CURRICULUM – 2018

(C-18)

DIPLOMA IN MINING ENGINEERING



STATE BOARD OF TECHNICAL EDUCATION & TRAINING

TELANGANA, HYDERABAD

III SEMESTER

APPLIED ENGINEERING MATHEMATICS

Course Title **: APPLIED ENGINEERING MATHEMATICS**	Course Code **: 18COMMON301F**
SEMESTER : **III**	Course Group **: Foundation**
Teaching Scheme (L : T : P) : **36 :24 : 0 (** in Periods)	Credits : **3 Credits**
Type of Course : **Lecture + Assignments**	Total Contact Periods : **60**
CIE : 6**0 Marks**	SEE : **40 Marks**
Programmes : **Common to all Engineering Diploma Programmes**	

Pre requisites

This course requires the knowledge of Basic Engg. Mathematics and Engg. Mathematics at Diploma 1st and 2nd Semester level.

Course Outcomes: COs

At the end of the course, the student will have the ability to:

CO 1	Integrate different kinds of functions
CO 2	Integrate functions using different methods
CO 3	Find the values of definite integrals.
CO 4	Solve simple problems of Areas, Volumes.
CO 5	Find the Mean and RMS values of various functions and Approximate values of Definite integrals using Trapezoidal and Simpson's 1/3rd rule
CO 6	Form the Differential Equation and Solve Simple DEs of 1st order and 1stdegree.

Course Content:

Unit-I **Duration: 10 Periods (L: 6.0 – T:4.0)**

Indefinite Integration-I

Integration regarded as anti-derivative – Indefinite integral of standard functions. Properties of indefinite integral. Integration by substitution or change of variable. Integrals of the form $\sin^m\theta . \cos^n\theta$. where m and n are positive integers. Integrals of tan x, cot x, sec x, cosec x and powers of tan x, sec x by substitution.

Evaluation of integrals which are reducible to the following forms:

$i)\ \frac{1}{a^2+x^2}, \frac{1}{a^2-x^2}, \frac{1}{x^2-a^2}$

$ii)\ \frac{1}{\sqrt{a^2+x^2}}, \frac{1}{\sqrt{a^2-x^2}}, \frac{1}{\sqrt{x^2-a^2}}$

$iii)\ \sqrt{x^2+a^2}, \sqrt{a^2-x^2}, \sqrt{x^2-a^2}$

Unit – II **Duration: 08 Periods (L: 4.8 – T:3.2)**

Indefinite Integration-II

Integration by decomposition of the integrand into simple rational algebraic functions. Integration by parts, Bernoulli's rule.

Unit-III **Duration: 06 Periods (L: 3.6 – T:2.4)**

Definite Integral and its Properties:

Definite integral-fundamental theorem of integral calculus, properties of definite integrals, evaluation of simple definite integrals. Definite integral as the limit of a sum.

Unit – IV **Duration: 10 Periods (L: 6.0 – T:4.0)**

Applications of Definite Integrals:

Areas under plane curves – Sign of the Area – Area enclosed between two curves. Solid of revolution – Volumes of solids of revolution.

Unit – V **Duration: 08 Periods (L: 4.8 – T:3.2)**

Mean, RMS values and Numerical Integration:

Mean values and Root Mean Square values of a function on a given interval.

Trapezoidal rule, Simpson's 1/3 rule to evaluate an approximate value of a definite integral.

Unit – VI **Duration: 18 Periods (L: 10.8 – T:7.2)**

Differential Equations of First Order:

Definition of a differential equation – order and degree of a differential equation – formation of differential equations – solution of differential equation of first order, first degree : variables -separable, homogeneous, exact, linear differential equation, Bernoulli's equation.

Reference Books:

1. Integral Calculus Vol.I, by M.Pillai and Shanti Narayan
2. Thomas' Calculus, Pearson Addison –Wesley Publishers

Suggested E-Learning references

1. www.freebookcentre.net/mathematics/introductory-mathematics-books.html

2.E-books:www.mathebook.net

Suggested Learning Outcomes

Unit-I

1.0 Use Indefinite Integration to solve engineering problems

1.1 Explain the concept of Indefinite integral as an anti-derivative.

1.2 State the indefinite integral of standard functions and properties of Integrals $\int (u + v)\, dx$ And $\int ku\, dx$ where k is constant and *u, v* are functions of *x.*

1.3 Solve integration problems involving standard functions using the above rules.

1.4 Evaluate integrals involving simple functions of the following type by the method of substitution.

i) $\int f(ax + b)\, dx$ *where* $f(x)\, dx$ is in standard form.

ii) $\int [f(x)]^n f'(x)\, dx$

iii) $\int f'(x)/[f(x)]\, dx$

iv) $\int f\{g(x)\}\, g'(x)\, dx$

1.5 Find the Integrals of *tan x, cot x, sec x* and *cosec x using*the above.

1.6 Evaluate the integrals of the form $\int Sin^m\theta Cos^n\theta.\, d\theta$ where m and n are positive integers.

1.7 Evaluate integrals of powers of *tan x* and *sec x*.

1.8 Evaluate the Standard Integrals of the functions of the type

$$i)\ \frac{1}{a^2+x^2}, \frac{1}{a^2-x^2}, \frac{1}{x^2-a^2}$$

$$ii)\ \frac{1}{\sqrt{a^2+x^2}}, \frac{1}{\sqrt{a^2-x^2}}, \frac{1}{\sqrt{x^2-a^2}}$$

$$iii)\ \sqrt{x^2+a^2}, \sqrt{a^2-x^2}, \sqrt{x^2-a^2}$$

1.9 Evaluate the integrals of the type

$$\int \frac{1}{a \pm bSin\theta} d\theta, \int \frac{1}{a \pm b\cos\theta} d\theta \text{ and } \int \frac{1}{a\cos\theta \pm b\sin\theta \pm c} d\theta$$.

Unit-II

2.0 Use Indefinite Integration to solve engineering problems

2.1 Evaluate integrals using decomposition method.

2.2 Evaluate integrals using integration by parts with examples.

2.3 State the Bernoulli's rule for evaluating the integrals of the form $\int u.vdx$.

2.4 Evaluate the integrals of the form $\int e^x [f(x) + f'(x)]\, dx$.

Unit-III

3.0 Understand definite integral and use it in engineering applications

3.1 State the fundamental theorem of integral calculus

3.2 Explain the concept of definite integral.

3.3 Calculate the definite integral over an interval.

3.4 State various properties of definite integrals.

3.5 Evaluate simple problems on definite integrals using the above properties.

3.6 Explain definite integral as a limit of sum by considering an area.

Unit –IV

4.0 Understand definite integral and use it in engineering applications

4.1 Find the Areas under plane curves and area enclosed between two curves using integration.

4.2 Obtain the Volumes of solids of revolution.

Unit –V

5.0 Understand Mean, RMS values and Numerical Methods

5.1 Obtain the Mean value and Root Mean Square (RMS) value of the functions in any given Interval.

5.2 Explain the Trapezoidal rule, Simpson's 1/3 rules for approximation of definite integrals andprovide some examples.

Unit –VI

6.0 Solve Differential Equations in engineering problems.

6.1 Define a Differential equation, its order and degree

6.2 Form a differential equation by eliminating arbitrary constants.

6.3 Solve the first order first degree differential equations by the following methods:

i. Variables Separable.

ii. Homogeneous Equations.

iii. Exact Differential Equations

iv. Linear differential equation of the form $dy/dx + Py = Q$, where P and Q are functions of x or constants.

v. Bernoulli's Equation (Reducible to linear form.)

6.4 Solve simple problems leading to engineering applications by using above methods.

Suggested Student Activities

1. Student visits Library to refer Standard Books on Mathematics and collect related material

2.Quiz

3.Group discussion

4.Surprise tests

5. Seminars

6. Home Assignments

CO / PO - MAPPING

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	Mapped POs
CO1	3	2	2	1			1			3	1,2,3,4,7,10
CO2	3	2	2	1			1			3	1,2,3,4,7,10
CO3	3	2	2	1			1			3	1,2,3,4,7,10
CO4	3	2	2	1			1			3	1,2,3,4,7,10
CO5	3	2	2	1			1			3	1,2,3,4,7,10
CO6	3	2	2	1			1			3	1,2,3,4,7,10

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

MID SEM –II EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks
		R		U	A	
1	I	4	1	9(a)	13(a)	
2	II					
3	III		2	10(a)	14(a)	
4	IV					
5	V		3 (5, 6)	9(b) 11(a) 11(b)	13(b) 15(a) 15(b)	
6	VI		3 (7,8)	10(b) 12(a) 12(b)	14(b) 16(a) 16(b)	
Total Questions		8		8	8	

Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

Code: C18-Common-301F

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TELANGANA

BOARD DIPLOMA EXAMINATIONS

MID SEM –I, MODEL PAPER, III SEMESTER

APPLIED ENGINEERING MATHEMATICS

TIME: 1: 00 Hour Max. Marks: 20

PART-A

Instructions: 1. Answer **ALL** questions 04 X 01 = 04

2 Each question carries **ONE** mark

1. Integrate: $e^x - \sin x + x^4$
2. Find : $\int \frac{dx}{5x+7}$ dx
3. Write Bernoulli's rule of integration
4. Find : $\int x \log x \, dx$

PART-B

Instructions: 1. Answer any **TWO** questions 02 X 03 = 06

2. Each question carries **THREE** marks

5 a). Evaluate : $\int \frac{x^5}{1+x^{12}} dx$.

Or

5 b) Evaluate : $\int \frac{dx}{(x^2+25)}$

6 a). Evaluate : $\int x \sin x dx$

Or

6 b).Evaluate : $\int \frac{3x+2}{(x-1)(2x+3)} dx$.

PART C

Instructions: 1. Answer any **TWO** questions 02 X 05 = 10

2. Each question carries **FIVE** marks

7 a). Evaluate $\int \sqrt{x^2 + 2x + 5}\, dx$

Or

7 b) Evaluate : $\int cosx\ cos2x dx$.

8 a). Find $\int xTan^{-1}x dx$.

Or

8 b) Find $\int x^4 Cos2x dx$.

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Code: C18-Common-301F

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TELANGANA

BOARD DIPLOMA EXAMINATIONS

MID SEM –II, MODEL PAPER, III SEMESTER

APPLIED ENGINEERING MATHEMATICS

TIME: 1: 00 Hour Max. Marks: 20

PART-A

Instructions: 1. Answer **ALL** questions 04 X 01 = 04

2 Each question carries **ONE** mark

1. Integrate : $\int_0^1 (x^4 + 1)\, dx$
2. Evaluate : $\int_0^{\pi} Sin3x dx$
3. Evaluate : $\int_0^1 \frac{1}{1+x^2} dx$
4. Write the formula to find area bounded by the curve y= f(x) , x-axis,between the limits x=a and x =b

PART-B

Instructions: 1. Answer any **TWO** questions 02 X 03 = 06

2. Each question carries **THREE** marks

Find the Mean value of the function y = logx on [1 , e]

5 a) Evaluate: $\int_0^{\frac{\pi}{2}} \sqrt{1 - Sin2x}\, dx$

Or

5 b) Evaluate : $\int_0^{\frac{\pi}{2}} sin^2 x dx$

6 a). Find the area bounded by the line 2x + y =8, x-axis and the lines x = 2 and x = 4.

Or

6 b). Find the Volume of the Solid generated by revolving the part of the Circle $x^2 + y^2 = 36$

From x = 0 to x = 4 about x – axis.

PART C

Instructions: 1. Answer any **TWO** questions 02 X 05 = 10

2. Each question carries **FIVE** marks

7 a). Evaluate: $\int_0^{\frac{\pi}{2}} \frac{\sqrt{Sinx}}{\sqrt{Sinx}+\sqrt{Cosx}} dx$

Or

7 b). Evaluate : $\int_0^{\frac{\pi}{2}} \log sin\ x dx$

8 a) Find the area enclosed between the Parabolas $y = 3x - x^2 and y = x^2 - x$.

Or

8 b). Find the Volume of the Solid generated by the revolution of the area bounded by the Ellipse $\frac{x^2}{25} + \frac{y^2}{16} = 1$, about x- axis.

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C18-common

SUB.CODE:301F

BOARD DIPLOMA EXAMINATION,(C-18)

MODEL PAPER

III SEMESTER EXAMINATION

APPLIED ENGINEERING MATHEMATICS

Time: 2 hours [Total Marks: 40]

PART-A

Instructions: 1. Answer **ALL** questions 08 X 01 = 08

2 Each question carries **ONE** mark

1. Integrate: $x^7 - 3/x$

2. Evaluate: $\int_0^1 (x^2 + 1)$ dx

3. Write the formula to find mean value of y = f(x), in the interval (a, b)

4. Find the Order and Degree of the Differential Equation $x\frac{dy}{dx} = \sqrt{1 + \left(\frac{dy}{dx}\right)^2}$.

5 Write Trapezoidal Rule to find the approximate value of $\int_a^b f(x)dx$.

6. Write the formula to find RMS value of y = f(x) over the range x=a and x = b.

7. Solve: $\frac{dy}{dx} = e^{2x+y}$

8. Write the condition for exactness of the differential equation M(x,y)dx + N(x,y)dy =0

PART-B

Instructions: 1. Answer any **FOUR** questions 04 X 03 = 12

2. Each question carries **THREE** marks

9 a). Evaluate: $\int_0^{\frac{\pi}{2}} \sqrt{1 - Sin2x}\,dx$

Or

9 b) Find the approximate value of $\int_0^6 \frac{dx}{1+x}$ by taking n = 6 using Trapezoidal rule.

