CURRICULUM – 2018

(C-18)

DIPLOMA IN LEATHER TECHNOLOGY



STATE BOARD OF TECHNICAL EDUCATION & TRAINING

TELANGANA, HYDERABAD

III SEMESTER

III SEMESTER

`	Course Code	Course Name	Teaching Scheme					Examination Scheme						
			Instruction periods per week			Total Periods per semester	Credits	Continuous internal evaluation			Semester end examination			
			L	T	P			Mid Sem1	Mid Sem 2	Internal Evaluation	Max marks Min marks		Total Marks	Min marks for passing including internal
1	18LT-301C	Applied engineering Mathematics	2.4	1.6	0	60	3	20	20	20	40	14	100	35
2	18LT-302C	Applied Chemistry	2.4	1.6	0	60	3	20	20	20	40	14	100	35
3	18LT-303C	Chemistry of PreTannages & Microbiology	2.4	1.6	0	60	3	20	20	20	40	14	100	35
4	18LT-304C	Process of Heavy Industrial &Sports Goods leathers	2.4	1.6	0	60	3	20	20	20	40	14	100	35
5	18LT-305C	Leather Goods Fabrication Technology	2.4	1.6	0	60	3	20	20	20	40	14	100	35
6	18LT-306P	Vegetable Tanned leathers Lab	1	0	2	45	1.5	20	20	20	40	20	100	50
7	18LT-307P	Sole Leathers Lab	1	0	2	45	1.5	20	20	20	40	20	100	50
8	18LT-308P	Leather Goods Fabrication Technology Lab	1	0	2	45	1.5	20	20	20	40	20	100	50
9	18LT-309P	Web Design Technology Lab Practice	1	0	2	45	1.5	20	20	20	40	20	100	50
10	18LT-310P	Communication Skills & Life Skills Lab	1	0	2	45	1.5	20	20	20	40	20	100	50
11		**Academic activities**	0	0	7	105	2.5	0	0	**Rubrics**			--	-
		TOTAL	17	8	17	630	**25**	200	200	200	400	150	1000	450

APPLIED ENGINEERING MATHEMATICS

Course Title **APPLIED ENGINEERING MATHEMATICS** Semester : **Semester III** Teaching Scheme in Hrs(L:T:P) : 36**:24:0** Type of course : **Lecture + Assignments** CIE : **60 Marks**	Course Code : 18LT-**301F** Course Group : Foundation Credits : **3** Total Contact Hours : 60 **periods** SEE : **40 Marks**

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 and provide 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

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 1st 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.

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TELANGANA

BOARD DIPLOMA EXAMINATIONS

MID SEM –I, MODEL PAPER, III SEMESTER

APPLIED ENGINEERING MATHEMATICS 18LT-301F

TIME: 1: 00 Hours 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 : $\int x \, sinx dx$

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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STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TELANGANA

BOARD DIPLOMA EXAMINATIONS

MID SEM –II, MODEL PAPER, III SEMESTER

APPLIED ENGINEERING MATHEMATICS 18LT-301F

TIME: 1: 00 Hours 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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BOARD DIPLOMA EXAMINATION,(C-18)

MODEL PAPER

III SEMESTER EXAMINATION

APPLIED ENGINEERING MATHEMATICS-18LT-301F

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

Or

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

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18LT-302C, APPLIED CHEMISTRY

Course Title : **APPLIED CHEMISTRY**	Course Code : **18LT-302C**
Semester : **Semester III**	Course Group : **Core**
Teaching Scheme in Hrs(L:T:P) : **49:11:0**	Credits : **3**
Type of course : **Lecture + Assignments**	Total Contact Hours : **60 periods**
CIE : **60 Marks**	SEE : **40 Marks**

Rationale:

The objective of this course is to provide students with the necessary knowledge to understand and appreciate the role of basic concepts of Chemistry and its application in different areas of industries.

Prerequisite: Basic knowledge of chemistry and biology in secondary education .

Course Outcome:

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

CO1 :	Apply the principles of chemical equilibrium and ionic equilibrium in industries.
CO2 :	Explain the colligative properties of dilute solutions and discuss the methods of preparation and properties of colloids.
CO3 :	Outline the methods of manufacture and properties of chemicals used in leather manufacture.
CO4 :	Explain the classification, structure of amino acids and proteins.
CO5 :	Classify the organic compounds based on IUPAC nomenclature and outline the important functional group compounds.
CO6 :	Choose the reagents and reactions for specific purpose in the laboratories and industries .

COURSE CONTENT

1.0. Chemical Equilibrium and Ionic Equilibrium Duration: 12 periods (L:8 –T:2)

Chemical equilibrium -Reversible and irreversible reactions- Equilibrium state - Types of equilibria. Exothermic and endothermic reactions - characteristics of chemical equilibrium - Law of mass action – Application to a reversible reaction - Relation between K_p and K_c - Le-Chatelier's principle- application to the synthesis of NH_3 and SO_3 – Types of catalysis.

Ionic equilibrium – Electrolyte, strong electrolyte and weak electrolyte - Ostwald's dilution law - Degree of dissociation - Factors effecting the degree of dissociation.-Common ion effect - problems on pH of weak acids and bases - Types of buffer solutions - Action of acidic buffer and base buffer solutions - Henderson equation - Salt hydrolysis – Classification of salts –Acid base indicators-Ostwald theory of indicators.

2.0. Dilute solutions and Colloids Duration: 10 periods (L:8 –T:2)

Dilute solutions: Solubility, Dilute solution, mole and mole fraction- Colligative properties -Vapour pressure - Effect of solute on vapour pressure of solution - Relative lowering of vapour pressure- Raoult's law –Elevation of boiling point - Depression of freezing point - Distinguish between diffusion and osmosis - Effect of external pressure on the phenomenon of osmosis - Van't Hoff theory of dilute solutions- Derivation of $\pi V = nST$ - isotonic solutions - Problems related to colligative properties of solution

Colloids: True solution, colloid and suspension – Classification of the colloidal systems-

Lyophilic and lyophobic colloids - Preparation of colloids - dispersion and condensation methods. Purification of colloids -Dialysis method and ultra purification - Optical and electrical properties of colloids - Applications of colloid chemistry

3.0. Manufacture of Leather Chemicals Duration: 12 periods (L:8 –T:2)

Chemicals in leather processing- Manufacture and properties of lime- sodium sulphide-Manufacture of ammonia- Chemistry of ammonium salts- Manufacture and properties of sodium carbonate , sodium bi carbonate, formaldehyde, formic acid and acetic acid.

