual editing layers to one document ❖ Save the file with required format
3	Practice on Crop and rotate an image, change image size, pixels and resolution, color Depth and apply the color modes- RGB, CMYK and Grayscale.	Apply various operations onImagesusingCrop tools and apply the color RGB/CMYK/Gray scale.	❖ SelectappropriateGraphicsprocessing tool. ❖ Create/Select"NewCanvas"fromavail able menu. ❖ Import the image, crop the required area of the image, ❖ Apply rotate operation ❖ SelectspecifiedColorModelfromavail ablemenu. ❖ Produce specified image and Paint it by selecting appropriate colorcombination. ❖ Saveresultantimageatspecificlocatio nandcheckavailabilityofimageatspecifi edlocation.
4	Practice on Edit image using bridge, brushes, choosing colors, sampling colors from an image, using Pantone colors, multiple undo and taking Snapshots, use the History palette.	Apply brushes, colors, sampling colors from an image, using Pantone colors, multiple undo and taking Snapshots, use the History palette.	❖ Select the **Color** panel (**Window > Color**) displays the color values for the current foreground and background colors. ❖ Edit the foreground and background colors using different color models by using the sliders in the Color panel. ❖ Choose a foreground or background color from the spectrum of colors displayed in the color ramp at the bottom of the panel.

5	Practice on Retouch to Fix images using the Clone Stamp.	Apply the retouch to Fix images using the Clone Stamp.	❖ Select the Clone Stamp tool 📑. ❖ Choose a brush tip and set brush options for the blending mode, opacity and flow in the options bar. ❖ specify how you want to align the sampled pixels and how to sample data from the layers in your document, set any of the following in the options bar: **Aligned or Sample**
6	Practice with Healing tools: The history brush, the Red-Eye and colour replacement tools.	Apply the history brush, the Red-Eye and colour replacement tools.	❖ Open the image ❖ Use layers, ❖ Zoom the image for corrections ❖ Select Healing tool and Patch tool for the Color Replacement ❖ Select the eye-tool and color samplings to apply required color adjustments
7	Exercise on selection techniques using the marquee and the lasso tools, the quick selection tool, working in quick mask mode, adding and subtracting selections, saving a selection	Identify the marquee and the lasso tools, the quick selection tools	❖ In the **Quick** or **Expert** workspace, open a photo. ❖ Choose **Select > Subject**. ❖ Allow Photoshop Elements a few seconds to automatically select the most prominent subject(s) in your photo. ❖ The selection is visible with a moving, dotted line.
8	Exercise on printing-recognizing nonprintable colors, converting images to CMYK, saving for print, 3d (Menu), Color Correction (Adjustments), Smart Objects, Content Aware, Puppet Wrap Define(Brush, Pattern, Custom Shape).	Identify how to convert images to CMYK.	❖ Before saving your PDF, download and install PrintingCenterUSA's Color Profile and Adobe PDF Preset. ❖ After doing this, navigate to File > Save As. ❖ In the Save As window, name your file and change the file type to Photoshop PDF. ❖ Click Save.
9	Exercise on work with Palettes, i.e., layers palette, navigator palette, info palette, color palette,	Identify various pallettes like tool palette etc.,	❖ . Click on the tool icon to select that tool ❖ However your cursor over the tool icon to reveal its name and (keyboard shorcut).

	Swatches palette, Styles palette, History palette, Actions Palette, Tool preset palette, Channels Palette and Path Palette.		❖ Click and hold down on any tool icon that has a *white triangle in the bottom right* to reveal related tools nested underneath.
10	Exercise on work with the magic wand tool	Know the operation of the magic wand tool	**Use the Magic Wand tool** ❖ The Magic Wand tool selects pixels within a similar color range with one click. ❖ Select color range, or tolerance ❖ select Anti-aliased. ❖ select Contiguous. ❖ Select colors from pallet ❖ Click Refine Edge to make further adjustments to your selection and make it more precise.
11	Exercise on work with the lasso tool.	Know the operation of the lasso tool.	**Use the Lasso tool** The Lasso tool draws freehand selection borders. This tool lets you make very precise selections. ❖ Set Lasso tool options in the Tool Options bar: ❖ select Feather value. ❖ select Anti-aliased.
12	Exercise on Create images using Symbol Sprayer Tool.	Know to create images using Symbol Sprayer Tool.	❖ Use the Symbol Sprayer tool to apply the symbol instance on the art board ❖ Select the symbol instance in the Symbols panel. ❖ Drag with the Symbol Sprayer tool with required sample, spray the symbol on the artboard.
13	Exercise on edit the images using options of Warp Tool.	Know the different painting and editing techniques	❖ Choose **View > Extras** to show or hide the warp mesh and control points. ❖ Select a layer or an area in the image ❖ To warp your selection using a warp preset, choose a warp style from the **Warp** pop-up menu in the options bar. ❖ Choose grid size from the **Grid** pop-

			up menu in the options bar. ❖ Select a default grid size - 3 x 3, 4 x 4, or 5 x 5.
14	Exercise on use Dodge tool, Burn tool, Sponge Tool and Clone Stamp Tool.	Identify the operation of Dodge tool, Burn tool, Sponge Tool and Clone Stamp Tool.	❖ Select the Proper Tool ❖ Set the Options Palette ❖ Set the **Exposure** ❖ Select a Brush ❖ Begin Brushing in the Effect ❖ Change Brush Size and Exposure
15	Exercise on create Edit Selections; create images and giving special effects using Filters.	Create the required image Identify the filters need to apply special effects	❖ Apply a filter to the active layer, ❖ Apply a filter to an area of a layer, select that area. ❖ Select the Smart Object that contains the image content you want to filter. ❖ Choose a filter from the submenus in the Filter menu. ❖ Apply the filter effects.
16	Exercise on Produce an image by mixing two or more different Layer.	Know the the Auto-Blend Layers command	❖ Use the Auto-Blend Layers command to stitch or combine images with smooth transitions in the final composite image.

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-307	**2D Digital Animation Lab**	3	45	40	60

GUIDE LINES:

- All the exercises provided in the list of practical's should be completed and submitted during the semesterexamination.
- In order to develop skill in mastering creativity, every student should be made to practice thoroughly.
- The external examiners are requested to ensure that a single practical oriented question should not be given to more than three students while admitting a batch of 30 students during BoardExamination.

S No	Chapter/ Unit Title	No. of Periods	COs Mapped
1.	DIGITAL CONVERSION	5	CO1,CO2

2.	INTRODUCTION TOANIMATION	10	CO1,CO2,CO4
3.	FLASH APPLICATIONS	10	CO1,CO2,,CO3,CO4
4.	CHARACTER ANIMATION	20	CO1,CO2,CO3,CO4,CO5
	Total	45	

COURSE **OBJECTIVES**	**Upon completion of the course the student shall be able to** 8. Practice on Edit, test, playback flash animation designs 9. Apply usage of tools, objects and animation effects. 10. Design animations using timeline, different tweening methods, symbols, libraries with various drawing modes 11. Develop animation using character design and background settings 12. Create animation using character rigging constraints, frame by frame 13. Develop animation with different posses of character

CO No		**COURSE OUTCOMES**
CO 1	AM-307.1	Perform Edit, test and playbackof designed animation
CO 2	AM-307.2	Designing various symbols and objects using tools and library
CO 3	AM-307.3	Developing animations suing symbols and objects with timeline
CO5	AM-307.4	Designing animations with backgrounds, effects of timeline
CO5	AM-307.5	Applying character rigging constrains on various animations

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-307.1	2			2	3		2	3	2	
AM-307.2	2	2	3	2	3		2	2		
AM-307.3	2	2	3	2	2		2	2		
AM-307.4	2	2	3	2	3	2	2			1
AM-307.5	2	3	2	3	3	1	2			2
Average	**2**	**2.25**	**2.75**	**2.2**	**2.8**	**1.5**	**2**	**2.33**	**2**	**1.5**

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

LEARNING OUTCOMES:

1. Design the back ground of nature environment for animationclip.
2. Create the ball bouncing using frame by frame animation techniques (10sec).
3. Create the web jingles with the given reference andconcepts.
4. Design the character for animation with thereference
5. Create flight animation in 3 different shots for 20sec.
6. Create the car animation with proper background for 20sec.
7. Design your character and animate the facial expression for 10sec.
8. Create character animation by apply rigging constrains like walk, run, jump, pull and push
9. Create 2D animation using moving guide layer and masking
10. Develop Animation based on symbols at least for 10sec

The competencies and key competencies to be achieved by the student

S.No.	Name of the experiment	Objectives	Key Competencies
1	Design the back ground of nature environment for animationclip.	Develop animation Develop background Combine both	Identify the required suitable background nature environment Mix with animation
2	Create the ball bouncing using frame by frame animation techniques (10sec).	Design frames with ball in different angles Set timeline as required Animate frames	identify the no of frames required arrange in sequence to Animate frame by frame set the timeline for 10 sec accordingly playback

3	Create the web jingles with the given reference andconcepts.	Create web jingles Apply given references	Identify the given reference with suitable concepts Create the web jingles
4	Design the character for animation with thereference	Design the required suitable character Apply reference Use timeline and animate	identify the given references use the designed character set timeline for required period of animation playback
5	Create flight animation in 3 different shots for 20sec.	Design or choose flight image with matching posses Set timeline for 20sec Arrange flight frames in sequence, playback	Identify 3 different posses of flight Arrange frames in order Use time line and playback
6	Create the car animation with proper background for 20sec.	Design car image Chose required background Set timeline for 20sec Animate	Identify suitable background Use the timeline and set time for 20sec playback
7	Create character animation by apply rigging constrains like walk, run, jump, pull and push	Design character Develop different symbols with required rigging constraints Create and arrange frames	Identify and arrange the sequence of frames Animate for the required period
8	Create 2D animation using moving guide layer and masking	Create the moving guide layer Apply masking Design the suitable 2D	Use the moving guide layer Apply suitable mask Design suitable2D animation playback

233

9	Develop Animation based on symbols at least for 10sec	Design the required symbols Set timeline for 10sec Apply animation on symbols	Use the symbols and library Use the timeline Playback for 10sec

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-308	**Digital Photography Lab**	3	45	40	60

GUIDE LINES:

- All the exercises provided in the list of practical's should be completed and submitted during the semester examination.
- In order to develop skill in mastering creativity, every student should be made to practice thoroughly.
- The external examiners are requested to ensure that a single practical oriented question should not be given to more than three students while admitting a batch of 30 students during Board Examination.

S No	Chapter/ Unit Title	No. of Periods	COs Mapped

1.	**BASIC OF PHOTOGRAPHY**	5	CO1
2.	DIGITAL PHOTOGRAPHY	10	CO1,C02,C03
3.	IMAGE COMPOSITION	10	CO1,CO2,CO3
4.	DIGITAL IMAGING&PHOTOGRAPHY	20	CO1,CO2,CO3,CO4,CO5
	Total	**45**	

Course Objectives	- Perform Camera Mechanism and Handling various equipment in digital photography - Applying lighting techniques in handling various photo shoots along with projecting various styles in photo graphic - Designing various images in various formats - Applying Digital color correction &grading - Perform Printing & sharing photos.

	CO No	COURSE OUTCOMES
CO1	AM-308.1	Analysing basic principles of Photography
CO2	AM-308.2	Practicing Digital camera Functions.
CO3	AM-308.3	Applying various image composing techniques.
CO4	AM-308.4	Applying digital imaging principles
CO5	AM-308.5	Practicing industrial Applications of photography techniques and documentation.

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-308.1	2	2		2			3	2	2	
AM-308.2	2		2	2	2		3	3	2	
AM-308.3	2	2	3	2		3	2	3	2	
AM-308.4	2		3	2		2	2	3	3	1
AM-308.5	2			2	2	2	3	3	3	1
average	2	2	2.6	2	2	2.3	2.6	2.8	2.4	1

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

LIST OF PRACTICAL EXERCISES

1. Take shots of a Landscape exterior in differentangles.

2. Create PortraitPhotography.

3. Create FoodPhotography

4. Create your own visual storyPhotography

5. Create your silhouettePhotography

6. Create macroPhotography

7. Create your creativePhotography

8. Create your special effectsPhotography

9. Create Photography album

10. Create Milky Way photography

11. Create Pet photography

12. Crete sea space Photography

13. Create wildlife photography

The competencies and key competencies to be achieved by the student

S.No.	Name of the experiment	Objectives	Key Competencies			
	Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
	AM-309	2D GRAPHICS LAB	3	45	40	60

GUIDE LINES:

- The theory topics given below are to be taught as part of this Lab.
- All the exercises provided in the list of practical's should be completed and submitted during the semesterexamination.
- In order to develop skill in mastering creativity, every student should be made to practice thoroughly.
- The external examiners are requested to ensure that a single practical oriented question should not be given to more than three students while admitting a batch of 30 students during BoardExamination.

Required Infrastructure(Software, Hardware and other Equipment) to be procured as per C-20:

SNO	Hardware / Equipment Needed	Software Needed
1	**Desktop Systems:** Configuration: 9. Processor :: AMD Ryzen 9 3900X Or any other equivalent intel/Motorola etc.. processor or Above 10. Mother Board: AMD 400/500 or its equivalent or above 11. RAM: 8GB(or above) dual channel DDR4 12. HDD: 500GM (SSD)/1TB(or above) 13. Graphics Card: Aorus GeForce RTX 2080 Ti Xtreme (or equivalent) 14. Monitor: 17" or above 15. Multimedia Devices like Mic, Head Phones / Speakers , USB Web camera or USB Digital Video Camera 16. Color Photo Scanner and Printer	**1. Operating System:** Microsoft Windows 10 professional-64 bit (Minimum) 2.Animation and Multimedia Software 1. Adobe master collection cs6 (or Above) 2. Autodesk MAYA 3. Autodesk 3DS MAX.

LIST OF Animation Exercise

Theory content:

1. **Animation ProductionTechniques:** Animation Principles with light box, Flip book Animation theory, Character sketching, Different Character styles, Color Models, Foregrounds and Back Grounds, Movements of elements, Pivot Based and joint Movement, Different Functions and poses of human, Lip sink

2. **Important Application of Lightbox:** Key Poses, In-Between, Timing, Retouch up of drawing , Clean up, Dope sheets, Walk, Run and Jump, Flexibility, Acting, Body language, Change of Expressions, Formation of Story Board , Camera movements and Angels, Recording, Finalizing of Story Board, Animatic creation with Audio Narration, View output

Learning Outcomes:

S No	Chapter/ Unit Title	No. of Periods	COs Mapped
1.	Basics of	6	CO1
2.	Environment Lighting	9	CO2
3.	Mental ray Lighting Setup	9	CO3
4.	Mental ray Rendering Techniques	12	CO4
5.	V ray Lighting Work Flow	9	CO5
	Total	**45**	

COURSE OBJECTIVES	**Upon completion of the course the student shall be able to** 1. Introduction to animation principles. 2. Sketching characters with different styles. 3. Working with foregrounds and backgrounds. 4. Practicing movement of elements and poses. 5. Practicing walk, run, jump sequences . 6. Practicing body part movements and expressions. 7. Creation and finalising storyboards. 8. Adding audio narration to animation sequences.

CO No		COURSE OUTCOMES
CO 1	AM-309.1	Working with comic characters animation
CO 2	AM-309.2	Developing Backgrounds for story board animation sequences.
CO 3	AM-309.3	Working with motion cycles of parts of comic characters
CO 4	AM-309.4	Develop story boards and Audio narration.
CO 5	AM-309.5	Working with change of expressions and camera movement.

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-309.1	2	2	1	1		1		1	1	
AM-309.2	1	1	3	2	3	1	2		2	2
AM-3093		2	3	1		3	1	1	1	3
AM-309.4	1	2	2	2	3		2	1	3	2
AM-309.5			3	2			1			2
Average	1.3	1.7	2.4	1.6	3	1.6	1.5	1	1.7	2.25

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

LEARNING OUTCOMES

1. Practice drawing basic shapes in 2d.
2. Practice drawing diagrams of animals, humans, birds etc..
3. Design any two comic character for 2d animation process with proper poses
4. Create the two nature BG for your story board animation sequence(3min)
5. Create the ball bounce animation with stretch &squash (3min)
6. Create the normal walk cycle for your own character(2cycles)
7. Create the tail animation for any character for (2min)
8. Create run cycle for any own cartoon character(3min)
9. Create any five facial expression of your characters for (1min)
10. Create Hair movement for your character.(1 min)
11. Create jumping sequence of your character (3 min)
12. Create eye lid animation of your character (2 min).
13. Create eye brow movement of your character (2 min)
14. Create lip movement of your character (1 min).
15. Practice eye ball movement of your character(1 min)

The competencies and key competencies to be achieved by the student

S. No.	Name of the experiment	Objectives	Key Competencies
1	Practice drawing basic shapes in 2d.	Working with basic shapes	❖ Working with basic drawing elements ❖ viewoutput

2	Practice drawing diagrams of animals, humans, birds etc..	Creation of drawings	❖ Combining various shapes to form a drawing ❖ View output
3	Design any two comic character for 2d animation process with proper poses	Create characters with different poses.	❖ Identifying characters ❖ Identifying poses ❖ Generate animation sequence. ❖ View output
4	Create the two nature BG for your story board animation sequence(3min).	Creation of different Backgrounds	❖ Using backgrounds ❖ Working with storyboard. ❖ View output
5	Create the ball bounce animation with stretch &squash (3min)	Working with bouncing objects.	❖ Identify bouncing sequence ❖ Using stretch and squash. ❖ Working with timing ❖ Working with angles. ❖ View output
6	Create the normal walk cycle for your own character(2cycles)	Working with walk cycles.	❖ Identify movement sequences. ❖ Using timing and angles. ❖ Sound narration. ❖ View output
7	Create the tail animation for any character for (2min)	Working to move Body elements .	❖ Identify movement of body elements. ❖ Identify poses. ❖ View output
8	Create run cycle for any own cartoon character(3min)	Work with run cycles.	❖ Identify running sequences. ❖ Using timing and angles. ❖ Sound narration. ❖ View output
9	Create any five facial expression of your characters for (1min)	Identify Facial expressions	❖ Identify change of expressions ❖ Using timing and angles. ❖ Sound narration. ❖ View output
10	Create Hair movement for your	Identify body part elements	❖ Identify change of expressions ❖ Using timing and angles. ❖ Sound narration.

	character.(1 min)		❖ View output
11	Create jumping sequence of your character (3 min)	Generation of jump sequences.	❖ Identify jump sequences ❖ Identify change of expressions. ❖ Using timing and angles. ❖ Sound narration. ❖ View output
12	Create eye lid animation of your character (2 min).	*Identify body element movement*	❖ Identify structure of eye lid with other parts. ❖ View output
13	Create eye brow movement of your character (2 min)	Identify Body elements.	❖ Identify the structure of brow construction. ❖ Working with angles and timings. ❖ Sound narration ❖ View output
14	Create lip movement of your character (1 min).	Practice lipsink.	Identify lip sinking with narrated sound.
15	Practice eye ball movement of your character(1 min)		❖ Identify the structure of eye ball construction. ❖ Identify poses ❖ Working with angles and timings. ❖ Sound narration ❖ View output

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-310	Mini Project	6	90	40	60

Guidelines:

1. Students have to be divided into groups consisting of 4 to 6 members.
2. Each group has to develop a Miniproject by applying the knowledge acquired during previous and current semesters.
3. They have to approach nearby TV studios, Film Industries, Photo and Video Studios , Multimedia centers , DTP centres, Printing presses to collect the information and the Day to day Short term Projects related to Photography, Animation, Print Media and Visual media.
4. They have to be in a position to develop Visiting Cards, Logos, Invitation cards, Brochures, News papers, banners, Hotel Menu cards etc..
5. Develop Book covers for Various Local Publishers.
6. Any other local Animation and Multimedia related Jobs have to be taken up.
7. They have to Produce the Project report at the end of the semester.
8. They should conduct minimum three seminars/Workshops to explain the progressive development of their project with co project members and the staff.

FOURTH SEMESTER

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION
CURRICULUM-2020
(IV Semester)

Sub Code	Name of the Subject	Instruction Periods/Week		Total Periods Per Semester	Scheme Of Examinations			
		Theory	Practicals		Duration (hrs)	Sessional Marks	End Exam Marks	Total Marks
THEORY SUBJECTS								
AM-401	Mathematics III	3	-	45	3	20	80	100
AM-402	Multimedia Design Principles	5	-	75	3	20	80	100
AM-403	3D Modelling and Texturing	5	-	75	3	20	80	100
AM-404	Web Designing	5	-	75	3	20	80	100
AM-405	3D Lighting and Rendering Techniques	5	-	75	3	20	80	100
PRACTICAL SUBJECTS								
AM-406	3D Modelling and Texturing lab	-	3	45	3	40	60	100
AM-407	3D Animation Lab	-	3	45	3	40	60	100
AM-408	Communication Skills	-	3	45	3	40	60	100
AM-409	3D Lighting and Rendering Techniques lab		**3**	**45**	**3**	**40**	**60**	**100**

AM-410	Networking and Web Designing Lab *Note: Develop a Mini project with Web Technologies	-	7	105	3	40	60	100
	Total	**23**	**19**	**630**	**-**	**300**	**700**	**1000**

AM-401&408 Common with all branches
AM-402,403,405,406,409,410 same as DAG

C-20

ENGINEERING MATHEMATICS-III

Course Code	Course Title	No. of Periods/week	Total No. of periods	Marks for FA	Marks for SA
AM-401	Engineering Mathematics-III	3	45	20	80

S.No.	Unit Title	No. of periods	COs mapped
1	Higher order Linear Differential equations with constant coefficients	15	CO1
2	Laplace Transforms	18	CO2
3	Fourier Series	12	CO3
	Total Periods	45	

Course Objectives	(i) To learn the principles of solving differential equations of second and higher order. (ii) To comprehend the concept of Laplace transformations and inverse Laplace transformations. (iii) To understand the concept of Fourier Series expansion of functions.

Course Outcomes	CO1	Solve homogeneous and non-homogeneous differential equations of second and higher order.
	CO2	Find Laplace and inverse Laplace transforms of various functions.
	CO3	Expand given functions as Fourier series and half- range Fourier Sine and Cosine series.

ENGINEERING MATHEMATICS – III

Learning Outcomes

Unit-I

Differential Equations of higher order

C.O. 1 Solve homogeneous and non-homogeneous differential equation of second and higher order.

L.O 1.1 Solve Differential equations of the type $(aD^2 + bD + c) y = 0$ where a, b, c are real numbers and provide examples.

1.2 Solve higher order homogeneous differential equations with constant coefficients and provide examples.

1.3 Define complementary function, particular Integral and general solution of a non-homogeneous differential equation.

1.4 Describe the methods of solving *f(D) y = X* where *f(D)* is a polynomial of nth order and *X* is a function of the forms $k,\ e^{ax},\ \sin ax, \cos ax,\ x, x^n$ and their linear combinations where n is a positive integer, with examples.

Unit-II

Laplace Transforms

C.O. 2 Find Laplace and inverse Laplace transforms of various functions.

L.O. 2.1 Define Laplace Transform and explain the sufficient conditions of existence of Laplace Transform

2.2. Obtain Laplace transforms of standard functions and solve simple problems.

2.3 Write the properties of Laplace Transform – Linearity property, First shifting theorem (without proof) and Change of Scale property and solve simple problems.

2.4. Write the Laplace Transform of unit step function and second shifting theorem (without proof) and solve simple problems.

2.5. Write formulae for Laplace transform of functions with multiplication by t^n and division by t, Laplace transform of derivatives, evaluation of some definite integrals using Laplace Transforms and solve simple problems.

Syllabus for Unit test-I completed

2.6 Define inverse Laplace Transform, obtain inverse Laplace Transforms of standard functions and solve simple problems.

2.7 Write linearity property, first and second shifting theorems (without proof), change of scale property of inverse Laplace transform and solve simple problems.

2.8 Write inverse Laplace transforms of derivatives and integrals and solve simple problems.

2.9 Write inverse Laplace transforms of functions with multiplication by s and division by s and solve simple problems.

2.10 Write inverse Laplace transforms of functions using partial fractions and solve some simple problems.

2.10 Define convolution of two functions, state convolution theorem (without proof) and solve simple problems.

Unit-III

Fourier series

C.O. 3 Expand given functions as Fourier series and half- range Fourier Sine and Cosine series

L.O. 3.1 Define the orthogonality of functions in an interval.

3.2 Define Fourier series of a function in the intervals $(c, c + 2\pi)$ and $(c, c + 2l)$ and write the Euler's formulae for determining the Fourier coefficients.

3.3 Write sufficient conditions for the existence of Fourier series expansion of a function.

3.4 Find Fourier series of simple functions in the range (0 , 2π) and (-π , π)

3.5 Write Fourier series for even and odd functions in the interval $(-\pi, \pi)$ and $(-l, l)$ expand simple functions.

3.6 Write Fourier series expansion of a function over the interval (0, 2l) and $(-l, l)$ and expand simple functions.

3.7 Write half-range Fourier sine and cosine series of a function over the interval (0, π) and $(0, l)$ and expand simple functions.

Syllabus for Unit test-II completed

Engineering Mathematics – III

CO/PO - Mapping

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	3	2	1	1				2	3	2
CO2	3	3	3	3				3	3	3
CO3	3	3	3	3				3	3	3
Avg	3	2.66	2.33	2.33				2.66	3	2.66

3 = Strongly mapped (High), **2 =** Moderately mapped (Medium), **1 =** Slightly mapped (Low)

Note:

PO5: Appropriate quiz programme may be conducted at intervals and duration as decided by concerned teacher.

PO6: Seminars on applications of mathematics in various engineering disciplines are to be planned and conducted.

PO7: Such activities are to be planned that students visit library to refer standard books on Mathematics and latest updates in reputed national and international journals, attending seminars, learning mathematical software tools.

PSO1: An ability to understand the concepts of basic mathematical concepts and to apply them in various areas like computer programming, civil constructions, fluid dynamics, electrical and electronic systems and all concerned engineering disciplines.

PSO2: An ability to solve the Engineering problems using latest software tool, along with analytical skills to arrive at faster and appropriate solutions.

PSO3: Wisdom of social and environmental awareness along with ethical responsibility to have a successful career as an engineer and to sustain passion and zeal for real world technological applications.

C-20

Engineering Mathematics – III

PO- CO – Mapping strength

PO no	Mapped with CO no	CO periods addressing PO in column I		Level (1,2 or 3)	Remarks
		No	**%**		
1	CO1, CO2, CO3	45	100%	3	
2	CO1, CO2, CO3	37	82.2%	3	>40% Level 3
3	CO1, CO2, CO3	32	71.1%	3	Highly
4	CO1, CO2, CO3	32	71.1%	3	addressed
5					
6					25% to 40%
7					Level 2
PSO 1	CO1, CO2, CO3	37	82.2%	3	Moderately
PSO 2	CO1, CO2, CO3	45	100%	3	addressed
PSO 3	CO1, CO2, CO3	36	80%	3	5% to 25% Level 1 Low addressed <5% Not addressed

ENGINEERING MATHEMATICS – III

(Common Subject)

Course Content

Unit I: Differential Equations of higher order

1. Solve Homogenous linear differential equations with constant coefficients of order two and higher with emphasis on second order.

2. Solve Non-homogenous linear differential equations with constant coefficients of the form f(D)y = X where X is in the form k(constant), e^{ax}, sinax, cosax, x^n, where n is a positive integer, finding complimentary function, particular integral and general solution.

Unit II: Laplace Transforms

3. Definition, sufficient conditions for existence of LT, LT of elementary functions, linearity property, state first shifting theorem, change of scale property, multiplication by t^n, division by t, LT of derivatives and integrals, LT of unit step function, state second shifting theorem, inverse Laplace transforms- state shifting theorems and change of scale property, multiplication by s^n and division by s, derivatives, integrals, examples of inverse LT using partial fractions, state convolution theorem with simple examples.

Unit III: Fourier series

4. Orthogonality of trigonometric functions, Representation of a function in Fourier series over the interval $\left(c,\ c+2\pi\right)$ and $\left(c,\ c+2l\right)$, Euler's formulae , sufficient conditions for existence of Fourier series expansion of a function, Fourier series expansion of basic functions limited to k(constant), $x, x^2, \sin ax, \cos ax, e^{ax}$ and their combinations over the intervals $\left(0,\ 2\pi\right), \left(-\pi, \pi\right), \left(0,\ 2l\right), \left(-l, l\right)$, Fourier series for even and odd functions over $\left(-\pi, \pi\right) \text{and} \left(-l, l\right)$, Fourier half-range sine and cosine series over $\left(0,\ \pi\right) \text{and} \left(0,\ l\right)$

Textbook:

Engineering Mathematics-I, a textbook for first year diploma courses, prepared & prescribed by SBTET, AP.

Reference Books:

1. B.S.Grewal, Higher Engineering Mathematics, Khanna Publishers
2. M.R. Spiegel, Schaum's Outline of Laplace Transforms, Schaums' Series
3. M.Vygodsky, Mathematical Handbook: Higher Mathematics, Mir Publishers, Moscow.