10 a) Find the area bounded by the Parabola $y = x^2 - 2x + 1$ and x-axis.

Or

10 b) Form the Differential Equation from $y = Ae^x + Be^{3x}$ where A, B are arbitrary Constants.

11 a) Find the RMS value of $\sqrt{\log x}$ over the range x= 1 and x= e

Or

11 b) Calculate approximate value of $\int_0^4 \frac{dx}{1+x}$ by taking n= 4 using Simpson's 1/3 rule

12 a) Solve: $x\frac{dy}{dx} + 2y = logx$.

Or

12 b) Solve: $x(1-y^2)dx + y(1-x^2)dy = 0$

PART C

Instructions: 1. Answer any **FOUR** questions 04 X 05 = 20

2. Each question carries **FIVE** marks

13 a) Evaluate: $\int \frac{1}{x^2+2x+2}$ dx

Or

13 b) Find the RMS value of y = $\sqrt{8-4x^2}$ between x = 0 and x = 2

14 a) Find the volume of solid generated by revolving the Ellipse $\frac{x^2}{a^2}+\frac{y^2}{b^2} = 1$ about Major axis

Or

14 b) Solve: $\frac{dy}{dx} = Sin(x+y)$

15 a) A curve is drawn to passing through the points given by the following table:

x	1	1.5	2	2.5	3	3.5	4
y	3	3.4	3.7	3.8	2.7	2.6	2.1

Calculate the approximate area bounded by the curve , x-axis and the lines x= 1 and x= 4 using Simpson's 1/3 rule

Or

15 b) Evaluate: $\int_0^1 \sqrt{(1-x^2)}dx$ approximately by taking n = 4 using

Simpson's 1/3 rd Rule.

16 a) Solve : $(y^2 - xy)dx = x^2 dy$.

Or

16 b) . Solve: $\frac{dy}{dx} + yCosx = y^3$Sin2x.

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III SEMESTER

SKILL UPGRADATION IN - APPLIED ENGINEERING MATHEMATICS

ACTIVITY ASSESSMENT Steps

1. **Mathematical concepts**
2. **Procedure**
3. **Explanation**
4. **Working with others**
5. **Mathematical errors**

ACTIVITIES

1 .Write a short notes on different types of integrals.

2. Prepare a notes on different methods to evaluate integrals.

3. List out Properties of definite integrals.

4. List out and explain various applications of definite integrals.

5. Explain the procedure to solve problems on Areas using integration

6. Explain the procedure to find volumes of irregular shapes of solids of revolution using integration.

7. Prepare a presentation to find Mean values and R.M.S values of any given function.

8. Explain the procedure to calculate approximate area by using Trapezoidal rule.

9. Explain the procedure to calculate approximate area by Simpson's 1/3 rule

10. Prepare a presentation on solving 1^{st} order differential equations using any suitable method.

CO / PO - MAPPING OF ACTIVITIES

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
CO1	3	2	2	1			1	2	2	3
CO2	3	2	2	1			1	2	2	3
CO3	3	2	2	1			1	2	2	3
CO4	3	2	2	1			1	2	2	3
CO5	3	2	2	1			1	2	2	3
CO6	3	2	2	1			1	2	2	3
CO7	3	2	2	1			1	2	2	3
CO8	3	2	2	1			1	2	2	3
CO9	3	2	2	1			1	2	2	3
CO10	3	2	2	1			1	2	2	3

Rubrics for Activity assessment

CATEGORY	4	3	2	1
Mathematical Concepts	Explanation shows complete understanding of the mathematical concepts used to solve the problem(s).	Explanation shows substantial understanding of the mathematical concepts used to solve the problem(s).	Explanation shows some understanding of the mathematical concepts needed to solve the problem(s).	Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written.
Procedures	Typically, uses an efficient and effective procedure to solve the problem(s).	Typically, uses an effective procedure to solve the problem(s).	Sometimes uses an effective procedure to solve problems, but does not do it consistently.	Rarely uses an effective procedure to solve problems.
Explanation	Explanation is detailed and clear.	Explanation is clear.	Explanation is a little difficult to understand, but includes critical components.	Explanation is difficult to understand and is missing several components OR was not included.
Working with Others	Student was an engaged partner, listening to suggestions of others and working cooperatively throughout lesson.	Student was an engaged partner but had trouble listening to others and/or working cooperatively.	Student cooperated with others, but needed prompting to stay on-task.	Student did not work effectively with others.
Mathematical Errors	90-100% of the steps and solutions have no mathematical errors.	Almost all (85-89%) of the steps and solutions have no mathematical errors.	Most (75-84%) of the steps and solutions have no mathematical errors.	More than 75% of the steps and solutions have mathematical errors.

Basics of Electrical and Electronics Engineering

Course Title :	**Basics of Electrical and Electronics Engineering**	Course Code	**18MNG-302C**
Semester	**III**	Course Group	**Core**
Teaching Scheme in Hrs(L:T:P)	**30:15:0**	Credits	**3**
Methodology	**Lecture + Assignments**	Total Contact Hours :	**45Hrs/60Pds**
CIE	**60 Marks**	SEE	**40 Marks**

Pre requisites

This course requires the basic knowledge of high school Basic Physics and Mathematics.

Course Outcomes

CO1 :	Distinguish between DC and AC power and its units and relation between the terms.
CO2 :	Compare Electrostatic and Electromagnetic fields and solve simple problems.
CO3 :	Classification and identification of various Switches and Relays.
CO4 :	Classify Resistors and Capacitors, Select the correct components for a low power, medium and High power application and Use them for a given real time applications.
CO5 :	Identify the types of Inductors, Transformers and Batteries. Interpret their specifications and select the correct value and type for a given application.
CO6 :	Solve simple problems in electrical circuits, suggest correct electronic components required for simple electronic circuits including their specifications.

Course Contents

UNIT 1- Fundamentals of Electricity

Define Current, Voltage, Ampere and Potential Difference. Ohm's Law-Limitations and simple problems. KVL, KCL and simple problems. AC Fundamentals- Cycle, Time period, Frequency, Amplitude, Instantaneous value,-different forms of e.m.f equation -Average value, RMS value, Form factor and Peak factor for sine wave, Phase, Phase difference .

UNIT 2- Electrostatics & Electromagnetism

Electrostatics

Electric charge, Electric field, Electric flux, EMF, Electric flux density, Field strength, permittivity absolute permittivity, relative permittivity, Coulomb's laws of electrostatics.

Electromagnetism

Magnetism- Magnetic flux, Magnetic flux density, Magneto motive force (MMF), magnetic field strength, Magnetic flux leakage, Magnetic flux leakage coefficient, Relative permeability, absolute permeability, Faraday's laws of electromagnetic induction, Lenz's laws, Right hand thumb rule, Fleming's left hand rule, Fleming right hand rule.

UNIT 3- Switch Gear

Switches

Define switch-types-classification- ISI symbols-applications. Toggle, push button, slider switches-their constructional details, ratings, applications.

Relays

Relay-symbols, classification, specifications, constructional and working details of electromagnetic relay.

Fuses

Fuse-symbols, Classification, specifications, constructional and working details of fuse.

Unit-4 Resistors and Capacitors

Resistors

Resistance-Factors effecting resistance- Classification of resistors,-colour coding-Specifications-preferred values of resistors, applications of resistors, PTC, NTC, Effect of temperature on resistance, Derive $R=Ro(1+\alpha t)$. Carbon film, metal film, wire wound resistors- characteristics and applications, Constructional details of carbon and wire wound Potentiometers, Faults in resistors. Equivalent resistance of given resistors when connected in series and parallel.

Capacitors

Capacitance- Factors effecting capacitance-Classification and specifications of Capacitors, Dielectric constant, Dielectric strength. Energy stored in a capacitor, Relation between Q, C, V. Basic properties and applications of Paper, Mica, Ceramic, Glass and Electrolytic capacitors, Variable capacitors and Gang capacitors- applications, Equivalent capacitance of given capacitors when connected in series and parallel.

Unit-5 Inductors, Transformers and Batteries

Inductors

Inductance- Classification - symbols – Specifications. Self-inductance, Mutual-inductance, Factors affecting Self-inductance and Mutual-inductance, Coefficient of coupling, Comparison and applications of AF and RF chokes, Equivalent inductance of given inductors when connected in series and parallel (aiding and opposing).

Transformers

Define Transformer- Symbols- Classification- Principle of Transformer-constructional details and applications of Transformers, Turns Ratio, Step up and step down transformers.

Batteries

DC generation, Primary and Secondary cells, Lead acid batteries and Nickel Iron batteries and their comparison, Maintenance free batteries.

UNIT 6: Engineering applications.

Problems on ohms law, Coulomb's law –KVL, KCL, calculation of instantaneous value, average value form factor, peak factor of sine wave, Comparison -electric and magnetic circuits, problems on faradays laws, Series and parallel combination of resisters, capacitors, inductors (series aiding / opposition and parallel aiding / opposition), Effects of temperature on resistance, Problems on absolute and relative permittivity and their relation, Problems on self-inductance, Mutual inductance, coefficient of coupling, Determination of fuse ratings, choice of types of fuse per different applications, Selection of Relay for an application, Relay circuit for controlling AC/DC load.

Specific Learning Outcomes:

1.0 Distinguish between DC and AC power and its units and relation between the terms.

1.1 Define terms current, voltage, potential difference.

1.2 Define ohms law and mention its limitations.

1.3 Solve simple problems on ohms law.

1.4 State and explain Kirchhoff's laws.

1.5 Solve simple problems on KVL and KCL.

1.6 Define Alternating component(AC).

1.7 Compare DC and AC.

1.8 Different forms of emf equations.

1.9 Define Time period, Frequency and Amplitude of a sine wave.

1.10 Solve simple problems to calculate Amplitude ,frequency and Time Period.

1.11 Define the average value, R.M.S. value, form factor and peak factor for sine wave.

1.12 Explain the terms phase and phase difference.

2.0 Compare Electrostatic and Electromagnetic fields and solve simple problems.

2.1 Define Electric charge, Electric field, Electric flux, EMF, Electric flux density, Field strength.

2.2 Define permittivity, absolute permittivity, relative permittivity.

2.3 State the Coulomb's laws of electrostatics.

2.4 Define the Magnetic field, Magnetic flux, Magnetic flux density, MMF.

2.5 Define Magnetic flux leakage, Magnetic flux leakage coefficient.

2.6 Define Permeability, Relative permeability, absolute permeability.

2.7 State the Faraday's laws of electromagnetic induction.

2.8 State Lenz's law, Right hand thumb rule, Fleming's left hand rule, Fleming's right hand rule.

3.0 Classification and identification of various Switches and Relays.

3.1 Define switch.

3.2 Classify switches according to poles and throws.

3.3 Sketch the ISI symbols for SPST, SPDT, DPST, DPDT, Multi-pole multi-throw.

3.4 Explain the construction, working and rating of:

a) Toggle Switch
b) Push button Switch
c) Rotary Switch
d) Slider Switch.

3.5 Define Relay.

3.6 Classify different types of relays based on their principle of operation.

3.7 Mention specification and applications of Relays.

3.8 Explain the constructional and working details of electromagnetic relay.

3.9 State the need of a fuse in electronic equipments.

3.10 Classify different types of Fuses based on their principle of operation.

3.11 Explain the constructional and working details of fuse.

4.0 Classify Resistors and Capacitors, Select the correct components for a low power, medium and High power application and Use them for a given real time application.

4.1 Define Resistance.

4.2 Derive the relation $R = (\rho l) / a$.

4.3 Classify Resistors.

4.4 Identify the symbols of Resistors.

4.5 List the specifications of Resistors and state their importance.

4.6 Calculate equivalent resistance when given resistors are connected in series and parallel.

4.7 Simple problems on Series and Parallel connected resistors.

4.8 Compare the features of carbon film, metal film and wire wound resistors .

4.9 Describe the constructional features of carbon and wire wound potentiometers.

4.10 Compare the carbon and wire wound potentiometer.

4.11 Describe the working of rheostat and mention its application.

4.12 Define temperature coefficient of resistance.

4.13 Derive the relation $Rt = Ro (1+\alpha_t o)$.

4.14 Define Positive and Negative temperature coefficient.

4.15 List the common faults in resistors.

4.16 Define Capacitance.

4.17 Classify the different types of Capacitors.

4.18 List the specifications of a capacitor and state their importance.

4.19 State the factors affecting the capacitance of a capacitor.

4.20 Define Di-electric constant and Di-electric strength of a material.

4.21 State the properties, range and applications of paper, mica, glass, ceramic and electrolytic Capacitors.

4.22 Sate the different types of variable capacitors and mention their applications.

4.23 State the losses in capacitors.

4.24 Find the equivalent capacitance of capacitors connected in series and parallel and simple Problems.

4.25 List the common faults in capacitors.

5.0 Identify the types of Inductors and Transformers. Interpret their specifications and select the correct value and type for a given application.Define inductance, mutual inductance and

coefficient of coupling, Define Battery, classification of batteries, importance of maintenance free batteries

5.1. Define Inductance.

5.2. Define Self-inductance and Mutual-inductance.

5.3. Classify inductors.

5.4. State the factors effecting Self-inductance and Mutual-inductance.

5.5. Draw the symbol of iron core, air core and ferrite core inductors.

5.6. Find equivalence inductance when inductors connected in series (aiding and opposing), parallel(aiding and opposing)

5.7. List the specifications of inductors.

5.8. Describe the constructional features and applications of A.F and R.F chokes

5.9. List various core materials used in the construction of inductors.

5.10. List the applications of A.F. and R.F chokes.

5.11. List the common faults in inductors.

5.12. Define Transformer.

5.13. Explain the principle of operation of Transformer.

5.14. Different types of transformers

5.15. Constructional details and working principle of basic Transformer.

5.16. Classify cells.

5.17. Define and compare primary and secondary cells.

5.18. Explain the constructional details of lead acid and nickel iron cells.

5.19. Compare lead acid and nickel iron cells

5.20. Write the importance of maintenance free batteries

.