4.0. Protein chemistry Duration: 12 periods (L:7 –T:1)

Protein chemistry-Classification of amino acids-Zwitter ion-Formal titration-Polypeptides-Constitution and composition of proteins-Classification of proteins-Structure of proteins-Tests for identification of proteins-Properties of proteins.

5.0. Basic organic chemistry **Duration: 15 periods (L:10 –T:2)**

Basic Organic chemistry-Classification of organic compounds- Characteristic reactions of hydrocarbons carrying single, double, triple bond and aromatic rings-Characteristic reactions of alcohols, aldehydes, ketones, carboxylic acids, amines-Chemistry of typical compounds ethylene, acetylene, benzene, ethyl alcohol, phenol, acetaldehyde, acetone, acetic acid, aniline

6.0. Reactions and reagent in organic chemistry Duration: 10 periods (L:8 –T:2)

Reagents for oxidation-Reagents for reduction-Reagents for introduction of groups - Reagents for replacement of groups-Study of reactions-Hydrolysis, bleaching, neutralisation, diazotisation, coupling, saponification, fermentation, dehydration, decarboxylation, deamination, sulphonation.

Specific Learning Outcomes :

Upon completion of the course, the student will have ability to

1.0 Chemical Equilibrium and ionic equilibrium

1.1 Classify chemical reactions into reversible and irreversible reactions.

1.2 Define equilibrium state.
State the types of equilibrium. Physical equilibrium, chemical equilibrium, Homogeneous equilibrium and heterogeneous equilibrium.

1.3 Define exothermic and endothermic reactions

1.4 List out the characteristics of chemical equilibrium.

1.5 State law of mass action. Apply law of mass action to a reversible reaction.

1.6 Derive relation between K_p and K_c.

1.7 State Le-Chatelier's principle.
Apply Le-Chatelier's principle (i) manufacture of NH_3 by Haber's process (ii) Synthesis of SO_3 in contact process.

1.8 Define the term catalyst. State the types of catalysis with examples-Homogeneous, Heterogeneous, negative catalysis, Auto-catalysis and Enzyme catalysis.

1.9 Concept of Ionic equilibrium.

1.10 Define electrolyte, strong electrolyte and weak electrolyte.

1.11 State Ostwald's dilution law.

1.12 Define degree of dissociation. State the factors effecting the degree of dissociation.

1.13 Illustrate common ion effect.

1.14 Types of buffer solutions.Explain the action of acidic buffer and base buffer solutions.

1.15 State Henderson equation

1.16 Define salt hydrolysis. Classify salts based on hydrolytic behaviour.

1.17 Define indicator. List the acid base indicators with their pH ranges.
Explain Ostwald theory of indicators.

2.0 Dilute solutions and Colloids

2.1 Define the terms solubility and dilute solution.

2.2 Understand the concept of mole and mole fraction

2.3 List out the colligative properties of dilute solutions.

2.4 Define the terms vapour pressure. Explain the effect of solute on vapour pressure of solution. Explain relative lowering of vapour pressure. State and derive Raoult's law.

2.5 Define boiling point of a liquid. Explain the effect of increasing temperature on vapour pressure. Derive a relation for elevation of boiling point and molecular weight of solute.Define molal point elevation constant.

2.6 Define freezing point of a liquid. Explain the effect of decreasing temperature on vapour pressure. Derive a relation for depression of freezing point and molecular weight of solute. Define molal depression constant.

2.7 Distinguish between diffusion and osmosis. Explain the effect of external pressure on the phenomenon of osmosis. Define osmotic pressure. State
Van't Hoff theory of dilute solutions. Derive $\pi V = nST$. Define isotonic solutions.

2.8 Solve problems related to colligative properties of solution.

2.9 Define true solution, colloid and suspension.

2.10 Classify the colloidal systems based on the state of dispersion medium and dispersed phase. Define lyophilic and lyophobic colloids.

2.11 Describe the preparation of colloids by dispersion and condensation methods.

2.12 Describe the dialysis method.

2.13 State the principle of ultra-filtration.

2.14 Explain the optical properties of colloids (i) Tyndall effect and (iii) Brownian movement.

2.15 Explain the electrical properties of colloids (i) Electrophoresis (ii) Electro osmosis (iii) coagulation and (iv) protection

2.16 Explain the applications of colloid chemistry

3.0 Manufacture of Leather Chemicals

3.1 Describe the manufacture and properties of chemicals used in leather processing

3.2 Describe the manufacturing process of lime from lime stone

3.3 State the difference between quick lime and slaked lime

3.4 Explain the principle of manufacture of sodium sulphide from salt

3.5 Explain the reaction of sodium sulphide with water

3.6 State the properties of sodium sulphide

3.7 Describe Haber's process for manufacture of Ammonia

3.8 State the properties of ammonium hydroxide

3.9 Explain the formation of ammonium salts from ammonia

3.10 State the properties of ammonium salts such as hydrolysis, reaction with formaldehyde

3.11 Describe Solvay's process for the manufacture of sodium carbonate and sodium bicarbonate

3.12 Distinguish the properties of sodium carbonate and sodium bi carbonate

3.13 Describe the manufacture of Formaldehyde

3.14 List the properties of Formaldehyde

3.15 State the principle of preparing Formic acid

3.16 Explain the properties of Formic acid

3.17 Describe the manufacture of Acetic acid

3.18 State the properties of acetic acid

4.0 Protein Chemistry

4.1 Understand the composition, classification, structure and properties of proteins.

4.2 Name the functional groups of amino acid.

4.3 Classify amino acids based on position of $-NH_2$ group with respect to –COOH group.

4.4 State the importance of α-amino acids. Classify α-amino acids with suitable examples.

4.5 Define Essential amino acids with suitable examples. State the importance of Essential amino acids.

4.6 Explain the properties of amino acids

4.7 Define Zwitter ion

4.8 State the difficulty in direct titration of amino acids with acid or a base

4.9 Describe Formal titration in the estimation of amino acids

4.10 Explain the built up of polypeptide molecule in the steps of dipeptide, tripeptide etc.

4.11 Define N-terminal acid and C-terminal acids

4.12 List the elements of a protein molecule

4.13 Name the sources of proteins

4.14 Differentiate a protein from a polypeptide

4.15 Classify the proteins based on chemical behaviour and by structure

4.16 Illustrate simple, conjugate, and derived proteins

4.17 Distinguish globular and fibrous proteins

4.18 Describe the structure of proteins

4.19 Explain primary and secondary structure

4.20 Explain the principles of tertiary and quaternary structures of proteins

4.21 Describe the tests for identification of proteins

4.22 Illustrate various colour reactions of proteins for their identification

4.23 Explain the properties of proteins such as denaturation, reversible precipitation, molecular weight, colloidal nature, Isoelectric point, hydrolysis.