Blue print

S. No	Chapter/ Unit title	No of Periods	Weightage allotted	Marks wise distribution of weightage				Question wise distribution of weightage				COs mapped
				R	U	Ap	An	R	U	Ap	An	
1	Unit – I Higher order Linear Differential equations with constant coefficients	15	28	11	11	3	3	2	2	1	1	CO1
2	Unit - II Laplace Transforms	18	33	11	11	11	0	2	2	2	0	CO2
3	Unit - III Fourier Series	12	19	3	3	3	10	1	1	1	1	CO3
	Total	45	80	25	25	17	13	5	5	4	2	

R: Remembering Type   : 25 Marks
U: understanding Type   : 25 Marks
Ap: Application Type   : 17 Marks
An: Analysing Type   : 13 Marks

C-20

Engineering Mathematics – III

Unit Test Syllabus

Unit Test	Learning Outcomes to be Covered
Unit Test-I	From LO 1.1 to 2.5
Unit Test-II	From LO 2.6 to 3.7

Unit Test I   **C –20, AM-401**

State Board of Technical Education and Training, A. P
First Year
Subject name: **Engineering Mathematics-II**
Sub Code: **CM -401**

Time : 90 minutes   Max.marks:40

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                                  Part-A   **16Marks**

Instructions: **(1) Answer all questions.**
                  (2) First question carries four marks and the remaining questions carry three marks each

1. Answer the following:

   a. Write the auxiliary equation for given differential equation $\left(D^2+4\right)y=0$ (CO1)

   b. For given differential equation $f(D)y=0$, if roots of auxiliary equation are 1,-1,then $y=$
   _____   (CO1)

   c. $L\left\{e^{3t}\right\}=$ _____   (CO2)

   d. $L\{f(t)\}=\overline{f}(s)$ then $L\left\{e^{at}f(t)\right\}=\overline{f}(s+a)$: State TRUE/FALSE   (CO2)

2. Solve $\left(D^2-2D+1\right)y=0.$ (CO1)

3. Find the particular integral of $\left(D^2+D+4\right)y=e^x$ (CO1)

4. Evaluate $L\left\{(t-1)^2\right\}$ (CO2)

5. Evaluate $L\left\{t^2 + 2\cos t + 3\sin t\right\}$ (CO2)

Part-B   **3×8=24**

Instructions: (1) Answer **all** questions.

(2) Each question carries **eight** marks

(3) Answer should be comprehensive and the criterion for valuation

is the content but not the length of the answer.

6. A) Solve $\left(D^4 - 5D^2 + 4\right)y = 0.$ (CO1)

or

B) Solve $\left(D^2 + D - 6\right)y = 1 + e^{-3x}.$ (CO1)

7. A) Solve $\left(D^2 + 3D + 2\right)y = x^2 + \sin x.$ (CO1)

or

B) Solve $\left(D^2 - D\right)y = 2e^x + 3\cos x.$ (CO1)

8. A) Evaluate $L\left\{e^{3t}\cos^2 t\right\}$ (CO2)

or

B) Evaluate $L\left\{e^t (t+1)^2\right\}$ (CO2)

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254

Unit Test II

State Board of Technical Education and Training, A. P
First Year
Subject name: **Engineering Mathematics-II**
Sub Code: **AM-401**

Time : 90 minutes   Max.marks:40

Part-A   **16Marks**

Instructions: (1) Answer **all** questions.
                       (2) First question carries **four** marks and the remaining questions carry **three** marks each

1.   Answer the following:

   a. $L\{f(t)\} = \overline{f}(s)$ then $L\{tf(t)\} = -\dfrac{d}{ds}\left(\overline{f}(s)\right)$: State TRUE/FALSE   (CO2)

   b. $L^{-1}\left\{\dfrac{1}{s-3}\right\} = ?$ (CO2)

   c. $L^{-1}\left\{\dfrac{1}{s^2+a^2}\right\} = ?$ (CO2)

   d.   Write the Fourier series for the function $f(x)$ in the interval $c < x < c+2\pi$.   (CO3)

2.   Evaluate $L\{te^t\}$.   (CO2)

3.   Evaluate $\displaystyle\int_0^\infty e^{-3t}\sin 4t\,dt$.   (CO2)

4.   Evaluate $L^{-1}\left\{\dfrac{3}{s+4}+\dfrac{2}{s^2+16}-\dfrac{s}{s^2-4}\right\}$.   (CO2)

5.   Evaluate Fourier coefficient a_0 for $f(x)$ in the interval $(-\pi,\pi)$. (CO3)

Instructions: **(1) Answer all questions.**

                 (2) Each question carries eight marks

                 (3) Answer should be comprehensive and the criterion for valuation

                    is the content but not the length of the answer.

6.   A) Evaluate $L\left\{te^{-t}\cos t\right\}$.   (CO2)

           or

     B) Evaluate $L\left\{\dfrac{\cos at-\cos bt}{t}\right\}$.   (CO2)

7.   A) Evaluate $L^{-1}\left\{\dfrac{s}{(s+1)(s^2+1)}\right\}$.   (CO2)

           or

     B) Evaluate $L^{-1}\left\{\dfrac{s}{(s-1)^4}\right\}$. (CO2)

8.   A) Obtain the Fourier series for the function $f(x)=e^x$ in the interval $(0,2\pi)$.   (CO3)

           or

     B) Obtain the half range Fourier cosine series of $f(x)=x^2$ in $(0,1)$.   (CO3)

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STATE BOARD OF TECHNICAL EDUCATION, A.P
ENGINEERING MATHEMATICS –CM- 401

<u>TIME : 3 HOURS</u>   MODEL PAPER- I   <u>MAX.MARKS : 80M</u>
PART-A

Answer All questions. Each question carries THREE marks.   **10x3=30M**

1. Solve $\left(D^2 - 3D + 2\right)y = 0.$ **CO 1**

2. Solve $\left(D^2 + D + 1\right)y = 0.$ **CO 1**

3. Find the particular integral of differential equation $\left(D^2 + 4\right)y = \sin 2x.$ **CO 1**

4. Find the particular integral of differential equation $\left(D^2 + 3D + 2\right)y = e^{3x}.$ **CO 1**

5. Find $L\left\{2e^{3t} + \sin 3t + \cosh t\right\}.$ **CO2**

6. Find $L\left\{e^t \cos 4t\right\}.$ **CO2**

7. Find $L^{-1}\left\{\dfrac{1}{s^2} + \dfrac{4}{s^2 + 4} + \dfrac{3s}{s^2 - 9}\right\}.$ **CO2**

8. Find the value of a_0 in the Fourier expansion of $f(x) = e^x$ in the interval $(0, 2\pi).$ **CO3**

9. Find the Fourier coefficients of $f(x)$ in the interval $(-\pi, \pi).$ **CO3**

10. Find the value of a_1 in the half range cosine series of $f(x) = k$ in the interval $(0, \pi).$ **CO3**

PART-B

Answer All questions. Each question carries EIGHT marks. 5x8=40M

11. A) Solve $\left(D^3 - 6D^2 + 11D - 6\right)y = 0.$ **CO 1**

                    Or

    B) Solve $\left(D^2 - 9\right)y = e^{3x} + e^{-3x}.$ **CO 1**

12. A) Solve $\left(D^2 - 4D + 4\right)y = \sin 3x.$ **CO1**

Or

B) Solve $(D^2 + 2D + 2)y = x^2 + x + 1$. **CO1**

13. A) Evaluate $L\{te^t \cos t\}$. **CO2**

Or

B) Evaluate $L\{t^2 \cos 2t\}$. **CO2**

14. A) Evaluate $L\left\{\dfrac{\sin 5t \sin t}{t}\right\}$. **CO2**

Or

B) Evaluate $\displaystyle\int_0^\infty \dfrac{\sin t}{t}dt$. **CO2**

15. A) Find $L^{-1}\left\{\dfrac{1}{s(s+1)(s+2)}\right\}$. **CO2**

Or

B) Using convolution theorem find $L^{-1}\left\{\dfrac{s}{(s^2+1)(s^2+4)}\right\}$. **CO2**

PART-C

Answer the following question. Question carries TEN marks. 1x10=10M

16. Find the Fourier expansion of $f(x) = x + x^2$ in the interval $(-\pi, \pi)$ and hence deduce that

$$\dfrac{1}{1^2} - \dfrac{1}{2^2} + \dfrac{1}{3^2} - \dfrac{1}{4^2} + = \dfrac{\pi^2}{12}.$$ **CO3**

TIME : 3 HOURS   MODEL PAPER- 2   MAX.MARKS : 80M

PART-A

   Answer All questions. Each question carries THREE marks.   10x3=30M

1. Solve $\left(D^2 + 4D + 4\right) y = 0$. **CO 1**

2. Solve $\left(D^2 + 9\right) y = 0$. **CO 1**

3. Find the particular integral of differential equation $\left(D^2 - 4D + 3\right) y = e^{4x}$. **CO 1**

4. Find the particular integral of differential equation $\left(D^2 - 4D - 5\right) y = \cos 2x$. **CO 1**

5. Find $L\left\{2 - e^{-2t} + \sinh 6t\right\}$. **CO2**

6. Find $L\left\{e^{-2t}t^2\right\}$. **CO2**

7. Find $L^{-1}\left\{\dfrac{1}{s^2} + \dfrac{4}{s^2+4} + \dfrac{3s}{s^2-9}\right\}$. **CO2**

8. Find the value of a_0 in the Fourier expansion of $f(x) = x + x^2$

in the interval $\left(-1,1\right)$.   **CO3**

9. Write Euler's formula of Fourier expansion of $f(x)$ in the interval $\left(c, c+2\pi\right)$. **CO3**

10. Find the value of a_1 in the half range cosine series of $f(x) = \pi$ in the interval

$\left(0,\pi\right)$.   **CO3**

PART-B

Answer All questions. Each question carries EIGHT marks. 5x8=40M

11. A) Solve $\left(D^3 + 1\right) y = 0$. **CO 1**

                    Or

   B) Solve $\left(D^2 + D - 6\right) y = e^{3x} + e^{-3x}$. **CO 1**

12. A) Solve $\left(D^2 - 3D + 2\right) y = \cos 3x$. **CO1**

Or

B) Solve $\left(D^2 + 2D + 1\right) y = 2x + x^2$. **CO1**

13. A) Evaluate $L\left\{e^{3t}\cos^2 t\right\}$. **CO2**

Or

B) Evaluate $L\left\{t^2 \cos 2t\right\}$. **CO2**

14. A) Evaluate $L\left\{\dfrac{e^{-at} - e^{-bt}}{t}\right\}$. **CO2**

Or

B) Using Laplace transforms evaluate $\displaystyle\int_0^\infty \cos 3t\, dt$. **CO2**

15. A) Find $L^{-1}\left\{\log\left(\dfrac{s^2 + 1}{(s-1)^2}\right)\right\}$. **CO2**

Or

B) Using convolution theorem find $L^{-1}\left\{\dfrac{1}{\left(s^2 + 1\right)\left(s + 1\right)}\right\}$. **CO2**

PART-C

Answer the following question. Question carries TEN marks. 1x10=10M

16. Find the Fourier expansion of $f(x) = \left(\pi - x\right)^2$ in the interval $0 \prec x \prec 2\pi$ and hence deduce that

$$\frac{1}{1^2} + \frac{1}{2^2} + \frac{1}{3^2} + - - - = \frac{\pi^2}{6}.$$

CO3

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-402	Multimedia Design Principles	5	75	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	Design Overview	10	CO1
2.	Elements of Visual Design	10	CO1, CO2
3.	Human Computer Interface Design & Information Architecture	20	CO2,CO3,CO5
4.	Animation Design	20	CO3,CO4,CO5
5.	Visual Effects & Design Application Examples	15	CO1,CO2,CO3,CO4,CO5
	Total Periods	75	

Course Objectives	- Describe with Multimedia design , learning modes, system quality and elements of user interface - Differentiate elements of Visual design and Human computer interface design - Acquire knowledge on information architecture - Explain animation design and visual effects - Explain the concept of design in Multimedia applications

CO NO		COURSE OUTCOMES
CO1	**AM**-402.1	Explain factors related to Multimedia design
CO2	**AM**-402.2	Describe elements of Visual design
CO3	**AM**-402.3	Explain Human computer interface design and information architecture
CO4	**AM**-402.4	Explain animation designsaspects.
CO5	**AM**-402.5	Applying various effects to visual design in Multimedia applications

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-402.1	2	2				2	2	2		
AM-402.2		3					2	2	2	
AM-402.3		2	2			3	2	2		2
AM-402.4		2		3			2			
AM-402.5	2	2		2	2		3	2		2
Average	2	2.2	2	2.5	2	2.5	2.2	2	2.5	2

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

Learning Outcomes:

1.0   Design Overview

   1.1   State the need for design.

   1.2   State the human factors that affect multimedia design.

   1.3   Explain Role of human with respect to perception, Skill level and behavior, dialogues and tasks in multimedia.

   1.4   Discuss about Learning and Learning modes.

   1.5   List Domains of Learning. (Cognitive , Affective and Psychomotor)

   1.6   Explain Domains of Learning.

   1.7   Discuss about Multimedia Educational Software.

   1.8   Modeling

   1.9   System quality

   1.10   List the elements of user interface.

2.0   Elements of visual design

   2.1   List basic elements of visual design.

   2.2   Describe basic elements of visual design

      2.2.1   Line

      2.2.2   Shape

      2.2.3   Colour

      2.2.4   Texture

      2.2.5   Layout

      2.2.6   Motion

      2.2.7   Framing

      2.2.8   Surfaces

      2.2.9   Visual hierarchy

      2.2.10   Typography

   2.3   Explain how to compose elements of visual design.

   2.4   State the importance of Visual Rhetoric.

   2.5   Explain how to organize information to get good design.

   2.6   List the factors considered by designers when creating

      2.6.1   illustration and visual design.

      2.6.2   Designing for screen

2.7   State the purpose of spatial relationships in the interface.
2.8   List the symbols and semiotics used in interface design.
2.9   Discuss about Visual Design Methodology.
2.10   State the purpose of Clarity, Consistency, Appearance in Visual design
2.11   List the visual coding layout principles.
2.12   Explain visual coding layout principles.

3.0   Human Computer Interface Design & Information Architecture
3.1   State the importance of Information design.
3.2   Describe Information design.
3.3   Describe interaction design.
3.4   Describe Sensorial design.
3.5   List the guidelines for user interface design.
3.6   Explain how to design dialogue.
3.7   Discuss about Cognitive Walkthrough.
3.8   Give some case-studies/examples of Cognitive Walkthrough
3.9   List some different android applications and their interaction designs.
3.10   Explain the steps used in human computer interaction designing.
3.11   State the need for Definitions of story.
3.12   State the need for flowchart in HCI design.
3.13   State the need for scripts.
3.14   State the need for Storyboard.
3.15   State the importance of the Pre production documentations.
3.16   Explain about interactive flowchart and story board.
3.17   Discuss suitable case studies for human computer interaction.

4.0   Animation Design
4.1   State the use of perspective drawing in Animation design.
4.2   Explain how to learn perspective drawing.
4.3   Explain about Gesture drawing.
4.4   Explain about Action drawing.
4.5   Explain about Line of Action.
4.6   Explain about Dynamic poses.
4.7   Explain about Action Sketches.
4.8   List some 2D design concepts and 2D composition.
4.9   List the Principles of Animation.
4.10   Explain about process of 2D animation.
4.11   Explain the process of film making.
4.12   State the need of editing and animatics in animation.
4.13   Explain how to insert sound effects in Animation.
4.14   List various sound effects.
4.15   Explain the process of sound recording in Animation.
4.16   State the purpose of character in Animation.
4.17   Explain the process of designing a character in Animation.
4.18   Explain the process of developing a character in Animation.

5.0   Visual Effects & Design Application Examples
5.1   State the need for design.

263

5.2   List some Design specifics in Visual effects.
5.3   State the purpose of scripts in Design of Visual effects.
5.4   State the purpose of storyboards in Visual effects.
5.5   List the advantages of storyboards.
5.6   Explain how effectively storyboard can be useful in designing visual effects.
5.7   State the purpose of flowchart in designing visual effects.
5.8   Draw some examples of flowcharts in designing visual effects.
5.9   Explain the process of writing a script in designing visual effects.
5.10 Explain scripts with an examples.
5.11 State the need for screen layout designs in visual effects.
5.12 Explain Screen layout designs with suitable example.
5.13 State the need for human computer interaction in visual effects.
5.14 Discuss about hypermedia.
5.15 Discuss about interaction in visual effects.

COURSE CONTENT

1. **Design Overview:** Need for design, Human Factors, ,Fundamentals of Human, Perception, Human skill level and behavior, dialogues and tasks, learning and learning modes, Cognitive Domain Learning, Affective and Psychomotor Domain Learning, Multimedia Educational Software, Modeling, System Quality, Elements of user interface

2. **Elements of Visual Design::** Introduction to basic visual elements-Introduction to basic visual elements-Line, shape, colour, texture, layout, motion, framing, surfaces, visual hierarchy, typography. Elements of composition, visual rhetoric, organizing- information, factors designers consider when creating illustration and visual design, designing for screen, spatial relationships in the interface, symbols and semiotics in the interface. Visual Design methodology. Clarity, consistency, appearance, visual coding layout principles.

3. **Human Computer Interface Design & Information Architecture:** Information Design, interaction and sensorial design, guidelines for user interface design, dialogue design, cognitive walkthrough- case studies/examples- Different Android Applications.
    Definitions of story, flowchart, scripts, storyboard. Necessity of the pre-production documentations, Interactive Flowchart and storyboard. Examples and case studies

4. **Animation Design :** Introduction & Learning perspective drawing- Drawing for Animation: Gesture Drawing-Action Drawing, Line of Action, Dynamic Poses, Action Sketches- 2D Design concepts & composition- Principles of Animation- Process of 2D Animation Film Making- Editing & Animatics- Input Sound, Sound Effects-Sound Recording- Designing, Developing Characters

5. **Visual Effects & Design Application Examples:** Need for design, design specifics, scripts, storyboards, advantages and effectiveness of storyboards, flowcharts, writing a script, screen layout designs, human computer interaction, hypermedia & interaction

REFERENCE BOOKS
1. Principles of Multimedia 2nd Edition – Ranjan Parekh
2. Multimedia Design Systems, Pearson Publications, Prabhad K. Andleigh
3. A Book of Multimedia Principles – Ruth Clark & Richard Mayer

Model Blue print:

S.No.	Chapter/Unit title	No.of periods	Weightage Allocated	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	Design Overview	10	11	3	8			1	1			CO1
2	Elements of Visual Design	10	11		11		10		2		*	CO1,CO2
3	Human Computer Interface Design & Information Architecture	20	17	3	14		10	1	3		*	CO1,CO2,CO3
4	Animation Design	20	17	3	6	8	10	1	2	1	*	CO1,CO2,CO3,CO4
5	Visual Effects & Design Application Examples	15	14	6		8	10	2		1	*	CO1,CO2,CO3,CO4,CO5
	Total *	75	70 +10*	15	39	16	*10	5	8	2	1	

Note: Part-C: 10 marks single analytical question may be chosen from any or combination of starred(*) chapters

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 3.17
Unit test-2	From 4.1 to 5.15

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER
Multimedia Design Principles
UNIT TEST-1
SCHEME:C-20 :: SUB CODE:AM-402

MAX MARKS:40   **TIME: 90Minutes**

PART-A   **16Marks**

Instructions: 1) Answer all questions
                  2) First question carries 4marks, and each question of remaining carries 3marks.

1.a)Multiplane camera was introduced by Walt Disney. (True/False)   (CO4)

b) -----------------------refers to any type of application or presentation that involves more than one type of media, such as text, graphics, video, animation, and sound.   (CO1)

c)SVG stands for _____.   (CO5)

d) Subsystem of human machine processor that handles actions of system is called

a) Cognitive System   b) Motor System

c) Perceptual System   d) Autonomic System   (CO3)

2) List basic elements of visual design.   (CO2)

3) State the need for flowchart in HCI design.   (CO3)

4) List various sound effects.   (CO4)

5) State the need for design.   (CO5)

PART-B   **3X8=24Marks**
Instructions:1) Answer all questions
                2) Each question carries 8 Marks
                3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

6. a)Explain how to organize information to get good design.   (CO2)

266

Or

b)Explain visual coding layout principles.   (CO2)

7. a)Explain the steps used in human computer interaction designing.   (CO3)

Or

 b)Explain about Gesture drawing.   (CO4)

8. a)Explain about Action Sketches.   (CO4)

Or

  b) Explain the purpose of scripts in Design of Visual effects.   (CO5)

BOARD DIPLOMA EXAMINATIONS
DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER – YEAR END EXAMINATION
Multimedia Design Principles

SCHEME:C-20 :: SUB CODE:AM-402

MAX MARKS:80   **TIME: 3HOURS**

PART-A

10X3=30Marks

Note: Answer all questions

1. List Domains of Learning.   (CO1)

2.Describe basic elements of visual design   (CO2)

3.List the guidelines for user interface design.   (CO3)

4. State the need for scripts.   (CO3)

5.State the importance of Information design.   (CO3)

6.List the Principles of Animation.   (CO4)

7.State the use of perspective drawing in Animation design.   (CO4)

8. State the purpose of character in Animation.   (CO4)

9.List some Design specifics in Visual effects.   (CO5)

10. List the advantages of storyboards.   (CO5)

PART-B

Note: Answer all questions**5x8=40Marks**

11. A.Explain about Domains of Learning.   (CO1)

                                        OR

11.B.Explain Role of human with respect to perception, Skill level and behavior, dialogues and tasks in multimedia.   (CO1)

12.A.Explain how to compose elements of visual design.   (CO2)

                                        OR

12.B. Explain visual coding layout principles.   (CO2)

13.A.Explain how to design dialogue.   (CO3)

                                        OR

13.B. Explain the steps used in human computer interaction designing.   (CO3)

14.A Explain the process of film making.   (CO4)

                                        OR

14.B Explain how to insert sound effects in Animation.   (CO4)

15.A.Explain how effectively storyboard can be useful in designing visual effects. (CO5)

                                        OR

15.B.Explain the process of writing a script in designing visual effects. (CO5)

PART-C

1X10=10Marks

16.Explain the process of developing a Micky-Mouse character in Animation.   (CO4)

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-403	3D Modelling and Texturing	5	75	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	Maya Interface & Workflow	15	CO1
2.	Low Polygon Modelling Techniques	10	CO2
3.	Advance Modelling Techniques	20	CO3
4.	Texturing Work Flow	15	CO4
5.	Advance Texturing Techniques	15	C05
	Total Periods	75	

Course Objectives	• To familiarize with User interface tools in MAYA software. • To develop modelling techniques for Polygon using Polygon tools and set model. • To develop 3D modelling techniques • To understand Mapping Techniques in texturing. • To apply character texturing techniques

	At the end of the course the student able to learn following:		
Course Outcomes	CO1	AM-403.1	Describes various User interface tools in MAYA software
	CO2	AM-403.2	Develop different Logos and sample models using Polygon modelling Techniques
	CO3	AM-403.3	Develop a picture using 2D/3D Modelling techniques
	CO4	AM-403.4	Apply different mapping Techniques.
	CO5	AM-403.5	Apply different character texturing Techniques

CO-PO/PSO Matrix:

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-403.1	3					1		3	1	1
AM-403.2	2	2	2	1		3		1	3	1
AM-403.3	3	1		1		1	1		1	1
AM-403.4	1		2	2	1		1	2	1	2
AM-403.5	3		2		1	1	1	2		2
Average	2.4	1.5	2	1.3	1	1.5	1	2	1.5	1.4

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

Learning Outcomes:

1.0 MAYA INTERFACE&WORKFLOW
1.1.   Identify Menu bar and Status bar in Maya layout.
1.2.   State the need of Shelves in Maya layout.
1.3.   Study about Toolbox tools to move, scale and rotate object.
1.4.   Describe viewport in Maya layout.
1.5.   Explain navigation controls in Maya layout.
1.6.   Explain the importance of Channel Box in Maya layout.
1.7.   Describe Layer Editor in Maya layout.
1.8.   Explain Attribute Editor in Maya layout.
1.9.   Explain Time & Range Slideroptions in Maya layout.
1.10. Check the various playback options in Maya layout.
1.11. Explain command help lines in Maya.
1.12. State the need of outliner in Maya.
1.13. Describe save preferences in Maya layout
1.14. Demonstrate Export and Import options in Maya.
1.15. Study various Project Folder Setting in Maya interface.
1.16. Explain different types of Curves in Maya.
1.17. Explain about various Curve Editing Tools.
1.18. Explain Curve Fillet andRebuild Curves.
1.19. Explain about NURBS Surfaces.
1.20. Describe the necessity of object and component in Maya.
1.21. Explain the process of Revolve in Maya.
1.22. State the need of Loft in Maya.
1.23. Explain briefly Planar concept in Maya
1.24. Explain Extrude concept.
1.25. Describe Brail and Bevel tools in Maya.
1.26. State the need of NURBS Boolean in Maya.
1.27. Explain Sculpt Geometry Tools in Maya.
1.28. Describe Stitching & Fillet techniques in Maya.

2.0 LOW POLYGON MODELLING TECHNIQUES:

2.1. Study the purpose of Polygons Primitives Object &Component.
2.2. Describe Polygon Selection– Combine and Group.
2.3. State the need of Extract in polygon modeling.
2.4. Explain the concept of Booleans in polygon modeling.
2.5. Explain Triangulate &Quad angulate.
2.6. Explain Component Selection Tools.
2.7. Explain Component Editing Tools.
2.8. Explain various Split & Bevel Tools.
2.9. Describe Poke & Wedge Face with examples.
2.10. Explain differentChamfers & Split Tools.
2.11. Explain various Sculpt Geometry Tools.
2.12. Develop Logos for various examples like your college, branch, city… etc.
2.13. Develop a Simple Models according to your ideology by using various polygon modelling techniques.

3.0 ADVANCE MODELLING TECHNIQUES

2DMODEL PROCESS:

3.1. Study about basic Anatomy Needs for Character Model.
3.2. Explain Model sheet preparation in 2D modelling.
3.3. Explain the rules to draw Model Sheet in different views.
3.4. Explain the Conditions of Model Sheet Preparation in 2D modelling.
3.5. Describe the steps to prepare model sheet in Front View and Side View.
3.6. Explain the Concept of Characters in 2D modeling.
3.7. Explain Pose Studies in 2D modeling.
3.8. Mention the rules to draw Rapid Sketches in 2D modeling.
3.9. Explain Character Blocking in 2D modeling.
3.10. State the need of Polygon Nodes in 2D modeling.
3.11. Explain Mesh concept with examples in 2D modeling.
3.12. Mention the steps to Avoid Triangle in 2D modeling.
3.13. Describe Basic Shapes Making in 2D modeling.
3.14. Create Low Resolution Model in 2D modeling.
3.15. Explain Poly Count in 2D modeling.
3.16. Mention the steps to Reduce Poly Count in 2D modeling.

3D MODEL PROCESS:

3.17. Know how to set Model Sheets in 3D modeling.
3.18. Explain the concept of Image Planes in modeling with examples.
3.19. Explain how to create the following
    3.19.1. Body Parts
    3.19.2. Arms
    3.19.3. Legs

3.19.4. Fingers

3.19.5. Toe

3.20. Describe Polygon Normal's concept in 3D modeling.

3.21. Explain Sculpting Meshes in 3D modeling.

3.22. State the need of Fine Tuning in 3D modeling.

3.23. Give the steps to create Portrait Model in 3D modeling.

3.24. Describe the Head Blocking concept in 3D modeling.

3.25. Explain the steps to create Meshes in 3D modeling.

3.26. State the need of Polygon Editing Tools in 3D modeling.

3.27. Explain how to use Polygon Tools in 3D modeling.

3.28. Explain the steps to create

3.28.1. Male Head

3.28.2. Female Head

3.28.3. Child

3.28.4. Old Man

3.28.5. Realistic Head and Cartoon Head

3.28.6. Ear and Inner Eye

3.28.7. Inner Mouth, Teeth and Tongue

3.28.8. Polygon Hair

4.0 TEXTURING WORK FLOW

4.1. Know about Hyper Shade in Texturing.

4.2. State the need of networking concept in Texturing.

4.3. Explain Texture mapping with different examples.

4.4. Explain about File Texture.

4.5. Describe Texture Resolution concept in Texturing.

4.6. Explain about Texture Filtering.

4.7. Explain the following Mapping Methods in Texturing.

4.7.1. Projection Mapping

4.7.2. Stencil Mapping

4.7.3. Label Mapping

4.7.4. Bump Mapping

4.8. Describe 2D &3D Texture Positioning with examples.

4.9. Explain following Mapping types

4.9.1. Planar Mapping

4.9.2. Cylindrical Mapping

4.9.3. Spherical Mapping.

4.10. Explain about Mapping Manipulators in Texturing.

4.11. Explain Layered Textures with examples.

4.12. State the need of Unwrapping in Texturing.

4.13. Describe UV Texture Editor.

4.14. Explain the steps to create UV Files.

4.15. Explain different UV Edit Tools.

4.16. Explain the purpose of UV Snap Shot in Texturing.

4.17. Explain about Photoshop Edit tool.

4.18. Explain Blending Modes in Texturing.

4.19. Describe various Painting Techniques in Texturing.
4.20. Explain how to use various Brushes in Texturing.
4.21. Write the steps to create PSD Network.
4.22. Explain the process of reloading Maya.
4.23. State the need of Color Correction in Texturing.
4.24. DescribePainting Techniques in Texturing.
4.25. Explain the steps to create Bump Map and Specular Map in Texturing.