6.0 Solve simple problems in electrical circuits; suggest correct electronic components required for simple electronic circuits including their specifications.

6.1 Simple Problems on Ohms law.

6.2 Simple problems on Coulomb's law.

6.3 Simple problems on KVL, KCL.

6.4 Calculation of instantaneous value, average value form factor, peak factor of sine wave.

6.5 Simple problems on Faradays laws.

6.6 Problems on series and parallel combination of resisters, capacitors, inductors (series aiding / opposition and parallel aiding / opposition).

6.7 Problems on Effects of temperature on resistance.

6.8 Problems on absolute and relative permittivity and their relation.

6.9 Calculating the values of R & C using color coding.

6.10 Problems on self-inductance, Mutual inductance, coefficient of coupling.

6.11 Determination of fuse ratings, choice of types of fuse per different applications.

6.12 Selection of Relay for an application.

6.13 Relay circuit for controlling AC/DC load.

Suggested Student Activities for Induction Program

	Forenoon	Afternoon
Day1	Registration	Class work as per Time table Drawing and Basic workshop practice classes may be conducted.
Day2	Rules and Regulations	
Day3	Getting acquainted with Head and faculty	
Day4	Familiarization with Institutional facilities	
Day5	Interaction with Class teacher and Seniors	
Day6	Introducing the mentor	
Day7	Parent –Teacher meeting	

Suggested Student Activities

1. Student visits Library to refer to Manual of electronic components to find their specifications
2. Student inspects the available equipment in the Lab to identify the components
3. Visit nearby Industry to familiarize with fabrication techniques
4. Analyze the connections in the UPS available in the Institution facility
5. Quiz
6. Group discussion
7. Surprise test.

Recommended Books

1. Electrical Technology Volume 1 by B.L. Theraja
2. Electronic Devices and Circuits by David A. Bell Prentice hall
3. Hand book of components for Electronics by Charles A. Harper Mc Grahills

Suggested E-Learning references

1. https://electrical4u.com/
2. www.electronics-tutorials.ws
3. www.nptel.ac.in

CO-PO Mapping Matrix

Course Outcome		CL	Linked PO	Teaching periods
CO1	Distinguish between DC and AC power and its units and relation between the terms.	R/U	1,2,10	**8**
CO2	Compare Electrostatic and Electromagnetic fields and solve simple problems.	R/U	1,2,5,6,7	**12**
CO3	Classification and identification of various Switches and Relays, Preparation of PCBs.	R/U/A	1,2,4,5	**8**
CO4	Classify Resistors and Capacitors, Select the correct components for a low power, medium and High power application and Use them for a given real time application.	R/U/A	1,2,5,7	**8**
CO5	Identify the types of Inductors and Transformers. Interpret their specifications and select the correct value and type for a given application.	R/U/A	1,2,4,5	**12**
CO6	Solve simple problems in electrical circuits; suggest correct electronic components required for simple electronic circuits including their specifications.	R/U/A	1,2,3,7	**12**
	Total			**60**

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

MID SEM –II EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks
		R		U	A	
1	I	4	1	9(a)	13(a)	
2	II					
3	III		2	10(a)	14(a)	
4	IV					
5	V		3 (5, 6)	9(b) 11(a) 11(b)	13(b) 15(a) 15(b)	
6	VI		3 (7,8)	10(b) 12(a) 12(b)	14(b) 16(a) 16(b)	
Total Questions		8		8	8	

Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

18MNG-303C—FUNDAMENTALS OF SURVEYING

Course Title	**FUNDAMENTALS OF SURVEYING**	Course Code	**18MNG-303C**
Semester	**III**	Course Group	**Core**
Teaching Scheme in Periods (L:T:P)	**45:15:0**	Credits	**3**
Methodology	**Lecture + Tutorial**	Total Periods	**60**
CIE	**60 Marks**	SEE	**40 Marks**

Pre requisites

This course contains basic knowledge on principles and objectives of mine surveying and helpful to analyze the skills in application orientation towards mine development. And to develop the techniques of taking measurements and plotting the details

Course Outcomes:

After completion of the course, the student should be able to

CO1	Familiar with the basic concept and applications of surveying, know the difference between plan and map and certain laws to follow about plans and sections
CO2	Determining the distance between any two lines with the help of linear apparatus and making the reference sketch
CO3	Knowing the basic differences between angles and bearings, and evaluating interior and exterior angles of any stations by using compass surveying
CO4	Apply the basic knowledge of levelling and its applications, different terminologies related to the levelling and to identify the elevations and depressions of ground surface
CO5	Knowing the importance and uses of contouring, calculations of volume with the help of contour maps
CO6	Understanding the importance of the theodolite and measure horizontal and vertical angles along the planes

Course Content:

UNIT 1: Understand Evaluate the preliminaries of Surveying

Duration: 8 Periods (L: 6 – T: 2)

Definition and objectives of surveying, primary divisions, classifications, and principle of surveying. To know the difference between plan and map, importance of scale and representative fraction, general requirements of mine plans, care and maintenance of plans and sections according to mining laws.

UNIT 2: Basics concepts linear measurements (chain and tape)

Duration: 8 Periods (L: 6– T:4)

Perform Different objectives of chain surveying, Ranging, Cross staff survey, Plotting the chain triangulations for measuring the areas, corrections in chain surveying and simple problems on it.

UNIT 3: Evaluate the concepts of angular measurements (compass surveying)

Duration:10 Periods (L: 7.5– T:2.5)

Introducing the concepts of angular measurements with the adoption of compass surveying, differences between angle and bearing, terminologies and parts of prismatic compass, solving the problems of bearings, angles and also introduced the concepts of traverse. Errors and its distribution of a closed traverse.

UNIT 4: Introduction to levelling. **Duration:10 Periods (L: 7.5– T:2.5)**

Learning the concept of elevations and depressions of ground surface by introducing the different methods of levelling, definition of different terms in levelling, and brief lines about dumpy level and inverted staff.

UNIT5: Applications and problem solving in levelling and contouring

Duration:12 Periods (L: 8– T:4)

Importance of reduced levels and problem on it by different methods, definitions of curvature and refraction, problem solving on reciprocal levelling, and importance of HFL and contouring

UNIT6: Understand the concepts of theodolite survey.

Duration: 12 Periods (L: 8– T:4)

Introducing the concepts of angular measurements with the adoption of theodolite surveying, different terminologies used in theodolite and its parts, measurements of horizontal and vertical angles and introducing the concepts of repetition and reiteration methods.

RECOMMENDED BOOKS

1. Surveying and levelling by S.Ghatak (volume-1)
2. Surveying and levelling vol I by Kanetkar
3. Surveying Vol I and II,B.C. Punmia.
4. Surveying and levelling by N.N.Basak.

Unit wise Outcomes:

Upon completing this course the student will be able to

1.0 Evaluate the preliminaries of Surveying

1.1 Define the term Surveying.

1.2 List the objectives of surveying.

1.3 Evaluate the principles of surveying.

1.4 List the primary divisions of surveying.

1.5 Give the broad classification of surveying.

1.6 Define the term

(a) Plan (b) Map (c) Scale of a Plan d) Representative fraction.

1.7 List the general requirements about mine plans according to CMR-2017.

1.8 Explain the different types of mine plans according to CMR-2017

2.0 Basics concepts linear measurements (chain and tape)

2.1 State the principle of chain surveying.

2.2 List and Explain the methods of ranging.

2.3 Define the term Offset.

2.4 List and different types of Offsets.

2.5 Explain different types of Offsets and its applicabilities.

2.6 Solve the problems on irregular boundaries by using Simpsons rule and trapezoidal rule.

2.7 Explain the Reconnaissance survey.

2.8 Explain the term Reference sketch.

2.9 Define the terms (a) Base line (b) Check line(c) Tie line.

2.10 Solve the problems to obtain true length, true area and true volumes.

2.11 List the common mistakes in surveying.

2.12 Solve the simple problems on correction measuring distance with chain or tape.

3.0 Evaluate the concepts of angular measurements (compass surveying).

3.1 State the purpose of Compass surveying.

3.2 State the principle of Compass surveying.

3.3 Identify the parts of Prismatic Compass.

3.4 Explain the constructional details of a Prismatic Compass.

3.5 Explain the following terms.

a) Whole Circle Bearing, b) Quadrantal Bearing, d)True meridian, e) Magnetic meridian, f) True bearing, g) Magnetic bearing, h)Dip, i) Declination.

3.6 Solve the problems on Conversion of Whole Circle Bearing into Quadrantal Bearing and vice versa.

3.7 Define the term traversing.

3.8 Outline different types traverse.

3.9 Define the term local attraction.

3.10 Solve the problems on included angles of a closed traverse.

3.11 Define the term local attraction.

3.12 Mark the effects of local attraction.

3.12 Solve the problems on local attraction.

3.13 List the errors in Compass surveying. And its distribution.

4.0 Introduction to levelling.

4.1 Define the term Levelling.

4.2 List the objectives of Levelling.

4.3 Know the principle of levelling.

4.4 Define the following terms

a)level surface b) horizontal plane c) Vertical plane D) Datum surface or datum line

e)Elevation. f) bench mark. g) Line of collimation. h) Back sight. j) Foresight.

k) Intermediate sight. L) Change point

4.5 Describe the Dumpy level.

4.6 List the temporary adjustments of dumpy level.

4.7 List the fundamental lines of dumpy level.

4.8 List different types of levelling instruments.

4.9 What is levelling staff and list types.

5.0 Applications and problem solving in levelling and contouring.

5.1 Define the term reduced level.

5.2 List the importance of reduced level.

5.3 Solve the problems on reduced levels by

a) The collimation system or height of instrument system (HI)

b) The rise-and-fall method.

5.4 Explain the effects of (a) Curvature (b) Refraction in levelling.

5.5 Describe the method of Reciprocal levelling.

5.6 Solve the problems on reciprocal levelling.

5.7 Define the term contouring and mention its applications.

5.8 Discover the importance of highest flood level.

5.9 Define the term contouring.

5.10 Outline the characteristics of contour line.

5.11 List the methods of contouring.

5.12 List the uses of contours.

5.13 Describe the methods of contouring.

6.0 Understand the concepts of theodolite survey.

6.1 State the purpose of theodolite.

6.2 Describe the component parts of a transit theodolite.

6.3 List the fundamental lines of a transit theodolite

6.4 List the relations between the fundamental lines.

6.5 List the permanent adjustments of a transit theodolite.

6.6 Define the terms related to theodolite(a) transiting (b) Swinging (c) Face left (d) Face right (e) changing face.

6.7 List the methods of measuring horizontal angle.

6.8 Describe the Repetition method of measurement of horizontal angle.

6.9 Describe the Reiteration method of measurement of Horizontal angle.

6.10 State the applicabilities of Repetition and Reiteration methods

6.11 Describe the method of measuring Vertical angle.

6.12 List the method of traversing with theodolite.

6.13 Describe the continuous Azimuth method of traverse.

6.14 Define the term ‘Permissible error of Closure.

Suggested Student Activities

1.Student visits Library to refer books on basic surveying and levelling books and their importance.

2.Student inspects the available equipment in the Lab to identify various surveying apparatus and use them in proper way to learn the concepts of basic surveying.