5.0 Basic Organic Chemistry

5.1 Unique characteristics of carbon

5.2 Classification of organic compounds.

5.3 IUPAC nomenclature of organic compounds.

5.4 Explain a preparation method and following chemical properties of Ethane (a) oxidation (b) halogenation (c) combustion.

5.5 Explain a preparation method and following chemical properties Ethylene and Acetylene: (a) Addition of HX (b) oxidation (c) hydrogenation (d) polymerisation.

5.6 Explain a preparation method and following chemical properties Ethyl alcohol (a) reaction with sodium (b) Lucas test (c) de-hydration (d) replacement of - OH by – Cl.

5.7 Explain a preparation method and following chemical properties Acetaldehyde (a) reaction with ammonia derivatives (b) addition of sodium bi-sulphite (c) oxidation (d) reduction.

5.8 Explain a preparation method and following chemical properties Acetone (a) reaction with ammonia derivatives (b) addition of sodium bi-sulphite (c) oxidation (d) reduction.

5.9 Compare the characteristic reactions of aldehydes and ketones.

5.10 Explain a preparation method and following chemical properties of Acetic acid (a) esterification (b) formation of acid anhydrides (c) de-carboxylation.

5.11 Explain a preparation method and following chemical properties of Ethyl amine (a) reaction with acids (b) reaction with alkyl halides

5.12 State Huckel's rule.

5.13 Explain a preparation method and following chemical properties of Benzene (a) oxidation (b) nitration (c) sulphonation (d) halogenation.

5.14 Explain a preparation method and following chemical properties of Aniline. (c) reaction with aldehydes (d) reaction with nitrous acid (diazo-coupling).

6.0 Reactions and Reagents in Organic Chemistry

6.1 Define oxidation.

6.2 Define oxidising agent.

6.3 List various oxidising agents.

6.4 Illustrate the specific use of reagent in organic chemistry.

6.5 Define reduction.

6.6 Define reducing agent.

6.7 List various reducing agents.

6.8 Give examples for reagents and reactions for introduction of groups such as –OH, -Cl, -NO_2, - SO_3H, - R, -CHO, -COOH, -NH_2.

6.9 Give examples for reagents and reactions for replacement of one functional group by another functional group such as –OH by –Cl, -Cl by OH etc.

6.10 Name the reagents, reactants, products of reactions, - bleaching, neutralisation, diazotization, coupling, saponification, fermentation, dehydration, decarboxylation, deamination, sulphonation.

Reference Books :

1. J. C. Kuriacose and J. Rajaram: Chemistry in Engineering and Technology Volume 1 & 2. Tata Mc. Graw Hill Co.
2. Jain and Jain – Engineering Chemistry, Ghanpat Rai and Sons.
3. V. Raghavan, Materials science and engineering, for a first course 2nd edn. Prentice Hall India.
4. B. R. Puri and L. R. Sharma, Principles of Physical Chemistry, S. Chand Co.
5. Chemistry tech. I-IV, Chemical Engineering Education Development Centre, IIT, Madras.
6. Fergusson and Fergusson , Organic Chemistry
7. Intermediate Chemistry I and II – Telugu Academy TS

Suggested E - learning links:

https://iupac.org/

https://www.youtube.com

https://www.khanacademy.org/

http://www.iltaonleather.org/jilta.html

https://www.clri.org/http://alcajournal.com/

www.nptel.ac.in

http://swayam.com

CO PO Mapping Matrix

CO	Course outcome	CL	Linked PO	Teaching periods
CO1	Apply the principles of chemical equilibrium and ionic equilibrium in industries.	R/U/A	1,2,3,10	**10**
CO2	Explain the colligative properties of dilute solutions and discuss methods of preparation and properties of colloids.	R/U	1,2,3,6	**10**
CO3	Outline the methods of manufacture and properties of chemicals used in leather manufacture.	R/U/A	1,2,3,10	**10**
CO4	Explain the Classification, structure of amino acids and proteins.	R/U	1,2,5	**08**
CO5	Classify the organic compounds based on IUPAC nomenclature and outline important functional group compounds.	R/U/A	1,2,9	**12**
CO6	Choose the reagents and reactions for specific purpose in the laboratories and industries .	R/U/A	1,2,3	**10**

Model Paper for Mid Sem-I

BOARD DIPLOMA EXAMINATION, (C-18)

DLT-THIRD SEMESTER, 18-LT-302C

APPLIED CHEMISTRY

Time: 1 hr. Total Marks: 20 M

Important Note: Wherever any question has choice, marks will be allotted only to first attempted question. **No marks will be allotted for extra questions answered**

PART-A (4x1 = 4M)

Note: *Answer **ALL** the questions. Each question carries **1** mark. The length of the answer shall not exceed 1/4 of page*

1. Define exothermic reaction.
2. List out any two factors effecting the chemical equilibrium.
3. What are lyophilic colloids?
4. Define vapour pressure.

PART-B (2 x 3 = 6M)

Note: *Answer the following questions. Each question carries **3** marks. The length of the answer shall not exceed 1 page*

5. a) Write the characteristics of chemical equilibrium.

   OR

   b) Write a note on enzyme catalysis.

6. a) Classify buffer solutions with suitable examples.

   OR

   b) State Raoult's law. Derive its equation.

PART-C (2x5 = 10M)

Note: *Answer the following questions. Each question carries **5** marks. The length of the answer shall not exceed 2 pages*

7. a) Describe Solvay process for the manufacture of sodium carbonate.

   OR

   b) Explain the following terms related to colloids. (i) Tyndall effect (ii) Electrophoresis.