5.0 ADVANCE TEXTURING TECHNIQUES
5.1. Explain character texturing techniques.
5.2. Explain Normalize concept in Texturing.
5.3. Describe about Rotate concept in Texturing.
5.4. Explain about Map UV Border in Texturing.
5.5. State the purpose of Relax concept in Texturing.
5.6. Describe about Untold in Texturing.
5.7. Explain about Layout in Texturing.
5.8. Explain the steps to cut UV Edges, Split and Move in Texturing.
5.9. State the purpose of UV Snap Shot in Texturing.
5.10. Explain the concept of Texturing in Photoshop.
5.11. Explain the steps to painting Skin Tone in Texturing.
5.12. Explain different Brush Techniques in Texturing.
5.13. Explain the steps to create the Depth in Texturing.
5.14. Describe various Coloring Techniques in Texturing.
5.15. Explain the process to update With Maya.
5.16. Explain the steps to creating Bump Map.
5.17. Write the process to create PSD File to Jpeg Texture / PNG Texture.
5.18. Explain the steps to exporting Mesh in Texturing.
5.19. Describe about Z-brush Interface.
5.20. Explain about Preferences Setting.
5.21. Explain about High- Resolution Texture Files.
5.22. Describe various Spotlight Tools.
5.23. Explain different Spotlight Techniques.
5.24. Explain how to work with RGB & MRGB Channels.
5.25. Explain about RGB Intensity.
5.26. Explain Z Texturing Character in Texturing.
5.27. Explain Setting Texture Resolution in Texturing.
5.28. State the steps to create Displacement Mapping and Normal Map in Texturing.

COURSE CONTENT

1. **Maya interface & workflow** – Menu Bars- Status Bar – Shelves –Toolbox -Viewport & Navigation Controls - Channel Box – Layer Editor –Attribute Editor –Time & Range Slider – Playback Options – Command & Help Lines – Outliner – Save Preferences – Export & Import –

Project Folder Setting – Intro to Curves –Types Of Curves – Curve Editing Tools – Curve Fillet – Rebuild Curves – Nurbs Surfaces – Object & Component – Revolve – Loft – Planar & Extrude – Brail & Bevel – Nurbs Boolean –Sculpt Geometry Tool – Stitching & Fillet .

2. LOW POLYGON MODELLING TECHNIQUES:

Polygons Primitives – Object &Component – Polygon Selection– Combine, Group, Extract& Booleans– Triangulate &Quad angulate– Component Selection Tools – Component Editing Tools – Split & Bevel Tools – Poke & Wedge Face – Chamfers & Split Tools Sculpt Geometry Tool -Logos & Simple Models

3. ADVANCE MODELLING TECHNIQUES

2D MODEL PROCESS: Anatomy Needs For Character Model – Model Sheet Preparation – Conditions Of Model Sheet Preparation Draw Model Sheet – Front View – Side View – Designing Concept Characters – Pose Studies – Rapid Sketches– Character Blocking – Polygon Nodes – Mesh – Avoid Triangle – Basic Shapes Making – Create Low Resolution Model – Poly Count – Reduce Poly Count

3D MODEL PROCESS: Model Sheets –Image Planes – Blocking With Primitives – Creating Body Parts – Creating Arms & Legs – Creating Fingers & Toe – PolygonsNormal's– Sculpting Meshes – Fine Tuning-Create Portrait Model – Head Blocking – Create Meshes –
Needs Of Polygon Editing Tools – How To Use Polygon Tools – Male Head – Female Head – Child – Old Man – Realistic Head – Cartoon Head – Ear – Inner Mouth – Teeth – Tongue - Inner Eye – Polygon Hair

4. TEXTURING WORK FLOW

Hyper Shade & Networking – Intro to Texture mapping– File Texture – Texture Resolution –Texture Filtering –Mapping Methods– Projection Mapping – Stencil Mapping – Label Mapping – Bump Mapping –2D &3D Texture Positioning –Mapping types-Planar Mapping – Cylindrical Mapping – Spherical Mapping– Mapping Manipulators –Layered Textures

Unwrapping – UV Texture Editor – Create UV Files – UV Edit Tools – UV Snap Shot – Photoshop Edit tool –Blending Modes – Painting Techniques – Using Various Brushes – Creating PSD Network – Reloading Maya – Color Correction – Painting Techniques – Create Bump Map – Specular Map

5. ADVANCE TEXTURING TECHNIQUES

Character texturing Techniques-Normalize, Rotate– Map UV Border, Relax, Untold, Layout – Cut UV Edges, Split, Move– UV Snap Shot – Texturing In Photoshop – Painting Skin Tone – Brush Techniques – Create The Depth – Coloring Techniques – Update With Maya – Creating Bump Map – Create PSD File To Jpeg Texture / PNGTexture
Exporting Mesh – Z-brush Interface – Preferences Setting – High- Resolution Texture Files – Spotlight Tools – Spotlight Techniques – Working With RGB & MRGB Channels – RGB Intensity – Z Texturing Character – Setting Texture Resolution – Create Displacement Mapping –Normal Map.

REFERENCE BOOKS
1. Mastering Maya AERIC KELLER WILEY INDIA PVT LTD 2009 - First Edition
2. Autodesk Maya Techniques Marc – André iguanodon neoreel Autodesk media Entertainment 2008 First Edition
3. Maya with Photoshop Daniel gray BPB Publications 2007- First Edition

Model Blue Print:

S.No.	Chapter/Unit title	No.of periods	Weightage Allocated	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	Maya Interface & Workflow	15	14	3	11			1	2			CO1
2	Low Polygon Modelling Techniques	10	11	3		8		1		1		CO2
3	Advance Modelling Techniques	20	17	3	6	8		1	2	1		CO3
4	Texturing Work Flow	15	14	3	11		10	1	2		*	CO4
5	Advance Texturing Techniques	15	14	6	8		10	2	1		*	C05
	Total	**75**	**70 + 10(*)**					**6**	**7**	**2**		

Note: Part-C: 10 marks single analytical question may be chosen from any or combination of starred chapters

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 3.16
Unit test-2	From 3.17 to 5.28

DIPLOMA IN 3D ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER
3D MODELLING AND TEXTURING
UNIT TEST-1
SCHEME: C-20SUBJ CODE:AM-403

MAX MARKS:40   TIME: 90Minutes

PART-A

16Marks

 Instructions: 1) Answer all questions
                    2) First question carries 4marks, and each question of remaining carries
                      3marks.

   1. a) Triangulation is the decomposition of a polygonal area into a set of triangles. (True/False)
                                                                        (CO2)
        b) NURBS stands for --------------------   (CO1)

        c) ------------------ is an animation technique in which key poses are created to

establish timing and placement of characters and props in a given scene or shot.   (CO3)

        d) Which one of the following is a type of curve in MAYA   [   ]   (CO1)

            I) Fillet Curve   II) Rebuild Curve   III) Both I & II   IV) None

2) State the importance of Viewport in MAYA software.   (CO1)
3) What is curve and list any two types of curves.   (CO1)
4) List various Sculpt geometry tools used in polygon modelling techniques.   (CO2)
5)Write about rapid sketches.   (CO3)

            PART-B   **3X8=24Marks**

 Instructions:1) Answer all questions
                    2) Each question carries 8 Marks
                    3) Answer should be comprehensive and the criterion for valuation is the
                               content but not the length of the answer.

6. a) Explain about various Curve Editing Tools.   (CO1)
                                        Or
   b) Explain Time & Range Slider options in Maya layout.   (CO1)

7. a) List and Explain Component Selection Tools.   (CO2)

276

Or

b) Explain about Chamfers & Split Tools. (CO2)

8. a) Write the Conditions of Model Sheet Preparation in 2D modeling. (CO3)

Or

b) Explain about Polygon Nodes in detail. (CO3)

BOARD DIPLOMA EXAMINATIONS
DIPLOMA IN 3D ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER – YEAR END EXAMINATION
3D MODELLING AND TEXTURING
SCHEME: C-20SUBJ CODE:AM-403

<u>**MAX MARKS:80**</u>   **TIME: 3HOURS**

PART-A

Note: Answer all questions   **10X3=30Marks**

1. Write briefly about Revolve in MAYA technology. (CO1)

2. List out the Toolbox tools used in MAYA software. (CO1)

3. What are the various Sculpt geometry tools used in polygon modelling techniques. (CO2)

4. State the purpose of Pose studies? (CO3)

5. Write briefly about rapid sketches. (CO3)

6. What is fine tuning in 3D. (CO3)

7. State about 2D &3D Texture Positioning. (CO4)

8. List various Mapping types. (CO4)

9. State about UV Snap Shot. (CO5)

10. Explain briefly how to exporting Mesh. (CO5)

PART-B

Note: Answer all questions   **5x8=40Marks**

11. A. Explain about various Curve Editing Tools. (CO1)

OR

B. Explain Time & Range Slider options in Maya layout. (CO1)

12. A. State and Explain Component Editing Tools. (CO2)

OR

B. Explain about various Chamfers & Split Tools. (CO2)

13. A. Explain the Conditions of Model Sheet Preparation in 2D modelling. (CO3)

OR

B. Explain the steps to use Polygon Tools in 3D. (CO3)

14. A. Explain about Mapping Manipulators in detailed. (CO4)

OR

B. Explain various Mapping Methods. (CO4)

15. A. Explain the steps to Cut UV Edges, Split and Move. (CO5)

OR

B. Explain how to create Displacement Mapping and Normal Map. (CO5)

PART-C 1X10=10Marks

16. Draw the picture of a dog by using painting techniques in Photoshop. (CO4)

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA

AM-404	Web Designing	5	75	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	UNIT I: HYPERTEXT MARKUP LANGUAGE (HTML)	15	CO1
2.	UNIT II: SCRIPTING LANGUAGE	15	CO1,CO2
3.	UNIT III: DREAMWEAVER CREATIVE CLOUD	15	CO1,CO3
4.	UNIT IV: WORK SPACE AND VISUAL DEVELOPMENT	15	CO1,CO3,CO4
5.	UNIT V: FLASH WITH ACTION SCRIPTS	15	CO5
	Total Periods	75	

Course Objectives	- Describe basic concepts of WWW and Learn HTML, CSS. - Developing Scripts using Javascript - working with Dream viewer to handle uploading , importing files , folders , images and videos. - Analyze Integrating Layouts, photo shop, Dream viewer, templates to optimize workspace and visual web development with HTML - Working with Action scripts of flash to develop web pages with Movie clips , animations and Games to develop dynamic websites to make user activities live .

CO NO		COURSE OUTCOMES
CO1	AM-404.1	Develop simple web pages using HTML.
CO2	AM-404.2	Develop webpage using Client side scripting Language.
CO3	AM-404.3	Working with Creative cloud environment.
CO4	AM-404.4	Apply features of Workspace and Visual development in web designing.
CO5	AM-404.5	Developing live web pages to achieve dynamic programming.

CO-PO/PSO MATRIX

279

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CO1	2	2	2	2	2	2		3	1	
C02	2	2	2	2	1	2		3	1	
C03	2	2	2	2	1	2	3	1		
C04	2	2	2	2	1	2		3	2	
C05	2	2	2	2	1	2		3	3	2
Average	2	2	2	2	1.2	2	3	2.6	1.75	2

3=strongly mapped, 2=moderately mapped, 1=slightly mapped

Learning Outcomes:

1. **Hypertext Mark-up Language (HTML):**

1.1 Introduction and Evolution of World Wide Web

1.2 Define Browser

1.3 List different types of browsers

1.4 Discuss the Applications of Web Designing

1.5 What is HTML State the advantages of HTML

1.6 Explain the Structure of an HTML Document

1.7 Describe the Standards of HTML

1.8 Explain about various Text Formatting Tags, Positioning Tags and List Tags

1.9 Explain about various Table Formatting Tags, Image Tags and Anchor tags

1.10 Explain about various Frames, Forms and Form Elements

1.11 Explain about Other Tags of HTML

1.12 What is CSS?

1.13 Explain about Styles and Style sheets with CSS

1.14 What is CSS Positioning?

1.15 Explain about Scripting Styles in CSS

2. **SCRIPTING LANGUAGE:**

2.1 Define JavaScript

2.2 syntaxes of JavaScript

2.2.1 literals

2.2.2 variables

2.2.3 constants, comments

2.3 Explain various Operators used in JavaScript

2.3.1 arithmetic

2.3.2 string

2.3.3 logical, bitwise

280

3.10   Write the steps needed for Creating Web Page

3.11   Explain about Graphics for the web

3.12   Explain the steps to Importing HTML

4. **Work Space and Visual Development:**

   4.1 Explain Web- Application Development

   4.2 Define Photoshop Integration

   4.3 Explain about Photoshop Dream weaver Workflows

   4.4 Defining your site

   4.5 Describe Page layout with table

   4.6 Explain various Library temples

   4.7 Define form

   4.8 Define Data Managing

   4.9 Describe about Text and Alignment

   4.10   Explain the procedure to Adding effects

   4.11   Explain the Optimizing Graphics for the web

   4.12   Explain a procedure to Creating navigation Buttons

   4.13   Write steps to maintaining web site

      4.13.1   Write the procedure to Importing HTML

      4.13.2   Write steps to Insert content, Inserting an email

      4.13.3   Explain Getting your site on web

5. **Flash with Action Scripts:**

   5.1 Explain about Action Panel

   5.2 Explain various Conditions

   5.3 Explain various List loops

   5.4 Write a procedure to Create a Hyperlink

   5.5 Explain the procedure to Working with Movie Clips

   5.6 Event Handling

      5.6.1   Definition

      5.6.2   Listing the basic event handlings

      5.6.3   Explain about the basic event handlings

   5.7 Graphics and Animation

      5.7.1   Definitions

COURSE CONTENT

1. Hypertext Mark-up Language (HTML): Introduction and Evolution of World Wide Web, Browsers, Applications of Web Designing, Introduction to HTML, Benefits of HTML, Structure of an HTML Document, HTML Standards.HTML TAGS - Text Formatting Tags, Positioning Tags, List Tags, Table Formatting Tags, Image Tags, Anchor tags, Frames, Forms and Form Elements, and Other HTML Tags. Introduction to CSS – Styles and Style sheets with CSS, CSS Positioning, Scripting Styles

2. **SCRIPTING LANGUAGE:** Introduction to JavaScript - Syntax Basics- Operators-Conditional Code, Loops, Arrays, Objects- Functions- Testing Type- Reserved Words-Cookies- Dialog Box- Animation- Multimedia-Image Map-Browser's

3. **Dreamweaver Creative Cloud:** Introduction- Workspace-Documentation and Preference-Toolbar- Panel- Basic sit Structure- Naming Conventions-Defining a site Files and Folders- Uploading Files- Browser's and Web Sites- Creating Web Page- Working with Graphic-Importing HTML-

4. **Work Space and Visual Development:** Web- Application Development - Photoshop Integration - Photoshop Dream weaver Workflows- Defining your site-Page layout with table- Library temples- form and Data Managing-Working with Text and Alignment - Adding effects, Optimizing Graphics for the web, Creating navigation Buttons, maintaining web site - Importing HTML-Insert content, Inserting an email - Getting your site on web

5. **: Flash with Action Scripts:** Working with Action Panel- Code- Conditions and Loops- Create a Hyperlink, Working with Movie Clips, Text- Basic Event Handlings- Programming for Graphics and Animation - Creating Button and Button Animation - Skeleton Animation - Games Developing

REFERENCE BOOKS

1.   Designing with Web Standards, by Jeffrey Zeldman, New Riders,

1.   UsalibityThe practice of simplicity, by JakobJielsen, New Riders,

Model Blue print:

S.No.	Chapter/ Unit title	No.of periods	Weightage Allocatd	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	HYPERTEXT MARKUP LANGUAGE (HTML)	15	14	3	3	8	10	1	1	1	*	CO1
2	SCRIPTING LANGUAGE	15	14	3	3	8	10	1	1	1	*	CO1,CO2
3	DREAMWEAVER CREATIVE CLOUD	15	14		6	8	10		2	1	*	CO1,CO3
4	WORK SPACE AND VISUAL DEVELOPMENT	15	14	3	3	8	10	1	1	1	*	CO1,CO3,CO4
5	FLASH WITH ACTION SCRIPTS	15	14		6	8	10		2	1	*	CO5
	Total	75	70+10*	9	21	40	10	3	7	5	1	

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 3.6
Unit test-2	From 3.7 to 5.14

Diploma in Animation and Multimedia Engineering

………

PART-A   **16Marks**

Instructions: 1) Answer all questions
2) First question carries 4marks, and each question of remaining carries 3marks

1. A).are the HTML tags and elements the same thing?(True/False)   (CO1)
B) The element is positioned according to the normal flow of the document is called---- (CO1)
C) Which of the following is not a java script data type   [   ]   (CO2)
        I) number   II) string   III) enum   IV) boolean
D) ------ links are used to connect users to other pages within the same website [   ] (CO3)
        I) internal link II) external link III) basic email link IV) none
2**.** What are tags and attributes in HTML?   (CO1)
3. What are object prototypes?   (CO2)
4. Explain Implicit Type Coercion in JavaScript.   (CO2)
5 **.How do we insert a Table??**   (CO3)

                              PART-B   3X8=24Marks

Instructions: 1) Answer all questions
2)Each question carries 8 Marks
3)Answer should be comprehensive and the criterion for valuation is the content but not
        the length of the answer
6. a) Which HTML tag is used to display the data in the tabular form?   (CO1)
                                        Or

  b) Explain the layout of HTML?   (CO1)
7. a) List some of the advantages and disadvantages of JavaScript.   (CO2)
                                        Or

  b) What is BOM (Browser Object Model)?   (CO2)
8. a) **Explain how you can perform validation in Dreamweaver?**.   (CO3)

                                        Or

  b) **Explain how you can add an image to your web page in Dreamweaver?**   (CO3)

Board Diploma Examination
Model Question paper-End Exam
Diploma in Animation and Multimedia Engineering
SUB NAME: Web Designing

SCHEME:C-20   **SUB CODE:AM-404**

MAX MARKS:80   **TIME: 3HOURS**

Part-A

Answer All Questions each carries three marks   10X3=30

1. Define Tags in HTM   CO1
2. What is CSS?   CO1
3. List various data types in JavaScript.   CO2
4. Define cookies?   CO2
5. Define site files and folders.   CO3
6. List components in toolbar   CO3
7. What is Photoshop integration?   CO4
8. List different library templates.   CO4
9. What is event handling?   CO5
10. Define graphics and animation.   CO5

Part-B

Answer All Questions carries eight marks   5X8=40

11. (a) in how many ways can we specify the CSS styles for the HTML element? CO1

(or)

(b) What are forms and how to create forms in HTML?   CO1

12. (a) explain how to create an array in JavaScript?   CO2

(or)

(b) Explain various pop-up boxes available in JavaScript?   CO2

13**. (A) Explain how you can perform validation in Dreamweaver?**   CO3

(Or)

(b) Explain how you can make your site live in Dreamweaver?   CO3

14. (a) Explain about Photoshop dream weaver workflow with neat diagram.   CO4

(or)

(b) Explain about creating navigation buttons   CO4

15. (a) explain about creating movie clips.   CO5

(or)

(b) Explain about creating button and button animation.   CO5

Part-C

(1x10=10M)

16. Design an website using Dreamweaver   CO3

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-405	3D Lighting and Rendering Techniques	5	75	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	Basic Lighting Techniques	10	CO1
2.	Environment Lighting	15	CO2
3.	Mental ray Lighting Setup	10	CO3
4.	Mental ray Rendering Techniques	20	CO4
5.	V- Ray Lighting Work Flow	20	C05
	Total Periods	75	

Course Objectives	• To familiarize with basic lighting techniques • To understand environment lighting. • To familiarize with mental ray lighting setup • To understand mental ray rendering techniques. • To understand v ray lighting work flow.

Course Outcomes	At the end of the course the student will b e able to		
	CO1	AM-405.1	Demonstrates variousbasic lighting techniques
	CO2	AM-405.2	Apply differentenvironment lighting Techniques
	CO3	AM-405.3	Describe mental ray lighting setup
	CO4	AM-405.4	Apply differentmental ray rendering techniques
	CO5	AM-405.5	DescribeV- ray lighting work flow

CO-PO/PSO Matrix:

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3

AM-403.1	3				1	1		3		1
AM-403.2	2	2	2	1			1	1	3	1
AM-403.3	2	1	2	1	1	1	1	2	1	1
AM-403.4	1	2		1		3	1	2	1	2
AM-403.5	2		2	2	1	1	1	2	1	2
Average	2	1.6	2	1.25	1	1.5	1	2	1.5	1.4

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

Learning Outcomes:

1.0 BASIC LIGHTINGTECHNIQUES
1.1.   Explain about Maya Lights.
1.2.   State the Art of Lighting.
1.3.   Explain Common Light Attributes.
1.4.   Explain the various types of Light.
        1.4.1.   Ambient Light
        1.4.2.   Directional Light
        1.4.3.   Point Light
        1.4.4.   Spot Light
        1.4.5.   Volume Light
1.5.   Describe about Light Menus.
1.6.   Explain the steps to working on Light Decay.
1.7.   Explain Lighting Placement concept.
1.8.   State the need of Key in lighting techniques.
1.9.   Explain the process of Fill in lighting techniques.
1.10. Explain about Rim Lights.
1.11. Describe about Positioning Lights.
1.12. Explain Light Connections with examples.
1.13. Explain about Negative Lights with examples.

2.0 ENVIRONMENT LIGHTING
2.1.   Introduction to Light Setup environment lighting.
2.2.   Explain the concept of Exterior Light Setup with examples.
2.3.   Explain the concept of Interior Light Setup with examples.
2.4.   Explain the concept of 3Point Lighting Setup with examples.
2.5.   Describe Light Linking in environment lighting.
2.6.   Describe Shadow Linking in environment lighting.
2.7.   Compare Light Linking and Shadow Linking techniques.
2.8.   Explain the concept of Light fog.
2.9.   Explain theconcept of Light Glow.

2.10. Explain about Depth Map Shadow in environment lighting.
2.11. Explain about Ray Trace Shadow in environment lighting.
2.12. Describes about Environment &Volume Fogs techniques with examples.
2.13. Explain about Camera Settings.
2.14. Explain the concept of Depth of Field.
2.15. Mention about Motion Blur.
2.16. Explain about the Production Quality.
2.17. Explain the steps to create Sun Direction Light.
2.18. Describe the concept Render Global in environment lighting.
2.19. Explain Software Rendering in environment lighting.
2.20. Explain about IPR Rendering.
2.21. Explain briefly about Ray Trace Setting.

3.0 MENTAL RAY LIGHTING SETUP
3.1. State the purpose of Mental Ray lighting.
3.2. Explain the concept of Global Illumination.
3.3. Explain the concept of Indirect Illumination
3.4. Describes Final Gather in Mental Ray lighting.
3.5. State the purpose of Caustics concept.
3.6. Explain about Caustics Workflow in Mental Ray lighting.
3.7. Explain the working procedure on Caustics Photon.
3.8. Explain about Photon Color & Intensity.
3.9. Describe the concept of Exponent Photon Counts & Radius in Mental Ray lighting.
3.10. Explain about Accuracy in Mental Ray lighting.
3.11. Explain about Caustic Filter Type.
3.12. Describe the concept of Caustic Photon Map in Mental Ray lighting.
3.13. Explain Photon Tracing concept.
3.14. Explain about Caustic File.
3.15. Describe Map Visualizes in Mental Ray lighting.
3.16. Explain about Diagnose Photon in Mental Ray lighting.

4.0 MENTAL RAY RENDERING TECHNIQUES
4.1. Explain about Batch Rendering techniques.
4.2. Describe the usage of 'F' check in Mental Ray rendering.
4.3. Explain about Render Passes.
4.4. Describe the concept Render Layers.
4.5. State the purpose of HDRI lightings.
4.6. Describe Mental Ray Nodes.
4.7. Describe Mental Ray Shaders.
4.8. Explain Image Based Lighting with examples.
4.9. Mention the steps to simulate Sun & Sky Setup.
4.10. Explain about Physical Sun in mental ray rendering.
4.11. Explain about Physical Sky in mental ray rendering.
4.12. State the need of Mia in mental ray rendering.
4.13. Explain about Mia Exposure with examples.
4.14. Describe Mental Ray Shadow Map with examples.

4.15. Explain about the HDRI Setup.

5.0 V- RAY LIGHTING WORK FLOW
5.1. Explain the types of V-ray Lights.
5.2. Mention the steps to V-ray setting.
5.3. Mention the steps to Shadow setting.
5.4. Mention the steps to GI Setup.
5.5. Define Photon Emission and give examples.
5.6. Describes the Advance Options in V-Ray lighting.
5.7. Explain about Render Elements in V-Ray lighting.
5.8. Explain the Gamma Corrections in V-Ray lighting.
5.9. Describe about Bright Multiplier in V-Ray lighting.
5.10. Illustrates Camera Work Flow in V-Ray lighting.
5.11. Explain Environmental Fog.
5.12. Describe DMC Sampler concept in V-Ray lighting.
5.13. Explain Indirect Illumination with examples.
5.14. State about the Render Setting in V-Ray lighting.
5.15. State the importance of Render Elements in V-Ray lighting.
5.16. Explain about V-ray Blend Materials with examples.
5.17. Describe V-ray CARPAINT in V-Ray lighting.
5.18. Describe about V-ray Light Materials.
5.19. State the need of V-ray Material Wrapper.
5.20. Explain about V-ray Bump Materials with examples.
5.21. Explain about Double Side Materials with examples.
5.22. Explain V-ray SSS Shader in V-Ray lighting.
5.23. Explain V-ray Skin Shader in V-Ray lighting.
5.24. State the purpose of V-ray Rendering.

COURSE CONTENT

1. **Basic lighting techniques** – Maya Lights – Art of Lighting - Common Light Attributes – Types of Light – Ambient Light – Directional Light – Point Light – Spot Light – Volume Light - Light Menus – Working on Decay – Lighting Placement –Key, Fill, Rim Lights – Positioning Lights – Light Connections – Negative Lights

2. **Environment lighting** – Exterior Light Setup – Interior Lighting –3Point Lighting Setup – Light Linking – Shadow Linking – using Light fog – Light Glow - Depth Map Shadow –Ray Trace Shadow – Environment &Volume Fogs – Camera Settings – Depth of Field – Motion Blur – Production Quality– Create Sun Direction Light Scene – Render Global - Software Rendering – IPR Rendering – Ray Trace Setting

3. **Mental Ray lighting setup -** Mental Ray lighting– Global Illumination – Indirect

Illumination- Final Gather – Caustics - Caustics Workflow — Working on Caustics Photon – Photon Color & Intensity – Exponent Photon Counts & Radius – Accuracy – Caustic Filter Type – Caustic Photon Map – Photon Tracing – Caustic File – Map Visualizes – Diagnose Photon

4. **Mental Ray rendering techniques -** Batch Rendering – usage of 'F' check - Render Passes – Render Layers – HDRI lightings – Mental Ray Nodes– Mental Ray Shaders – Image Based Lighting – Simulate Sun & Sky Setup –Physical Sun –Physical Sky – Mia – Mia Exposure – Mental Ray Shadow Map–HDRI Setup

5. **V-Ray lighting work flow :** Types of V-ray Lights – V-ray Setting – Shadow Setting – GI Setup – Photon Emission – Advance Options – Render Elements – Gamma Corrections – Bright Multiplier – Camera Work Flow – Environmental Fog – DMC Sampler – Indirect Illumination – Render Setting – Render Elements- V-ray Blend Materials – V-ray CARPAINT – V-ray Light Materials – V-ray Material Wrapper – V-ray Bump Materials – Double Side Materials – V-ray SSS Shader – V-ray Skin Shader – V-ray Rendering

REFERENCE BOOKS
   1. Mastering Maya Aerickeller Wiley India PvtLtd . 2009 - First Edition
   2. Autodesk Maya Techniques Marc – André iguanodon neo reel Autodesk media Entertainment 2008 First Edition
   3. Maya with Photoshop Daniel gray BPB Publications 2007- First Edition

Model Blue Print:

291

S.No.	Chapter/Unit title	No.of periods	Weightage Allocated	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	Basic Lighting Techniques	10	11	3	8			1	1			CO1
2	Environment Lighting	15	14	3	3	8	10	1	1	1	*	CO2
3	Mental ray Lighting Setup	10	11	3		8		1		1		CO3
4	Mental ray Rendering Techniques	20	17	6	11		10	2	2		*	CO4
5	V - Ray Lighting Work Flow	20	17	6	3	8	10	2	1	1		C05
	Total	**75**	**70 + 10(*)**					**7**	**5**	**3**		

Note: Part-C: 10 marks single analytical question may be chosen from any or combination of starred chapters

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 3.16
Unit test-2	From 4.1 to 5.24

**DIPLOMA IN 3D ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER**

3D LIGHTING AND RENDERING TECHNIQUES
UNIT TEST-1
SCHEME: C-20SUBJ CODE:AM-405

MAX MARKS:40 <u> </u> **TIME: 90Minutes**

PART-A **16Marks**

Instructions: 1) Answer all questions
　　　　　　　2) First question carries 4marks, and each question of remaining carries 3marks.