5. Participate in the Quiz.

6. Participate in Group discussion.

Suggested E-Learning references

1. www.mineportal.in/
2. www.nptel.ac.in/

CO-PO MAPPING MATRIX

Course Outcome		CL	Linked PO	Teaching Periods
CO1	Familiar with the basic concept and applications of surveying, know the difference between plan and map and certain laws to follow about plans and sections	R,U,A	1,2,3,5,8,9,10	06
CO2	Determining the distance between any two lines with the help of linear apparatus and making the reference sketch	R,U,A	1,2,3,4,5,8,9,10	10
CO3	Knowing the basic differences between angles and bearings, and evaluating interior and exterior angles of any stations by using compass surveying	R,U,A	1,2,3,4,5,8,9,10	12
CO4	Apply the basic knowledge of levelling and its applications, different terminologies related to the levelling and to identify the elevations and depressions of ground surface	R,U,A	1,2,3,4,5,8,9,10	10
CO5	Knowing the importance and uses of contouring, calculations of volume with the help of contour maps	R,U,A	1,2,3,4,5,8,10	10
CO6	Understanding the importance of the theodolite and measure horizontal and vertical angles along the planes	R,U,A	1,2,3,4,5,8,9,10	12

SCHEME OF EVALUTAION

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

MID SEM –II EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE					Remarks
		R			U	A	
1	I	4	1		9(a)	13(a)	
2	II						
3	III		2		10(a)	14(a)	
4	IV						
5	V		3	5, 6	9(b) 11(a) 11(b)	13(b) 15(a) 15(b)	
6	VI			7,8	10(b) 12(a) 12(b)	14(b) 16(a) 16(b)	
Total Questions		8			8	8	

Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

MODEL QUESTION PAPERS

C18-MNG-303C

BOARD DIPLOMA EXAMINATION, (C-18)
END EXAMINATION MODEL PAPER

FUNDAMENTALS OF SURVEYING

Time : 2 Hours] [Total Marks: 40

PART-A

Instructions: Answer **ALL** questions. Each question carries **ONE** mark. 08X01=08

1. List the common mistakes in surveying.
2. Define the term local attraction.
3. Name the uses of contours.
4. Write the principles of surveying.
5. Define the term reduced level.
6. List the methods of contouring.
7. Write the purpose of theodolite.
8. Define the term 'Permissible error of Closure.

PART-B

Instructions: Answer any **ALL** questions. Each question carries **THREE** marks 04X03=12

9. (a) Find the true length of the line.the length of a line measured with the chain was found to be 820m. it was after words found that the chain was 20cm too long.

(or)

9. (b) list the importance of HFL.

10. (a) Convert the following whole circle bearing to Quadrantal bearing
    i) 48^0 18' ii) 65^0 24'

(or)

10. (b) List the fundamental lines of a transit theodolite.

11. (a) Outline characteristics of contouing.

(or)

11. (b) Find the true difference of level between A and B from Thegiven data. the leveling between two points A and B on opposite bank of rever, the level was set up near A and the staff readings on A and B were 5.42 and 7.56 respectively.the level was then moved and set up near B, and the respective staff readings on A and B were 2.74 and 4.76

12. (a) list the peripheral components of transit theodolite.

(or)

12. (b) write the uses of repetition method.

PART-C

Instructions: Answer any **ALL** questions. Each question carries **FIVE** marks 04X05=20

13. (a) Explain the different types of mine plans according to CMR-2017.

(or)

13. (b) Find the RLs of all the points from the following consecutive readings were taken with a levelling instrument at an interval of 20m. 2.375, 1.730, 0.615, 3.450, 2.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.225 and 3.630m.The instrument was shifted after the forth and eighth readings. The last reading was taken on a BM of RL110.200 m.

14. (a) Below are the observed bearings of the lines of a traverse ABCDE with a compass in a place where local attraction was suspected:

Line	Fore bearing	Back bearing
AB	$191^0 45'$	$13^0 0'$
BC	$39^0 30'$	$222^0 30'$
CD	$22^0 15'$	$200^0 30'$
DE	$242^0 45'$	$62^0 45'$
EA	$330^0 15'$	$147^0 45'$

Find the corrected bearings of the lines.

(or)

14. (b) Describe the Reiteration method of measurement of Horizontal angle.

15. (a) Explain the effects of Curvature and Refraction in levelling.

(or)

15. (b) Describe the square method of contouring.

16. (a) Describe the method of measuring Vertical angle.

(or)

16. (b) describe the continuous azimuth method of traverse.

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C18-MNG-303C

BOARD DIPLOMA EXAMINATION, (C-18)
MID-I EXAMINATION MODEL PAPER
FUNDAMENTALS OF SURVEYING

Time : 1 Hour] [Total Marks: 20

PART-A

Instructions: Answer **ALL** questions. Each question carries **ONE** mark. 04X01=04

1. List the objectives of surveying.
2. Define the term representative fraction.
3. List the common mistakes in surveying.
4. Mention the field applications of offsets.

PART-B

Instructions: Answer any **ALL** questions. Each question carries **THREE** marks.

02X03=06

5. (a) Give the designation of following scales

   i) 1/1000 ii) 1/25000

(or)

5. (b) List general requirements of mine plans according to CMR-2017.

6. (a) Explain the Reconnaissance survey.

(or)

6.(b) Explain direct method of ranging.

PART-C

Instructions: Answer any **ALL** questions. Each question carries **FIVE** marks. 02X05=10

7. (a) Give the broad classification of surveying.

(or)

7. (b) Explain the different types of mine plans according to CMR-2017.

8. (a) Explain the direct method of ranging by stepping method.

(or)

8. (b) A line was measured by a 20m chain which was accurate before starting the day work. After chaining 900 m. the chain was found to be too long. After chaining a total distance of 1575 m, the chain was found to be 14 cm too long. Find the true distance of the line.

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C18-MNG-303C
BOARD DIPLOMA EXAMINATION, (C-18)
MID-II EXAMINATION MODEL PAPER
FUNDAMENTALS OF SURVEYING

Time : 1 Hour] [Total Marks: 20

PART-A

Instructions: Answer **ALL** questions. Each question carries **ONE** mark. 04X01=04

1. what is the purpose of compass surveying.
2. Define the term declination.
3. List the objectives of leveling.
4. Define the term elevation.

PART-B

Instructions: Answer any **ALL** questions. Each question carries **THREE** marks.

02X03=06

5. (a) Convert the following Quadrantal bearing to whole circle bearing.
   a) S 48^0 18' E b) N 65^0 24' W

(or)

5. (b) Outline the term local attraction.

6. (a) demonstrate the temporary adjustments of dumpy level.

(or)

6. (b) summarize the various types leveling staffs.

PART-C

Instructions: Answer any **ALL** questions. Each question carries **FIVE** marks. 02X05=10

7(a) Explain the constructional details of a Prismatic Compass.

(or)

7. (b) Convert the following whole circle bearing into quadrantal bearing.
   a) $68^0$32' b) $132^0$12' c) $236^0$37' d) $334^0$52' e) $128^0$14'

8. (a) Describe the construction details of Dumpy level.

(or)

8. (b) Explain the following terms
   i) Horizontal plane .
   ii) Line of collimation.

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18MNG-304C- Mine Transportation

Course Title :	**Mine Transportation**	Course Code	**18MNG-304C**
Semester	**III**	Course Group	**Core**
Teaching Scheme in Periods(L:T:P)	**45:15:00**	Credits	**3**
Methodology	**Lecture + Tutorials**	Total Periods	**60**
CIE	**60 Marks**	SEE	**40 Marks**

Pre requisites

This course requires the knowledge of the Basics of Mining

Course Outcomes

CO1 :	Knows the safety devices on Conveyors and Explain the Transportation system by Conveyors,Solve simple problems on Size of Belt Conveyors.
CO2 :	Classifies Locomotive Haulage ,Explain the Construction and Working of Aerial Rope ways.
CO3 :	Familiarise with Wire Ropes, classifies the wire Ropes, Describe the Construction of Different Wire Ropes and their applications.
CO4 :	Understand the Different Methods of Capping, Carryout the method of Splicing of Wire Rope.
CO5 :	Classifies the Types of Rope Haulages,Applications of Rope Haulages,Solve simple Problems on Number of Tubs and H.P of Moter
CO6 :	Choose the different mine Pumps,Explain the Working Principle of Mine pumps along with their Fittings.

Course Content

Unit 1: Trasportation system in Mines -Conveyors: Duration:7 Periods

Conveyor usage, classification - belt conveyor system, different types of belt constructions, safety devices merits, demerits and limitations of conveying system - Scraper chain convey or system,

protective devices-merits, demerits and limitation, computation of numerical problems on size of the conveyor for a given output and computation of motor HP.

Unit 2: Transportation in Mines -Locomotives and Aerial Ropeways . **Duration:8 Periods**

Classify locomotive haulage systems, merits, demerits, applicability of different system – classify aerial rope ways, the applicable conditions of aerial ropeways- Computation of Simple numerical problems on number of carriers and length of haul.

Unit 3: Wire Ropes: Duration:10 Periods

Usage, chemical composition, infield tests of wire, classification of wire ropes, applicability of different ropes - causes of deterioration, precautions, selection parameters - computation of numerical problems on size - Weight and strength of wire ropes.

Unit 4: Rope Capping: **Duration: 5 Periods**

Capping and recapping of wire ropes, classification - description of capping methods - splicing methods, description of splicing

Unit 5: Transportation in Mines -Rope Haulages : Duration:15 Periods

Purpose of transportation, comprehensive classification of transportation - rope haulage - direct Rope Haulage System, merits, demerits and applications - safety Devices in Direct Rope Haulage system-Endless Rope Haulage System, merits, demerits and applicability's safety devices-Rope clips, tensioning arrangements in endless haulage-Main and tail haulage system-factors of selection for rope haulage - computation problems for determination of H.P., Tub capacity, number of tubs.

Unit 6: Mine Pumps: Duration:15 Periods

Pumping - Various terms of pumping, classification of pumps - centrifugal pump fittings - Turbine pump, fittings – End thrust - submersible pump - fittings merits limitation - Selection of pumps - computation of numerical problems on Head, Quantity, H.P of mine pumps..

Recommended Books

1.Elements of Mining Technology, Vol-III D.J Deshmukh,

2. Dr. G.B. Mishra, Surface Mining Pub:GeoMinetech Publisher, Bhubneshwar
3. Amitosh Dey, Heavy Earth Moving Machinery. Available at Geeta book store, Dhanbad
4. M.A. Ramlu, Mine Hoisting. Pub: Oxford & IBH Publishing Co. Pvt.Ltd. New Delhi
5. Karelin, Mine Transport. Pub:- Orient Longmans Ltd.New Delhi
6. M. A. Ramlu; "Mine Hoisting" Oxford & IBH Publishing Co. Pvt. Ltd. New Delhi

7. C. P. Chug; “High Technology in Drilling and Exploration” Oxford & IBH publishers.
8 Cummins & Givens; “SME Mining Engineering Handbook,Vol. I & II” A.I.M.M.New-York
9. R..D. Singh, Principles & Practices of Modern Coal Mining Pub:-New Delhi.

UNIT WISE OUTCOMES

Upon completion of the course the student should be able to understand the Transportation system in Mines and mine pumps

1.0 Understand transportation in mines by conveyors.

1.1 Give the comprehensive classification of conveyors based on their applicability
1..2 Explain the component parts of belt conveyors
1..3 List the safety devices on belt conveyors
1..4 State limitations of belt conveyor system
1..5 State the Merits Of Belt Conveyor
1..6 State the Demerits Of Belt Conveyors
1..7 Explain scraper chain conveyor system
1..8 State the merits, demerits and applications of scraper chain conveyor
1..9 Simple problems to calculate the size of belt conveyor.

2.0 Understand transportation in mines by Locomotives & Aerial ropeways.

2.1 Classifies Locomotive haulage systems
2.2 State merits, demerits, applicability and limitations of diesel locomotives system.
2.3 Explain exhaust conditioner and flame trap fitted to diesel locomotive.
2.4 State merits, demerits, applicability and limitations of battery locomotives system.
2.5 Simple numerical problems in calculation of tractive effort of locomotive.
2.6 Classify aerial rope ways.
2.7 List the applicability of mono cable aerial rope.
2.8 State the applicability of BI-Cable aerial rope ways.
2.9 Describe the construction and working of Mono-cable aerial rope way.
2.10 State the purpose of track and traction rope in Bi-cable aerial rope way.
2.11 Solve numerical problems on calculation of

a) Number. of carriers b) carrier capacity c) length of haul

3.0 .Understand the manufacture of Wire ropes used in mines .

3.1 State the uses of wire ropes in mines

3.2 Classifies wire ropes based on place of application and construction.

3.3 State the composition of material of wire ropes.

3.4 List the field tests to be conducted on wires rope.

3.5 Explain the field tests to be conducted on wires rope

3.6 List stages of manufacturing of wires of ropes

3.7 Explain the stages of manufacturing of wires of ropes

3.8 Describe the constructional details of different types of ropes

3.9 Explain space factor, factor of safety, capacity factor, bending factor

3.10 State the applicability of different types of wire ropes in Mining.

3.11 List the causes of deterioration of wire ropes

3.12 List the preventive measures against deterioration of ropes

3.13 State the formulate for finding the size, weight and strength of wire ropes

3.14 Solves Simple problems related to the Size,Weight and Strength of the Wire Ropes.

4.0 Know Rope Capping.

4.1 Define the terms capping and recapping

4.2 List the different methods of capping the wire ropes

4.3 State the applicability of different recapping

4.4 Explain the method of split cappel with rivets.

4.5 Explain the method of white metal capping.

4.6 Describe the method of interlocking wedge capping.

4.7 State the purpose of splicing of wire ropes.

4.8 Describe the methodof splicing of wire ropes

5.0 Understand methods of rope haulage in underground mines

5.1 State the purpose of transportation in mines

5.2 Give comprehensive classification of transportation systems in mines

5.3 Explain different methods of transportation by rope haulage in underground and open cast mines

5.4 List the types of rope haulage

5.5 State the applicability of each type of rope haulage

5.6 Describe the direct rope haulage system

5.7 State the advantages and Dis-advantages of Direct rope haulage system.

5.8 List various safety devices required in direct rope haulage

5.9 Describe the endless rope haulage system

5.10 List advantage and disadvantage of endless rope haulage

5.11 State the necessity of tensioning arrangements

5.12 Describe the tensioning arrangement for endless rope haulage

5.13 Describe the main and tail rope haulage system

5.14 List the advantages and disadvantages of main and tail rope haulage

5.15 List the factors influencing the size of the rope haulage engine, H.P

5.16 List the factors governing the selection of system of rope haulage

5.17 Simple problems in calculation of drawbar pull, number of tubs required for a given output and calculation of H.P of motor

6.0 Understand various Pumps used in Mines

6.1 Define the various terms with regards to pumps

6.2 Give the comprehensive classification of mine pumps with their applicability

6.3 Explain the principle of working of reciprocating pump

6.4 Describe the methods of starting and stopping of reciprocating pump

6.5 State the purpose of air vessel

6.6 Define the terms a) Water hammer b) End thrust

6.7 Explain the constructional details of centrifugal pumps

6.8 Describe the working principle of centrifugal pumps

6.9 Explain the constructional details of turbine pump

6.10 Explain the working principles of turbine pump

6.11 Describe the methods of starting and stopping of turbine pump

6.12 Describe the method of balancing end thrust - hydraulic balance disc

6.13 Explain the constructional details and fittings of submersible pump

6.14 List out the considerations for the selection of pumps

6.15 List differences between reciprocating pump and centrifugal pump

6.16 Simple numerical problems on calculation of head, capacity and H.P of mine pumps.

Suggested Student Activities

1.Quiz

2.Group discussion

3.Surprise test

4.references from library.