8. a) Derive an equation for the molecular weight of a solute by elevation of boiling point.

   OR

   b) Calculate the molecular weight of a solute if 12.16 grams of it in 100 ml of water showed an osmotic pressure of 6.92 atmospheres at 15^0C.

Model Paper for Mid Sem-II

BOARD DIPLOMA EXAMINATION, (C-18)

DLT-THIRD SEMESTER, 18-LT-302C

APPLIED CHEMISTRY

Time: 1 hr. Total Marks: 20 M

Important Note: Wherever any question has choice, marks will be allotted only to first attempted question. **No marks will be allotted for extra questions answered**

PART-A (4x1 = 4M)

Note: *Answer **ALL** the questions. Each question carries **1** mark. The length of the answer shall not exceed 1/4 of page*

1. Write the formula of quick lime.
2. List out any two properties of sodium sulphide.
3. What are N-terminal amino acids?
4. What is Zwitter ion?

PART-B (2 x 3 = 6M)

Note: *Answer the following questions. Each question carries **3** marks. The length of the answer shall not exceed 1 page*

5. a) Distinguish the properties of sodium carbonate and sodium bi carbonate

   OR

   b) Write any three properties of ammonium salts.

6. a) Write any three properties of proteins.

   OR

   b) Describe formal titration to determine amino acids.

PART-C (2x5 = 10M)

Note: *Answer the following questions. Each question carries **5** marks. The length of the answer shall not exceed 2 pages*

7. a) Describe the manufacture of acetic acid

   OR

   b) Describe the manufacture of formic acid.

8. b) Discuss the classification of proteins.

   OR

   b) Explain the built up of polypeptide molecule

Model Paper for SEE_BOARD DIPLOMA EXAMINATION, (C-18)

BOARD DIPLOMA EXAMINATION, (C-18)

DLT-THIRD SEMESTER, 18-LT-302C

APPLIED CHEMISTRY

Time :**2** Hrs Total Marks : 40

Important Note: Wherever any question has choice, marks will be allotted only to first attempted question. **No marks will be allotted for extra questions answered**

PART – A (8x1 = 8M)

Note: *Answer **ALL** the questions. Each question carries **1** mark.*
The length of the answer shall not exceed 1/4 of page

1. What is auto catalysis?

2. Write the difference between quick lime and slaked lime

3. Write the IUPAC names of the compound CH_3-CH_2-CHO

4. Define mole.

5. State Huckel's rule.

6. Write the structure of aniline

7. Define oxidation

8. List out any two reducing agents.

PART- B (4 x 3 = 12M)

Note: *Answer the following questions. Each question carries **3** marks.*
The length of the answer shall not exceed 1 page

9. (a) Explain the action of acidic buffer solution.

OR

(b) Compare any two characteristic reactions of aldehydes and ketones.

10. (a) List out any three essential amino acids

OR

(b) Give examples of reagents and reactions for introduction of groups –Cl,

11. (a) Write any two chemical properties of ethane with equations

OR

(b) Write the chemical equation for nitration of benzene.

12. (a) What are oxidizing agents? List out any two.

OR

(b) What are reducing agents ? List out any two.

PART - C (4x5 =20M)

Note: *Answer the following questions. Each question carries* ***5*** *marks*
The length of the answer shall not exceed 2 pages

13. (a) Write Haber's process for the synthesis of ammonia.

OR

(b) Write the properties of ethyl alcohol

14. (a) Explain the structure of polypeptide chain.

OR

(b) Illustrate the specific use of reagents in organic chemistry.

15. (a) Write the preparation and two properties of aniline.

OR

(b) Formulate the following reactions:

a) Ethyl alcohol reacts with acetic acid
b) Methyl amine reacts with methyl chloride

16.(a) Explain the following with one example each; i) Hydrolysis ii) Nitration

OR

(b) Explain saponification method with equations

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18LT-303C, Chemistry of Pre Tannages and Microbiology

Course Title : **Chemistry of Pre Tannages and Microbiology** Semester :**Semester III** Teaching Scheme in Hrs(L:T:P) : **30:15:0** Type of course :**Lecture + Assignments** CIE : **60 Marks**	Course Code :18LT-**303C** Course Group : Core Credits :**3** Total Contact Hours :60**periods** SEE :**40 Marks**

Rationale:

The objective of this course is to provide students with the necessary knowledge to understand and appreciate the rule of leather chemistry and microbiology and its application in different areas of industries.

Prerequisite: Basic knowledge of chemistry and biology in secondary education .

Course Outcome: On successful completion of the course, the students will have ability to attain below Course Outcomes (CO):

CO1: Explain the structure of skin and function of tissues

CO2: Compare the properties of collagen and other skin proteins

CO3: Apply various microscopic and histological techniques

CO4: Assess the structural changes and defects in Leather processing using microscope

CO5: Explain the methods in curing and pre-tanning Operations.

CO6: Appraise the role of vegetable tannins in leather process.

COURSE CONTENT

TOPIC –1 Anatomy of Skin

Cells-tissues-Epidermis-Epidermal appendages-Grain Layer, Corium Layer and Adipose Layer- Variation of thickness, texture among hides and skins

Basic concepts of a cell and its functions - Tissues of animal skin - Study of different layers of skin - Anatomical structures of Buffalo, Cow, Goat, Hair sheep and Wool sheep skins - Grain surface pattern of animal skins –

Topic-2 Introduction to chemistry of skin protein

Amino acids-types-zwitter ion-Isoelectric point-Formation of polypeptide- Proteins-Difference from polypeptides-elemental composition-amino acids and polypeptide chains-formation of primary, secondary and tertiary structures of proteins-Chemistry and Structure of Collagen, Elastin, Keratin, Reticulin- Isoelectric point, swelling and shrinkage behavior of proteins-Interfibrillary cementing substances-their properties and significance

Topic –3 Introduction to Microscopy& Histology

Introduction to microscopy-Size of the objects and need of optical instruments- Principles of image formation-Principle, utility and limitations of simple microscope- Principle, utility and limitations of compound microscope-Factors affecting quality of image-Types of microscopy-principle, applications and limitations of -Bright field and dark field microscopy, Phase contrast microscopy, Fluorescent microscopy and Electron microscopy

Techniques of Histology

Histology-Definition-Study of living tissues-Histological techniques in the study of dead tissues-Photomicrography-applications

Topic - 4Microscopic view of Leather Processing

Structural changes in the skin during leather processing - Damages in beamhouse and finishing operations.