1. a) Light decay is nothing but the reduced lighting part in intensity of original light.(True/False)
　　　　　　　　　　　　　　　　　　　　　　　(CO1)

　b) In rendering techniques, IPR stands for -------------------- 　　　(CO2)

　c) The energy of photon is directly proportional to _____ of light. 　　(CO3)

　d) Which one of the following is a type of Light [ ] 　　　(CO1)

　　　I) Ambient Light 　　II) Point Light 　III) Spare Light 　　IV) Spot Light

2) List any three Light Menus.
(CO1)
3) Write the differences between Light Linking and Shadow Linking. 　　(CO2)
4) What do you mean by Production Quality in environment light? 　　(CO2)
5) Define Accuracy in metal ray lighting. 　　　　(CO3)

PART-B **3X8=24Marks**

Instructions:1) Answer all questions
　　　　　　　2) Each question carries 8 Marks
　　　　　　　3) Answer should be comprehensive and the criterion for valuation is the

　　　　　　content but not the length of the answer.

6. a) List and explain the types of Light in detail. 　　　(CO1)
　　　　　　　　　　Or
　b) Explain the concept of Negative Lights with examples. 　　(CO1)

7. a) Explain the concept of Exterior Light Setup with examples. 　　(CO2)
　　　　　　　　　　Or
　b) Explain the concept of Light fog and Light Glow. 　　(CO2)

8. a) Explain about Global Illumination in Mental Ray lighting.(CO3)

<div align="center">Or</div>

 b) Explain Photon tracing in mental ray lighting.   (CO3)

<div align="center">

BOARD DIPLOMA EXAMINATIONS
DIPLOMA IN 3D ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER – YEAR END EXAMINATION
3D LIGHTING AND RENDERING TECHNIQUES
SCHEME: C-20   SUBJ CODE:AM-405

</div>

MAX MARKS:80
TIME: 3HOURS

<div align="center">

PART-A
10X3=30Marks

</div>

Note: Answer all questions
1. Write briefly about Light attributes.   (CO1)
2. Write the differences betweenLight Linking and Shadow Linking techniques.(CO2)
3. Explain briefly about Light fog.   (CO2)
4. Define Accuracy in mental ray lighting.   (CO3)
5. Write about Mental Ray Nodes.   (CO4)
6. What is ImAMe based lighting and give example.   (CO4)
7. Write the steps toHDRI Setup in mental ray rendering.   (CO4)
8. Define Photon Emission.   (CO5)
9. Mention Render elements in V-Ray lighting.   (CO5)
10. Compare V-ray SSS Shader and V-ray Skin Shader.   (CO5)

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PART-B

</div>

5x8=40Marks
Note: Answer all questions
11. A. Explain different types of Light.   (CO1)

<div align="center">OR</div>

   B. Explain the steps of working Light Decay in lighting.   (CO1)
12.A. Explain about Depth Map Shadow in environment lighting(CO2)

<div align="center">OR</div>

   B. Explain the concept of Interior Light Setup with examples.   (CO2)
13. A. Explain about Photon Color & Intensity.   (CO3)

<div align="center">OR</div>

  B. Explain the concept of Global Illumination in Mental Ray lighting.   (CO3)
14. A. Describe Mental Ray Shadow Map with examples.   (CO4)

<div align="center">OR</div>

B. Write the differences between Physical Sun and Physical Sky techniques.   (CO4)
15. A. Explain the Gamma Corrections in V-Ray lighting.   (CO5)

<div align="center">OR</div>

  B. Write the differences betweenV-ray Bump Material and Double Side Material in V-Ray

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</div>

Lighting.   (CO5)

<div align="center">**PART-C**</div>   1X10=10Marks
16. Explain the concept of 3Point Lighting Setup with examples.   (CO2)

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-406	3D Modelling and Texturing Lab	3	45	40	60

Required Infrastructure(Software, Hardware and other Equipment) to be procured as per C-20:

SNO	Hardware / Equipment Needed	Software Needed
1	**Desktop Systems:** Configuration: 17. Processor :: AMD Ryzen 9 3900X Or any other equivalent intel/Motorola etc.. processor or Above 18. Mother Board: AMD 400/500 or its equivalent or above 19. RAM: 8GB(or above) dual channel DDR4 20. HDD: 500GM (SSD)/1TB(or above) 21. Graphics Card: Aorus GeForce RTX 2080 Ti Xtreme (or equivalent) 22. Monitor: 17" or above 23. Multimedia Devices like Mic, Head Phones / Speakers , USB Web camera or USB Digital Video Camera 24. Color Photo Scanner and Printer	**1. Operating System:** Microsoft Windows 10 professional-64 bit (Minimum) 2.Animation and Multimedia Software 4. Adobe master collection cs6 (or Above) 5. Autodesk MAYA 6. Autodesk 3DS MAX.

S No	Chapter/ Unit Title	No. of Periods	COs Mapped
1.	Maya Interface & Workflow	6	CO1
2.	Low Polygon Modelling Techniques	9	CO2
3.	Advance Modelling Techniques	9	CO3
4.	Texturing Work Flow	12	CO4
5.	Advance Texturing Techniques	9	CO5
	Total	**45**	

	Upon completion of the course the student shall be able to
COURSE **OBJECTIVES**	6. Installation of MAYA software. 7. Practice all menus in MAYA layout and exercise various options like Time slider, Range slider, Import and Export options ... etc. 8. Install and practice Component Selection, Editing, Split, Bevel, Chamfers, Split and Sculpt geometry tools. 9. Draw various model sheets in Front and Side views. 10. Describe Basic Shapes Making and draw Low Resolution Model. 11. Install and draw various polygon editing tools in 3D. 12. Practice to draw Ear, Inner Mouth, Teeth, Tongue, Inner Eye and Polygon Hair 13. Practice different mappings like Projection Mapping, Stencil Mapping, Label Mapping, Bump Mapping, ... etc. 14. Practice various Depth Coloring Techniques update With Maya 15. Install Spotlight Tools and and develop Spotlight Techniques

	CO No	COURSE OUTCOMES
CO 1	AM-406.1	Installing MAYA tools and practice various options in Maya layout
CO 2	AM-406.2	Develop a Simple Model (including Logos) according to your ideology by using various polygon modelling techniques.
CO 3	AM-406.3	Draw various models like Ear, Inner Mouth, Teeth, Tongue, Inner Eye and Polygon Hair, Male Head, Female Head, Child – Old Man, Realistic Head and Cartoon Head.
CO 4	AM-406.4	Practice different Painting Techniques with PSD Network
CO 5	AM-406.5	Developvarious advance texturing techniques like UV Snap Shot and Texturing ,Skin tone and brush,Depth Coloring Techniques, spotlight, ..., etc.

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-406.1	2	2		1	1			1		
AM-406.2		1	3	2	3	1	2		2	2
AM-406.3				1	2	3		1		3
AM-406.4	2	2	3		3		2		2	
AM-406.5	2			2		1	2	1		2
Average	2	1.6	3	1.5	2.4	1.6	2	1	2	2.3

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

LEARNING OUTCOMES:

1. Practice Menu bar, Status bar in MAYA layout.
2. Exercise on different Maya layout options like Export option, Import option, play back options, .., etc.
3. Practice various Curve Editing Tools.
4. Draw the NURBS Surfaces.
5. Practice various polygon tools like Split, Bevel, Sculpt Geometry, …, etc.
6. Develop Logos for various examples like your college, branch, city… etc.using various polygon modelling techniques.
7. Develop a Simple Model according to your ideology by using various polygon modelling techniques.
8. Prepare Model Sheet to any image in Front View and Side View.
9. Practice to making Basic Shapes of any image in 2D.
10. Draw various human body Parts like Arms, Legs, Fingers & Toe in 3D.
11. Draw the picture of Male Head, Female Head and Child – Old Man in 3D.
12. Draw the picture of any bird's Realistic Head and Cartoon Head in 3D.
13. Practice various images using different Mapping Methods.
14. Texture the given exterior model with PSD network
15. Exercise on how to create UV Files.
16. Draw an animal image by using various painting techniques.
17. Practice how to exporting Mesh.
18. Create any image by using Displacement Mapping.
19. Texture human face model with given texture reference image.
20. Texture the given character with z brush spot light using normal &diffuse maps.

The competencies and key competencies to be achieved by the student

S.No.	Name of the Experiment	Objectives	Key Competencies
1	Practice Menu bar, Status bar in MAYA layout.	Identify the different options in Menu bar, Status bar of MAYA layout	❖ Identify the different options in Menu bar, Status bar ❖ Differentiate various options in menu bar and status bar in MAYA layout
2	Exercise on different Maya layout options like Export option, Import option, play back options, ..., etc.	Identify the various options in Maya layout	❖ Identify different MAYA layout options ❖ Know the purpose of each option ❖ Practice all options in layout
3	Practice various Curve Editing Tools.	Showing the various Curve Editing Tools	❖ Know the Curve Editing Tools ❖ Install available curve editing tools ❖ Practice curve editing techniques
4	Draw the NURBS Surfaces	Identify different measurements to draw NURBS surface	❖ Identify the NURBS Boolean values ❖ Draw NURBS Surfaces ❖ Practice on that surface with different measurements
5	Practice various polygon tools like Split, Bevel, Sculpt Geometry, …, etc.	Identify different polygon tools available and Install that polygon tools	❖ Installation of Split, Bevel, Sculpt Geometry, ... , etc. Polygon tools. ❖ Practice different tools with various examples
6	Develop Logos and Simple Models according to your ideology by using various polygon modelling techniques.	Know the techniques used to draw Logos Identify various Models	❖ Know about various polygon modelling techniques. ❖ Identify different Logos ❖ Develop various models
7	Prepare Model Sheet to any image in Front View and Side	Identify the elements of Model Sheet in 2D	❖ Prepare Model sheet in 2D ❖ Know different views like Front view and Side view in 2D ❖ Practice any image in Front view

	View.		and Side view
8	Practice to making Basic Shapes of any image in 2D.	Identify the various basic shapes of image in 2D	❖ Know the basic shapes in 2D ❖ Draw any image basic shapes in 2D
9	Draw various Body Parts like Arms, Legs, Fingers & Toe, Male Head, Female Head, Child – Old Man,Realistic Head and Cartoon Head in 3D.	Identify various tools to draw any image in 3D	❖ Know different tools used to draw any image in 3D ❖ Draw different images like Arms, Legs, and Fingers & Toe. ❖ Draw Male Head, Female Head, Child – Old Man. ❖ Draw Realistic Head and Cartoon Head ❖ Compare all images
10	Practice various images using different Mapping Methods and Texture the given exterior model with PSD network	Identify different Mapping Methods and different texture models in PSD network	❖ Know different Mapping Methods ❖ Know about PSD network ❖ Identify different models in PSD network ❖ Create PSD network ❖ Practice on PSD network in texturing
11	Exercise on how to create UV Files.	Identify UV file options	❖ Know various UV editing tools ❖ Install UV editing tools ❖ Exercise to create UV file ❖ Practice on various UV file options
12	Draw an animal image by using various painting techniques.	Know the different painting techniques	❖ Identify various painting techniques ❖ Compare different painting techniques ❖ Paint different animal images using various Brushes
13	Practice how to exporting Mesh	Identify Mesh concept in advance texturing technique	❖ Know about Mesh concept ❖ Develop mesh in texturing ❖ Exercise export option in Mesh method
14	Create any image by using Displacement	Identify Displacement Mapping concept in advance texturing	❖ Know about Displacement Mapping concept ❖ Create any image by using

	Mapping.	technique	Displacement Mapping ❖ Practice with different images
15	Texture human face model with given texture reference image	Identify different models and draw that model	❖ Know various models in texturing ❖ Draw different models ❖ Compare different models
16	Texture the given character with z brush spot light using normal &diffuse maps	Identify different maps and practice to Z –brush that images	❖ Know normal & diffuse maps in texturing ❖ Practice Z- brush spotlight using various maps in texturing ❖ Draw different images

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA

AM-407	3D ANIMATION LAB	3	45	40	60

Required Infrastructure(Software, Hardware and other Equipment) to be procured as per C-20:

SNO	Hardware / Equipment Needed	Software Needed
1	**Desktop Systems:** Configuration: 25. Processor :: AMD Ryzen 9 3900X Or any other equivalent intel/Motorola etc.. processor or Above 26. Mother Board: AMD 400/500 or its equivalent or above 27. RAM: 8GB(or above) dual channel DDR4 28. HDD: 500GM (SSD)/1TB(or above) 29. Graphics Card: Aorus GeForce RTX 2080 Ti Xtreme (or equivalent) 30. Monitor: 17" or above 31. Multimedia Devices like Mic, Head Phones / Speakers , USB Web camera or USB Digital Video Camera 32. Color Photo Scanner and Printer	**1. Operating System:** Microsoft Windows 10 professional-64 bit (Minimum) 2.Animation and Multimedia Software 7. Adobe master collection cs6 (or Above) 8. Autodesk MAYA 9. Autodesk 3DS MAX.

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	Introduction To 3Ds MAX	9	CO1
2.	Modeling Techniques	6	CO2
3.	Material&Shadingnetwork	9	CO3
4.	Rigging&Animation	9	CO4
5.	Lighting &Rendering	12	CO5
Total Periods		45	

Course Objectives	• To familiarize with 3Ds MAX software • To understand Modeling Techniques • To understand Material&Shadingnetwork • To understand Rigging • To understand Lighting&Rendering

CO NO		COURSE OUTCOMES
CO1	**AM-407**.1	Practice the user interface Menus, tool bars of 3Ds MAX software, keyboard shortcuts.
CO2	**AM-407**.2	Design surfaces and Modelling techniques
CO3	**AM-407**.3	Develop animations using Material&Shadingnetwork, mappings
CO4	**AM-407**.4	Practice Animation tools, Curve Editor, Character studio in developing 3D animations.
CO5	**AM-407**.5	Use Lighting, Rendering, filters and FX simulations on 3D animations.

1. **CO-PO/PSO MATRIX**

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-407.1	1		1			1	2	2	2	
AM-407.2	1	2	1	2		1	2	2	2	
AM-407.3	1	2		2	2	2	3	1	3	2
AM-407.4	1	3	3	3	2	2	3	1	3	2
AM-407.5	1	3	3	3	2	2	3	1	3	3
Average	1	2.5	2	2.5	2	1.6	2.6	1.4	2.6	2.3

2. **3=strongly mapped, 2=moderately mapped, 1=slightly mapped**

Learinig outcomes:

1. Installation of 3Ds max studio and practice IDE.
2. Practice commands, menus and toolbars.
3. Create 3d geometric objects like cone, cylinder, sphere, and cube.
4. Create an Exterior Set modeling with given reference Image.
5. Model the interior set with given reference image.
6. Practice editable poly surfaces and Editable mesh surfaces.
7. Create vehicle modeling application using a bike.
8. Texture the given exterior model with PSD.
9. Texture the given set model with bitmap file using material editor
10. Practice ray trace mapping for an exterior setup like a tree.
11. Create your college logo animation
12. Create animation application to rotate a globe on inclined stand.
13. Create the lighting for exterior with mental ray lighting system.
14. Create the lighting for interior with I-ray render lighting system.

15. Create a 3D animation application to add backgrounds and filters using Video Post

S.No.	Name of the experiment	Objectives	Key Competencies
1	Installation of 3Ds max studio and practice IDE.	Identify different options of IDE in 3D Max	❖ Practice IDE options
2	Practice commands, menus and toolbars.	Identify commands, menus and tool bars	❖ Practice commands, menus and tool bars
3	Create 3d geometric objects like cone, cylinder, sphere, and cube.	Identify different Geometric objects	❖ Practice geometric objects
4	Create an Exterior Set modeling with given reference Image.	Identify exterior modeling tools	❖ Practice exterior modeling tools like shading, layers etc ❖ Practice types of images importing in to 3D max
5	Model the interior set with given reference image.	Identify interior modeling tools	❖ Practice interior modeling tools like shading, layers etc ❖ Practice types of images importing in to 3D max
6	Practice editable poly surfaces and Editable mesh surfaces.	Identify editable poly surfaces and mesh surface tools	❖ Practice editable poly surface tools and editable mesh surface tools like vertices, edges, boarders, polygon etc
7	Create vehicle modeling application using a bike.	Identify vehicle modeling tools	❖ Practice vehicle modelling tools like vertices, edges, boarders, polygon, connect, etc
8	Texture the given exterior model with PSD	Identify various texture images	❖ Practice various materials and textures etc
9	Texture the given set model with bitmap file using material editor	Identify material editor options	❖ Practice material editor options and importing bitmap images
10	Practice ray trace mapping for reflective and refractive surfaces.	Identify ray trace map option	❖ Practice material editor options and ray trace map options
11	Create Your college logo animation	Design your college logo	❖ Practice shapes, colors and rendering options
12	Create animation application to rotate a globe on inclined stand.	Animate the globe with rotate options	❖ Practice rotation of object options
13	Create the lighting for exterior with mental ray lighting system.	Identify mental ray render lighting tools	❖ Practice mental ray render lighting options
14	Create the lighting for interior with I-ray render lighting system.	Identify I-ray render lighting tools	❖ Practice I-ray render lighting options

15	Create a 3D animation application to add backgrounds and filters using Video Post	Identify background tool, filters and video post options	❖ Practice Video Post options

Communication Skills

Course Code	Course Title	No. of Periods/Week	Total No. of Periods	Marks for FA	Marks for SA
Common/ AM-408	Communication Skills	3	45	40	60

S. No.	Unit Title	No of Periods	COs Mapped
1	**Listening Skills**	6	CO1
2	**Introducing Oneself**	3	CO1, CO2, CO3
3	**Short Presentation (JAM)**	6	CO1, CO2, CO3
4	**Group Discussion**	6	CO1, CO2, CO3
5	**Preparing Resume with Cover Letter**	3	CO3
6	**Interview Skills**	9	CO1, CO2, CO3
7	**Presentation Skills**	9	CO1, CO2
8	**Work place Etiquette**	3	CO1, CO2
Total Periods		**45**	

Course Objectives	To comprehend the features of communication needed for professional success and display the use of these competently

306

	To present ideas, opinions in group discussions and presentations on topics of general and technical interest
	To prepare for job selection processes

CO No.	Course Outcomes
CO1	Interacts in academic and social situations by comprehending what is listened to when others speak.
CO2	Demonstrates effective English communication skills while presenting ideas, opinions in group discussions and presentations on topics of general and technical interest
CO3	Exhibits workplace etiquette relevant in classroom situations for easy adaptation in professional setting in the future

CO-PO Matrix

Course Code Common-408	Course Title: English Number of Course Outcomes: 4				No. of Periods: 45
POs	Mapped with CO No.	CO Periods Addressing PO in Column 1		Level of Mapping (1,2,3)	Remarks
		Number	Percentage %		
PO1		Not directly applicable for Communication Skills Course however interactive activities that use content from science and technology relevant to the Programme taken up by the student shall be exploited for communication in the Course.			
PO2					
PO3					
PO4					
PO5	CO1, CO2, CO3	11	25%		>60%: Level 3
PO6	CO1, CO2, CO3	27	60%		16 -59%: Level 2
PO7	CO1, CO2, CO3	7	15%		Up to 15%: Level 1

Level 3 – Strongly Mapped
Level 2- Moderately Mapped
Level 1- Slightly Mapped

Mapping Course Outcomes with Program Outcomes:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO 1					✓	✓	✓
CO 2					✓	✓	✓
CO3					✓	✓	✓

Blue Print for evaluation based on Course Outcomes for SA:

Note: Every Question based on CO has to be given marks for the following parameters of communication in the rubric.

- Fluency and Coherence
- Lexical Resource (Vocabulary)
- Grammatical Range and Accuracy

*Rubric Descriptors 'Good/ Competent / Fair /Poor' for Communication

LEVEL OF COMPETENCE	Fluency and Coherence	Lexical Resource (Vocabulary)	Grammatical Range and Accuracy
GOOD (9-10*)	Speaks at length without noticeable effort or loss of coherence. May demonstrate language-related hesitation at times, or some repetition and/or self-correction.	Uses vocabulary resources flexibly during discussion. Uses paraphrase effectively.	Uses a range of complex structures with some flexibility.
	Uses a range of connectives and discourse markers with some flexibility. **Articulates and adapts to near naturalization.**	Uses some less common vocabulary and shows some awareness of style and collocation	Mostly produces error-free sentences.
COMPETENT (6-8)	Is willing to speak at length, though may lose coherence at times due to occasional repetition, self-correction or hesitation.	Has enough vocabulary to discuss topics and make meaning clear in spite of inappropriacies.	Uses a mix of simple and complex structures, but with limited flexibility.
	Uses a range of connectives and discourse markers but not always appropriately.	Generally paraphrases successfully	May make mistakes with complex structures though these rarely cause comprehension problems.

FAIR (3-5)	Tries to maintain a flow of speech but t uses repetition, self correction and/or slow speech to keep going.	Manages to talk about familiar and unfamiliar topics but uses vocabulary with limited flexibility.	Produces only basic sentence forms, however, errors persist.
	Produces simple speech fluently, but more complex communication causes fluency problems.	Attempts to use paraphrase but with mixed success.	Uses a limited range of more complex structures, but these usually contain errors and may cause some comprehension problems
POOR (0 *-2)	Speaks with long pauses. Pauses lengthy before most words. **Merely imitates**	Uses simple vocabulary to convey personal information	Attempts basic sentence forms but with limited success, or relies on apparently memorized utterances
	Has limited ability to link simple sentences	Has insufficient vocabulary for less familiar topics	Makes numerous errors except in memorized expressions
	Gives only simple responses and is frequently unable to convey basic message	Only produces isolated words or memorized utterances	Struggles to produce basic sentence forms

s*10 marks to be awarded only if competence level shows flawless expertise in English.
 *0 marks to be awarded when student shows incoherence and gives irrelevant responses.

Blue Print for evaluation based on Course Outcomes for SA of each student:

Note: Marks are awarded for each student as per the Rubric descriptors.

S. No.	Questions based on Course Outcomes	Periods Allocated for practical work	Marks Wise Distribution of Weightage	Marks allotment for each Student in the Rubric*				Mapping of COs
				Poor 0-2	Fair 3-5	Competent 6-8	Good 9-10	
1	Describe the given object in a minute	6	10					CO 2
2	Exchange ideas/ views in a group discussion on _____ issue (academic, technical or social)	6	10					CO1, CO 2
3	Present your ideas /opinions on the given issue/ topic (individual to an audience)	9	10					CO1, CO2, CO 3
4	Role play an imaginary work-place situation	6	10					CO1, CO2, CO 3
5	Individual interaction with the Examiner duly submitting Resume (Facing the Interview) – Introducing oneself and answering questions	12	10					CO1, CO2, CO 3
6	*Listen to and comprehend any audio communication/ content	6	10					CO1, CO2, CO 3
	TOTAL	45	60					

*Listen to and comprehend the given audio content: Giving the Students time to read the questions (Fill in the Blanks, Select from Alternatives, True or False, Table fill, etc.) in chunks before listening to audio inputs also played in chunks.

Blue Print for evaluation based on Course Outcomes for Formative Assessment:

Note: Every Question based on CO has to be given marks for the following parameters in the rubric.

- Fluency and Coherence
- Lexical Resource
- Grammatical Range and Accuracy

S. No.	Questions based on Course Outcomes	Periods Allocated for practical work	Marks Wise Distribution of Weightage	Marks allotment for each Student in the Rubric*				Mapping of COs
				Poor 0-2	Fair 3-5	Competent 6-8	Good 9-10	
Formative Assessment - 1							
1	Describe the given object in a minute	3	10					CO 2
2	Exchange ideas/ views in a group discussion on _____ issue (academic, technical or social)	6	10					CO1, CO 2
3	Present your ideas /opinions on the given issue/ topic (individual to an audience)	6	10					CO1, CO2, CO 3
4	*Listen to and comprehend any audio communication/ content	3	10					CO1, CO2, CO 3
	Total	**18**	**40**					
	Formative Assessment -2							
1	Present your ideas /opinions on the given issue/ topic (individual to an audience)	3	10					
2	Role play an imaginary work-place situation	6	10					CO1, CO2, CO 3
3	Individual interaction with the Examiner duly submitting Resume (Facing the Interview)	15	10					CO1, CO2, CO 3

4	– Introducing oneself and answering questions							
	*Listen to and comprehend any audio communication/ content	3	10					CO1, CO2, CO 3
TOTAL		**27**	**40**					

Learning Outcomes

1. **Listening Skills:**
    1.1 Listen to audio content (dialogues, interactions, speeches, short presentations) and answer questions based on them
    1.2 Infer meanings of words / phrases / sentences / after listening to audio content as mentioned above

2. **Introducing Oneself:**
    2.1 Prepare a grid different aspects for presentation about a person / oneself
    2.2 Present a 1 or 2 minute introduction of oneself for an audience

3. **Short Presentation:**
    3.1 Define an object
    3.2 Describe an object, phenomenon, event, people
    3.3 Speak on a topic randomly chosen

4. **Group Discussion:**
    4.1 Practice Group Discussion. Techniques
    4.2 Participate in group discussions

5. **Resume Writing and Cover Letter:**
    5.1 Prepare resumes of different sorts – one's own and others.
    5.2 Write an effective cover letter that goes with a resume

6. **Interview Skills:**
    6.1 Prepare a good Curriculum Vitae
    6.2 Exhibit acceptable (Greeting, Thanking, Answering questions with confidence)

7. **Presentation Skills:**
    7.1 Prepare Posters, Charts, PPT's on issue of general and technical interest
    7.2 Present one's ideas before an audience with confidence using audio visual aids and answer questions that are raised.

8. **Workplace Etiquette:**
    8.1 Show positive attitude & adaptability / appropriate body language to suit the work place
    8.2 Display basic of etiquette like politeness, good manners.

312

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-409	3D Lighting and Rendering Techniques Lab	3	45	40	60

Required Infrastructure(Software, Hardware and other Equipment) to be procured as per C-20:

SNO	Hardware / Equipment Needed	Software Needed

1	**Desktop Systems:**
	
	Configuration:
	  1. Processor :: AMD Ryzen 9 3900X Or any other equivalent intel/Motorola etc.. processor or Above
	  2. Mother Board: AMD 400/500 or its equivalent or above
	  3. RAM: 8GB(or above) dual channel DDR4
	  4. HDD: 500GM (SSD)/1TB(or above)
	  5. Graphics Card: Aorus GeForce RTX 2080 Ti Xtreme (or equivalent)
	  6. Monitor: 17" or above
	  7. Multimedia Devices like Mic, Head Phones / Speakers , USB Web camera or USB Digital Video Camera
	  8. Color Photo Scanner and Printer
		1. Operating System: Microsoft Windows 10 professional-64 bit (Minimum)
		
		2.Animation and Multimedia Software
		  10. Adobe master collection cs6 (or Above)
		  11. Autodesk MAYA
		  12. Autodesk 3DS MAX.

S No	Chapter/ Unit Title	No. of Periods	COs Mapped
1.	Basic Lighting Techniques	6	CO1
2.	Environment Lighting	9	CO2
3.	Mental ray Lighting Setup	9	CO3
4.	Mental ray Rendering Techniques	12	CO4
5.	V ray Lighting Work Flow	9	CO5
	Total	**45**	

	Upon completion of the course the student shall be able to
COURSE **OBJECTIVES**	9. Introduction to MAYA Lights 10. Know the different light attributes. 11. Practice various Light menus. 12. Explain the various types of Light setup in environment lighting. 13. Describe the Light linking techniques. 14. Check the Production Quality in lighting 15. Introduction to Mental Ray lighting concept 16. Discuss various techniques involved in Mental Ray lighting 17. Practice different mental ray rendering techniques. 18. Explain thedifferenttypes of V-ray Lights 19. Describes the concepts like Render elements, Gamma corrections, Different materials, ... , etc. In V-Ray lighting.