5.Identifying equipments in laboratory.

Suggested E-Learning references

1. www.allaboutmining.com
2. www.novamining.com
2. http://mining4u.com
3. www.mining-tutorials.ws
4. www.nptel.ac.in

CO PO Mapping Matrix

On Successful completion of the course, the student will be able to attain the following Course Outcomes (COs):

Course Outcome		CL	Linked PO	Teaching Periods
CO1	List the safety devices on Conveyors and Explain the Transportation system by Conveyors	R/U/A	1,2,5	**7**
CO2	Classify Locomotive Haulage ,Explain the Construction and Working of Aerial Rope ways.	R/U/A	1,2,7	**8**
CO3	Select the Wire Ropes, classifies the wire Ropes and Describe the Construction of Different Wire Ropes	R/U/A	1,2,9	**10**
CO4	List the Different Methods of Capping, Describe the method of Splicing of Wire Rope	R/U/A	1,2,5	**5**
CO5	List the Types of Rope Haulages,Classification of Rope Haulage ,Solve simple Problems on Number of Tubs and H.P of Moter	R/U/A	1,2,3,4,7	**15**
CO6	Name different mine Pumps.Explain the Working Principle of Mine pumps along with their Fittings	R/U/A	1,2,3,6,8	**15**

SCHEME OF VALUATION

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

MID SEM –II EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks
		R		U	A	
1	I	4	1	9(a)	13(a)	
2	II					
3	III		2	10(a)	14(a)	
4	IV					
5	V		3 — 5, 6	9(b) 11(a) 11(b)	13(b) 15(a) 15(b)	
6	VI		3 — 7,8	10(b) 12(a) 12(b)	14(b) 16(a) 16(b)	
Total Questions		8		8	8	

Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

STATE BOARD OF TECHNICAL EDUCATION & TRAINING:TS:HYDERABD

C18MNG-304C MINE TRANSPORTATION

III SEMESTER MID SEMESTER – I MODEL PAPER

Time: 1 hour **Max. Marks:20**

PART-A **1x4=4**

Instructions : 1. Answer **ALL** questions.
2. Each question carries **ONE** mark.

1. List the safety devices on belt conveyors

2. State limitations of belt conveyor system.

3. State the limitations of diesel locomotives system.

4. List the applicability of mono cable aerial rope

PART-B **2x3=6**

Instructions : 1. Answer any **ALL** questions.
2. Each question carries **THREE** marks

5(a) State the merits and demerits Of Belt Conveyor

(or)

5(b). State the merits, demerits of scraper chain conveyor

6(a). State merits, demerits and applicability of diesel locomotives system

(or)

6(b). State merits, demerits and limitations of battery locomotives system

PART-C **2x5=10**

Instructions : 1. Answer any **ALL** questions.
2. Each question carries **FIVE** marks.

7(a). Give the comprehensive classification of conveyors based on their applicability.

(or)

7(b).Explain the scraper chain conveyor system.

8(a).Explain exhaust conditioner and flame trap fitted to diesel locomotive.

(or)

8(b).Describe the construction and working of Mono-cable aerial rope way

STATE BOARD OF TECHNICAL EDUCATION & TRAINING:TS:HYDERABD

C18MNG-304C MINE TRANSPORTATION

III SEMESTER MID SEMESTER – II MODEL PAPER

Time: 1 hour **Max. Marks:20**

PART-A **1x4=4**

Instructions : 1. Answer **ALL** questions.
2. Each question carries **ONE** mark.

1. State the uses of wire ropes in mines
2. State the composition of material of wire ropes
3. List the different methods of capping the wire ropes
4. State the purpose of splicing of wire ropes

PART-B **2x3=6**

Instructions : 1. Answer any **ALL** questions.
2. Each question carries **THREE** marks

5(a).Classify the wire ropes based on their place of application.

(or)

5(b).Define the terms factor of safety and capacity factor

6(a).Define the terms capping and recapping.

(or)

6(b).Outline the method of white metal capping.

PART-C **2x5=10**

Instructions : 1. Answer any **ALL** questions.
2 Each question carries **FIVE** marks.

7(a).Explain the stages of manufacturing of wires of ropes.

(or)

7(b).Describe the constructional details of different types of ropes

8(a).Describe the method of interlocking wedge capping.

(or)

8(b).Describe the methodof splicing of wire ropes

C18MNG-304C

ʁOARD DIPLOMA EXAMINATION, (C-18)
MARCH/APRIL-2019
DMNGE III SEMESTER END EXAMINATION
MINE TRANSPORTATION

Time : 2 Hours] [Total Marks: 40

PART-A

08X01=08

Instructions : 1. Answer **ALL** questions.
2. Each question carries **ONE** mark.

1. Classify Locomotive haulage systems
2. List the field tests to be conducted on wires rope
3. State the purpose of transportation in mines
4. State the purpose of air vessel
5. List the types of rope haulage
6. List various safety devices required in direct rope haulage
7. Define the term total head with regard to pumps
8. Define the term Water hammer in pumps

PART-B

04X03=12

Instructions : 1. Answer any **ALL** questions.
2. Each question carries **THREE** marks.

9. (a) State the applicability of BI-Cable aerial rope ways
(or)
9. (b) List the advantages and disadvantages of main and tail rope haulage

10. (a) State the applicability of different types of wire ropes in Mining
(or)
10. (b) Outline the methods of starting and stopping of reciprocating pump

11. (a) State the applicability of different types of wire ropes in Mining
(or)

11. (b) List the factors influencing the size of the rope haulage engine, H.P.

12. (a) Outline the methods of starting and stopping of centrifugal pump

(or)

12. (b) List differences between reciprocating pump and centrifugal pump

PART-C

04X5=20

Instructions : 1. Answer any **ALL** questions.

2. Each question carries **FIVE** marks.

13. (a) Explain the component parts of belt conveyors.

(or)

13. (b) Describe the endless rope haulage system.

14. (a) List the causes and preventive measures against the deterioration of wire ropes

(or)

14. (b) Explain the working principles of turbine pump

15. (a) Describe the direct rope haulage system

(or)

15. (b) Describe the main and tail rope haulage system including safety devices used

16. (a) Explain the principle of working of reciprocating pump

(or)

16. (b) Explain the constructional details of turbine pump

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Applied Geology

Course Title	**Applied Geology**	Course Code	**18MNG-305C**
Semester	III	Course Group	Core
Teaching Scheme in Periods (L:T:P)	45:15:0	Credits	3
Type of course	Lecture + Tutorial	Total Contact Periods	60
CIE	60 Marks	SEE	40 Marks

Prerequisites

Basic knowledge of surface Environment and Mining Geology.

Course Outcomes

A student who has completed this course will be able to:

CO1	Knowledge about the Physiographic divisions of India and different systems
CO2	Identify the different processes of mineralization and distribution of Minerals
CO3	Identify the various Mineral deposits in the field
CO4	Relate the Origin and Properties of the Fuels
CO5	Explain the importance of Ground water
CO6	Apply advanced concepts of Geology in Mining

Course Content

UNIT-1 Stratigraphy **Duration 8 Periods (L: 6 – T: 2)**

Stratigraphy- Definition principles of stratigraphic correlation and objectives. Geological time scale. Indian stratigraphic scale Physiographic divisions. Economic minerals occurring in following systems– Archeans-Cuddapah – Vindhyan – Gondwana systems.

UNIT-2 Economic Geology **Duration 10 Periods (L: 7.5 – T: 2.5)**

Define the terms- Ore, gangue, tenor, associated mineral, resources, proved, probable and possible reserves. Different process of Mineralization.

UNIT -3 Prospecting Techniques **Duration 10 Periods (L: 7.5 – T: 2.5)**

Objectives of prospecting techniques – Guides for location of mineral deposits –Geophysical methods– Electrical, Gravity, Seismic and Radiometric.

UNIT -4 Fuel Geology **Duration: 8 Periods (L: 6 – T: 2)**

Classify the Periods and Stages of Coal formation. Chemical properties of Coal. Classification of Coal based on rank. Theories of Coal formation. Importance of Petroleum as fuel. Different Oil traps. Origin, Migration and Accumulation of Petroleum.

UNIT -5 Hydrogeology **Duration: 12 Periods (L: 9 – T: 3)**

Introduction, Occurrence and source of ground water. Vertical distribution of ground water. Water Table and Types of Ground water. Hydrological cycle. Types of Precipitation- Rain fall measurements and records. Evaporation – Factors controlling evapo-transpiration. Runoff. Infiltration and factors affecting infiltration. Zone of Saturation and Zone of Aeration. Water bearing properties of rocks: Porosity and Permeability of Rocks Aquifer, Aquifuge and Aquiclude.

UNIT – 6 Applications of Geology in Mining **Duration: 12 Periods (L:9 – T: 3)**

Stratigraphy of India and Telangana state. Origin, Occurrence, Ore distribution and Uses of minerals in India: Iron Ore deposits, Copper Ore deposits, Bauxite Ore deposits and Manganese Ore deposits. Geological prospecting techniques. Various structural features of Coal Seams. Distribution of coalfields of India. State the distribution of Oil fields in India. Advantages of Rain harvesting.

Reference Books:

1) Parbin Singh-A Text Book of Engineering & General Geology- S.K.Kataria & sons
2) N ChennaKesavulu- A Text book of Engineering Geology- Macmillan India Ltd.
3) Mukerjee P.K., A Textbook of Geology, The World Press Pvt. Ltd Calcutta.
4) A Text book of Geology, G.B.Mahapatra- CBS Publishers & distributors.
5) Principles of Engineering Geology, K.M.Bangar- Standard Publishers distributors.
6) Geology of India and Burma, M S Krishnan- CBS Publishers & distributors.
7) Fundamentals of Historical Geology and Stratigraphy of India, Ravindra kumar- New age publishers.
8) Groundwater Hydrology- David Keith Todd- Wiley Student Edition.
9) Economic Geology- Umeshwar Prasad- CBS Publishers & distributors.