Topic -5 Chemistry of curing& Pre-tanning Operations:

Necessity of preservation- Factors favouring bacterial growth- Curing - materials used, methods followed-their principles-applicability and limitations-Mechanism of dehydration by salting as well as by drying – arsenication of hides and skins.

Definitions, objectives, materials used, methods followed and mechanism of soaking, liming, de-liming, bating, pickling, de-pickling and degreasing.

Topic – 6 Chemistry of Vegetable Tanning

Need of tanning – types of tanning, advantages and disadvantages of non-mineral tannages, over mineral tannage. Chemistry of Vegetable Tanning - Definition, origin, properties of vegetable tanning, structure, formation of – Classification – Non-tannins, method, mechanism of vegetable tanning – Chemical controls of vegetable tanning – Solid extracts preparation.

SPECIFIC LEARNING OUTCOMES:

On completion of the study of the course the student will be able to

1.0 Anatomy of Skin

1.1 Define cell and tissue.

1.2 Classify tissues of animal skins

1.3 Draw the diagram of animal skin and label the parts

1.4 Explain the structure of Epidermis

1.5 List the epidermal appendages and their functions

1.6 Explain the structure of Dermis-Grain and Corium Layers

1.7 Explain the Adipose Layer

1.8 Compare the anatomical structures of hides and skins

1.1.9 Understand the anatomy of various animal skins

1.1.10 Identify the cell as a basic unit of all organs

1.1.11 Draw the diagram of animal cell and label the organelles

1.1.12 List the functions of cell

1.1.13 Correlate the functions of cell with those of its organelles

1.1.14 State the functions of tissue

1.1.15 Classify the tissues of skin

1.1.16 Explain the functions of each tissue

1.1.17 State the functions of skin

1.1.18 Name the different layers of skin

1.1.19 Draw the cross section of the skin

1.1.20 Study the epidermis of the skin

1.1.21 List the epidermal appendages, Their location and function

1.1.22 Differentiate corium minor from corium major with regard to its thickness, fibres and compactness

1.1.23 Explain the organization of fibre bundles in corium major in respect of angle of weave, boldness, compactness, splitting

1.1.24 Name the tissues in adipose layer

1.1.25 Identify the anatomical features of a skin

1.1.26 Study the anatomical features of the skins of Buffalo and Cow

1.1.27 Study the anatomical features of the skins of animals Goat, Hair sheep and Wool sheep

1.1.28 Compare the anatomy of hides and skins

1.1.29 Define grain surface pattern

1.1.30 State the factors influencing grain surface pattern

1.1.31 Describe the grain surface pattern of animal skin

2.0 Introduction to Chemistry of Proteins :

2..1 State the relationship between leather chemistry and manufacturing of leather

2.2 Identify the elements and their composition in proteins.

2.2.6 State product obtained by acid and alkali hydrolysis of proteins.

2.2.7 Identification tests for proteins

2.2.8 Explain the behaviour of amino acids in acid and alkaline solutions

2.2.9 Explain the concept of Isoelectric point

2.2.10 Describe Four levels of structures of proteins-Primary, Secondary, Tertiary and Quaternary

2.2.11 Explain the structure of Collagen

2.2.12 State the physical properties of collagen

2.2.13 Explain the uptake of water by proteins and their swelling

2.2.14 Explain the shrinkage of collagen

2.2.15 State the reactive groups of collagen

2.2.16 Explain the features of Elastin

2.2.17 Compare the features of Collagen and Elastin

2.2.18 Explain the features of Keratin

2.2.19 Explain the features of Reticulin

2.2.20 Make a comparison of the skin proteins with regard to amino acid composition, location, iso electric point, and other properties

2.2.21 Study the other skin proteins like cementing substances

3.0 Introduction to Microscopy and Histology

3.1.1 Understand the principles, applications and limitations of various microscopic techniques

3.1.2 Know the size of objects and recognize the need of optical instruments

3.1.3 Classify the objects of different sizes

3.1.4 Understand the limitations of naked eye

3.1.5 State the need of optical instruments

3.1.6 Understand the principles of image formation

3.1.7 Recapitulate the terminology associated with lenses

3.1.8 Classify the types of images

3.1.9 Relate the position of the object to the formation of image

3.1.10 Understand the functioning of simple microscope

3.1.11 Draw the optical ray diagram of a simple microscope

3.1.12 Compute the magnification limit of a simple microscope

3.1.13 Give examples for utilization of simple microscope

3.1.14 Summarise the merits and demerits of simple microscope

3.1.15 Understand the functioning of a compound microscope

3.1.16 Draw the optical ray diagram of a compound microscope

3.1.17 Understand the image formation

3.1.18 Calculate the magnification power of a compound microscope

3.1.19 Identify the parts

3.1.20 State the function of each part

3.1.21 Compare the features with a simple microscope

3.1.22 Give examples for its utilisation

3.1.23 Interpret the factors affecting the quality of image

3.1.24 List the qualities of an image

3.1.25 Define numerical aperture, resolving power and magnification

3.1.26 Explain the relation between them

3.1.27 Relate the qualities of image to the above

3.1.28 Understand the different types of microscopy with regard to the principle

3.1.29 applications and limitations.