CO No		COURSE OUTCOMES
CO 1	AM-409.1	Illustrates how to working with different types of light
CO 2	AM-409.2	Develop different types of light setup models in environment lighting
CO 3	AM-409.3	Develop mental ray lighting setup
CO 4	AM-409.4	Practice different mental ray rendering Techniques
CO 5	AM-409.5	Demonstrates the concept of V-Ray lighting work flow

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-409.1	2	2	1	1		1		1	1	
AM-409.2	1	1	3		3	1	2			2
AM-4093		2		1		3	1	1	1	3
AM-409.4	1	2		1	3		2	1	2	2
AM-409.5			3	2			1			2
Average	1.3	1.7	2.3	1.25	3	1.6	1.5	1	1.3	2.25

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

LEARNING OUTCOMES:

1. Practice on any image by changing common light attributes.
2. Exercise on various light menus and options.
3. Practice on different types of lights.
4. Demonstrates the Positioning Lights by taking an image
5. Light The Interior Scene Using Software Renderfor any image
6. Light The Exterior Scene Using Software Render for any image
7. Light The Given 3d Scene With Caustics And Final Gather
8. Practice how to create Sun Direction Light Scene to an image
9. Demonstrates the Camera Settings and Ray Trace Setting
10. Light The Scene With Direct Illumination Using Skylight System
11. Light The Interior With Global Illumination And Final Gather
12. Practice on Photon Color & Intensity with different measurements
13. Render The Interior Set In Layer Render Techniques Using Mental Ray Render
14. Exercise on Exponent Photon Counts & Radius.
15. Practice Mental Ray Nodes and Mental Ray Shaders for any object.
16. Simulating both Sun Setup & Sky Setupby using mental ray rendering techniques.
17. Practice on Mental Ray Shadow Map with examples.
18. Demonstrates the types of V-ray Lights
19. Light The Exterior Using V-ray Rendering System.
20. Light The Interior Using V-ray Rendering System
21. Exercise on different materials used in V-ray Lights

The competencies and key competencies to be achieved by the student

S. No.	Name of the experiment	Objectives	Key Competencies
1	Practice on any image by changing common light attributes	Identify the different common light attributes	❖ Identify the attributes of light ❖ Practice with different attributes values ❖ Compare different images with different attributes.
2	Exercise on various light menu options	Identify the various options in light menu	❖ Identify different menu options ❖ Practice all menu options
3	Practice on different	Identify the various	❖ Know the concept of light ❖ Identify different types of light

316

	types of lights	types of light	❖ Differentiate various types of light ❖ Practice with different lights
4	Demonstrates the Positioning Lights by taking an image	Identify thevarious position values to projection light	❖ Identify the position values in lighting ❖ Exercise on different position values for different images
5	Light the Interior or Exterior or 3d point Scene Using Software Render for any image	Identify the different types Light Setup	❖ Know the types of Light setup ❖ Practice Exterior Light Setup ❖ Practice Interior Light Setup ❖ Practice 3D point Light Setup ❖ Compare images with different types of Light setup
6	Practice how to create Sun Direction Light Scene to an image	Develop sun direction light	❖ Know about sun direct light ❖ Create sun direction light scene
7	Demonstrates the Camera Settings and Ray Trace Setting	Identify theCamera setting options and Ray trace setting options	❖ Know about camera Settings ❖ Know about the Ray trace settings ❖ Practice on both camera and ray trace settings
8	Light The Scene With Indirect or Global Illumination Using Skylight System	Identify the global and Indirect illumination lighting	❖ Know different illumination types ❖ Practice Indirect illumination using sky light ❖ Practice Global illumination using sky light ❖ Compare both techniques
9	Practice on Photon Color & Intensity with different measurements	Mention Photon Color and Intensity	❖ Know about Photon color and Intensity concept ❖ Practice with different measurements on photon color and intensity
10	Render The Interior Set In Layer Render Techniques Using Mental Ray Render	Identify different Render techniques	❖ Identify Interior Set In Layer Render Technique ❖ Practice the Interior Set In Layer Render Techniques Using Mental Ray Render
11	Exercise on Exponent Photon	Identify the count of photon and measure	❖ Know about count of photon ❖ Know about radius of photon ❖ Practice with different values

	Counts & Radius.	radius	
12	Practice Mental Ray Nodes and Mental Ray Shaders for any object.	Know the concept of Mental Ray Nodes and Mental Ray Shaders	❖ Identify various Mental Ray Nodes and Mental Ray Shaders ❖ Exercise Mental Ray Nodes and Mental Ray Shaders on any image
13	Simulating both Sun Setup & Sky Setup by using mental ray rendering techniques.	Identify Sun Setup & Sky Setup	❖ Identify different Setups in mental ray rendering techniques ❖ Exercise Sun Setup & Sky Setup by using mental ray rendering techniques
14	Practice on Mental Ray Shadow Map with examples.	Identify Mental Ray Shadow Map technique	❖ Know about shadow map technique ❖ Practice on Mental Ray Shadow Map with different example images.
15	Demonstrates the types of V-ray Lights	Identify different types of V-Ray lights	❖ Know the types of V-Ray light ❖ Practice different types of V-Ray light
16	Light The Exterior or Interior Using V-ray Rendering System	Identify different types of V-ray Rendering System	❖ Identify types of V-ray Rendering System ❖ Practice both Exterior or Interior Using V-ray Rendering System
17	Exercise on different materials used in V-ray Lights	Identify different types of materials used in V-ray Lights	❖ Know the different materials in V-ray Lights ❖ Practice on different materials used in V-ray Lights ❖ Compare all different materials

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-410	Networking And Web Designing Lab	7	105	40(20 – Networking + 20- Mini Project)	60 (30- Networking +30- Mini project)

GUIDE LINES:

- All the exercises provided in the list of practical's should be completed and submitted during the semesterexamination.
- In order to develop skill in mastering creativity, every student should be made to practice thoroughly.
- The external examiners are requested to ensure that a single practical oriented question should not be given to more than three students while admitting a batch of 30 students during BoardExamination.

S No	Chapter/ Unit Title	No. of Periods	COs Mapped
1.	Computer Networking	30	CO1,CO2,CO3
2.	Network Maintenance through server	30	CO3,CO4
	Networking Lab Total	60	
3	Mini Project (should be developed - Based on Web designing Course)	45	CO1,CO2,CO3,CO4,CO5,CO6
	Mini Project Total	45	
	Total No. of Hours	105	

COURSE **OBJECTIVES**	1. Identify all the components of mother board. 2. Install drives, NIC cards, modems(internal, external) 3. Install network devices, design and develop network. 4. Understand ip address classes and sub netting 5. Prepare cross and straight Ethernet cables 6. Install and configure proxy server 7. Install any network operating system and Control/maintain the network and network resources using server administration. 8. Troubleshoot the entire network 9. Setting up VPN 10. Develop a Live Web based Animation Mini Project based on the Knowledge

319

			acquired in web designing Theory Course.

	CO1	AM-410.1	Identify the PC Components.
	CO2	AM-410.2	Install network devices, Design and develop network and perform sub-netting
Course Outcomes	CO3	AM-410.3	Install any Operating system and maintain/ control the entire network as a system administrator
	CO4	AM-410.4	Troubleshoot entire network.
	CO5	AM-410.5	Install any network device and configure
	C06	AM-410.6	Developing a Live Web based Mini project to encourage group activity

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AG-410.1	2	1	2					2		
AG-410.2	3	3	1	3				2		
AG-410.3	2	2	3	2	3	2	2	2	2	2
AG-410.4	2	2	2			2	2	2		2
AG-410.5	3	3	1	3				2		
AG-410.6	2	2	3	2	3	2	2	2		2
Average	2.3	2.2	2	2.5	3	2	2	2	2	2

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

Learning Outcomes:

Computer Networking

1. Exercise on Identification and familiarization of various components of computer system.
    a. Identify and note down mother board , Components and Chips
    b. Identify various Internal and External slots in the mother board and clean them with blower/ Brush.
    c. Practice Inserting and Removing RAM with care
    d. Measure the Output voltages of SMPS
2. Exercise on Installation of Network card.
3. Exercise on Dis-assembling and assembling of working desktop.
4. Exercise on Preparing the Ethernet cable for cross and direct connections using crimping tool and test using LAN

tester.

5. Exercise on Installation of a switch and connecting systems to a network switch.
6. Exercise on Installation of a modem (internal, external or USB) and connecting to internet.
7. Exercise on Using FTP for uploading and downloading files.
8. Exercise on Installation and configuring the proxy server for internet access.
9. Exercise on Setting of particular IP address to an existing terminal system
10. Exercise on Installation of network operating system

Network Maintenance through server

11. Exercise on Creating and managing user accounts through network server.
12. Exercise on Configuration of DHCP and DNS
13. Exercise on File/Folder accessing rights for sharing
14. Exercise on remote desktop.
15. Exercise on setting up of VPN on network
16. **Mini Project:**

The competencies and key competencies to be achieved by the student

S.No.	Name of the experiment	Objectives	Key Competencies
1	Exercise on Identification and familiarization of various components of computer system.	Identification and familiarization of various components of computer system.	❖ Identify and note down mother board , Components and Chips. ❖ Identify various Internal and External slots in the mother board and clean them with blower/ Brush. ❖ Practice Inserting and Removing RAM with care. ❖ Measure the Output voltages of SMPS.
2	Exercise on Installation of Network card.	Installation of Network card.	❖ Identify the slot for placing NIC card ❖ Know how to place NIC card ❖ Install required NIC driver ❖ Check for working status of NIC card
3	Exercise on Dis-assembling and assembling of working desktop.	Dis-assembling and assembling of working desktop.	❖ Identify all the peripherals of Desktop computer. ❖ Check the working condition of system before dis-assembling it. ❖ Dis-assemble all the peripherals. ❖ Assemble all the peripherals. ❖ Check the working condition of system after assembling it.
4	Exercise on Preparing the Ethernet cable for	Preparing the Ethernet cable for cross and direct connections using crimping	❖ Know the color pattern of Ethernet cable for direct connection. ❖ Prepare UTP cable for direct connection

321

	cross and direct connections using crimping tool and test using LAN tester.	tool and test using cable tester.	using crimping tool. ❖ Check the working condition of cable using LAN tester. ❖ Know the color pattern of Ethernet cable for cross connection. ❖ Prepare UTP cable for cross connection using crimping tool. ❖ Check the working condition of cable using LAN tester.
5	Exercise on Installation of a switch and connecting systems to a network switch.	Installation of a switch and connecting systems to a network switch	❖ Know the purpose of switch ❖ Run Ethernet cables from switch to individual computers ❖ Connect Ethernet cables of computers to switch. ❖ Check the network status of the connection in computer system.
6	Exercise on Installation of a modem (internal, external or USB) and connecting to internet.	Installation of a modem (internal, external or USB) and connecting to internet.	Internal modem ❖ Identify PCI slot for placing Internal modem ❖ Connect internal modem ❖ Install required modem driver ❖ Check for the working condition External modem ❖ Connect External modem ❖ Install required modem driver ❖ Check for the working condition USB modem ❖ Connect USB modem ❖ Install required modem driver Check for the working condition
7	Exercise on Using FTP for uploading and downloading files.	Using FTP for uploading and downloading files.	❖ Know about FTP protocol ❖ Know how to upload file using FTP ❖ Know how to download file using FTP
8	Exercise on Installation and configuring the proxy server for internet access	Installation and configuring the proxy server for internet access	❖ Know about proxy server. ❖ Know how to install proxy server. ❖ Know how to configure proxy server.
9	Exercise on Setting of particular IP address to an existing terminal system	Setting of particular IP address to an existing terminal system	❖ Know about IP addresses ❖ Know how to set IP addresses to the computer systems in a LAN
10	Exercise on Installation of	Installation of network operating system	❖ Know about Network operating systems. ❖ Know about different network operating

	network operating system		systems. ❖ Install any Network operating systems ❖ Configure the system with the proper settings.
11	Exercise on Creating and managing user accounts through network server.	Creating and managing user accounts through network server.	❖ Know how to create user accounts ❖ Know how to modify user accounts ❖ Know how to delete user accounts
12	Exercise on Configuration of DHCP and DNS.	Configuration of DHCP and DNS.	❖ Know about static IP address, dynamic IP address ❖ Know about DHCP ❖ Configure the DHCP ❖ Know about DNS ❖ Configure the DNS
13	Exercise on File/Folder accessing rights for sharing	File/Folder accessing rights for sharing.	❖ Know the different accessing rights ❖ Know how to give access rights ❖ Know how to remove access rights ❖ Know how to share file/folders
14	Exercise on remote desktop.	Exercise on remote desktop.	❖ Know about remote login ❖ Know how to login to the remote desktop
15	Exercise on setting up of VPN on network	Exercise on setting up of VPN on network	❖ Know about VPN ❖ Know how to configure VPN service
16	Mini Project	Student has develop a Web Based Mini Project by applying the knowledge acquired.	**Student Activities:** ❖ Create Animation Clips ❖ Create Images with different proportions ❖ Create Photographs. ❖ Develop Cartoon Movies. ❖ Develop web pages ❖ Upload them to the web site ❖ Import from web site ❖ Integrate web with photoshop, dream viewer, Flash etc ❖ Upload media data into YouTube, Facebook, Twitter, Instragram …etc.

FIFTH SEMESTER

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
SCHEME OF INSTRUCTIONS AND EXAMINATION
CURRICULUM-2020
(V Semester)

Sub Code	Name of the Subject	Instruction Periods/Week		Total Periods Per Semester	Scheme Of Examinations			
		Theory	Pract--icals		Duration (hrs)	Sessio-nal Marks	End Exam Marks	Total Marks
THEORY SUBJECTS								
AM-501	Industrial Management and Entrepreneurship	5	-	75	3	20	80	100
AM-502	3D Rigging AND Character animation	6	-	90	3	20	80	100
AM-503	Cinematography	4	-	60	3	20	80	100
AM-504	Audio Visual Production	4	-	60	3	20	80	100
AM-505	Visual EFX and Compositing Techniques	5	-	75	3	20	80	100
PRACTICAL SUBJECTS								
AM-506	3D Rigging AND Character animation lab	-	3	45	3	40	60	100
AM-507	Compositing Lab	_	3	45	3	40	60	100
AM-508	Life Skills	-	3	45	3	40	60	100
AM-509	Editing Lab		3	45	3	40	60	100
AM-510	Project work	-	6	90	3	40	60	100
	Total	**24**	**18**	**630**	**-**	**300**	**700**	**1000**

Note:AM-501 Common with DIT, DAG and DCME branch

AM-502,503,505,506,507,509 &510 common with DAG Branch

AM-508 common with all branches

Course code	Course Title	No. of Periods/ Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-501	Industrial Management and Entrepreneurship	5	75	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	Principles and functions of Industrial Management	08	CO1
2.	Organisation structure & Organisational behaviour	16	CO2
3.	Production Management	12	CO3
4.	Materials Management, Maintenance management & Industrial Safety	19	CO4
5.	Entrepreneurship Development & Quality management.	20	CO5
	Total Periods	75	

Course Objectives	Upon completion of the course the student shall be able to 1. Understand the principles and functions of industrial management, organisation structure and organisational behaviour. 2. Understand the production management, materials management, maintenance management and industrial safety. 3. Understand the entrepreneurship development and trends in management.

	CO No.	COURSE OUTCOMES
CO1	AM-501.1	Explain principles and functions of industrial management.
CO2	AM-501.2	Explain organisation structure and organisationalbehaviour.
CO3	AM-501.3	Use CPM and PERT techniques in production management.

CO4	AM-501.4	Explain materials management, maintenance management and industrial safety.
CO5	AM-501.5	Explain Entrepreneurship Developmentand Quality management aspects.

CO-PO/PSO Matrix:

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-501.1	2				2	2		2		
AM-501.2	2			2	2	2		2		
AM-501.3	1	3	3	2		3			3	3
AM-501.4	2			2	2	2		2		2
AM-501.5	3		1		2	2	3	2		2
Average	2	3	2	2	2	2.2	3	2	3	2.3

3=stronglymapped, 2=moderately mapped, 1=slightly mapped

Learning outcomes:

Principles and functions of Industrial Management

1.1   Define industry, commerce (Trade) andbusiness.
1.2   Know the need formanagement.
1.3   Understand the evolution ofmanagement
1.4   Understand functions ofManagement.
1.5   Explain the principles of scientificmanagement.
1.6   Explain the principles ofmanagement.

1.7   Differentiate between management andadministration.
1.8   Understand the nature of management as aprofession
1.9   Differentiate between supervisory, middle and Top levelmanagement
1.10   Explain the importance of managerial skills (Technical, Human,Conceptual)

2.0 Organisation Structure & organisational behaviour

2.1   Explain the philosophy and need of organisation structure of an industry.
2.2   Discuss the line, staff and Functional organisations
2.3   Explain the Authority and ResponsibilityRelationships
2.4   List the differences between Delegation and decentralization
2.5   Explain the factors of effective organisation
2.6   Outline the communication process
2.7   State motivational theories.
2.8   State Maslow's Hierarchy of needs.
2.9   List different leadership models.
2.10   Explain the trait theory ofleadership
2.11   Explain behavioural theory of Leadership
2.12   Explain the process of decisionmaking.
2.13   Assessing Human resourcerequirements
2.14   Describe the concept of Job analysis, Job description andspecifications
2.15   Explain the process of recruitment, selection, training and development
2.16   Listand explain types of business ownerships
2.17   Differentiate between the business ownerships
2.18   State the objectives of Employee participation
2.19   Give the meaning and definition social responsibilities
2.20   Explaincorporate social responsibilities

3.0 Production management

3.1   Identify the factors of Plant Location
3.2   List the objectives of plant Layout
3.3   State the principles of plant Layouts
3.4   Explain the types of plant Layouts
3.5   Relate the production department with other departments.
3.6   State the need for planning and it'sadvantages.
3.7   State different types of production.
3.8   Explain the stages of Production, planning and control.
3.9   List the basic methods forecasting
3.10   Explain routing methods.
3.11   Explain scheduling methods.
3.12   Explain dispatching.
3.13   Explain Break Even Analysis
3.14   Define supply chain Management, competitive strategy, Supply chain strategy
3.15   Explain project scheduling.
3.16   Draw CPM and PERT networks.
3.17   Identify the critical path.
3.18   Simple numerical problems on CPM and PERT.

4.0 Materials Management, Maintenance management & Industrial Safety

4.1   Explain the importance and functions of materials management in Industry.
4.2   State an expression for inventory control.
4.3   Explain ABC analysis.
4.4   Define safety stock and reorder level
4.5   State an expression for economic ordering quantity.
4.6   State the functions of Stores Management,
4.7   Explain types of store layouts.
4.8   List out stores equipment and stores records.
4.9   Explain general purchasing procedures
4.10   Explain tendering, E-tendering and E-procurement procedures
4.11   List purchase records.
4.12   Explain the Bin card.
4.13   Describe Cardex method.
4.14   List the applications of RFIDin material management

4.15 Explain Objectives and activities of maintenance management
4.16 Explain the importance of maintenance management in Industry.
4.17 Explain the importance of Preventive maintenance
4.18 State the need for scheduled maintenance
4.19 Differentiate between scheduled and preventive maintenance
4.20 Know the principles of 5 s for good housekeeping
4.21 Explain the importance of safety at Work place.
4.22   List the important provisions related to safety.
4.23 Explain hazard and accident.
4.24 List any six different hazards in the Industry.
4.25 Explain any six causes of accidents.
4.26 Explain the direct and indirect causes of accidents.
4.27 Explain the types of emission from process Industries, their effects environmentandcontrol
4.28 Describe the principles of solid waste management

5.0 Entrepreneurship Development&Quality management.

5.1   Define the word entrepreneur.
5.2   Explain the requirements of an entrepreneur.
5.3   Determine the role of entrepreneurs in promoting Small Scale Industries.
5.4   Describe the details of self-employment schemes.
5.5   Characteristic of successful entrepreneurs
5.6   Explain the method of site selection.
5.7   List the financial assistance programmes.
5.8   List out the organisations that help an entrepreneur
5.9   Know the use of EDPProgrammes
5.10 Understand the concept of make in India, Zero defect and zero effect
5.11 Understand the importance forstartups
5.12   Explain the conduct of demand surveys
5.13   Explain the conduct of a market survey
5.14   Evaluate Economic and Technical factors.

5.15   Prepare feasibility report study
5.16   Explain the concept of quality.
5.17   List the quality systems and elements of quality systems.
5.18   State the principles of quality Assurance.
5.19   Explain management information system (MIS)
5.20   Explain the basic concepts of TQM
5.21   State the Pillars of TQM
5.22   List the evolution of ISO standards.
5.23   Explain ISO standards and ISO 9000 series of quality systems.
5.24   List the beneficiaries of ISO 9000.
5.25   Explain the concepts of ISO 14000
5.26   Give the overview of PDCA cycle
5.27   State Kaizen strategy.

Course Content
1. **Principles and functions of Industrial Management**
   Introduction: Industry, Commerce and Business; Definition of management; Functions of management - Principles of scientific management byF.W.Taylor, Principles of Management by Henry Fayol; Administration and management; levels of management; managerial skills;

2. **Organisation Structure & organisational behaviour**
   Organizing - Process of Organizing; Line, Staff and functional Organizations, Decentralization and Delegation, Communication, Motivational Theories; Leadership Models; Human resources development; recruitment selection training and development, Forms of Business ownerships: Types – Sole proprietorship, Partnership, Joint Stock Companies, Cooperative Organization; objectives of employee participation, Corporate Social responsibility;

3. **Production management**
   Definition and importance; objectives and principles of plant layout, Plant location and types of layout; Types of production -job, batch and mass; production Planning and Control: basic methods of forecasting, routing, scheduling, dispatching and follow up; Break even analysis; Project scheduling; Application of CPM and PERT techniques; simple numerical problems;

4. **Materials Management, Maintenance management & Industrial Safety**
   Materials in industry, Importance and functions of materials management, Basic inventory control model, ABC Analysis, Safety stock, re-order level, Economic ordering quantity, Stores Management: Stores layout, stores equipment, Stores records, purchasing procedures, tendering, e-tendering, e-procurement; purchase records, Bin card, Cardex, RFID Applications in materials management, Objectives and importance of maintenance management, Different types of maintenance, Schedules of preventive maintenance, scheduled maintenance Advantages of preventive maintenance, Advantages of scheduled maintenance, Importance of Safety at work places; industrial hazards; Causes of accidents.5S Principles

5. **Entrepreneurship Development& Quality Management.**

Definition of Entrepreneur; Requirements of entrepreneur, Role of Entrepreneur; Entrepreneurial Development, Details of self employment scheme, financial assistant programmes, organisations that help entrepreneurs (SSI, MSME, DIC, Banks) Concept of Make In India, ZERO defect, Zero Effect, Concept of Start-up Company, Demand survey and Market survey; Preparation of Feasibility study reports

Concept of quality, quality systems and its terms, principles of quality assurance, Introduction to Management Information System (MIS); Total Quality Management (TQM), ISO 9000 series , ISO-14000, Deming's PDCA Cycle (Plan, Do, Check and Action). Kaizen Strategy (continuous improvement)

REFERENCE BOOKS

1. Industrial Engineering and Management -by O.P Khanna
2. Production Management- byBuffa.
3. Engineering Economics and Management Science - by Banga &Sharma.
4. Personnel Management byFlippo.
5. Production and Operations Management –S.N. Chary
6. Converging_Technologies_for_Smart_Environments_and_Integrated_Eco systems_IERC_Book_ Open_Access_2013pages-54-76
7. Supply Chain Management –Sunil Chopra and Meindl, PHIpublishers
8 5 S made easy by DavidVisco

Model Blueprint :

S.No.	Chapter/Unit title	No.of periods	Weightage Allocated	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	

1	Principles and functions of Industrial Management	08	11	3	8			1	1			CO1
2	Organisation structure & Organisational behaviour	16	24	3	11		10	1	2		*	CO2
3	Production Management	12	24	3	11		10	1	2		*	CO3
4	Materials Management, Maintenance management & Industrial Safety	19	24	11	3		10	2	1		*	CO4
5	Entrepreneurship Development & Quality management.	20	27	14	3		10	2	1		*	CO5

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 3.18
Unit test-2	From 4.1 to 5.27

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER
Industrial Management and Entrepreneurship
UNIT TEST-1

SCHEME: C-20   **SUBJ CODE:AM-501**
MAX MARKS: 40   **TIME: 90Minutes**

Instructions:1) Answer all questions
                2) First question carries 4marks, and each question of remaining carries
                3marks

1. a) Management and Administration are synonyms (True/False)   (CO1)

b) Maslow's Hierarchy of needs states ……………………………………….   (CO2)

  c) CPM stands for…………………………………..   (CO3)

d) Which one the following is not a managerial skill [   ]   (CO3)

i) Technical II)Commercial III)Human IV) Conceptual

2) Define supervisory management.   (CO1)
3) Differentiate delegation and decentralization.   (CO2)
4) List the objectives of plant Layout.   (CO3)
5) Define project scheduling.   (CO3)

PART-B   **3 X 8=24Marks**

Instructions: 1) Answer all questions
            2)Each question carries 8 Marks
            3)Answer should be comprehensive and the criterion for valuation is the
                content but not the length of the answer

6.A. Explain the principles of management.   (CO1)
                        (Or)
B.Explain the nature of management as a profession.   (CO1)

7.A.Describe line, staff and functional organizations.   (CO2)
                        (Or)
 B.Explain the Concept of Job Analysis, Job Description & specification.   (CO2)

8. A. Explain Break-Even Analysis.   (CO3)
                        (Or)
B.In the table below a list of activities are there and their duration is given: (CO3)

Activity										
Duration										

  (a) Prepare the network.
  (b) Identify critical path.
  (c) Calculate the project completion.

BOARD DIPLOMA EXAMINATIONS

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING

MODEL PAPER –END EXAMINATION
Industrial Management and Entrepreneurship

SCHEME: C-20   **SUBJ CODE:AM-501**
<u>**MAX MARKS:80**</u>   **TIME: 3HOURS**

PART - A
Answer all the Questions. Each Question Carries 3 marks

1. Define industry, commerce and business. (CO1)
2. Write the advantages of line and staff organization. (CO2)
3. What are the types of leadership? (CO2)
4. Define the following (CO3)
   (a) Routing
   (b) Scheduling
5. State the importance of materials management (CO3)
6. Differentiate between bincard and cardex method (CO4)
7. List any three important provisions related to safety (CO4)
8. Define the term Entrepreneur. (CO5)
9. List the financial assistance programs. (CO5)
10. State the benefits of ISO 9000 series. (CO5)

PART – B
Answer all the Questions. Each Question Carries 8 marks

11.A. Explain the principles of scientificmanagement. (CO1)
<div align="center">OR</div>

B.Explain the importance of managerial skills (CO1)

12.A.Define motivation. Explain Maslow's need hierarchy theory. (CO2)
<div align="center">or</div>

B.Explain the types of business ownerships. (CO2)

13. A. Explain the stages of production, planning and control (CO3)
<div align="center">Or</div>

B.In the table below a list of activities are there and their duration is given :(CO3)

Activity											
Duration											

   (d) Prepare the network.
   (e) Identify critical path.
   (f) Calculate the project completion.

14. A. Explain ABC analysis with the help of neat sketch. (CO4)

<div align="center">334</div>

Or

B. Explain the importance of maintenance management in industry.   (CO4)

15. A. Explain the details of self-employment schemes.   (CO5)

Or

B. Explain the role of entrepreneurs in promoting small scale industries.   (CO5)

PART – C   **1X10=10Marks**

16. Explain the importance of safety at work place and any five causes of accidents in industry.

(CO4)

PCourse code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA

		6	90	20	80
AM-502	3D Rigging AND Character Animation				

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	RIGING MENUS & EDITORS SKELTON SETUP& PROPSRIGGING Robot rigging	20	CO1.
2.	CHARCTER RIGGING WORK FLOW QUADRUPED RIGGING SETUP ADVANCE RIGGING TECHNIQUES	24	C02
3.	ANIMATION MENUS& EDITORS BASIC ANIMATION TECHNIQUES	16	CO3
4.	LINEAR ANIMATION TECHNIQUES NON-LINEAR ANIMATION TECHNIQUES	18	C04
5.	FACIAL ANIMATION& LYP SYNC	12	C05
Total Periods		**90**	

Course Objectives	- Understand the 3D graphics animation pipeline and to become Familiar with Maya software handling - Able to handle character & mechanicalrig and becoming 3-D riggingartist and creating pre visualization - Become animation artist to apply character animation techniques , 3d projects rigging & animation and Handling 3d projects from various media - Understand the filmhistory, script writingtechniques and story writingtechniques - Able to make documentaryfilms and Short Films - Able To Handle ProductionUnit, cameras& apply techniques and to play role of a director.

CO NO		COURSE OUTCOMES
		After completion of this course thew student will be able to
CO1	AM-502.1	Apply Skelton setup & Props Rigging, Robot Rigging Tools and Controls and menu controls.
CO2	AM-502.2	Use Human Anatomy, Quadruped Anatomy and Advanced rigging techniques.
CO3	AM-502.3	Explain Animation Menus, Editors and Basic Animation Techniques.
CO4	AM-502.4	Designing Linear and Non-Linear character Animation and Animation techniques.
CO5	AM-502.5	Apply Facial animation and Lip Sync features.