Unit wise Outcomes

1.0 Stratigraphy

1.1. Define Stratigraphy

1.2. Define Correlation

1.3. Define Fossil and Index fossil

1.4. Summarize the uses of Fossil

1.5. Preservation of fossil

1.6. Identify the objectives of Stratigraphy

1.7. Classify the geological Time units and corresponding Rock units

1.8. Categorize the Geological Time Scale

1.9. Importance of the Physiographic Divisions of India

1.10. Discuss each of the following systems with their distribution and economic importance Archeans – Cuddapah - Vindhyan – Gondwana

2.0 Economic Geology

2.1 Define Economic Geology

2.2 Define the terms Ore Minerals, Gangue Minerals, Tenor of Ore and Associated Minerals

2.3 Define the terms: Resource - Reserves

2.4 Define the terms. Proved, Probable, Possible reserves

2.5 Explain the following process of formation of mineral deposits with examples
i) Magmatic Process ii) Sedimentation Process iii) Metamorphic Process iv) Contact metasomatic Process v) Hydrothermal process vi) Residual and Mechanical concentration vii) Oxidation and supergene sulphide enrichment Process viii) Sublimation ix) Evaporation

3.0 Prospecting Techniques

3.1 Define the Prospecting

3.2 Make uses of Prospecting

3.3 List the Guides for location of mineral deposits in the Field

3.4 Classify the Prospecting methods

3.5 Elaborate the equipment required for prospecting

3.6 List the Geophysical methods of Prospecting

3.7 Discuss the Electrical Prospecting Method

3.8 Explain the Gravity Prospecting Method

3.9 Summarize the Seismic Prospecting Method

3.10 Determine the Radiometric Prospecting Method

4.0 Fuel Geology

4.1 Outline the formation of Coal

4.2 Classify the Periods of Coal formation

4.3 List out the Stages of Coal formation

4.4 Elaborate the chemical properties of Coal

4.5 Summarize the Banded constituents of Coal

4.6 Discuss the Origin of Coal theories

4.7 List the Structural Features of Coal Seams

4.8 Define the Composition of Petroleum

4.9 List out various products of Petroleum

4.10 Importance of Petroleum as a Fuel

4.11 Explain the Origin of Petroleum

4.12 Discuss the Migration and Accumulation of Petroleum

4.13 Classify the different types of Oil traps

5.0 Hydrogeology

5.1 Importance of the Hydrogeology

5.2 Outline the Occurrence of ground water

5.3 Analyze Vertical distribution of ground water

5.4 Explain the Water Table

5.5 Compare the different types of Ground water

5.6 Describe the Hydrological cycle

5.7 Classify the types of Precipitation

5.8 Function the Rain fall measurements and records.

5.9 What is Evaporation

5.10 Explain evapo-transpiration

5.11 Classify the factors controlling evapo-transpiration

5.12 Define Runoff

5.13 What is Infiltration

5.14 Function the different factors affecting infiltration

5.15 Distinguish the Zone of Saturation and Zone of Aeration

5.16 Elaborate the Water bearing properties of Rocks

5.17 Define the Porosity

5.18 What is Permeability

5.19 Explain Aquifer, Aquifuge and Aquiclude

6.0 Applications of Geology in Mining

6.1 Discuss the Stratigraphy of India and Telangana

6.2 Elaborate Origin and distribution of Iron ores

6.3 Explain the Origin and distribution of Copper ores

6.4 Discuss the Origin and distribution of Bauxite ores

6.5 Explain the Origin and distribution of Manganese ores

6.6 Determine the Geological exploration prospecting methods

6.7 Elaborate the Structural features of Coal seams

6.8 Discuss the Various Coal fields in India

6.9 Discuss the Various Oil fields in India

6.10 Apply the Various Rain harvesting methods

SUGGESTED STUDENT ACTIVITIES

1. Student visits Library to refer to Geology magazines
2. Student inspects the available equipment in the Lab to identify the components
3. Visit nearby mine quarry and collect samples
4. Student should prepare models of Physiographic divisions of India
5. Student should prepare charts of Geological Time Scale
6. Student should prepare charts of Systems
7. Collection of different Fossils
8. Maps preparation of various mineral resources and reserves in India
9. Visiting nearby areas and prepare the local mineral resource maps
10. Collection of mineral samples and study its properties
11. Download research papers related to Mining geology and give the Seminars
12. Student to know the various prospecting methods-by attending the nearby Geophysical and Geological surveys conducted by various organisations like SCCL
13. Visit the nearby mines to know the geology of the particular areas
14. Clean and green activities to protect the environment in the institute and nearby places

15. Attending motivational classes given by experts
16. Visiting nearby public places and extending help to the needs as the part of social responsibility
17. Guiding junior students in academic affairs
18. Attending yoga classes
19. Quiz
20. Group discussion
21. Surprise test

Suggested E-Learning references

1. http://geology.com/
2. http://emg.geoscienceworld.org/content/current
3. http://en.wikipedia.org/wiki/Mineral_exploration
4. http://en.wikipedia.org/wiki/Geology
5. http://geology.about.com/
6. http://geology.com/
7. www.nptel.com

CO-PO MAPPING MATRIX

Course Outcome		CL	Linked PO	Teaching Periods
CO1	Relate the importance of Stratigraphy	R,U,A	1,2,6	8
CO2	Explain different processes of Mineralization	R,U,A	1,2,5,6	10
CO3	Explain various geophysical prospecting methods	R,U,A	1,2,3,4,5	10
CO4	Relate the importance of Fuel Geology	R,U	1,2,6	8
CO5	Explain the importance of Ground water	R,U	1,2,5,6	12
CO6	Apply advanced concepts of Mining Geology	R,U,A	1,2,5,6,7	12

Legend : R- Remember, U-Understand , A-Application

SCHEME OF EVALUATION

MID SEM-I EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-I	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-II	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

MID SEM –II EXAM

S.No	Unit Name	R	U	A	Remarks
1	Unit-III	1, 2	5(a) 5(b)	7(a) 7(b)	
2	Unit-IV	3, 4	6(a) 6(b)	8(a) 8(b)	
Total Questions		4	4	4	

Semester End Examination

Sl No	Unit No.	Questions to be set for SEE				Remarks
		R		U	A	
1	I	4	1	9(a)	13(a)	
2	II					
3	III		2	10(a)	14(a)	
4	IV					
5	V		3 (5, 6)	9(b) 11(a) 11(b)	13(b) 15(a) 15(b)	
6	VI		3 (7,8)	10(b) 12(a) 12(b)	14(b) 16(a) 16(b)	
Total Questions		8		8	8	

Legend:	Remembering (R)	1 Mark
	Understanding (U)	3 Marks
	Application (A)	5 Marks

MODEL QUESTION PAPERS

C18-MNG-305C

BOARD DIPLOMA EXAMINATION, (C-18)
III SEMESTER END EXAM MODEL PAPER
APPLIED GEOLOGY

Time : 2 Hours] [Total Marks: 40

PART-A

Instructions: Answer **ALL** questions. Each question carries **ONE** mark. 08X01=08

1. List out the rock units with the corresponding time units
2. Classify the different types of Oil traps
3. Define the term Hydrogeology
4. List the structural features of Coal seams
5. What is zone of Saturation
6. Define the term Aquifuge
7. Mention the geological methods
8. Name the Iron ore minerals

PART-B

Instructions: Answer any **ALL** questions. Each question carries **THREE** marks.

04X03=12

9. (a) What a short note on Reserves
   (or)
9. (b) Outline the occurrence of Ground water

10. (a) Write the importance of Petroleum as a fuel
    (or)
10. (b) Write a short note on Oil fields of India

11. (a) Distinguish the zone of aeration and zone of saturation
    (or)
11. (b) Write a short note on water bearing properties of Rocks

12. (a) Briefly discuss the Origin of the Manganese Ore
    (or)
12. (b) Write a short note on Stratigraphy of Telangana

PART-C

Instruction: Answer any **ALL** questions. Each question carries **FIVE** marks. 04X05=20

13. (a) Explain the Physiographic divisions of India
(or)
13. (b) Classify the different types of Precipitation

14. (a) Summarize the Prospecting methods
(or)
14. (b) Explain the Origin and distribution of Copper ores in India

15. (a) Discuss the Hydrological cycle
(or)
15. (b) Explain the water table and types of Ground water

16. (a) Discuss the various rain harvesting methods
(or)
16. (b) Explain the coal fields of India

C18-MNG-305C

BOARD DIPLOMA EXAMINATION, (C-18)
III SEMESTER FIRST MID EXAM MODEL PAPER
APPLIED GEOLOGY

Time : 1 Hour] [Total Marks: 20

PART-A

Instructions: Answer **ALL** questions. Each question carries **ONE** mark. 04X01=04

1. Summarize the Uses of Fossils
2. What is Stratigraphy
3. Define the term Resource
4. List out the various reserves

PART-B

Instructions: Answer any **ALL** questions. Each question carries **THREE** marks.

02X03=06

5. (a) Identify the objects of Stratigraphy
   (or)
5. (b) Classify the Cuddapah system of rocks

6. (a) Write a short note on evaporation deposits
   (or)
6. (b) Briefly discuss Sublimation process

PART-C

Instructions: Answer any **ALL** questions. Each question carries **FIVE** marks. 02X5=10

7. (a) Write about the importance of the Physiographic divisions of India
   (or)
7. (b) Categorize the Geological time scale

8. (a) Discuss the Oxidation and supergene enrichment process with suitable examples
   (or)
8. (b) Explain the Sedimentation process

C18-MNG-305C

BOARD DIPLOMA EXAMINATION, (C-18)

III SEMESTER SECOND MID EXAM MODEL PAPER

APPLIED GEOLOGY

Time : 1 Hour] [Total Marks: 20

PART-A

Instructions: Answer **ALL** questions. Each question carries **ONE** mark. 04X01=04

1. Classify the different types of prospecting methods
2. List the Geophysical prospecting methods
3. What are the stages of Coal formation
4. Name the various products of Petroleum

PART-B

Instructions: Answer any **ALL** questions. Each question carries **THREE** marks.

02X03=06

5. (a) Write a short note on equipment required for prospecting method
   (or)
5. (b) Discuss the guides for location of mineral deposits in the field

6. (a) Elaborate the chemical properties of Coal
   (or)
6. (b) Write the importance of petroleum as a fuel

PART-C

Instructions: Answer any **ALL** questions. Each question carries **FIVE** marks

02X05=10

7. (a) Determine the Radiometric method
   (or)
7. (b) Summarize the Seismic prospecting method

8. (a) Explain the theories about origin of the Coal seams formation
   (or)
8. (b) Discuss the migration and accumulation of Petroleum

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Basics of Electrical and Electronics Engineering Lab Practice

Course Title :	**Basics of Electrical and Electronics Engineering Lab Practice**	Course Code	**18MNG-306P**
Semester	**III**	Course Group	**Core**
Teaching Scheme in Hrs(L:T:P)	**7.5:0:37.5**	Credits	**3**
Methodology	**Lecture + Practicals**	Total Contact Hours :	**45 periods**
CIE	**60 Marks**	SEE	**40 Marks**

Pre requisites

This course requires the basic knowledge of high school science and Mathematics.

Course Outcomes

CO1 :	Able to handle Analog and Digital Multimeter.
CO2 :	Identify and measure the various parameters of AC signal.
CO3 :	Distinguish and interpret and verify Ohm's law and Kirchoff's laws in electrical circuits.
CO4 :	Identify different Switches, Relays, Fuses, MCBs.
CO5 :	Identify and distinguish Various R, L, C Components and calculate their values.
CO6 :	Attain knowledge on soldering and PCB preparation.

Course Contents

I. Analog and Digital Multimeter. (Able to handle Analog and Digital Multimeter.)

1. Identify electronic equipment and draw their circuit symbols.
2. To handle and use analog and digital multimeter.
   a) Identify the range selector and terminals (Analog and Digital).
   b) Keep the Multimeter in mA mode and measure the current through a given resistor.
   c) Connect batteries in series and parallel and observe the output voltage.

II. AC Fundamentals Analysis. (Identify and measure the various parameters of AC signal.)

3. Calculate the values of Instantaneous value, Average value, and Maximum value for the given values. (manually)
4. Calculate the values of Form factor, Peak factor and RMS value for the given values. (manually)

III. Ohm's law, KVL, KCL analysis. (Distinguish and interpret and verify Ohm's law and Kirchhoff's laws in electrical circuits.)

5. Identify the resistance value by Ohms Law.
6. Rig up a circuit to verify ohm's law.
7. Rig up a circuit to verify Kirchhoff's Voltage law.
8. Rig up a circuit to verify Kirchhoff's current law.

IV. Electronic Switches and relays. (Identify different Switches, Relays, Fuses, MCBs)

9. Identify different switches and their terminals.
10. Connect any switches in parallel and series combination.
11. Connect small loads (bulbs, motors etc.) to the switch and observe their operation.
12. Identify various relays, fuses and MCBs.
13. Observe the operation of relays, fuses and MCBs connecting to loads.

V. Electronic Components. (Identify and distinguish Various R, L, C Components and calculate their values)

14. Identify different Resistors, Capacitors and Inductors.
15. Measure the value of the resistance by using (i) Analog and Digital Multi-meter and (ii) By Colour coding.
16. Using Analog Multimeter measures the value of the given 5 resistors & verify by colour code.
17. Measure the value of the given 5 inductors using LCR Meter.
18. Identify the capacitance & Inductance values of the given components by LCR Meter.
19. By using a suitable meter, measure the value of the given 5 capacitors.

VI. Soldering Practice and Preparation of PCBs. (Attain knowledge on soldering and PCB preparation)

20. Identify various soldering equipment.
21. Practice soldering.
22. Practice desoldering using desoldering wick and desoldering pump.
23. Identify and fix/solder different components.

Suggested Student Activities

1. Do Market survey on List of Electronic components available in the market and collect the following information like name of the electronic component, specifications, Price etc. The student should submit a handwritten report. Documents have to be maintained as a record.
2. Take Quiz tests / assignments in Semiconductor device experiments. Documents have to be maintained as a record.
3. Do power point presentations on Electronic components, Ohm's laws, Kirchhoff's laws, Coloumb's laws, and Faraday's laws. Documents have to be maintained as a record.

Recommended Books:

1. 1. Electrical Technology Volume 1 by B.L. Theraja
2. 2. Electronic Devices and Circuits by David A.Bell Prentice hall
3. 3. Hand book of components for Electronics by Charles A. Harper McGrahills

E-LEARNING SITES

1.http://electrical4u.com/

2. www.electronics-tutorials.ws

3. www.nptel.ac.in

CO-PO Mapping Matrix

Course Outcome		CL	Linked PO	Teaching periods
CO1	Able to handle Analog and Digital Multimeter.	R/U	1,3,10	
CO2	Identify and measure the various parameters of AC signal.	R/U/A	1,2,10	
CO3	Distinguish and interpret and verify Ohm's law and Kirchoff's laws in electrical circuits.	R/U/A	1,2,3,7,10	
CO4	Identify different Switches, Relays, Fuses, MCBs.	R/U	1,3,4,8,10	
CO5	Identify and distinguish Various R, L, C Components and calculate their values.	R/U/A	1,2,3,4,7, 8,10	
CO6	Attain knowledge on soldering and PCB preparation.	R/U/A	1,2,3,4,5, 8,10	
	Total			

FUNDAMENTALS OF SURVEYING LAB PRACTICE

Course Title:	**FUNDAMENTALS OF SURVEYING LAB PRACTICE**	Course Code	**18MNG 5307P**
Semester	**III**	Course Group	**Core**
Teaching Scheme in Periods(L: T:P)	**1:0:2** **15:0:30**	Credits	**1.5**
Methodology	**Lecture + Practical**	Total Contact Hours:	**45Pds**
CIE	**60 Marks**	SEE	**40 Marks**

PRE-REQUISITE

Practicing the basic concepts of mine surveying and its importance while preparing mine plans.