3.1.30 Bright field microscopy

3.1.31 Dark field microscopy

3.1.32 Compare bright field and dark field microscopy

3.1.33 Phase contrast microscopy

3.1.34 Electron microscopy

3.1.35 State the types of electron microscopy

3.1.36 Compare scanning electron microscopy and transmission electron microscopy

3.1.37 Compare light microscopy and electron microscopy

Techniques of Histology

3.2.1 Understand the histology of living tissues

3.2.2 Define histology

3.2.3 Give examples of living tissues

3.2.4 Name the techniques applicable to living tissues

3.2.5 Apply the histological techniques to dead tissues

3.2.6 Give examples of dead tissues

3.2.7 List the stages in processing of dead tissues

3.2.8 Define autolysis

3.2.9 State the methods of collecting samples

3.2.10 State the objectives of fixation

3.2.11 Name fixative agents

3.2.12 Evaluate the merits and demerits of various fixatives

3.2.13 Know the methods of clearing tissues

3.2.14 Define embedding

3.2.15 Describe paraffin embedding

3.2.16 Describe freezing embedding

3.2.17 Compare the two types of embedding

3.2.18 Illustrate the sectioning process

3.2.19 Understand the necessity of staining

3.2.20 Classify stains and staining structures

3.2.21 Describe the methods of staining

3.2.22 Prepare the tissue for making a permanent slide

3.2.23 List the requirements of good mounting medium

3.2.24 Give examples of mounting agents

3.2.25 Understand Photomicrography

3.2.26 State the constraints in preservation of micro slides

3.2.27 Combine the photography and microscopic techniques

3.2.28 State the applications of photomicrography

4.0 Microscopic View of Leather Processing

4.1 Apply microscopic techniques in correlating structural changes in skin to the process of leather

4.2 Write the sequence of unit operations in leather processing

4.3 Study the structural changes in curing

4.4 Apply the microscopic technique in assessing the condition of raw stock

4.5 Study the structural changes in soaking, liming, deliming, bating and tanning operations

4.6 Describe the damages in beamhouse and finishing operations

4.7 Defects in curing

4.1.39 Defects in soaking

4.1.40 Defects in liming

4.1.41 Defects in deliming, bating and degreasing

4.1.42 Defects in Tanning

4.1.43 Defects in neutralization, dyeing, fatliquoring and finishing

5.0 Chemistry of curing and pre tanning operations:

5.1 Mention the necessity of preservation

5.2 Identify the conditions that favour bacterial growth

5.3 State objectives of curing.

5.4 List methods used for curing-Physical and Chemical

5.5 Relate the method of curing in preventing the conditions of spoilage

5.6 Explain the principle, method, merits and demerits of the curing methods

5.7 Sun drying

5.1.7 Fumigation

5.1.8 Solvent dehydration

5.1.9 Cold storage

5.1.10 Radiation

5.1.11 Salting methods of preservation

5.1.12 Preservatives, Arsenication of hides and skins

5.1.13 Dry salting, wet salting, brining, pickling methods-their merits and demerits

5.1.14 Types of salts used-their advantages and disadvantages

5.1.15 Mechanism of curing

5.1.16 Bacteriostatic action of salt

5.1.17 Dehydration by osmosis

5.1.18 Formation of less charged molecules

Pre-Tanning Operations:

5.1 Soaking

5.2 State the objectives, materials used for soaking.

5.3 Explain wetting agent.

5.4 Classification of wetting agents.

5.5 Explain the mechanism of soaking

5.2.5 Explain the phenomenon of wetting-contact angle

5.2.6 Explain the action of wetting agent

5.2.7 Explain the rehydration of skins by capillary action

5.2.8 Explain the role of soaking aids in increasing water uptake.

5.2.9 State the factors influencing soaking

5.3.0 Liming:

5.3.1 Mention the objectives, materials used for liming.

5.3.2 State what are sharpening agents and give examples

5.3.3 State the relation between quick lime and slaked lime

5.3.4 Outline the methods of liming

5.3.5 Explain the action of lime on Keratin

5.3.6 Define immunization of keratin

5.3.7 Explain the role of sharpening agent in depilation

5.3.8 Explain the action of lime on collagen

5.3.9 Explain shift of isoelectric point and neutralization phenomena

5.3.10 Distinguish between lyotropic swelling and osmotic swelling

5.3.11Outline the eco-friendly unhairing methods –enzymatic and oxidative unhairing

5.4.0 De-liming:

5.4.1 State the necessity of de-liming

5.4.2 State the objectives of deliming

5.4.3 List out de-liming agents.

5.4.4 Explain the selection of de-liming agent.

5.4.5 Formulate the interaction of deliming agents with lime

5.5.0 Drenching:

5.5.1 State what is drenching.

5.5.2 Mention preparation of drench liquor by Wheat Bran

5.5.3 State what is working drench.

5.5.4 Differentiate between de-liming and drenching.

5.5.5 State drawbacks of drenching.

5.6.0 Bating:

5.6.1 State objectives of bating.

5.6.2 List materials used for bating.

5.6.3 Mention composition of bate.

5.6.4 Outline method of preparation of bats.

5.6.5 State interaction of bate with collagen.

5.6.6 Mention factors influencing bating.

5.7.0 Pickling:

5.7.1 State objectives of pickling.

5.7.2 List materials used for pickling.

5.7.3 Mention the preparation of pickling liquor.

5.7.4 State effect of acid salt ratio, temp. P^H on pickling.

5.7.5 State mechanism of pickling.

5.7.6 Mention masked pickling and its advantages.

5.7.7 Mention Alum pickling and its advantages

5.8.0 De-Pickling:

5.8.1 State objectives of de-pickling.

5.8.2 Mention chemicals used for de-pickling.

5.8.3 Reactions of various de-pickling agents.

5.9.0 Degreasing:

5.9.1 State objectives of degreasing

5.9.2 Define Rancidification

5.9.3 Explain methods like – Aqueous emulsification, pressure, degreasing and solvent degreasing.

6.0 Chemistry of Vegetable Tannins

6..1 State objectives of tanning.

6. 2 List types of various tannages.

6..3 State advantages and disadvantages of organic tannage over inorganic tannage.

6..4 State the occurrence of vegetable tannins.

6..5 Indicate tannin contents in vegetable tannins.

6..6 Mention physical and chemical properties.

6. 7 State classification of vegetable tannins.

6..8 Hydrolysable tannins and their structure.

6. 9 Condensed tannins and their structure

6. 10 Compare hydrolysable and condensed tannins

6. 11 Describe leaching of tan liquors and State properties of vegetable tan liquor.

6. 12Explain method of expression of concentration vegetable tan liquor and preparation of solid extracts.

6. 13 List the non-tannins in vegetable tannins.

6. 14 Mention the importance tannin – non-tannin ratio.

6. 15 State method of tanning.