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-502.1	3	3	3	3	2	2	1	3	3	3
AM-502.2	3	2	3	2	3	2	1	3	3	3
AM-502.3	3	2	3	3	1	1	2	3	3	3
AM-502.4	3	1	3	3	1	2	1	3	3	3
AM-502.5	3	3	3	3	3	3	1	3	3	3
Average	3	2.2	3	2.8	2	2	1.2	3	3	3

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

Learning outcomes:

1.0. RIGGING MENUS & EDITORS, SKELTONSETUP & PROPS RIGGING and ROBOT RIGGING
      1.1   Define the terms Rig, Rig Structure, Skelton, Joint
      1.2   Explain types of tools for rigging and process of starting rigging
      1.3   List various types of joints

1.4 Create joints

1.5 Explain about Joint Tool

1.6 State the significance of joint chain

1.7 Define joint bone

1.8 Explain how to use hierarchy editor tool

1.9 Explain Set Driven

1.10 Give the steps to use connection editor

1.11 Explain the process of controls creation

1.12 Add and edit attribute in connection Editor

1.13 Explain about Outliner

1.14 Explain various types of constraints (Point, Aim, Orient, Parent Normal, Tangent, Pole vector)

1.15 Describe Grouping & Parenting

1.16 Explain the usage of channel box

1.17 Describe usage of   pivot point

1.18 Explain Freeze Transformations

1.19 State the purpose of Building Skeletons

1.20 Explain human Skelton anatomy

1.21 List and explain character setup tools

1.22 List out types of joints

1.23 Discuss about different types of joints (Ball joint, Insert Joints, Connect Disconnect Joints, Joint Orients)

1.24 Explain join Limits and Naming Joints

1.25 Explain the procedure of creating joints for leg, hand, spine

1.26 Describe about mirror joints

1.27 Explain about Skeleton Hierarchy

1.28 Describe about Reroot Skeletons

1.29 Explain the procedure of Creating Robotic Skeletons

1.30 Describe about orients

1.31 Explain the process of naming child and parent rig

1.32 Describe applying constraints

1.33 Explain set driven controls

1.34 How to use Inverse Kinematics

1.35 Explain about IK Handles & Attributes

1.36 Explain about IK solvers

1.37 Explain about RP & SC Solvers

1.38 Describe about Spine IK

1.39 Explain various types of Non-Linear Deformers

1.40 Describe about clusters

1.41 Explain about Prop Rigs with Deformer

2.0. CHARCTER RIGGING WORKFLOW, QUARDRPED RIGGING SETUP and ADVANCE RIGGING TECHNIQUES:

2.1   Explain Skelton Anatomy

2.2   Explain process of manual Skelton creation

2.3   How to use IK Skelton Generator

2.4   Understand the use of Characterization Tool

2.5   Explain about Character Controls

2.6   Explain Leg IK Rigging, Spine Rigging, Hand Rigging

2.7   Explain How to create proper controls

2.8   Describe How to create Stretching & Squash

2.9   State the use of Script Editor

2.10   Create character set using script Editor

2.11   Use of proper grouping and character set

2.12   Creation of bind skin, interactive skin Bind

2.13   List out paint skin weight Tools

2.14   Explain mirror &Copy Skin Weights

2.15   Explain quadruped Anatomy

2.16   Explain manual Skelton creation and naming

2.17   State the use LK handler and LK Spine Handler

2.18   Explain leg Rig with Grouping Method and Reverse Foot method

2.19   Explain Spline Rig with Clusters Method

2.20   Describe Tail and Neck Rigging

2.21   Create Proper Controls, character set

2.22   Explain Bind Skin, interactive Skin Bind

2.23   Describe Paint Skin WeightTool

2.24   Use of Explain Mirror & Copy Skin Weights
2.25   Explain Component Editor
2.26   Describe Facial Rigging
2.27   Create Facial Joints
2.28   Applying Constraints
2.29   Procedure to create proper control and user interface
2.30   Explain facial Control Window
2.31   Explain Set Driven
2.32   Explain Eye Grouping, Eye Rigging
2.33   Use of jaw rig, Tongue Rig
2.34   Describe creation of facial Expression
2.35   State the need of Blend Shape
2.36   Discuss Blend shape Editors
2.37   Explain Lip Sync Rigging
2.38   List various Lip Sync Controls
2.39   Explain various Sync Effects (Bind Skin, Smooth Bind)
2.40   Explain paint Skin Effects
2.41   Describe How to add & Remove Influence
2.42   Explain Copy & Mirror Skin Weights – Smooth SkinWeights.
2.43   State the use of Lattice

2.44   State the use of wrap, cluster

2.45   Explain Sculpt Deformers, Jiggle Deforms

2.46   Explain about Wire Tool

2.47   Explain Non-Linear Deforms (Bend, Squash, Sine, Twist, Wave)

2.48   Explain Edit Deforms

2.49   State the purpose of Weight Tools

2.50   Explain the concepts of Export & import , Deform Weight, Mirror Weight

2.51   Describe the process of Control creation

2.52   Describe attaching Deform to character Set

2.53   Explain Proper Grouping & Hide DeformSource

3.0 ANIMATION MENUS& EDITORS AND BASIC ANIMATION TECHNIQUES.

3.1   State the need of Maya 3d animation

3.2   Explain various Animation Principles

3.3   Describe about Animation Preferences Time Sliders (Play Back, Time Field, Range Slider)

3.4   Explain Channel Control Editor

3.5   Use of Graph Editor, Trax Editor

3.6   Explain about Dope Sheet (Set Key, Auto Key, Cut, Copy, Paste, Delete Keys)

3.7   Describe Mute Channels

3.8   Make use of DrivenKeys

3.9   Explain Breakdowns (In Between)

3.10   Explain Ghost Select

3.11   Explain Animation Snapshot

3.12   Create AnimatedSwapMotionPath

3.13   State the use of Use of Turntable

3.14   Explain SetTimeCode

3.15   Discuss about AnimationClip,

3.16   Describe Play Back Speed (Various ObjectAnimation)

3.17   Explain Key Frame Animation

3.18   Explain Set Key Preferences (Set Driven Keys)

3.19   Describe Ball Bouncing Animation

3.20   Explain Break Downs (In Between)

3.21   Explain Graph Editors & Curve Adjustment (Dope Sheet & Timing Adjustment)

3.22   Using Path Animation

3.23   Create Orienting the Path Curve (World, Space, Object Space, And Local Space)

3.24   Describe Character Pose Setting

4,0. LINEAR AND NON – LINEAR ANIMATION TECHNIQUES

4.1   Describe Linear Character Animation

4.2   Create Pose (Understanding Animation Ctrl, Creating Pose to Walk Cycle)

4.3   Explain Types & Techniques in The Poses (Key, In-Between, Extreme)

4.4   Describe Steeped Motion Flow

4.5   Explain Fine Tune with Tangents

5. **Facial Animation with LipSync**

COURSE CONTENT

1. RIGGING MENUS & EDITORS: Joint Tool– Create Joints – Joint Chain–Joints Bones–Hierarchy Editors – Set Driven –Connection Editor – Controls Creating – Add & Edit Attribute – Outliner –Types Of Constraints, Point, Aim ,Orient, Parent Normal, Tangent, Pole vector – Grouping & Parenting – Channel Box – Pivot Point – Freeze Transformations.

SKELTONSETUP & PROPS RIGGING: Building Skeletons: Human Skeletons Anatomy – Character Setup Tools
– Create Joints – Ball Joint–Insert Joints – Connect Disconnect Joints – Joints Orients –Joint's

Limits–Naming Joints – Creating Joints For *L*eg, Hand ,Spine– Mirror Joints –Skeleton Hierarchy – Reroot Skeletons

ROBOT RIGGING : Creating Robotic Skeletons – Orients & Naming – Child &Parent Rig – Applying Constraints – Set Driven Controls – Using Inverse Kinematics – IK Handles & Attributes –IK Solvers, RP &SC Solvers – Spine IKAttributes – Non Linear Deformers – Clusters — Props Rig With Deformers

2. **CHARCTER RIGGING WORKFLOW:**
HUMAN RIGGNG: Human Anatomy – Skeleton Anatomy – Manual Skeleton Creation – Using IK Skeleton Generator – Characterization Tool – Character Controls – Leg IK Rigging – Spline Rigging – Hand Rigging – Creating Proper Controls – Stretching & Squash – Using Script Editor – Create Character Set – Proper Grouping – Character Set – Bind Skin – Interactive Skin Bind – Paint Skin Weight Tools – Mirror & Copy Skin Weights

QUARDRPED RIGGING SETUP: Quadruped Anatomy – Skeleton Anatomy – Manual Skeleton Creation – Skeleton Naming – Using LK Handler & LK Spline Handler. Leg Rig With Grouping Method & Reverse Foot Method – Spline Rig with Clusters Method – Tail Rigging – Neck Rigging – Stretch & Squash – Create Proper Controls – Create Character Set – Bind Skin – Interactive Skin Bind – Paint Skin WeightTool– Mirror & Copy Skin Weights – Component Editor

ADVANCE RIGGING TECHNIQUES: Facial Rigging: Creating Facial Joints – Applying Constrain – Create Proper Control – Create User Interface – Facial Control Window – Set Driven – Connection Editor – Eye Grouping – Eye Rigging – Jaw Rig – Tongue Rig – Facial Expression Creation – Blend Shape – Blend Shape Editors – Lip Sync Rigging – Lip Sync Controls – Various Sync Effects – Bind Skin – Smooth Bind – Paint Skin Weights – Add & Remove Influence – Copy & Mirror Skin Weights – Smooth SkinWeights. **Deformers:** Lattice – Wrap – Cluster – Sculpt Deformers – Jiggle Deforms – Wire Tool – Non Linear Deforms – Bend, Squash, Sine, Twist, Wave – Blend Shape – Edit Deforms – Weight Tools – Export & Import Deform Weight – Mirror Weight – Control Creation – Attach Deform To Character Set – Proper Grouping & Hide DeformSource

3. **ANIMATION MENUS& EDITORS:** Intro To Maya 3danaimation – Animation Principles – Animation Preferences Time Sliders – Play Back – Time Field – Range Slider – Channel Control Editor – Graph Editor – Trax Editor – Dope Sheet –Set Key- Auto Key – Cut, Copy, Paste „Delete Keys – Mute Channels–DrivenKeys,Breakdowns – In Between – Ghost Select – Animation Snapshot – Create AnimatedSwapMotionPath–Turntable–SetTimeCode–AnimationClip , Play Back Speed – Various ObjectAnimation

BASIC ANIMATION TECHNIQUES: Key Frame Animation: Set Key Preferences – Set Driven Keys – Ball Bouncing Animation – Break Downs – In Between – Graph Editors & Curve Adjustment – Dope Sheet & Timing Adjustment. – Path Animation – Orienting the Path Curve – World, Space, Object Space, And Local Space
– Intro Character Pose Setting– Hands on Practice
4. **LINEAR ANIMATION TECHNIQUES:** Linear Character Animation: Create Pose – Understanding Animation Ctrl – Creating Pose To Walk Cycle – Types & Techniques In The Poses – Key, In-Between, Extreme – Steeped Motion Flow – Fine Tune With Tangents – Adjusting With Principles – Graph Editor Curve Flow – Presets Of Tangents -Adjusting A Ctrl Motion Value – Snap Keys– Creating Number Of Cycles – Types Of Infinity – Animation Curve Smoothness – Various Types Of Animation, Run, Jump, Dancing – Character With PropsAnimation
NON-LINEAR ANIMATION TECHNIQUES
Working With Non- Linear Editors: Graph Editor Work Flow – Working with Various Tangents – Breaking Tangent – Weighted Tangents – Bake Simulation Track Editor Workflow – Create

Character Set – Creating Animation Clip – Edit Clips – Merging – Grouping & Managing Clips – Trim Wrap – Blending Clips – Dope Sheet Editors – Timing & Spacing Adjustment –Camera Sequence – Working with Animation Shots – Converting Shot Into Sequence – Working On Multiple Camera – SequenceOutput.

5. **Facial Animation with LipSync**

Intro To Acting Skills – Using Proper Sequence – Act & Animate Techniques – Creating Various Facial Control – Key Frame & In Between Animation Principles – Fine Tune & Clean Up – Play Back Lip Sync – Listing the Words – Using Vowels – Create Dialogue with Lip Sync – Editing Lip Sync – Recording Dialogue – Import Sound – Create the Lip Movement – Animation Principles – Fine Tune & Cleanup – Playback Adjusting With Non-linearEditors

REFERENCE BOOKS:

1. The Animation Book, by Kit Laybourne, Three Rivers Press.
2. The Human Figure In Motion, by Eadweard Muybridge, Dover Publication
3. Animals In Motion, by Eadweard Muybridge, Dover Publication
4. Directing Film techniques and Aesthetics, by Michael Rabiger, Big picture media
5. Shot By Shot , by Steven D.Katz, Columbia university press
6. Film Language, by Christian Metz, Chaplin book publishers

Model Blue print

S.No.	Chapter/Unit title	No.of periods	Weightage Allocated	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	**RIGING MENUS & EDITORS SKELTON SETUP& PROPSRIGGING** Robot rigging	20	11	3	8		10	1	1		*	CO1
2	**CHARCTER RIGGING WORK FLOW**	24	17	6	11		10	2	2		*	C01,C02

343

	QUADRUPED RIGGING SETUP ADVANCE RIGGING TECHNIQUES										
3	**ANIMATION MENUS& EDITORS BASIC ANIMATION TECHNIQUES**	16	14	6	8			2	1		C01,C02,CO3
4	**LINEAR ANIMATION TECHNIQUES NON-LINEAR ANIMATION TECHNIQUES**	18	14	6	8		10	2	1	*	C01,C02,CO3,C04,
5	**FACIAL ANIMATION& LYP SYNC**	12	14	6	8			2	1		C01,C02,CO3,C04, CO5
	Total	90	**70+10***					9	6	1	

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 2.47
Unit test-2	From 3.1 to 5.16

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER
3D Rigging and Character Animation
UNIT TEST-1

SCHEME: C-20   **SUBJ**
CODE:AM-502
MAX MARKS: 40   **TIME:**
90Minutes
PART-A   **16 Marks**

Instructions:1) Answer all questions
　　　　　2) First question carries 4marks, and each question of remaining carries
　　　　　3marks
1. a) The _____ enables users to create and edit different types of hierarchies   (CO1)
　b) Pole Scalar a constraint –(True /False)
　　　　　　　　　　　　　　　　　　　　　(CO1)
　c). IK Stands for ____   (CO2)
　d) which of the following is the Non-Linear Deform
a) bind   b) Bind Skin   c) bend   d) Flat
(CO2)
　2) Define Joint.   (CO1)
　　　3) What is the purpose of Pivot Point
　　　(CO1)
4) List out any three Linear Deforms   (CO2)
5) Write about Mirror Weight   (CO2)

PART-B   **3 X 8=24Marks**
Instructions: 1) Answer all questions
　　　　　2) Each question carries 8 Marks
　　　　　3) Answer should be comprehensive and the criterion for valuation is the
　　　　　content but not the length of the answer

　6.A. Explain various types of constraints.   (CO1)

　　　　　　　　(Or)
　6.B. Explain about set driven controls.   (CO1)

　7.A. Describe about   clusters   (CO1)
　　　　　　　　(Or)
　7.B. Explain Various Sync Effects   (CO2)

8. A Explain Blend shape Editors   (CO2)

(Or)

8.B. Describe Spline Rig   (CO2)

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER –END EXAMINATION
3D Rigging and Character Animation

SCHEME: C-20   **SUBJ CODE:AM-502**

MAX MARKS:80   **TIME: 3HOURS**

PART - A
Answer all the Questions. Each Question Carries 3 marks

11. Define Joint   .   (CO1)
12. State the use of Script Editor.   (CO2)
13. List out paint Skin weight Tools   (CO2)
14. Write a short note on Wire Tool   (CO2)
15. How to use Driven Keys   (CO3)
16. State the use of Graph Editor   (CO3)
17. What is a camera Sequence?   (CO4)
18. Define Snap Key   (CO4)
19. List out any three Animation Techniques   (CO5)
20. Write about Key frame   .   (CO5)

PART – B
Answer all the Questions. Each Question Carries 8 marks

11.A. Explain the procedure of creating joints for leg.   (CO1)
OR
  B. Explain various types of Non-Linear Deformers   (CO1)

12.A Explain about Character Controls   (CO2)

OR

   B. Explain various Sync Effects   (CO2)

13.A. Describe Ball Bouncing Animation   (CO3)

OR

   B. Describe Character Pose Setting.   (CO3)

14.A. Explain Fine Tune with Tangents   (CO4)

OR

   B. Explain Grouping & Managing Clips   (CO4)

15.A. Explain Act & Animate Techniques.   (CO5)

OR

   B. Explain Play Back Lip Sync   .   (CO5)

PART – C   **1X10=10Marks**

16. With the help of animation techniques describe a cartoon character with any 4 poses   (CO4)

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-503	**Cinematography**	4	60	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	**Concept &Types Of Camera**	10	CO1
2.	**Purpose& Type Of Lighting**	15	CO2
3.	**Lens & Attributes**	12	CO3
4.	**Cinematography And Styles**	13	CO4
5.	**The role& ethics of cinematographer**	10	CO4,CO5
Total Periods		60	

Course Objectives	• Describe types of cameras • Explaining the purpose lighting and types. • Describe variouslens and attributes • DescribeCinematography and styles • Stick to ethics of cinematographer.

CO NO   **COURSE OUTCOMES**

CO1   **AM-503**.1   Operate different types of camera and wide screen systems

CO2   **AM-503**.2   Apply lighting tools and techniques to suit the selected location.

CO3   **AM-503**.3   Explain the usage of lens and filters with proper attributes

CO4   **AM-503**.4   Explain cinematographers and their styles

CO5   **AM-503**.5   Explain the role of cinematographer in coordinating with all the departments

involved in feature film making and the ethics to be followed

CO-PO/PSO Matrix:

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
CM-503.1	1	2	3	3	3	2	2	1	3	2
CM-503.2	2	3	3	3	2	2	3	1	2	3
CM-503.3	2	3	3	3	2	2	3	1	2	3
CM-503.4	3	1	1	2	2	3	3	1	3	2
CM-503.5	3	3	1	1	3	3	3	1	3	2
Average	2.2	2.4	2.2	2.4	2.4	2.4	2.8	1	2.6	2.4

3=stronglymapped, 2=moderately mapped, 1=slightly mapped

Learning Outcomes:

1.1 Concept &Types Of Camera

1.1 Explain the Concept of camera as a story teller.
1.2 List tools of creative cinematography. (Frame, Lens, Texture, Light and color, movement etc.)
1.3 Explain tools of creative cinematography.
1.4 List different types of camera
        1.4.1 Compact Digital Cameras
        1.4.2 Digital SLR Cameras
        1.4.3 Mirror less Cameras
        1.4.4 Action Cameras
        1.4.5 360 Cameras
        1.4.6 Film Cameras
1.5 List different types of Movie Cameras .(Mitchell, Arriflex, Panavision)
1.6 List Different types of Digital Cameras.
1.7 Explain Different types of digital Cameras.
1.8 List different types of Film Formats.
1.9 Explain different types of film formats
1.10 List different types of Digital Formats
1.11 Explain different types of digital formats.
1.12 Explain types of film strip Widths (8mm, 16mm, 35 mm etc.)
1.13 List and explain Wide Screen Systems

1.14 Discuss about Anamorphic System.

1.15 Describe Film stock.

1.2 Purpose & Type Of Lighting

2.1 Explain the concept of lighting for cinematography.

2.2 State the aims of lighting in cinematography.

2.3 Discuss about Good lighting and bad lighting.

2.4 Explain how to set position of lights in cinematography.

2.5 Explain the effects if we set position of lights properly.

2.6 List the light sources for photography shooting.

2.7 Explain the selection of time of shooting.

2.8 Explain how to select location for filming.

2.9 Explain hard lighting for effective image reproduction.

2.10 Explain soft lighting for effective image reproduction.

2.11 Explain how to set lighting to create mood and atmosphere.

2.12 List special lighting effects.

2.13 Explain Special Lighting Effects.

2.14 Explain the process of controlling the contrast, tone and clarity of photo.

2.15 Explain the play of shadows in photography.

2.16 Explain the role of composition as an effective tool of creative cinematographer.

2.17 Illustrate the type of lighting used to lighting flat surface and lighting on object.

2.18 Explain the role of color and tones with respect to lighting psychology.

2.19 List types of lighting. (High key lighting, Low key Lighting, Cameo lighting etc.)

2.20 Explain types of lighting.

2.21 Explain various styles in large scales lighting in cinematography.

      2.21.1 Moon light setup

      2.21.2 Day or night effect

      2.21.3 Fire sets and mystery

      2.21.4 Lighting camp fire scene

      2.21.5 Candle flame

      2,21,6 Rain, summer moon, etc.

2.22 Explain how to expose a light source.

2.23 Explain how to use lighting for high speed cinematography

2.24 Describe lighting for single frame animation.

2.25 Classify cinematography based on time.

2.26 Explain about Time slice cinematography.

2.27 Explain about Time frame animation.

2.26 Discuss about Cinematography style.

1.3 Lens & Attributes

3.1 List the Factors responsible for the quality image reproduction of a lens system.

3.2 Explain the Factors responsible for the quality image reproduction of a

lens system.

      3.2.1 Resolution of a lens systems

      3.2.2 Contrast of lens system

      3.2.3 Sharpness and definition of lens system

      3.2.3 Color reproduction of lens system

3.3 List different types of lenses used in Cinematography.

3.4 Explain different types of lenses used in Cinematography.
3.5 Discuss about study of Normal lens.
3.6 State the importance of wide angle lens and its effects?
3.7 Explain about Focal length and magnification.
3.8 Define Depth of Focus.
3.9 Discuss about focal plane and flange focal distance in camera systems.
3.10 Define hyper focal distance in photography.
3.11 List different types of filters used in lens.
3.12 Illustrate the use of glass filter in lens.
3.13 Illustrate the use of Gelatin filter in lens.
3.14 Illustrate the use of Sand witch filters in lens.
3.15 Explain Filter factor compensation.
3.16 Explain black and white filters in cinematography.
3.17 Explain about filters used for colour cinematography.
3.18 List the filters used for colour correction and conversion in lens.
3.19 List general purpose filters in lens.
3.20 Explain different general purpose filters in lens.
       3.20.1 ND filters
       3.20.2 Graduated filters
       3.20.3 Polarizing filter
3.21 Explain Angle of view Perspective in Photography.

1.4 Cinematography And Styles

4.1 Explain the cinematography styles.
4.2 Describe about Hollywood Cinematographers and European Cinematographers.
4.3 List Cinematographers of other countries.
4.4 Explain Cinematographers of other countries.
4.5 Explain about Contemporary Indian Cinematographers.
4.6 Explain Wide Screen Cinematography.
4.7 List types of wide screen cinematography.
4.8 Explain Mask frame widescreen cinematography.
4.9 List the advantages and disadvantages of different formats of mask frame Techniques?
4.10 State the need of Super 35mm format.
4.11 List the advantages and disadvantages of Super 35mm format?
4.12 Discuss about Anamorphic Cinematography.
4.13 List the concepts of Anamorphic Cinematography.
4.14 List the advantages and disadvantages of cinemascope format over other 35mm wide screen systems?
4.15 Describe techniscope system.
4.16 Discuss about Horizontal frame cinematography.
4.17 Explain Vista vision.
4.18 Explain Technirama.

1.5 The role& ethics of cinematographer

5.1 Explain the role of DOP in Cinematography.
5.2 Explain the role of lighting director in cinematography.
5.3 Explain the role of rigging in cinematography.
5.4 Explain the role of gaffer in cinematography.
5.5 Explain the role of a focus puller in cinematography.

5.6 Write about roles and techniques of the following personnels in a feature film

    5.6.1 Director

    5.6.2 Producer

    5.6.3 Editor

    5.6.4 Audiographer,

    5.6.5 Art director

    5.6.6 Choreographer

5.6.7 Action/Stunt director

    5.6.8 Make-up and Costume professionals.

5.7 Explain the importance of the departments of the direction, production, editing, audigraphy, art directing, cinematography, action/stunt direction, Make-up and costume department.

5.8 Explain the need for co-operation of various departments working for feature film.

5.9 Explain the role of camera work as a marvellous vehicle of the imagination of the Director.

5.10 Explain about the role of a cinematographer.

5.11 List the responsibilities of cinematographer.

5.12 Explain responsibilities of cinematographer.

5.13 List the work ethics followed by the cinematographer?

COURSE CONTENT

1. **Concept &Types Of Camera:**The concept of camera as a story teller – The tools of creative cinematography – Different types of camera – Mitchell – Arriflex – Panavision – Different types of Digital Camera's – Advantages and Disadvantages – Film Formats and Digital Formats – 8mm cameras – 16mm cameras – Super 16 cameras – 35mm cameras Anamorphic system – wide screen system – 70mm cameras – Super 35mm system –Film stocks

2. **Purpose& Type Of Lighting:** The concept of lighting for cinematography aims of lighting – Good lighting and bad lighting – Position of lights and its effects – Lighting terms – Creative approach through lighting – Selection of light sources, time of shooting, locations, hard or soft lighting for effective image reproduction – Lighting to crate mood and atmosphere – Special lighting effects – Control of contrast, tone and clarity – Play of shadows – Composition as an effective tool of creative cinematographer lighting a flat surface – Lighting on object – Understanding the color and tones in relation lighting psychology

    High key lighting – Low key lighting – Cameo lighting – Limbo lighting – Rembrandt lighting – Chroma key lighting Large scale lighting – Moon light setup – Day for night effect – Set lighting modern methodology in lighting – Cinematography style Large scale lighting – Fire sets and mystery – Lighting for lighting camp fire scene – Candle flame – Lighting on rain – summer moon light – Dream lighting Tents – Transparency lighting – Exposing a light source – Ring lighting – Lighting for high

speed cinematography – lighting for single frame animation – Time slice cinematography time lapse cinematography Cinematography style

3. **Lens& Attributes:** Factors responsible for the quality image reproduction of a lens system – Resolution of a lens system – Contrast of a lens system – Sharpness and Definition of lens system – Color reproduction of lens system – Different types of lenses used in Cinematography – Study of normal lens – Wide angle lens and its effects – Study of a telephoto lens – Depth of field in relation with these lenses - Focal length and magnification – Depth of focus – Focal plane and flange focal distance – Hyper focal distance –Filters – Glass filters – Gelatin filters – Sand witch filters –Filter factor compensation – Black and White filters – Filters for color cinematography – Color correction and conversion filters – General purpose filters – ND filters – Graduated filters – Polarizing filter - Angle of view Perspective

4. **CINEMATOGRAPHY AND STYLES:** Study of cinematographers and their styles – Hollywood, European cinematographers – Cinematographers of other countries - contemporary Indian cinematographers Wide Screen Cinematography – Types of wide screen cinematography – Mask frame widescreen cinematography – The advantages and disadvantages of different formats of mask frame techniques – Super 35mm format – Advantages and Disadvantages – Anamorphic cinematography – The concepts – advantages and disadvantages of cinemascope format over other 35mm wide screen systems – Techniscope system – Horizontal frame cinematography – Vista vision – Technirama

5. **THE ROLE& ETHICS OF CINEMATOGRAPHER:** The role of DOP – The role of a lighting director – The role of rigging – The role of gaffer – The role of a focus puller – Technique of working in a feature film with the Director – Producer – Editor – Audiographer – Art Director – Choreographer – Action/Stunt director – Make-up and Costume professionals – The importance of each department and the reasons for the need for co-operation – The role of Camera work as a marvelous vehicle of the imagination of the Director The role and responsibilities of a cinematographer – Work ethics .

REFERENCE BOOKS
1. Contemporary Cinematographers on Their Art Pauline B Rogers The McGraw-Hill Companies 2000- secondEdition
2. The Professional Cameraman's Hand Book Sylvia Carlson Harvard University Press 2009 – Fourth Edition
3. Practical Cinematography Paul Wheeler Harvard University Press, 1997- First Edition

ModelBlue Print:

S.No.	Chapter/Unit title	No.of periods	Weightage Allocatd	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	Concept &Types Of Camera	10	11	3		8		1		1		CO1
2	Purpose& Type Of Lighting	15	17	3	3	11	10	1	1	2	*	CO2
3	Lens& Attributes	12	14	3	8	3	10	1	1	1	*	CO3
4	Cinematography And Styles	13	17	11	6			2	2			CO4
5	The role& ethics of cinematographer	10	11	8	3		10	1	1		*	CO4,CO5
	Total	60	70+10*	28	20	22	10	6	5	4	1	

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	1.1 to 3.10
Unit test-2	3.11 to 5.13

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER
Cinematography
UNIT TEST-1

SCHEME: C-20   **SUBJ CODE:AM-503**
MAX MARKS:40   **TIME: 90Minutes**

PART-A   **16Marks**

Instructions: 1) Answer all questions
    2) First question carries 4marks, and each question of remaining carries
    3marks

1. a) Even the best camera in the world can't capture a perfect picture without good lighting.(True/False)
                                                                    (CO2)
   b) _____ control changes the volume of light entering into camera.   (CO1)
   c) Magnification and _____ contributes to Geometric unsharpness.
        i) Movement ii) Line focus iii) Distortion iv) Optical density   (CO3)
   d) Which lense is able to focus closer to an object than normal lenses?
        i) Standard Lens ii) Telephoto Lens iii) Normal Lens iv) Macro lens   (CO1)
2. List tools used in cinematography.   (CO1)
3. List Special Lighting Effects.   (CO2)
4. Define Focal length.   (CO3)
5. Define film formats.   (CO1)

PART-B   **3X8=24Marks**

Instructions: 1) Answer all questions
    2)Each question carries 8 Marks
    3)Answer should be comprehensive and the criterion for valuation is the content but not the
        length of the answer
6. a) Explain briefly various digital formats used in photography.   (CO1)
                                    Or
   b) Explain briefly about various cameras.   (CO1)
7. a) Explain the process of lighting flat surface in cinematography.   (CO2)

355

Or

b)Explain how to set position of lights in cinematography.   (CO2)

8. a) Explain different types of lenses used in Cinematography.   (CO3)

Or

b) Explain the role of Contrast of lens systemfor the quality image reproduction of a lens system.(CO3)

BOARD DIPLOMA EXAMINATION
DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER-END EXAM

Cinematography

SCHEME: C-20   **SUBJ CODE:AM-503**
MAX MARKS: 80   **TIME: 3HOURS**

PART-A   **10X3=30Marks**

Note: Answer all questions

1.	List different types of cameras.	(CO1)
2.	What are the aims of lighting in cinematography?	(CO2)
3	How to setup lighting to get moon light effect?	(CO2)
4	Write short note on Time Slice cinematography.	(CO2)
5	What is the usage of normal lens in Photography?	(CO3)
6	Define magnification.	(CO3)
7	What is techniscope system?	(CO4)
8	What are the advantages of cinemascope format over 35 mm wide screen systems?	(CO4)
9	List some cinematographers of other countries.	(CO4)
10	Write short note on DOP in cinematography.	(CO5)

PART-B   **5x8=40Marks**

Note: Answer all questions

11.A.   Explain Different types of digital Cameras.   (CO1)

OR

11.B   Explain the Concept of camera as a story teller.   (CO1)

12.A.   Explain how to set lighting to create mood and atmosphere.   (CO2)

OR

12.B   Explain the role of color and tones with respect to lighting psychology.   (CO2)

13.A.   Explain black and white filters in cinematography.   (CO3)

OR

13.B   Explain about Focal length and magnification.   (CO3)

14.A.   Explain Mask frame widescreen cinematography.   (CO4)

356

<div align="center">OR</div>

14.B   Explain about Contemporary Indian Cinematographers.   (CO4)

15.A.   Explain the role of lighting director in cinematography.   (CO5)

<div align="center">OR</div>

15.B   Explain the importance of camera work as a marvellous vehicle of the imagination of
        the Director.   (CO5)

<div align="center">**PART-C**   **1X10=10Marks**</div>

16.   Explain the setting of lights for shooting video at Mountains.   (CO2)

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-504	Audio Visual Production	4	60	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	Introduction to Audio & Video systems	9	CO1
2.	Audio Production	10	CO1,CO2,CO4
3.	Video production **(Pre-Production)**	18	CO1,CO2,CO3,CO4
4.	Video Production (Production)	13	CO1,CO2,CO3,CO4
5.	Video Production (Post Production)	10	CO1,CO2,CO3,CO4,CO5
Total Periods		60	

Course Objectives	• Analyse different types of audio and video systems and their trouble shooting. • Apply different techniques in Audio Production • Apply various techniques in Pre-production. • Perform production activities • Develop full video clipping after Post- production using audio, video editing techniques

CO NO   **COURSE OUTCOMES**

CO1   **AM-504**.1   Explain different types of audio devices

CO2   **AM-504**.2   Explain the process of recording

CO3   **AM-504**.3   Explain the process of screenplay and shooting script

CO4   **AM-504**.4   Explain different types of lights and sound equipment

CO5   **AM-504**.5   Explain the process of editing ,publicity,color grading and rating

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-504.1	2			2	1		2	2		1
AM-504.2	2	3		2				2		
AM-504.3		2		2	2			2		
AM-504.4	2	2	2	2	1		1	2	2	
AM-504.5	2	3	3	2	1	2		2	3	2
Average	2	2.5	2.5	2	1	2	1.5	2	2.5	1.5

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

LEARNING OUTCOMES:

   1.11 Introduction to Audio and Video

1.12 Describe the Characteristics of Sound
1.13 Explain various Audio devices and their applications
1.14 State the purpose of Digital Audio Fundamentals
- **a)** Define Digital audio
- **b)** Defineaudio sample
- **c)** Define audio sample rate
- **d)** Know about various sample rates

1.15 State the purpose ofStereophonic sound
- a) Define Stereophonic sound
- b) Various forms of stereo sound systems
- c) Process of two channel stereo recording

1.16 Describe the architecture of Flat panel TV receivers.
1.17 State the purpose of 3-Dimensional TV
- a) Define 3DTV
- b) History of 3DTV
- c) Study about 3D production
- d) Architecture of 3DTV Scheme.