COURSE OBJECTIVE

The objective of fundamentals of surveying Lab Practice is to analyze the basic concepts of surveying and its real time applications on chain, compass, leveling and theodolite surveying for mine planning activity.

COURSE CONTENTS

S. No	Name of the Exercise	Periods
1	Identification of surveying equipments used for linear and angular measurements	09
2	Computing the compass traverse	12
3	Determining the elevations and depressions of ground surface by using dumpy level	12
4	Identification parts of theodolite and making the traverse by using theodolite	12

COURSE OUTCOME

Students who had completed the course will be able to

Course outcome		Linked Exercise	CL	Linked PO	Teaching Periods
CO1	Identification of surveying equipments used for linear and angular measurements	1	R/U/A	1, 2, 3,10	03
CO2	Practicing ranging operations	2,3	R/U/A	1, 2, 3, 8,9,10	03
CO3	Linear measurements (chain /tape)	4,5,6,	R/U/A	1, 2, 3, 8,9,10	09
CO4	Understand the conventional signs used in mine surveying.	7	R/U/A	1, 2, 3, 10	03
CO5	Compass surveying	8,9,10	R/U/A	1, 2, 3, 8,9,10	09
CO6	Leveling	11,12,13,14	R/U/A	1, 2, 3, 8,9,10	09
CO7	Practicing basic consepts of theodolite traverse	15,16,17	R/U/A	1, 2, 3, 8,9,10	09

LIST OF EXPERIMENTS

S.No	Name of the Experiment	Hours
1	Identification of surveying equipments used for linear and angular measurements	3
2	Practicing ranging operations	
3	Measure the distance between stations by convetional methods.	3
4	Conduct cross staff surveying and plot the measured area.	3
5	Understand the conventional signs used in mine surveying.	3
6	Identify the componental parts of compass.	3
7	Practice the traverse survey with comapass, calculate interior angles of the traverse and its errors and their distribution (local attraction)	6
8	Draw the traverse by using observed bearings on the field.	

9	Identify the componental parts of dumpy level.	6
10	Perform the leveling operations to calculate reduced bearing of a line by various methods.	
12	Identify the componental parts of theodolite.	12
13	Practice theodolite traversing measuring horizontal angles.	
14	Practices the measurement of vertical angle. use the vertical circle .use verniers C and D. note the index error if any.	
15	Conduct traverse survey by direct bearing method (continuous Azimuth method). Measure the bearings of all the lines of traverse.	
16	Conduct traverse survey by double foresight method. Measure the included angles of the traverse.	3
17	Conduct traverse survey by double foresight method. Measure the included angles of the traverse.	3

LIST OF EQUIPMENTS

S. No.	NAME OF THE EQUIPMENTS REQUIRED
1	Identification of all surveying equipments there in surveying lab.
2	For linear measurements (Chain, tape, Ranging rods, arrows, cross staff, pegs, etc).
3	For angular measurements (compass and theodolite)
4	For leveling and contouring (dumpy level , inverted staff)

REFERENCES BOOKS

1. Surveying and Levelling Vol- I & II by B C Punmia
2. Surveying and Levelling by T P konetkar& S V Kulkarni
3. Plane Surveying by Dr.Alak De
4. Surveying and Levelling by S SBhavikatti
5. Surveying by Duggal
6. Surveying by R Agor
7. Fundamentals of Surveying by S K Roy
8. Surveying and Levelling by N NBasak
9. Advanced Surveying by R Agor
10. Mine Surveying and Levelling by S.Ghatak
11.

Suggested Student Activities

The topic of the project will be decided by the faculty and care should be taken that task should not be repeated among students the students will work in an individual or group of 3 – 5 on each topic. The topic should be related to the subject taught by the faculty and should have proper utility and importance to enhance his practical skill & knowledge and lifelong learning.

Few suggested activities:

1. Identify the instruments there in surveying lab and make a notes on each instrument.
2. Practice on field to measure the areas by using conventional apparatus.
3. Measure the area of a closed traverse with compass.
4. Problem solving on local attraction in compass surveying.
5. Knowing the elivations and depressions on groung.
6. Plot theodolite traverse on field.

Suggested E-Learning references

1. https://www.youtube.com.
2. http://nptel.ac.in.
3. http://en.wikipedia.org.
4. http://media.sakshat.ac.in/NPTEL-IIT-Videos.
5. http://nptel.iitk.ac.in/courses/Civil_Eng/IIT%20Roorkee/Surveying.htm.

SCHEME OF VALUATION

MID EXAMINATION -I and II

One questions to be chosen from the list of experiments 1 to 4 for Mid examination -I and from 5 to 9 for mid examination -II. Student can select one question by lottery method.

Sl. No	Description	Marks
1	Writing procedure	5
2	Sketch / Drawing	5
3	Experiment	5
4	Viva voice	5
Total		20

INTERNAL EVAULATION

The internal evaluation of a student in the laboratory will be carried out based on the following objectives

Sl. No	Description	Marks
1	Assignment	10
2	Seminar /Model preparation	10
Total		20

END EXAMINATION

One questions to be chosen from the list of experiments1 T to 10. Student can select one question by lottery method.

Sl. No	Description	Marks
1	Writing procedure	10
2	Sketch / Drawing	05
3	Experiment	15
4	Viva voice	10
Total		40

18MNG-307P

STATE BOARD OF TECHNICAL EDUCATION & TRAINING:TS: HYDERABD

SEMESTER END EXAMINATION MODEL QUESTION PAPER

SURFACE ENVIRONMENTAL ENGINEERING LAB PRACTICE

Time: 3-hours **Max. Marks: 40**

Instructions to the Candidates:

(i) Answer any One of the following Questions.

(ii) Each question carries same marks.

1. Define the term ranging and conduct the reciprocal ranging on field.
2. Conduct cross staff survey to measure the irregular boundaries.
3. Perform the closed survey of a traverse and measure the interior angle of it.
4. Perform the open traverse and identify the parts of compass.
5. Calculate the angles from closed traverse ABCDE from the observed barings on field.
6. Identify the local attractions in a closed traverse and make correction from observed bearing on the field.
7. Assume your own conditions to calculate the reduced level by height of instrument method.
8. Assume your own conditions to calculate the reduced level by rise and fall method.
9. Plot the contours by direct method assume your own conditions required to solve the problem.
10. Measure the horizontal angles by repetition method.
11. Conduct the traverse survey by double foresight method.

MINING GEOLOGY LAB PRACTICE

Course Title	**MINING GEOLOGY LAB PRACTICE**	Course Code	**18MNG 308P**
Semester	**III**	Course Group	**Core**
Teaching Scheme in Periods(L: T:P)	**1:0:2**	Credits	**1.5**
Methodology	**Lecture + Practical**	Total Contact Periods:	**45**
CIE	**60 Marks**	SEE	**40 Marks**

PRE-REQUISITES

Basic knowledge of Mining Geology

COURSE OBJECTIVE

The objectives of this lab is that to provide practical knowledge about physical properties rocks and minerals. Draw sketch of model showing different types of Folds, Faults and Joints.

COURSE CONTENTS

S. No	Name of the Exercise	Periods
1	Megascopic identification of Rock forming minerals	6
2	Megascopic identification of Ore forming minerals	6
3	Megascopic identification of Igneous rocks	6
4	Megascopic identification of Sedimentary and Metamorphic rocks	9
5	Draw sketch of model showing different types of Folds, Faults and Joints	6
6	Geological Field work	12

COURSE OUTCOMES

Students who had completed the course will be able to

Course outcome		Linked Exercise	CL (R/U/A)	Linked PO	Teaching periods
CO1	Identify the different Minerals based on their Physical properties	1	U,A	1,2,3,4,10	6
CO2	Identify the different Ore minerals on their Physical properties	2	U,A	1,2,3,4,10	6
CO3	Identify the different Rocks based on their Physical characters and composition	3	U, A	1,2,3,4,10	6
CO4	Identify the different Sedimentary and Metamorphic rocks based on their Physical characters and composition	4	U, A	1,2,3,4,10	9
CO5	Distinguish various Geological formations and structures of rocks, minerals on or below earth for mining operations	5	U,A	1,2,3,4,10	6
CO6	Evaluate samples based on knowledge and skills of Mining Geology	6	U,A	1,2,3,4,10	12

LIST OF EXPERIMENTS

S. No	Name of the Experiment	Periods
1	Megascopic identification of Rock forming minerals- Identify the physical properties of following rock forming Minerals- Types of Quartz, Calcite, Gypsum, Fluorite, Beryl, Feldspar, Asbestos, Talc, Corundum, Garnet and Kyanite	6
2	Megascopic identification of following Ore forming minerals- Identify the physical properties of following Ore forming Minerals - Hematite, Magnetite, Galena, Graphite, Chalcopyrite, Barite, Bauxite, Malachite	6
3	Megascopic identification of Igneous Rocks- Identify the following Igneous rocks: Granite, Basalt, Pegmatite, Dolerite, Syenite, Gabbro and Dunite	6
4	Megascopic identification of Sedimentary and Metamorphic rocks- Identify the following Sedimentary and Metamorphic rocks: Conglomerate, Sandstone, Limestone, Breccia, Grit, Shale, Gneiss , Schist, Slate, Marble, and Quartzite	9
5	Drawing sketch of model showing different types of Folds, Faults and Joints	6
6	**Geological field work** Identify the tools equipment used in Field Geological field work to measure Dip and Strike of Rocs with the help of Compass Identify folds like Anticline and Syncline Identify In lier and Out lier, Current bedding, Ripple marks and Outcrops Collect samples of any Special rocks and Mineral specimens	12

Suggested E-Learning references

1. http://en.wikipedia.org/wiki/Mineral_exploration
2. http://en.wikipedia.org/wiki/Geology
3. http://geology.about.com/
4. http://geology.com/
5. www.nptel.com

SCHEME OF VALUATION
MID EXAMINATION -I and II

Questions are to be chosen from the list of experiments 1 to 3 for Mid examination -I and from 4 to 6 for mid examination -II.

Sl. No	Description	Marks
1	Writing procedure	5
2	Sketch / Drawing	5
3	Experiment	5
4	Viva voce	5
Total		20

INTERNAL EVAULATION

The internal evaluation of a student in the laboratory will be carried out based on the following objectives

Sl. No	Description	Marks
1	Assignment	10
2	Seminar /Model preparation	10
Total		20

MODEL PAPERS

END EXAMINATION

S. No	Name of the Experiment	**Maximum Marks**
1	Identification of any **Two** Rock forming minerals	6
2	Identification of any **Two** Ore forming minerals	6
3	Identification of any **Two** Igneous rocks	6
4	Identification of any **One** Sedimentary and **One** Metamorphic rocks	6
5	Identify the different various Geological Structures	6
6	Component relevant for the given practical work	5
7	Viva voce	5
	Total Marks	40

I-MID EXAMINATION

S. No	Name of the Experiment	**Maximum Marks**
1	Identification of any **One** Rock forming minerals	3
2	Identification of any **One** Ore forming minerals	3
3	Identification of any **One** Igneous rocks	3
6	Component relevant for the given practical work	5
7	Viva voce	6
	Total Marks	20

II-MID EXAMINATION

S. No	Name of the Experiment	**Maximum Marks**
1	Identification of any **One** Sedimentary (or) **One** Metamorphic rocks	3
2	Identify the different various Geological Structures	3
3	Component relevant for the given practical work	5
4	Viva voce	6
	Total Marks	20

Mine Ventilation Engineering Lab Practice

Course Title:	Mine Ventilation Engineering Lab Practice	**Course Code**	18MNG 309P
Semester	III	**Course Group**	Core
Teaching Scheme in Periods(L: T:P)	1:0:2	**Credits**	1.5
Methodology	Lecture + Practical	**Total Contact Hours:**	45Pds
CIE	60 Marks	**SEE**	40 Marks

PRE-REQUISITE

Knowledge of Mine Environment, pressure, velocity of Air, different types of rescue and ventilation survey apparatus

COURSE OBJECTIVE

The objective of Mine ventilation Engineering Lab Practice is to analyze the mine environment during the mining activity. It also gives knowledge on identification of Pressure and velocity of air . In this course main emphasis is given the understanding of mine environment for safe day to day mining activity.