6.1.16 Explain the mechanism of vegetable tannin with collagen.

6.1.17 Mention the factors P^H, temp. acid salt ratio on vegetable tanning.

Suggested Student Activities

1. Student visits Library to refer to Text books, reference books and manuals to find their specifications
2. Student inspects the available equipment in the Chemistry Lab to familiarize with them.
3. Quiz
4. Group discussion
5. Seminar
6. Surprise test

SUGGESTED BOOKS FOR REFERENCE:

1. Bianciewicz, Physical Chemistry of Leather Manufacture.
2. K.H.Gustavson, Chemistry of Tanning Processes.
3. Fred O Flaherty, Chemistry and Technology of Leather vol.1,2,3,4, Rober E. Krieger Publishing Co.
4 . S.S.Dutta, Introduction to the Principles of Leather Manufacture, ILTA, Calcutta.
5. Progress in leather science, BLMRA, London.
6. A.J.Salle, fundamental principles of bacteriology, MC.Graw Hill book company.
7. Histological characteristics of Indian Hides and Skins – CLRI publication.
8. J.C.Tancouse, Skin, hide and leather defects.
9. Veterinary, Parasitology, E.Gurr.

E - learning links:

https://iupac.org/

https://www.youtube.com

https://www.khanacademy.org/

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):

CO	Course outcome	CL	Linked PO	Teaching periods
CO1	Explain the structure of skin and function of tissues	R/U	1,2,3,10	**10**
CO2	Compare the properties of collagen and other skin proteins	R/U	1,2,3,6	**06**
CO3	Apply various microscopic and histological techniques	R/U/A	1,2,3,10	**10**
CO4	Assess the structural changes and defects in Leather processing using microscope	R/U/A	1,2,5,8,10	**10**
CO5	Explain the methods in curing and pre-tanning Operations.	R/U/A	1,2,3,8,10	**11**
CO6	Appraise the role of vegetable tannins in leather process.	R/U/A	1,2,3,510	**13**

Internal Evaluation		
Test	Units	Marks
Mid Sem 1	1 and 2	20
Mid Sem 2	3 and 4	20
Slip Test 1	1 and 2	5
Slip Test 2	3 and 4	5
Assignment	1	5
Seminars	1	5
	Total	60

QUESTION PAPER PATTERN FOR MID SEMESTER EXAMS

Sl.No	Description	Level	No of Questions	Marks for each question	Choice	Total Marks
01	Part-A	Remembering(R)	4	1	Nil	4 Marks
02	Part-B	Understanding(U)	4	3	2	6 Marks
03	Part-C	Application(A)	4	5	2	10 Marks
Total Marks						20 Marks

	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			

The length of answer for each question framed in respect of Part-A, B&C shall not exceed ¼ of a page,1 page and 2 pages respectively

QUESTION PAPER PATTERN FOR SEMESTER END EXAM

Sl.No	Description	Level	No of Questions	Marks for each question	Choice	Total Marks
01	Part-A	Remembering(R)	8	1	Nil	8 Marks
02	Part-B	Understanding(U)	8	3	4	12 Marks
03	Part-C	Application(A)	8	5	4	20 Marks
Total Marks						40 Marks

Unit No	Questions to be set for SEE				
	R			U	A
I	Q4	Q1		Q9A	Q13A
II					
III		Q2		Q10A	Q14A
IV					
V		Q3	Q5,Q6	Q9(b),Q11(a), Q11(b)	Q13(b),Q15(a), Q15(b)
VI			Q7,Q8	Q10(b),Q12(a), Q12(b)	Q14(b),Q16(a), Q16(b)
Total	8			8	8

Model Paper for Mid Sem-1

BOARD DIPLOMA EXAMINATION, (C-18)

III Semester, 18LT-303C

Chemistry of Pretannages and Microbiology

Time- 1 hour Total Marks: 20M

Part-A (4x1=4M)

Note: Answer All the questions. Each questions carries 1 mark

1. What are Epidermal appendages.
2. Name Two functions of tissues.
3. What are acidic amino acids give examples.
4. What is Iso electric point.

Part-B (2x3=6M)

Note: Answer the following questions. Each carries 3 marks

5. (a) Draw & label the diagram of Animal skin & label the parts.

(or)

(b) Illustrate the function of tissues.

6. (a) Explain Biuret test.

(or)

(b) Mention the changes in amino acid when placed in acid & alkali.

Part-C (2x5=10M)

Note: Answer the following questions. Each questions carries 5 marks.

7. (a) Write the function of cell.

(or)

(b) What are the factors influencing grain surface pattern.

8. (a) Explain the formation of Twitter ion.

(or)

(b) Write the features of Keratin.

Model Paper for Mid Sem-2

BOARD DIPLOMA EXAMINATION, (C-18)

III Semester, 18LT-303C

Chemistry of Pretannages and Microbiology

Time- 1 hour Total Marks: 20

Part-A (4x1=4M)

Note: Answer All the questions. Each questions carries 1 mark

1. Define Histology.
2. Define Autolysis.
3. What is Stains.
4. Give examples of living tissues.

Part-B (2x3=6M)

Note: Answer the following questions. Each carries 3 marks

5. (a) Draw the optical ray diagram of a simple microscope.

(or)

(b) Write the different Fixative agents.

6 . (a) Write the deffects in Soaking.

(or)

(b) Write the structure changes in tanning operation.

Part-C (2x5=10M)

Note: Answer the following questions. Each questions carries 5 marks.

7. (a) Write the working principle of microscope.

(or)

(b) Compare Bright field & Dark field microscopy.

8. (a) Write the damages in finishing operations.

(or)

(b) What are the microscopic techniques in assessing condition of raw stock.

Model Paper for End Exam

BOARD DIPLOMA EXAMINATION, (C-18)

III Semester, 18LT-303C

Chemistry of Pretannages and Microbiology

Time: 2 hrs Max. Marks: 40

PART-A **8x1=8M**

Instructions : 1. Answer all questions each question carries one marks.
2. Answer should be brief and straight to the point and shall not exceed four simple sentences.

1. What are epidermal appendages.
2. Define Autolysis.
3. What are the conditions that favour Bacterial growth.
4. Define Histology.
5. What is Degreasing .
6. What is Bating.
7. What is Tanin- non tanin ratio .
8. List the advantages of Organic tannins.

PART - B **4X3=12M**

Instructions : 1. Answer all questions each question carries Three marks.

9. (a) Write the functions of skin.
(or)
(b) Write the objectives of Pickling.
10. (a) Write the difference between Bright Field and Dark Field Microscopy.
(or)
(b) What are Vegetable Tannins.
11. (a) Explain the mechanism of Soaking.
(or)
(b) What are the difference of using sea Salt for curing Skin.
12. (a) Write the factors influencing Vegatable Tanning.
(or)
(b) Write the general properites of Vegatable Tannins.