1.18 Explain EDTV
1.19 Explain HDTV
1.20 Differentiate between EDTV and HDTV
1.21 Explain various Digital Studio equipments
1.22 State the purpose of Liquid Crystal and Plasma Screen Televisions
- a) Comparison between Liquid Crystal and Plasma Screen Televisions

1.23 Explain Projection Display Systems and Television Home Theaters
1.24 Explain the process of Troubleshooting of Audio and Video Equipment

4.0 Audio Production
4.1 Describe the Concept of Sound and its phenomena
4.2 Differentiate between different types of Sound.
4.3 Define Audio range
   a)Different audio frequencies.
4.4 Describe the following equipments
- a) Acoustic
- b) Microphone
- c) Recorder
- d) Audio Mixer
- e) Cables & connectors

4.5 Describe the Process of recording
- a) Recording process
- b) Magnetic Tape
- c) The function of Magnetic tape heads
- d) The signal flow and recording process
- e) The signal flow in a recording setup
- f) The Digital recording process
- g) Digital Audio Tape system

4.6   Explain the concept of Mixing
4.7   Explain the concept of Sound processing
4.8   Explain the concept of Recording level
4.9   Describe the purpose of audio editing
      a)   Define Editing
      b)   Audacity Software
      c)   Editing in Analog medium
      d)   Editing in Digital medium
4.10   Describe voice Dubbing process
4.11   Explain the concept of voiceover (Process, steps)
      a)   Define voiceover
      b)   Why is good voice over important for video
      c)   The essential steps of a good voice over

7.0   **Video Production(Pre-Production)**
7.1   Introduction to Concept
7.2   State the purpose of pre-production
7.3   State the purpose of R & D
      a)   Describe the necessity of research
7.4   Describe the concept of visualization
      a)   Define visualization
      b)   State the purpose of visualization.
7.5   State the purpose of Screen play writing
      1)   decent screenplay
      2)   Format of Screenplay Writing
          (a) Scene Heading
          (b) Sub header
          (c) Action
          (d) Character
          (e) Dialogues
          (f) Extension
          (g) Transition
             (h) shot
7.6   Explain Storyboard making
7.7   State the purpose of Shooting script writing
      a)   A Guide to writing a shooting script
      b)   Arrangement of shooting script
      c)   Writing the shooting script
      d)   The shooting script configuration
7.8   a)   Describe the people involved in pre-production stage
      b)   Explain the responsibilities of each skilled person in pre-production

      1)   Set making
      2)   Copyright
      3)   Music making
      4)   Budgeting
7.9   State the importance of Making a set

a) Art Director, the man behind the set

7.10 State the importance of copyright
7.11 State the importance of Music making
7.12 State the importance of Budgeting
7.13 State the importance of Production design
a) Production designer
b) Responsibilities of production designer
7.14 Describe Location Hunting and various location necessities.
7.15 Describe about the Hiring of equipment & crew members

8.0 Video Production (Production)

8.1 Explain various equipments required in Video Production
8.2 Describe the concept of camera
a) Different types of cameras
b) Various accessories
8.3 Describe the concept of Lights & camera support
a) Different types of lights
b) Light Accessories
c) Different types of camera supporting equipments
8.4 State the importance of Clapboard
a) History of clapboard
b) Different types of clapboard
8.5 State the importance of Sound equipment
a) Classify various types of microphones
8.6 State the importance of Field Monitor
a) Necessity of Field Monitors
8.7 State the importance of blocking
a) Overview of Evolution of Blocking
b) Uses of Blocking
c) Define Establishing shot
d) Uses of an Establishing Shot
e) Long Shot
f) Mid shot
g) Master shot
h) Close-upshot
i) Over Shoulder Shot
8.8 State the importance of Rehearsal
8.9 State the importance of Lighting
a) Key light
b) Fill Light
c) Back Light
d) Different types of lighting
8.10 State the importance of shooting
a) How much to film
b) Get the location sound

9.0 Video Production (Post Production)

9.1 Describe the concept of compiling and Shooting material to final stage

9.2 Explain various peoples involved in Post-production
- a) Editor
- b) Assistant Editor
- c) Lead Compositor/Visual Effects Supervisor
- d) Compositors
- e) Sound Designer
- f) Sound Composer
- g) Mixing Engineer
- h) Foley Artist

9.3 Explain about different equipments required in Post-production

9.4 State the importance of Editing
- a) Introduction
- b) OpenShot Video Editing Software
- c) Main Window
- d) Keyboard shortcuts to work faster
- e) Import Files to the Project
- f) Quick operation Manual

9.5 State the importance of Color grading
- a) Motion Tracking
- b) Digital Intermediate

9.6 State the importance of Publicity.

9.7 State the importance of Transmission
- a) Methods of TV Transmission

9.8 State the importance of Rating

COURSE CONTENT

1. **Introduction to Audio and Video:**Characteristics of Sound-Audio devices and their applications-Digital Audio Fundamentals-Stereophonic sound, Flat panel TV receivers, 3-Dimensional TV, EDTV,HDTV and Digital Studio equipments- Liquid Crystal and Plasma Screen Televisions - Projection Display Systems and Television Home Theaters - Troubleshooting in Audio and Video Equipment

2. **Audio Production** :Concept of Sound, Types of sound, Audio range -Know your equipments (Acoustic, Microphone, Recorder, Audio Mixer, Cables & connectors) - Process of recording, Mixing, Sound processing, Recording level -Audio Editing, Dubbing & voiceover (Process, steps)

3. **Video Production (Pre-Production)** :Concept, What is pre-production, R & D, visualization , Screen play writing, Storyboard making, Shooting script writing- Peoples involved in pre-production -Set making, Copyright , Music making,

Budgeting -Production Design, Location hunting, Hiring of equipment & crew members .
4. **Video Production (Production)** Know your equipment, Camera & accessories - Lights & camera support -Clapboard , Sound equipment, Field Monitor - Blocking, Rehearsal, Lighting, Shooting.
5. **Video Production (Post Production)** Compiling the concept and Shooting material to final stage -Peoples involved in Post-production, Know your equipment -Editing, Color grading, Publicity -Transmission, Distribution and Rating

REFERENCE BOOKS
4. Audio Visual production – Adrian Vance
5. The managers guide to audio visual production – Shaun Murphy- Publications: Kogan Page

Model Blue print

S.No.	Chapter/Unit title	No.of periods	Weightage Allocatd	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	Introduction to Audio and Video	9	14	3	11			1	2			CO1
2	Audio Production	10	14	6		8	*	2		1	*	CO1,CO2,CO4
3	Video Production (Pre-Production)	18	14	3	3	8	*	1	1	1	*	CO1,CO2,CO3,CO4
4	Video Production (Production)	13	14		6	8	*		2	1	*	CO1,CO2,CO3,CO4
5	Video Production	10	14		6	8	*		2	1	*	CO1,CO2,CO3,CO4,CO

	(Post Production)											5
	Total *	60	70+(10*)	12	26	32	10	4	7	4	1	

Note: Part-C: 10 marks single analytical question may be chosen from any or combination of starred chapters

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 3.8
Unit test-2	From 3.9 to 5.8

DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER
Audio Visual Production
UNIT TEST-1

SCHEME: C-20   **SUBJ CODE:AM-504**
MAX MARKS:40   **TIME: 90Minutes**

                                    PART-A   **16Marks**
        Instructions:1) Answer all questions
                    2) First question carries 4marks, and each question of remaining carries
                    3marks

1. a)_____ is the system in which we store, recreate, and manipulate audio information in a computer system.   (CO1)
b)_____ is television that conveys depth perception to the viewer by employing techniques such as stereoscopic display, multi-view display, 2D-plus-depth, or any other form of 3D display.   (CO1)
c) Which of the following are equipments of audio production.   (CO2)
        a)Acousticb)Microphonec)Recorder   d) All of the above
d) Which of the following is a characteristic of sound   (CO1)
        i) Amplitudeii) Timeperiod iii) Pitchiv) All of the above
2) List any four audio devices.   (CO1)
3) Define Digital Audio?   (CO1)
4) Define voice over?   (CO2)
5)Describe the necessity of research?   (CO3)

                                    PART-B   **3X8=24Marks**

364

Instructions: 1) Answer all questions

2) Each question carries 8 Marks

3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer

6.a) Explain about the stereophonic sound?   (CO1)

(Or)

  b) Explain the architecture of Flat panel TV receivers?   (CO1)

7.a) Explain the following equipments

     1) Microphone   2) Recorder   3) Audio Mixer   (CO2)

(Or)

b) Explain the process of audio editing in Analog medium and Digital medium?(CO2)

8. a) Explain various steps involved in Screen play writing?   (CO3)

Or

  b) Explain various steps involved in Shooting script writing?   (CO3)

BOARD DIPLOMA EXAMINATIONS
DIPLOMA IN ANIMATION AND MULTIMEDIAENGINEERING
MODEL PAPER - END EXAMINATION
Audio Visual Production

SCHEME: C-20   **SUBJ CODE:AM-504**
MAX MARKS:80   **TIME: 3HOURS**

PART-A

Note: Answer all questions. Each question carries 3 marks   10 X 3=30M

21.	Describe the characteristics of sound?	3	CO1
22.	Define digital audio?	3	CO1
23.	Define voice over?	3	CO2
24.	List the equipments required in Audio production?	3	CO2
25.	Describe the necessity of research?	3	CO3
16	Define Visualization?	3	CO3
17	List different types of camera?	3	CO4
18	What are the uses of blocking?	3	CO4
19	List the people involved in Post-production?	3	CO5
20	Describe publicity?	3	CO5

PART-B

Note: 1. Answer all the question and making use of internal choice.

2. Each question carries 8 marks   5 X 8=40M

11(a). Explain about the stereophonic sound?   8   C-01

OR

11(b). Describe the architecture of Flat panel TV receivers?   8   CO1

12(a). Explain various equipment

i) Microphone ii) Recorder   2x4=8   CO2

OR

12(b).Explain the process of audio editing in Analog medium and Digital medium 8   CO2

13(a).Explain various steps involved in Screenplay writing   8   CO3

OR

13. a) Explain various steps involved in shooting script writing.   6   CO3

14(a). Explain about various types of lights?   8   CO3

(OR)

14(b). Explain about various types of microphones?   8   CO3

15(a). Describe the responsibility of each of the following person involved in Post-production

    i) Editor   ii) Compositor   iii) Sound Designer   iv) Sound Composer   4x2=8   CO5

(OR)

15(b). Explain the following terms in post-production

    i) Color Grading   ii) Rating   2X4=8   CO5

PART-C

Note: Answer the following question, This question carries 10 Marks   1 X10=10M

16.Prepare a document by using the following scenario.

First visit your favourite location. Notedown the facilities available there. List out the equipments require to hire your production from equipment hiring centre. Select few characters from your college and neighbours.

-10M   CO4

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-505	Visual EFX and Composting Techniques	5	75	20	80

S.No.	Chapter/Unit Title	No.of Periods	CO's Mapped
1.	**Evolution of Visual Effects**	15	CO1
2.	**Basic Of Rotoscopic& Composting Techniques**	15	CO2
3.	**Keying Techniques**	15	CO3
4.	**Match Moving Tracking Techniques**	15	CO4

5.	Stereoscopic Techniques	15	CO5
	Total Periods	75	

Course Objectives	- Understand the work flow of visualeffects and various level visual effectstechniques - Handling various visual effectssoftware's - Expert in rotoscopictechnique and keying&tracking - Understanding match move and tracking technique - Handling liveprojects

CO NO		COURSE OUTCOMES
CO1	AM-505.1	Describe basics of Visual Effects and Special Effects.
CO2	AM-505.2	Apply Rotoscopic and Compositing techniques w.r.t. Mocha.
CO3	AM-505.3	Use Keying techniques and techniques for fine details
CO4	AM-505.4	Apply tools like Transformation, tracking, editors
CO5	AM-505.5	Apply Stereoscopic techniques , cameras and conversion mechanisms.

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-505.1	3	1	2	1	2		1	2	1	1
AM-505.2	1	3	3	3	1	3	1	3	3	1
AM-505.3	1	2	3	2	1	3	1	3	3	1

AM-505.4	3	3	3	3	1	3	1	2	3	1
AM-505.5	3	3	3	3	1	3	1	2	3	1
Average	2.2	2.4	2.8	2.4	1.2	3	1	2.8	2.6	1

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

Learning Outcomes

1.0 Evolution of Visual Effects
    1.1 What is VFX?
    1.2 State the need of VFX.
    1.3 Give the history of VFX.
    1.4 Write the applications of VFX.
    1.5 List and Explainvarious techniques used in VFX in olden days.
    1.6 List and Explain Hollywood techniques of visual effects.
    1.7 Write about various Indian techniquesof visual effects.
    1.8 Explain Land marking visual studios.
    1.9 Explain screening of various movies
    1.10 Explain VFX Professional Development with an example.
    1.11 What is VFX pipeline?
    1.12 Explain VFX pipe line.
    1.13 List and Explain Pre- production methods used in VFX shooting
    1.14 Explain VFX Artist movie making.
    1.15 Explain VFX screening in Artist movie making?
    1.16 Explain applying special effects in VFX Movie making.

2.0 Basic Of Rotoscopic& Composting Techniques:
    2.1 Define Compositing.
    2.2 Define Rotoscoping.
    2.3 State the applications of Compositing.
    2.4 What is Mocha?
    2.5 Explain Mocha interface.
    2.6 List Mocha preferences.
    2.7 List and Explain various Mocha tools.
    2.8 List and Explain The Viewer Controls of Mocha.
    2.9 State the purpose of various viewer controls in mocha.
    2.10 State purpose of timeline controls in mocha.
    2.11 List various timeline controls in mocha.
    2.12 Explain the purpose of various timeline controls in mocha.
    2.13 What is trackingthe spline?
    2.14 List layer properties in Mocha.
    2.15 List types of compositing.
    2.16 Explain 2D Compositing.

2.17 List and explain ethics of compositing.
2.18 List and Explain Blending techniques
2.19 Explain transforming in 2D.
2.20 Explain Color correction.
2.21 Explain the process of making Tonal adjustment compositing workflow?
2.22 List and Explain quality checking techniques

3.0 Keying Techniques
3.1 What is Keying ?
3.2 State the uses of keying.
3.3 State the purpose of Nuke Keys.
3.4 List and explain Nuke Keys?
3.5 Demonstrate the usage of Primate with an example?
3.6 State the need of key light.
3.7 Explain the process of keying with key light.
3.8 Explain the keying workflow.
3.9 List and explain Various keying techniques.
3.10 Describe the key light with ultimate
3.11 Explain keying plug .
3.12 Explain keying in multiple softwares.
3.13 List and Explain various keying techniques for fine details.

4.0 Match Move &Tracking Techniques
4.1 What is the purpose of match move?
4.2 What is the purpose of Boujou interface?
4.3 List components of Boujou interface.
4.4 Explain the components of Boujou interface?
4.5 Explain different menus in BoujouMenubar.
4.6 List and Explain tools in tool bar in Boujou
4.7 Explain 2D mode tracking.
4.8 Explain 3D mode tracking.
4.9 Differentiate 2d and 3d tracking.
4.10 List and Explain track features.
4.11 List and Explain import sequences.
4.12 What is camera solve and state its need.
4.13 List and explain solve tools.
4.14 List and explain transformation tools.
4.15 Explain target tracks in detail.
4.16 List and Explain Graph Editors.
4.17 Explain export camera Solve.
4.18 List Trackers
4.19 Define Nuke
4.20 Explain Features Of Trackers.
4.21 Explain how to use trackers in Nuke
4.22 Define Point tracking
4.23 Define Planar Tracking.
4.24 Explain Point tracking.

4.25 Explain Planar tracking
4.26 Explain the process of importing tracking data from other softwares.
4.27 Explain Advanced Tracking workflow.
4.28 List and Explain Advanced Tracking Techniques

5.0 Stereoscopic Techniques
5.1 What is stereoscopy?
5.2 Mention types of stereoscope.
5.3 List and Explain types of dimensional Stereoscopy techniques.
5.4 List and explain category in stereoscopy with all subcategories.
5.5 What is stereo photography?
5.6 List and explain various olden stereo scope viewers.
5.7 Define stereographic projection.
5.8 Explain process of stereographic projection.
5.9 List and explain various types of stereo cameras.
5.10 Distinguish between types of stereo cameras.
5.11 List types of stereo display.
5.12 Explain types of stereo display.
5.13 List and Auto Stereoscopy Stereo Tools In Nuke
5.14 Explain Stereo Compositing Workflow
5.15 Define Stereo Conversion?
5.16 Explain process of Stereo Conversion.
5.17 Define Deep Compositing.
5.18 Explain process of deep Compositing.
5.19 Explain Quality Control of Stereo Conversion.
5.20 Explain Debugging of Stereo Conversion.

COURSE CONTENT

1. Evolution of Visual Effects:

History of VFX – Techniques used in VFX oldendays – Hollywood techniques of visual effects – Indian techniques visual effects – Land marking Visual studios – Screening of various movies–VFX Professional Development– VFX growth Introduction to VFX pipeline – Pre production – Methods used in VFX shooting – Famous visual VFX Artist Movie making screening –Special Effects–

2. Basic Of Rotosopic& Composting Techniques:

Introduction To Mocha – Mocha Interface – Mocha Preferences – Mocha Tools – The Viewer Controls – The Timeline Controls – Layer Properties – Tracking The Spline – What Is 2d Compositing – Ethics Of Compositing – Blending Techniques – Transforming In 2d – Color Correction – Making Tonal Adjustments Compositing Workflow – Quality Checking Techniques

3. Keying Techniques
Introduction To Nuke Keys – Usage Of Primate– Keying With Key Light – Keying Workflow – Various Keying– Key Light With Ultimate – Keying Plug- in Advanced– Keying in multiple software –Techniques For Fine Details

4. Match Move &Tracking Techniques
Boujou Interface – Menu Bar – Tool Bar – 2D& 3dtracking – View – Track Features – Import

Sequences – Camera Solve – Solve Tools – Transformation Tools – Target Tracks – Graph Editors – Export Camera Solve – Features Of Trackers – – Trackers In Nuke – Point And Planar Tracking – Importing TrackingData From Other Software's – Advanced Tracking Workflow – Advanced Tracking Techniques

5. Stereoscopic Techniques

What Is Stereoscopy – Types Of Dimensional – Category In Stereoscopy – Stereo Photography – Olden Stereoscope Viewers –Stereographic Projection – Types Of Stereo Camera – Type Of Stereo Display –Auto Stereoscopy Stereo Tools In Nuke – Stereo Compositing Workflow – Stereo Conversion –Deep Compositing – Quality Control And Debugging Of Stereo Conversion

REFERENCE BOOKS

1. The Art & Science Of Digital Compositing, by Ron Brinkmann, Morgan Kaufmann Publishers
2. Match Moving, by TIM DOBBERT, SYBEX Publisher
3. Digital Compositing, by Ron Brinkmann, Academic Press
4. **https://borisfx.com/support/documentation/mocha/6.0.0/#_the_timeline_controls**

Model Blue print

S. No.	Chapter/Unit title	No.of periods	Weightage Allocated	Marks Wise Distribution of Weightage				Question wise Distribution of Weightage				CO's Mapped
				R	U	Ap	An	R	U	Ap	An	
1	Evolution of Visual Effects	15	14	3	11			1	2			CO1
2	Basic Of Rotoscopic& Composting Techniques	15	14	3	3	8	10	1	1	1	*	CO2
3	Keying Techniques	15	14	3	11			1	2			CO3
4	Match Move &Tracking Techniques	15	14	3	3	8	10	1	1	1	*	CO4

5	Stereoscopic Techniques	15	14	3	3	8	10	1	1	1	*	CO5
	Total	**75**	**70 + 10(*)**					**5**	**7**	**3**	**1**	

Note: Part-C: 10 marks single analytical question may be chosen from any or combination of starred chapters

Table specifying the scope of syllabus to be covered for unit tests

Unit Test	Learning outcomes to be covered
Unit test-1	From 1.1 to 3.7
Unit test-2	From 3.8 to 5.20

DIPLOMA IN 3D ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER
Visual EFX and Composting Techniques
UNIT TEST-1
SCHEME: C-20SUBJ CODE:AM-505

MAX MARKS:40   **TIME: 90Minutes**

PART-A   16Marks

Instructions: 1) Answer all questions
   2) First question carries 4marks, and each question of remaining carries 3marks.

1.a) VFX stands for ----------------------   (CO1)
   b) Mocha is an interface [True/False]   (CO2)
c. Which of the following is a valid timeline controls in Mocha?   (CO2)
a)Current Frameb) Tracec) Stabilize   d)Overlays
d). The special compositing effect that happens when we take a part of a video and make it transparent is termed as _____   (CO3)
2) Write any three applications of VFX   (CO1)
3)Define Compositing   (CO2)
4) State the purpose of timeline controls in Mocha   (CO2)
5)Write any three uses of Keying   (CO3)

Instructions:1) Answer all questions

2) Each question carries 8 Marks

3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

6. a) Explain various techniques used in VFX in olden days   (CO1)

Or

b)Explain VFX Artist movie making.   (CO1)

7. a) Explain 2D Compositing   (CO2)

Or

  b) List and explain ethics of compositing.   (CO2)

8. a) Demonstrate the usage of Primate with an example?   (CO3)

Or

b) Explain the process of keying with key light.   (CO3)

BOARD DIPLOMA EXAMINATIONS
DIPLOMA IN 3D ANIMATION AND MULTIMEDIA ENGINEERING
MODEL PAPER – YEAR END EXAMINATION
VISUAL EFX AND COMPOSTING TECHNIQUES
SCHEME: C-20SUBJ CODE:AM-505

<u>**MAX MARKS:80**</u>   <u>**TIME: 3HOURS**</u>

PART-A10X3=30Marks

Note: Answer all questions

1. State the need of VFX.   (CO1)
2. What is VFX pipeline?   (CO1)
3. Define Rotoscoping   (CO2)
4. State any three applications of Compositing.   (CO2)
5. Write the purpose of Keying.   (CO3)
6. State the need of Key light.   (CO3)
7. What is match move?   (CO4)
8. List any three components of Boujou interface.   (CO4)
9. Define Stereoscopy.   (CO5)
10. List any three olden stereo scope viewers.   (CO5)

PART-B

                                                    5x8=40Marks

Note: Answer all questions

11. A.Explain the history of VFX in detail.   (CO1)

OR

11. B. Explain various Hollywood techniques of visual effects (CO1)

12.A Explain Any four tools in Mocha with examples   (CO2)

OR

12.B.Explain the process of making Tonal adjustment compositing workflow?   (CO2)

13.A.Explainany four Nuke keys with examples   (CO3)

OR

13.B. Explain keying in multiple softwares.   (CO3)

14.A. Differentiate 2D and 3D tracking in detail   (CO4)

OR

14.B. Explain Point and Planar tracking.   (CO4)

15.A. Eexplain category in stereoscopy with all subcategories.   (CO5)

OR

15.B. Distinguish between any two types of stereo cameras.   (CO5)

PART-C 1X10=10Marks

16.Explain the process of Creating a VFX application To demonstrate stereographic projection with an example video .   (CO5)

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-506	3D RIGGING AND ANIMATION LAB	3	45	40	60

S No	Chapter/ Unit Title	No. of Periods	COs Mapped
1.	Rigging Menus & Editors Skelton Setup& Props rigging Robot Rigging	9	CO1
2.	Character Rigging Work Flow Quadruped Rigging Setup Advance Rigging Techniques	12	C02
3.	Animation Menus& Editors Basic Animation Techniques	6	CO3
4.	Linear Animation Techniques Non-Linear Animation Techniques	12	C04
5	Facial Animation With LipSync	6	C05

	Total	45	

GUIDE LINES:

- All the exercises provided in the list of practicals should be completed and submitted during the semesterexamination.
- In order to develop skill in mastering creativity, every student should be made to practice thoroughly.
- The external examiners are requested to ensure that a single practical oriented question should not be given to more than three students while admitting a batch of 30 students during BoardExamination.

Required Infrastructure(Software, Hardware and other Equipment) to be procured as per C-20:

SNO	Hardware / Equipment Needed	Software Needed
1	**Desktop Systems:** Configuration: 33. Processor :: AMD Ryzen 9 3900X Or any other equivalent intel/Motorola etc.. processor or Above 34. Mother Board: AMD 400/500 or its equivalent or above 35. RAM: 8GB(or above) dual channel DDR4 36. HDD: 500GM (SSD)/1TB(or above) 37. Graphics Card: Aorus GeForce RTX 2080 Ti Xtreme (or equivalent) 38. Monitor: 17" or above 39. Multimedia Devices like Mic, Head Phones / Speakers , USB Web camera or USB Digital Video Camera 40. Color Photo Scanner and Printer	**1. Operating System:** Microsoft Windows 10 professional-64 bit (Minimum) 2.Animation and Multimedia Software 13. Adobe master collection cs6 (or Above) 14. Autodesk MAYA 15. Autodesk 3DS MAX.