COURSE OUTCOME

Students who had completed the course will be able to

Course outcome		Linked Exercise	CL (R/U/A)	Linked PO	Teaching Periods
CO1	Recognize the percentage of toxic and inflammable mine and employ the principles to predict the temperature ,humidity contained in underground air	1,12	R/U	1,2,3,4,6	6
CO2	Identify the precautionary measures for mine fire	2	R/U/A	1,2	3
CO3	Analyze the different rescue apparatus and recovery methods.	4,5,6,7,8	U/A	2,3,5	21
CO4	Measure the underground quality and quantity of air	3,9	R/U/A	3,4,8,9,10	9
CO5	Make provision of ventilation in any underground mine by Artificial means	10,11	R/U/A	2,3,4	6

LIST OF EXPERIMENTS

S .No	Name of the Experiment	Periods
1	To detect of carbon monoxide and methane using detector tube	3
2	To study various fire fighting equipments ,study and sketch fire fighting equipments for class A,B,C,D,E fires	4
3	To study coward's diagram	3
4	Identification of the parts of flame safety lamp	3
5	To study of constructional features and working of self-contained breathing apparatus.	5
6	To study of constructional features and working of self-rescuer	3
7	To Study of constructional features and working of Gas Mask	3
8	Estimation of air cooling power using kata thermometer	5
9	Carry out qualitative survey for determining the relative humidity of air	5
10	Conduction of ventilation survey for quantity of air using anemometer and velometer	5
11	Study of centrifugal fans	3
12	Study of axial flow fans	3
	Total	45

LIST OF EQUIPMENTS

S. No.	NAME OF THE EQUIPMENTS REQUIRED
1	Carbon monoxide detectors
2	Fire fighting equipments for class A,B,C,D,E FIRES
3	Chart of coward's diagram
4	Self –containing breathing apparatus
5	Self-rescuer
6	Gas-Mask
7	Kata thermometer
8	Hygrometer
7	Kata thermometer
8	Hygrometer
9	Flame safety lamp
10	Anemometer
11	Velometer
12	Working Model of axial flow fans
13	Working Model of Centrifugal fans

REFERENCES

1. Elements of Mining Vol 2 D.J.DeshmukhDennet Publications
2. Mine Fires, Rescue, Recovery and Inundation By M.A.Ramulu
3. Mine Ventilation S.Ghatak
4. Mine environment and its control G.B.Mishra

LIST OF OPEN SOURCE SOFTWEARE/LEARNING WEBSITE

1.	https://www.youtube.com/watch?v=C8knKG05lYA
2.	http://www.tcf.com/industries-applications/applications/Mining-Ventilation
3.	https://en.wikipedia.org/wiki/Underground_mine_ventilation
4.	http://miningquiz.com/minegasqa.htm
5.	http://miningquiz.com/powerpoints/mine_gases.htm
6.	http://miningquiz.com/pdf/mine_gases.htm
7.	http://miningquiz.com/pdf/Mine_Gases/2008-123.pdf
8.	http://web.mst.edu/~tien/218/Gas-OH.pdf

Communication Skills and Life Skills

Course Title	**Communication Skills and Life Skills**	Course Code	**18 Common 310 P**
Semester	**III**	Course Group	**Foundation**
Teaching Scheme in Periods- L: T:P	**15:0:30**	Credits	**1.5**
Methodology	**Lecture + Practical**	Total Contact Hours	**45 Periods (3 Periods per Week)**
CIE	**60 Marks**	SEE	**40 Marks**

Rationale:

This course is designed to impart communication skills and life skills to the students of diploma which will help them a great deal in personal and professional fronts.

Prerequisites:

This course requires the basic knowledge of vocabulary, grammar, and four language learning skills, viz. Listening, Speaking, Reading and Writing.

Course Outcomes:

	At the end of the course the students will have the ability to:
Listening Skills	Identify the main or the central idea. Listen for specific details. Learn the pronunciation.
Communication Skills – I	Learn relevant vocabulary to make introductions. Learn to introduce oneself in formal and informal situations. Learn vocabulary and expressions useful for describing objects Describe objects
Communication Skills – II	Learn vocabulary to talk about the past Describe the incidents that happened in the past Learn the techniques of organising the matter / content for one-minute speech. Speak fluently and accurately using appropriate body language.

Life Skills – I	Think positively. Develop positive attitude. Overcome negative attitude. Know the importance of setting goals. Set goals using SMART features.
Life Skills – II	Know the reasons for a problem. Learn to overcome problems. Learn the various techniques to solve the problems. Learn to make proper decisions on time. Think 'out of the box'. Learn to be creative. Think innovatively. Think critically.
Life Skills – III	Know how to be a leader. Learn the qualities of a good leader. Learn the qualities of a good team. Learn the advantages and disadvantages of a team. Manage time effectively. Learn various time management techniques. Learn the importance of prioritisation.

CO-PO Matrix

	Course Outcome		**Linked PO**
CO 1	Listening for main idea and specific details	**R/U/A**	**1, 2, 3, 4, 5,7,8, 9,10**
CO 2	Introduce oneself and Describe Objects	**R/U/A**	**1,2,3,8,9,10**
CO 3	Talk about the past and speak fluently for one minute	**R/U/A**	**1,2,3,7,8.9,10**
CO 4	Develop positive attitude and set short term and long term goals	**R/U/A**	**1,2,3,7,8,9,10**
CO 5	Learn to solve a problem, make decisions and think innovatively	**R/U/A**	**1,2,3,7,8,9,10**
CO6	Learn to become a good team member and leader	**R/U/A**	**1,2,3,7,8,9,10**

Course Contents:

I. Listening Skills **Duration: 9**

1. Listening – I
    - Digital Camera
    - A Dialogue
    - Wild Animal / Human conflict
2. Listening – II
    - A Recipe
    - A Telephone conversation
    - An Interview

II. Communication Skills – I **Duration:6**

3. Introducing Oneself
4. Describing Objects

III. Communication Skills – II **Duration:6**

5. Talking About the Past
6. Just A Minute

IV. Life Skills – I **Duration:6**

7. Attitude
8. Goal Setting

V. Life Skills – II **Duration:9**

9. Problem Solving and Decision-Making Skills
10. Critical Thinking & Creativity

VI. Life Skills – III **Duration:9**

11. Leadership and Teamwork
12. Time Management

Suggested Student Activities:

- Listening Comprehension
- Seminars
- Paper Presentations
- Line ups for introducing oneself
- Describing persons / places / things
- Picture description
- Role Plays
- Dumb charades
- What is in the bag? (Identify the objects)
- Games using Online Dictionaries
- Sharing the information using emails, chats and groups
- Just A Minute
- Writing diary events
- Find a solution to the problem
- Making innovative things through recycling
- Creating advertisements

- Five-minute activities on Life Skills
- Watching videos on life skills and making presentations
- Case studies

Evaluation Pattern:

I. Continuous Internal Examination: 60 Marks

a. **Mid Sem- I** 20 marks
Syllabus:
i. Listening Skills
ii. Communication Skills - I

b. **Mid Sem – II** 20 Marks
Syllabus:
i. Communication Skills - II
ii. Life Skills - I

c. **Internal assessment**: 20 marks

i. Seminars: 10 marks
ii. Assignments: 5 marks
iii. Lab record submission: 5 marks

II. Semester End Examination : 40 Marks

a. Listening: 10 Marks
b. JAM or Role plays: 15 Marks
c. *Viva Voce* on any life skills topic : 15 Marks

References:

Flint, Chrisand Jamie Flockhart*Listening: A2 (Collins English for Life: Skills)*Collins. 2013

Brown, Stephen E. English in Everyday Life. McGraw-Hill Education.2008

Mohanraj, Jayashree. *Let Us Hear Them Speak: Developing Speaking-Listening Skills in English*.Sage. 2015

Susan Earle – Carlin. *Q Skills for Success: Listening and Speaking 5: Student Book with Online Practice*. Oxford University Press. 2013

Kumar, Sanjay and Pushpa Latha. *Communication Skills: A Work Book*.Oxford University Press. 2018

Carnegie, Dale.*The Leader in You*. Simon & Schuster: 1995

Carnegie, Dale.*The Art of Public Speaking*. Prabhat Prakashan. NewDelhi.2013

Kaye, Martin. *Goal Setting (Workbook Included): Goals & Motivation: Introduction To A Complete & Proven Step-By-Step Blueprint For Reaching Your Goals (Goal Setting Master Plan 1)*. Kindle Edition. MK Coaching.2016.

West, Steven. *Critical Thinking Skills: Practical Strategies for Better Decision making, Problem-Solving and Goal Setting.* Kindle Edition.2018

Tracy, Brain. *Goals*. Berret-Koehler PublishersInc. San Francisco. 2017

Tracy, Brain. *Master your Time Master your Life.* Penguin Random House Inc. New York. 2017

Sean Covey . *The 7 Habits of Highly Effective Teens.* Simon and Schuster,2011

E-Learning Resources:

http://www.bbc.co.uk/worldservice/learningenglish/youmeus/learnit/learnitv39.shtml

https://www.examenglish.com/leveltest/listening_level_test.htm

https://www.oxfordonlineenglish.com/listening?utm_referrer=https%3A%2F%2Fwww.google.co.in%2F

https://takeielts.britishcouncil.org/prepare-test/free-ielts-practice-tests/listening-practice-test-1

https://learnenglish.britishcouncil.org/en/listening

https://www.cambridgeenglish.org/learning-english/activities-for-learners/?skill=listening

https://www.businessenglishsite.com/business-english-listening.html

BOARD DIPLOMA EXAMINATION (C-18)

THIRD SEMESTER 18 COMMON-310P

COMMUNICATION SKILLS AND LIFE SKILLS

MID SEM - I

Time : 1 Hour **Total Marks: 20 Marks**

Part – A **10 marks**

1. Listening Comprehension: 5 X 2 = 10

(Teacher should give the questions before reading the passage given below)

Florence Nightingale was an English social reformer and a statistician, and the founder of modern nursing. She was born in Florence, Italy, on May 12, 1820. Part of a wealthy family, Nightingale defied the expectations of the time and pursued what she saw as her God-given calling of nursing during the Crimean War. She and a team of nurses improved the unsanitary conditions at a British base hospital, greatly reducing the death count. Her writings sparked worldwide health care reform, and in 1860 she established St. Thomas' Hospital and the Nightingale Training School for Nurses. A revered hero of her time, she died on August 13, 1910, in London. Nightingale came to prominence while serving as a manager and trainer of nurses during the Crimean War, in which she organized care for wounded soldiers. She gave nursing a favourable reputation and became an icon of Victorian culture, especially in the persona of "The Lady with the Lamp" making rounds of wounded soldiers at night.

Questions:

1. Who was Florence Nightingale?
2. When and where was she born?
3. What does the passage convey?
4. When did she pass away?
5. Where did she establish nursing school?

PART- B **10 Marks**

Instruction: Answer any one of the questions in 150 words.

2. How do you introduce yourself formally in an interview?
3. Describe your polytechnic.

BOARD DIPLOMA EXAMINATION (C-18)

THIRD SEMESTER 18 COMMON-310P

COMMUNICATION SKILLS AND LIFE SKILLS

MID SEM - II

Time : 1 Hour **Total Marks: 20 Marks**

Part – A **10 marks**

Instruction: Answer any one of the following questions in 150 words.

1. Describe how you have spent your summer vacation.

2. What are the features of good JAM presentation? What precautions do you before speaking for one minute on the given topic?

Part – B **10 marks**

Instruction: Answer any one of the following questions in 150 words.

3. What is positive attitude? Give examples of positive attitude from your life.

4. Mention your long term goal with SMART features. How do you achieve it?

BOARD DIPLOMA EXAMINATION (C-18)
THIRD SEMESTER 18 COMMON-310P
COMMUNICATION SKILLS AND LIFE SKILLS
SEMESTER END EXAM

Time : 3 Hours **Total Marks: 40 Marks**

Part – A **10 marks**

1. Listen to the following passage and answer the questions give below it**. 5 X 2 = 10**

(Teacher should give the questions before reading the passage)

Answer the following questions after teacher reads the following paragraph.

Prof. Jayashankar was born to Mahalaxmi and Laxmi Kantha Rao on 6th August 1934 in Akkampet village, Warangal District. He was a Doctorate in Economics. He worked as a Vice-Chancellor of Kakatiya University. He worked in many capacities. He was popularly known as "Pedda Sir." He inspired many a people to fight for the cause of Telangana Statehood.

At the age of twelve, Jayashankar refused to sing songs in praise of the Nizam and insisted on singing Vande Mataram instead. As an intermediate student, in 1952, he protested against State Reorganization Committee plan to merge with the Andhra Rashtra. He took an active part in the agitations of "Non – Mulki go back" and " Idli Sambar go back." He took an active part in Telangana separate statehood agitation in 1969 too. In 1999, Prof. Jayashankar started the Telangana Development Forum in the USA which helped to propagate the injustice, discrimination and exploitation meted out to Telangana region and people in the aspects of employment, funds and water resources. He relentlessly put his efforts to end the struggle of Telangana people. He passed away on June 21, 2011. He was 76 years old at the time of his death.

Questions:

1. Where was Prof. Jayashankar born?
2. Why didn't he sing songs in praise of the Nizam?
3. Why did Jayashankar start the Telangana Development Forum in USA?
4. What are the two agitations in which he took an active part?
5. What is the meaning of 'relentlessly'?

Part – B **15 marks**

2. JAM / Role Plays

Part – C **15 marks**

3. Viva Voce on Life Skills topics