	CO No	COURSE OUTCOMES
		After completion of this course student will be able to
CO 1	AM-506.1	Create various Joints for Leg, spine, hand, robotic Skelton, rigging controls ,Controls, usage of Hierarchy Editor, Connection Editor, prop rigging
CO 2	AM-506.2	Create Human Skelton, Usage of IK Skelton Generator, usage of stretch and squash, script Editor, practice on quadruped rigging setup

CO 3	AM-506.3	Developing Ball Bouncing animations using graph Editor and Trax editor etc..
CO 4	AM-506.4	Apply poses, animations motion flow, working with animation shots, Tangents, creating Animation Clip, edit Clips
CO 5	AM-506.5	Developing animations with Various facial controls, dialogue with Lip Sync, play back adjusting

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-506.1	1	3	3	2	2	2	2	2	2	
AM-506.2	2	3	1	2	1	2	1	1	2	2
AM-506.3	1	2	2	2	2	1	1	2	2	3
AM-506.4	2	3	3	2	3	3	2	2	3	2
AM-506.5	2	2	2	2	3	3	2	1	3	1
Average	**1.8**	**2.6**	**2.2**	**2**	**2.2**	**2.2**	**1.6**	**1.6**	**2.4**	**2**

3=Strongly mapped, 2=moderately mapped, 1=slightly mapped

Learning outcomes

1. Create the human rig with proper control & skinning for given model   CO1.

2. Create Joints for Leg, Hand and Spine-   CO1
3. Create the facial rig for given 3d character with GUI controls.   CO1
4. Create the vehicle rig with dynamic controls for given auto mobilemodels.CO2
5. Crete a character using various Deformers .   CO2
6. Rig the given quadruped character with the proper control withskinning. -CO2
7. Create the thread mill walk cycle for 5sec with the given riggedcharacter-CO2
8. Create Ball bouncing animation   -CO3
9. Develop a scene with Graph Editor   -CO3
10. Match the footage of video sequence with given riggedcharacter.   -CO4
11. Create a audio track with grouping & merging Clips   -CO4
12. Create facial expression animation for given rigged character for6sec   -CO4
13. Create a simple walk cycle using 9 poses   -CO4
14. Create lip-sync for the character with given referencefootages   -CO5
15. Create lip-sync for the Santa Claus head with mouth animation**.   -CO5**

The competencies and key competencies to be achieved by the student

S. No.	Name of the experiment	Objectives	Key Competencies

1	Create the human rig with proper control & skinning for given model	❖ Identify controls to rig characters	❖ Use various controls to rig characters ❖ Use different controls for skinning character ❖ Apply different set drivens
2	Create Joints for Leg, Hand and Spine	❖ Identify mechanisms to create joints	❖ Use about various mechanisms to create joints ❖ Use different Joints for legs, hands, spine
3	Create the facial rig for given 3d character with GUI controls.	❖ Identify GUI controls for facial rigging	❖ Use various mechanism to do facial rigging for 3d character ❖ Use different controls for rigging 3d characters
4	Create the vehicle rig with dynamic controls for given auto mobilemodels.	❖ Identify dynamic controls to rig a vehicle or motor	❖ Use different dynamic controls to rig a vehicle ❖ Use various controls to rig mobile device
5	Crete a character using various Deformers	❖ Identify different deformers (lattice, Wrap, Cluster, Sculpt) & Non-Linear Deformers (Bend, Squash, sine, Twist, Wave, Blend Shape) to create a character	❖ Use different deformers (lattice, Wrap, Cluster, Sculpt) to create a character ❖ Use Non-Linear Deformers (Bend, Squash, sine, Twist, Wave, Blend Shape)
6	Rig the given quadruped character with the proper control withskinning.	❖ Identify controls for rigging quadruped character like Dog, car	❖ Use about controls for rigging quadruped character like Dog ❖ Use different controls to rig quadruped vehicle like, car
7	Create the thread mill walk cycle for 5sec with the given riggedcharacter	❖ Identify controls for rigging moving character thread mill	❖ Use controls for rigging moving character like thread mill ❖ Use different positions and speeds
8	Create Ball bouncing	❖ Identify animation techniques to bounce	❖ Use various animation techniques to bounce ball

	animation	a ball	❖ Practice on various directions ❖ Identify angles , motions, height
9	Develop a scene with Graph Editor	❖ Identify controls in Graph editor to make different curves in a scene	❖ Use mechanisms in Graph editor to make different curves in a scene ❖ Practice different curves ❖ Practice keys
10	Match the footage of video sequence with given riggedcharacter.	❖ Identify mechanism to match footage of video sequence with given character	❖ Use control mechanism to match footage of video sequence with given character ❖ Practice on different videos
11	Create audio track with grouping & merging Clips	❖ Identify controls to merge and group different audio tracks as one audio track	❖ Use of controls to merge and group different audio tracks as one audio track ❖ Practice on merging and grouping video clips
12	Create facial expression animation for given rigged character for6sec	❖ Identify controls to merge and group different audio tracks as one audio track	❖ Use different controls for facial expression animation for rigged character ❖ Practice different expressions
13	Create a simple walk cycle using 9 poses	❖ Identify controls for walk cycle using different poses	❖ Use poses and create walk cycles ❖ Practice using 9 poses
14	Create lip-sync for the character with given referencefootages	❖ Identify controls to create lip sync for a character	❖ Use various lip sync mechanisms to apply on character ❖ Practice on lip sync controls ❖ Using references ❖ Using footages
15	Create lip-sync for the Santa Claus head with mouth animation.	❖ Identify controls to create lip sync on head of a character for mouth animation	❖ Use different lip sync controls to create Santa Claus head with mouth animation ❖ Use Head and Mouth and lip sync controls

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-507	COMPOSITING Lab	03	45	40	60

S No	Chapter/ Unit Title	No. of Periods	COs Mapped
1.	Evolution of Visual Effects	3	CO1
2.	Basic Of Rotoscopic& Composting Techniques	15	CO2
3.	Keying Techniques	6	CO3
4.	Match Moving Tracking Techniques	12	CO4
5.	Stereoscopic Techniques	9	CO5
	Total	**45**	

GUIDE LINES:

- All the exercises provided in the list of practical's should be completed and submitted during the semester examination.
- In order to develop skill in mastering creativity, every student should be made to practice thoroughly.
- The external examiners are requested to ensure that a single practical oriented question should not be given to more than three students while admitting a batch of 30 students during Board Examination.

	Upon completion of the course the student shall be able to
COURSE **OBJECTIVES**	14. Install VFX software and configure it 15. Enhance VFX applications using tools and techniques in Mocha interface 16. Implement Keying techniques and Nuke Keys 17. Enhance VFX applications by applying concepts in Boujou interface 18. Implement stereoscopic projections using stereoscopic techniques 19. Implement projection mapping using MAYA.

CO No		**COURSE OUTCOMES**
CO 1	AM-507.1	Understand the evolution of Visual Effects
CO 2	AM-507.2	Develop VFX effects using Rotoscoping and Compositing Techniques
CO 3	AM-507.3	Develop VFX effects using Keying Techniques
CO 4	AM-507.4	Develop VFX effects using Match Moving Tracking Techniques
CO 5	AM-507.5	Develop VFX effects using Stereoscopic Techniques

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-507.1	3	1	1	1	2		1	1	1	1
AM-507.2	1	3	3	3	1	3	1	3	3	1
AM-507.3	1	2	3	2	1	3	1	3	3	1
AM-507.4	3	3	3	3	1	3	1	2	3	1
AM-507.5	3	3	3	3	1	3	1	2	3	1
Average	2.2	2.4	2.6	2.4	1.2	3	1	2.8	2.6	1

3=Strongly mapped , 2=moderately mapped, 1=slightly mapped

Required Infrastructure(Software, Hardware and other Equipment) to be procured as per C-20:

SNO	Hardware / Equipment Needed	Software Needed
1	**Desktop Systems:** Configuration: 1. Processor :: AMD Ryzen 9 3900X Or any other equivalent intel/Motorola etc.. processor or Above **2.** Mother Board: AMD 400/500 or its equivalent or above **3.** RAM: 8GB(or above) dual channel DDR4 **4.** HDD: 500GM (SSD)/1TB(or above) **5.** Graphics Card: Aorus GeForce RTX 2080 Ti Xtreme (or equivalent) **6.** Monitor: 17" or above **7.** Multimedia Devices like Mic, Head Phones / Speakers , USB Web camera or USB Digital Video Camera **8.** Color Photo Scanner and Printer	**1. Operating System:** Microsoft Windows 10 professional-64 bit (Minimum) 2.Animation and Multimedia Software 16. Adobe master collection cs6 (or Above) 17. Autodesk MAYA 18. Autodesk 3DS MAX.

Learning Outcomes

1. Install the VFX related software and Configure it.
2. Demonstrate tracked spline tool in Mocha to speed up shape creation .
3. Demonstrate Mocha tools with real time scenarios

4. Demonstrate Blending Techniques in Mocha

5. Create the rotoscopic for character to changing the dress color.

6. Create Track, keying &composite given footages using mocha nuke.

7. Composite the green matte footage with given main footages using nuke.

8. Demonstrate Keying techniques for fine details

9. Demonstrate tools in Boujou toolbar

10. Demonstrate menus in Boujou menubar

11. Create Match move using boujo & composite with Maya.

12. Import tracking data from other softwares

13. Create the title effect & logo animation in after effects.

14. Create the 3d composite Using Nuke for layer renders.

15. Create 3d camera movement to footage using projection mapping using Maya& nuke.
16. Create dual role effects on a character and use deep compositing..

17. Create an application demonstrating stereographic projection

18. Demonstrate Debugging of stereo conversion

The competencies and key competencies to be achieved by the student

S.No.	Name of the experiment	Objectives	Key Competencies
1	Install the VFX related software and Configure it.	Understand VFX and Identify various VFX related software	❖ Identify VFX related software ❖ Install the latest version ❖ Configure the latest version ❖ Test the software
2	Demonstrate tracked spline tool in Mocha to speed up shape creation and reduce manual key frames	Practice the usage of tracked spline tool in Mocha interface	❖ Implement the tracked spline tool for speed up of shape creations ❖ Implement the tracked spline tool for reducing manual delays.
3	Demonstrate Mocha tools with real time scenarios	Use various tools used in Mocha	❖ Apply various Mocha tools to enhance VFX applications
4	Demonstrate Blending Techniques in Mocha	Understand various blending techniques	❖ Apply blending tools in Mocha to enhance VFX applications
5	Create the rotoscopic for character to changing the dress color.	Use rotoscopic color change mechanism	❖ Implement rotoscopic mechanism ❖ Apply color schemes
6	Create Track, keying &composite given footages using mocha nuke.	Demonstrate Tracking, Keying and Composite mechanisms	❖ Implement Tracking ❖ Implement Keying ❖ Implement Compositing Using Mocha interface
7	Composite the green matte footage with given main footages using nuke.	Composting mat footages.	❖ Apply compositing on main footages with green matte footage. ❖ Using Nkue.
8	Demonstrate Keying techniques for fine details	Practice d Keying techniques	❖ Apply Keying techniques for making fine details
9	Demonstrate tools in Boujou toolbar	Use various tools in Boujou toolbar	❖ Use Boujou toolbar for creating VFX applications

10	Demonstrate menus in Boujou menubar	Identify various menus in Boujou menubar	❖ Use Boujou menubar for creating VFX applications
11	Create Match move using boujo & composite with Maya.	Apply Match Move concept	❖ Implement Match Move ❖ Implement Composite Using Maya
12	Import tracking data from other software	Working with importing of Tracking data.	❖ Import tracking data from various softwares
13	Create the title effect &logo animation in after effects.	Creating after effects	❖ Create title effect ❖ Create logo ❖ Animate the effect.
14	Create the 3d composite Using Nuke for layer renders.	Understand 3D Composite using Nuke	❖ Implement 3D Composition ❖ Using Nuke ❖ Creating for layer renders
15	Create 3d camera movement to footage using projection mapping using Maya& nuke.	Demonstrate projection mapping	❖ Using Maya and Nuke ❖ Applying projection mapping. ❖ Using 3D camera movement ❖ Working with footages using cameras.
16	Create dual role effects on a character	Work with dual roles.	❖ Using radioscopic effect. ❖ Create dual roles of a character. ❖ Apply deep compositing.
17	Create an application demonstrating stereographic projection	Understand stereographic projection	❖ Implement Stereographic projection

18	Demonstrate Debugging of stereo conversion	Understand Debugging in stereo conversion	❖ Use debugging mechanisms of stereo conversion

Life Skills

Course Code	Course Title	No. of Periods/Week	Total No. of Periods	Marks for FA	Marks for SA
Common 508	Life Skills	3	45	40	60

S. No.	Unit Title	No of Periods	COs Mapped
1	**Attitude**	**4**	CO1
2	**Adaptability**	**4**	CO1, CO2
3	**Goal Setting**	**4**	CO1, CO2, CO3
4	**Motivation**	**4**	CO1, CO2, CO3
5	**Time Management**	**4**	CO2
6	**Critical thinking**	**4**	CO3
7	**Creativity**	**4**	CO3
8	**Problem Solving**	**5**	CO3
9	**Team Work**	**4**	CO4
10	**Leadership**	**4**	CO4
11	**Stress Management**	**4**	CO4

Total Periods	45	

Course Objectives	To understand the importance of Life skills for acceptable, sustainable and ethical behaviour in academic, professional and social settings
	To exhibit language competence appropriate to acceptable social and professional behaviour.
	To demonstrate time management, stress management, team skills, problem solving ability to manage oneself in academic, professional and social settings.

CO No.	Course Outcomes
CO1	Demonstrates positive attitude and be able to adapt to people and events
CO2	Fixes personal and professional goals and manages time to meet targets
CO3	Exhibits critical and lateral thinking skills for problem solving.
CO4	Shows aptitude for working in teams in a stress free manner and sometimes/ very often/ mostly display leadership traits.

CO-PO Matrix

Course Code Common-508	Course Title: English Number of Course Outcomes: 4				No. of Periods: 45
POs	Mapped with CO No.	CO Periods Addressing PO in Column 1		Level of Mapping (1,2,3)	Remarks
		Number	Percentage %		
PO1		Not directly applicable for Life Skills Course. However activities that use content and situations from academic, professional and social settings relevant to the Programme shall be exploited for triggering thought and interaction in the Course.			
PO2					
PO3					
PO4					

PO5	CO1, CO2, CO3, CO 4	11	25%		>60%: Level 3
PO6	CO1, CO2, CO3, CO4	27	45%		16 -59%: Level 2
PO7	CO1, CO2, CO3, CO4	7	30%		Up to 15%: Level 1

Level 3 – Strongly Mapped
Level 2- Moderately Mapped
Level 1- Slightly Mapped

Mapping Course Outcomes with Program Outcomes:

CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7
CO 1					✓	✓	✓
CO 2					✓	✓	✓
CO3					✓	✓	✓
CO4					✓	✓	✓

Blue Print for evaluation based on Course Outcomes for SA:

Note: Every Activity based Question that focuses on COs and responses as exhibited through communication has to be given marks for the following parameters

- Clarity of Thinking as Exhibited through Content
- Features of Etiquette

*Rubric Descriptors 'Outstanding/ Very Good/ Good/ Satisfactory/ Poor' levels of Competence

Level of Competence	Parameters of Assessment	
	Clarity of thinking as exhibited through content	Features of etiquette

Outstanding 10	**Thinking** is **extremely logical** and suggested course of action is **feasibile** Shows **creativity and uniqueness** Exhibits **expert use of expression** (organizational devices and discourse markers) that denote clarity in thought.	Exhibits **courtesy to all most appropriately** with **confidence**
Very Good 8/9	**Thinking** is **clear and logical** Suggested **course of action is feasible** Shows **traces of creativity** Exhibits **good expression** (organizational devices and discourse markers) that denote clarity in thought.	Exhibits **courtesy to all to a considerable level.**
Good 6/7	**Thinking is clear and logical most of the time**. Lacks creativity or out of the box thinking as expressed through content.	Exhibits **courtesy / politeness to an acceptable level.**
Satisfactory 4/5	**Thinking is logical**; However **expressing content is disjointed and disorganized.**	Has courtesy but often fumbles with language.
Poor 3 or less than 3	**Thoughts** as expressed through content are **incoherent.Language skills are very limited.**	Fails to show courtesy to others.

Blue Print for evaluation based on Course Outcomes for SA of each student:
Note: Marks are awarded for each student as per the Rubric descriptors.

S N o.	Questions based on Course Outcomes	Periods Allocate d for practical work	Max Marks	Poor >3	Satisfact ory 4 /5	Good 6/7	Very Good 8/9	Outstandin g 10
1	Short presentation on GOALS with Timeline and Action Plan	12	10					
2	State what you will do in the given situation (Assesses adaptability and critical thinking skills, leadership, team skills)	12	10					

3	In how many different and creative way can you use _____ (Object) other than its primary use	8	10					
4	What solutions can you think of for _____ problem.	13	10					
	Total	45	60					

Note: The marks that are awarded for the student for 40 to be increased proportionally for 60.

Learning Outcomes

1. **Attitude Matters :**

   9.1 Understand the importance of positive attitude and the consequences of negative

   attitude.

   1.2 Demonstrate positive attitude in dealing with work-related issues and in personal life.

2. **Adaptability….*makes life easy* :**

   10.1   Understand the significance of adaptability.

   2.2 Show adaptability whenever needed, both at place of work and on personal front.

3. **Goal Setting … *life without a Goal is a rudderless boat!***

   3.2 Understand the SMART features of goal-setting.

   3.3 State one's short-term and long-term goals and spell out plans to achieve them.

4. **Motivation … *triggers success!***

   4.2 Comprehend the need for motivation in order to achieve success in life.

   4.3 State how one is motivated in life.

   4.4 Show the impact of motivation on one's life

5. **Time Management… *the need of the Hour!***

   5.2 Understand the value of time management and prioritizing in life

   5.3 Demonstrate the effect of time management on one's professional work.

6. **Critical Thinking … *logic is the key!***

6.1 Distinguish between facts and assumptions

6.2 Use logical thinking in dealing with professional matters

7. Creativity … *the essential you!*

7.2 Understand the importance of thinking out of the box in dealing with critical issues

7.3 Solve problems using creativity / imagination

8. Problem Solving … *there is always a way out!*

8.2 Understand the need for and importance of problem solving.

8.3 Use logic or creativity to solve a problem at workplace or home.

9. Team Work… *together we are better!*

9.1 Understand the need for team skills / team building

9.2 Demonstrate one's skills as a team player

10. Leadership… *the meaning of a leading!*

10.1 Understand the need for team skills / team building

10.2 Demonstrate one's skills as a team player

11. Stress Management… *live life to the full!*

11.1 Understand what causes stress and how to cope with stress at workplace.

11.2 Demonstrate how stress can be overcome in a healthy way.

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-509	EDITING Lab	3	45	40	60

GUIDELINES:

- All the exercises provided in the list of practicals should be completed and submitted during the semesterexamination.
- In order to develop skill in mastering creativity, every student should be made to practice thoroughly.
- The external examiners are requested to ensure that a single practical oriented question should not be given to more than three students while admitting a batch of 30 students during BoardExamination.

Laboratory requirements:

S.No	Item	Configuration	Quantity
1	**Computer**	Processor :: 2.66GHZ Core 2 Quad (or above)	For batch of 5 to 10 students at a time
		8GB DDR3 RAM	
		1TB HDD SATA	
		Monitors – 17"	
		Graphic Accelerator Cards 2 GB RAM, GPU Support	
2	Audio Dubbing Acoustic Studio	HDV - VIDEO CAMERA -1No Stereo Mic- 1No Sound Mixer-1No Amplifier-1No Speakers-1Pair/1 set of home theatre Stereo Head Phones-1set/student	
3	OperatingSys	Windows-XP(64-Bit)- (or above)	
5	Adobe Master Collection CS6	a) PHOTOSHOP b) Premier c) Sony Soundforge	

S No	Chapter/ Unit Title	No. of Periods	COs Mapped
1.	Audio capturing	9	CO1,CO5
2.	Audio Editing	9	CO1,CO3
3.	Video Capturing	9	CO2,CO4

4.	Video Editing	9	CO1,CO2
5.	Video Production (Post Production,Pre production, production)	9	CO5
	Total	**45**	

COURSE **OBJECTIVES**	1. To develop process of making movies. 2. To practice basic storyboarding to prepare for a movie using editing software 3. To practice the categories in compositing process 4. To apply editing techniques in various stages of production	

CO No		COURSE OUTCOMES
CO 1	AM-509.1	Practice on the latest techniques in editing
CO 2	AM-509.2	Develop the method to visualize and create their own video logs and short-films.
CO 3	AM-509.3	Apply the concepts of Non-Linear editing
CO5	AM-509.4	Apply the basics of camera technology, sound, microphones, shooting techniques in editing process
CO5	AM-509.5	Apply editing techniques at Pre-production, Production and Post-Production

CO-PO/PSO MATRIX

CO NO.	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-509.1	2	1	1	3	3	2	3	3	3	2
AM-509.2		1	3	3	2	2	3	2	3	2
AM-509.3	1						2	3	2	1
AM-509.4		1				2	3	3	3	2
AM-509.5		1	2	2	2	3	2	3	3	3
Average	**1.5**	**1**	**2**	**2.2**	**2.5**	**2.2**	**2.8**	**2.8**	**2.8**	**2**

3=strongly mapped, 2=moderately mapped, 1=slightly mapped

LEARNING OUTCOMES:

1. Record audio for 10 min edit it for 5 min.
2. Develop concept for audio recording and mix it with appropriate effects.
3. Experiment on audio mixing using some effects.
4. Remove vocals from a song using audio editing software.

5. Convert the raw video file & edit the video sequence for 5min
6. Create the title for the movie IN 2 min with the given worddocument
7. Edit the given HD video file and make the final out put in vob (DVD)format
8. Edit the 3D rendering sequence &make the video file as demoreel
9. Make the single video file of the interview taken in multicameras
10. Edit the short film for 5 min video sequence in given 20 min video sequence
11. Make the teaser(1min) for the givenmovie
12. Edit the given video with cine quality video effects with warm colortone.

The competencies and key competencies to be achieved by the student

S.No.	Name of the experiment	Objectives	Key Competencies
1	Record audio for 10 min edit it for 5 min	Identify various tools for recording audio and editing the audio.	Identity the options for audio recording Edit audio for 5mnts
2	Develop concept for audio recording and mix it with appropriate effects.	Identify mixing tools	Identify tools for audio mixing Apply suitable effects
3	Experiment on audio mixing using some effects.	Identify the tools to set some audio effects	Identify how we can change the audio by setting some effects.
4	Remove vocals from a song using audio editing software.	Practice in separating various elements in audio.	Identify the tools in separation of elements from audio.

5	Convert the raw video file & edit the video sequence for 5min	Identify the tools to edit video	Identify various options used for video editing
6	Create the title for the movie IN 2 min with the given word document	Demonstrate title editing	Identify various tools to edit titles of a video
7	Edit the given HD video file and make the final out put in vob (DVD)format	Demonstrate the editing of HD video file and changing format of video.	Identify various tools in HD video editing Save it in vob9DVD) format.
8	Edit the 3D rendering sequence &make the video file as demo reel	Demonstrate how 3D rendering can be done on given video and practice making video file as reel	Identify various tools in rendering Make demo real
9	Make the single video file of the interview taken in multicameras	Demonstrate how to take video using different cameras	Identify tools to edit video captured from different angles.
10	Edit the short film for 5 min video sequence in given 20 min video sequence	Demonstrate how to edit a short film.	Identify tools for editing a short film.
11	Make the teaser(1min) for the given movie	Demonstrate how to make a teaser from a big video.	Identify tools to make a teaser.

12	Edit the given video with cine quality video effects with warm colortone.	Demonstrate the edit the video to get quality video with various effects.	Identify the tools for increasing the quality of video.

Course code	Course Title	No. of Periods/Weeks	Total No. of periods	Marks for FA	Marks for SA
AM-510	Project Work	6	90	40	60

Guidelines:

9. Students have to be divided into groups consisting of 3 to 4 members.
10. Each group has to develop a project by applying the knowledge acquired during entire diploma course.
11. They have to approach TV studios, Film Industries, Photo and Video Studios , Multimedia centers , DTP centres, Printing presses to collect the information and the long term Projects related to Photography, Animation, Film making ,Print Media and Visual media.
12. They have to be in a position to develop short films , cartoon movies , TV Shows by applying Pre Shooting , Production Design , Shooting , Post Production , Rigging , Rendering, Lighting, Shading , Editing, Compositing techniques wherever necessary.
13. They have to Produce the Project report at the end of the project.
14. They should conduct minimum three seminars/Workshops to explain the progressive development of their project with co project members and the staff.
15. Some of the examples of the projects may be:
    a. Create a short film on farming.
    b. Short film on Education.
    c. Short film on Cartoon characters.
    d. Short film on Political roles.
    e. Short film on Fishing.
    f. Short film on Airport activities.
    g. Short film on Cooking.
    h. Short film on Sports and Games.
    i. Short film on Social and Ethical responsibilities.
    j. Short film on Cardiac operation in Hospital.
    k. Short film on Moon , Sun and other Planets…etc.

In producing all the short films the student should apply all activities mentioned in the Point No. 4 and make them available on social media websites like YouTube, Facebook, Twitter, Instagram and your Institute website.

SIXTH SEMESTER

C-20 DAME

6th Semester

INDUSTRIAL TRAINING (In-house/Industry)

Course Code	Course title	No of periods/week	Duration	Marks for FA	Marks for SA
AM-601	INDUSTRIAL TRAINING (In-house/Industry)	42	6 months	240	60

S No	Unit Title	Duration	COs Mapped
1	Application of Knowledge acquired.	1 month	CO1
2	Skill Acquirement.	2 months	CO2
3	Participate in product development.	2 months	CO3
4	Preform onsite service.	1 month	CO4
	Total	6 months	

Course Objectives	1.Expose to real time working environment 2. Enhance knowledge and skill already learnt in the institution 3. Acquire the required skills in SDLC phases . 4. Instil the good qualities of integrity, responsibility and self confidence.

CO No		COURSE OUTCOMES
CO1	AM-601.1	Apply knowledge and skill already learnt in the institution.
CO2	AM-601.2	Acquire the required skills of analysis, design and development , testing, verification and validation , deployment and distribution of the product.
CO3	AM-601.3	Involve in product design, development, quality testing and maintenance production by exhibiting the strength, teamwork spirit and self-confidence
CO4	AM-601.4	Prepare product document, gain the skills in deploying product at customer site , training the end user, maintaining the system.

CO-PO/PSO MATRIX

CO No	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PSO1	PSO2	PSO3
AM-601.1	3					3		3	3	
AM-601.2	3			2	3	3	3	3	3	
AM-601.3	3	3	3	3	3	3	3	3	3	3
AM-601.4	3	3	3	3	3	3	3	3	3	3
Average	3	3	3	2.7	3	3	3	3	3	3

3=strongly mapped
2=moderately mapped
1=slightly mapped

LEARNING OUTCOMES (In-house training):

TRAINING MODULE NO.	TOPIC	LEARNING OUTCOMES (In-house training)	No. OF PERIODS
e 1	**lanning**	1. Define the problem 2. Identify the scope of any existing systems. 3. Determine the objectives for the proposed new system. 4. Developing an effective outline for the upcoming development cycle. 5. Catch problems. 6. Identify funding and resources. 7. Set the project schedule at various time frames	**90**

e 2	**Analysis**	1. Define prototype system requirements 2. Evaluate alternatives to existing prototypes 3. Perform research and analysis to determine the needs of end-users 4. Prepare software requirement specification(SRS) document. 5. Specify the software, hardware, and network requirements.	110
e 3	**Design**	1. Design overall system architecture. 2. User interfaces 3. System interfaces 4. Network requirements 5. Databases 6. Prepare design document.	110
e 4	opment	1. Practice coding guidelines. 2. Code and build the application as per the design using modular programming. 3. Compilation and execution.	200
5	g	1. Perform debugging. 2. Perform Modular and integrated testing. 3. Verify and validate the system. 4. Prepare the testing document and/or user document.	60
e 6	ct installation and maintenanc e	1. Site preparation for deploying product 2. Install a product system at site. 3. Train the end user to operate the system. 4. Provide security enforcement. 5. Provide maintenance to the system after installation. 6. Explain customer relationship importance	60
TOTAL NUMBER OF PERIODS			630

LEARNING OUTCOMES (In Industry):

- Apply knowledge and skill already learnt in the institution.
- Acquire the required skills of analysis, design and development , testing, verification and validation , deployment and distribution of the product.
- Involve in product design, development, quality testing and maintenance production by exhibiting the strength, teamwork spirit and self-confidence

399

- Prepare product document, gain the skills in deploying product at customer site , training the end user, maintaining the system.

Scheme of evaluation

SI. No.	Subject	Duration	Scheme of evaluation		
			Item	Nature	Max. Marks
1	Industrial Training	6 months	1.First Assessment at Industry (After 12 Weeks)	Assessment of learning outcomes by both the faculty and training mentor of the industry	120
			2.Second Assessment at the Industry (After 20 weeks))	Assessment of learning outcomes by both the faculty and training mentor of the industry	120
			Final Summative assessment at institution level	Training Report	20
				Demonstration of any one of the skills listed in learning outcomes	30
				Viva Voce	10
TOTAL MARKS					**300**

Weightage of marks for Assessment of Learning Outcomes during first and second assessment

Sl.No	Learning Outcome	Max Marks Allotted For first assessment	Max Marks Allotted For second assessment
1	Apply knowledge and skill already learnt in the institution.	50	10
2	Acquire the required skills of analysis, design and development , testing, verification and validation , deployment and distribution of the product.	70	30
3	Involve in product design, development, quality testing and maintenance production by exhibiting the strength, teamwork spirit and self-confidence	-	40
4	Prepare product document, gain the skills in deploying product at customer site , training the end user, maintaining the system.	-	40
	Total	120	120

Guidelines for industrial training of DIPLOMA IN ANIMATION AND MULTIMEDIA ENGINEERING programme

➢ Duration of the training: 6 months.
➢ Eligibility: The As per SBTET norms
➢ Training Area: Students can be trained in either in In-house/Industry/Cisco CCNA certification
➢ The Industrial Training shall carry maximum 300 marks
➢ Pass mark is 50% in assessment at industry (first and second assessment put together) and also 50% in final summative assessment at the institution level
➢ Formative assessment at industry level shall be carried out by the representative of the industry, where the student is undergoing training and the faculty from the concerned section in the institution.
➢ If the student fails to secure 50% marks in assessment at industry (first and second assessment put together), the student should reappear for 6 months industrial training at his/her own expenses.
➢ If the student fails to secure 50% marks in final summative assessment at institution level, the student should reappear for final summative assessment in the subsequent board examination.
➢ Final summative assessment at institution level is done by both internal, external examiners and faculty members who assessed the students during industrial training.
➢ During industrial training the candidate should maintain a minimum of 90% attendance.
➢ If the student fails to secure 90% attendance during industrial training, the student should reappear for 6 months industrial training at his/her own expenses.