PART -C **4X5=20M**

Instructions : 1. Answer all questions each question carries five marks.

13. (a) Write the functions of Epithelial Tissues and connective Tissue.
(or)
(b) What is soaking process and write the materials used for Soaking.
14.(a) Write the purpose of using Microscope.

(or)

(b) Write the working Principle of Microscope.

15.(a) What is Liming process and write the objectives of Liming process.

(or)

(b) What is Bacteriostatic action of salt .

16. (a) Write the Mechanism of Hydrolysable Tannins.

(or)

(b) What are Condensed Tannins.

PROCESS OF HEAVY INDUSTRIAL & SPORTS GOODS LEATHERS

Course Title	Process of Heavy,Industrial & Sports Goods Leathers	**Course Code**	18LT-304C
Semester	III	**Course Group**	Core
Teaching Scheme in Pds/Hrs(L:T:P)	30:15:0	**Credits**	3
Type of course	Lecture+Assignments	**Total Contact Hrs**	60Pds
CIE	60 Marks	**SEE**	40 Marks

Pre requisites: Basic Pre Tannage and Basic Post Tannages

Course Objectives: After studying this course, the student will be able to understand and appreciate the Processing of Heavy Industrial and sports goods leathers.

Course outcomes: On successful completion of the course, the student will have the ability to attain below Course outcomes (CO):

Course outcomes		Linked POs	Teaching Hours
CO1	List the various types of sole Leathers	P2,P6	8
CO2	Explain the use of different Footwear Leathers	P2,P3,P4,P8	12
CO3	To Explain the difference in process of Heavy Leathers Manufacture	P2,P8	06
CO4	understand and explain the hydraulic leathers	P2,P8	14
CO5	identify the different industries where leathers are used and how they are manufactured	P3,P8	12
CO6	Able to identify and manufacture sports goods leathers	P1,P2,P10	8
			60

COURSE CONTENTS:

Unit – I : Sole Leathers:

Manufacture of sole leathers by using different tanning materials and tanning techniques such as vegetable tanned sole leathers by slow and rapid tanning techniques by bag tanning, chrome soles and wax soles, water

Proofing of Leathers, the purpose of water proofing – Advantages, disadvantages of water proofing of sole leathers – Chemicals used and different methods adopted for water proofing of sole leathers.

Unit – II : Foot Wear Leathers:

Manufacturing of leathers such as kattai, banwar, welting, russet leathers, lace leathers, case hides and zuggrain leathers.

Unit – III : Industrial Leathers:

Manufacturing of different industrial leathers like harness leathers, saddlery leathers, belting leathers by vegetable tanning, chrome tanning. Leather for industrial gloves. Washer leather,

Unit – IV : Hydraulic Leathers:

oil seal and diaphragm leathers and vegetable tanned, chrome tanned hydraulic and mechanical leathers. Manufacturing of orthopaedic and parchment leathers.

Unit – V : Textile Leathers:

Manufacturing of pickling band leathers, pickers, check straps, carding leathers and condenser rubbing leather.

Unit – VI : Sports Goods Leathers:

Manufacturing of different leathers used for making sports goods like football, volleyball, cricket ball, hockey ball and wicket keeper gloves.

Specific learning outcomes:

Upon completion of the course the student shall be able to

Unit I: Sole Leathers:

1.1.0 Sole leathers.

1.1.1 Spell the Properties of Sole Leathers
1.1.2 Tell the Selection of raw material for the manufacture of sole leather.

1.1.3 Explain the Manufacture of sole leather by slow tanning method.
1.1.4 Explain the Manufacture of sole leather by rapid tanning method.
1.1.5 Compare the Difference between slow method and rapid method.
1.2.0 Explain the Manufacture of chrome sole leathers.
1.3.0 Explain the Manufacture of wax sole leathers.
1.3.1 Compare the Difference between vegetable tanned sole leather and chrome tanned sole leather.
1.4.0 Water Proofing of sole leather:

1.4.1 Explain the term water proofing of sole leather.
1.4.2 Mention the Objectives of water proofing of sole leather
1.4.3 List the Advantages and disadvantages of water proofing the sole leather.
1.4.4 List the Chemicals used in water proofing of sole leather.
1.4.5 Compare the Different methods used in water proofing of sole leather.

Unit II:Foot Wear Leather:

2.1.0 Kattai and Banwar Leathers.

2.1.1 List out the Uses of Kattai and Banwar Leathers
2.1.2 Mention the Selection of raw material for manufacture of banwar leather.
2.1.3 Explain the Process for manufacture of banwar leathers from EI stock.
2.1.4 Explain the Process for manufacture of banwar leather from wet salted stock.
2.2.0 Welting and russet leather.

2.2.1 list out the Uses of welting and russet leathers.

2.2.1 Outline the Process for manufacture of welting and russet leathers.
2.3.0 Lace Leathers:

2.3.1 List out the Uses and Properties required for Lace Leather.
2.3.2 Mention the Selection of raw material for manufacture of lace leather.
2.3.3 Explain the Process for manufacture of lace leather.
2.4.0 Zug grain leathers.
2.4.1 List out the Uses of zug grain leathers.
2.4.2 Summarize the Properties of zug grain leathers.
2.4.3 Mention the Selection of raw material for manufacture of zug grain leather.
2.4.4 Explain the Manufacture of zug grain leather.
2.4.5 List Special method adopted in finishing the zug grain leathers.
2.5.0 Case Hides

2.5.1 List out Uses of case hide.
2.5.2 List out the Properties required for case hides.
2.5.3 Mention the Selection of raw material for manufacture of case hides.
2.5.4 Explain the Manufacture of case hides.

Unit III: Industrial Leathers:

3.1.0 Harness leathers.

3.1.1 List out the Uses of harness leathers.
3.1.2 Tell the Properties required for hardness leathers.
3.1.3 Mention the Selection of raw materials for manufacture of harness leathers.
3.1.4 Explain the Manufacturing of harness leather.
3.2.0 Saddlery leathers.

3.2.1 List out the Uses of saddlery leather.
3.2.2 Spell the Properties required for the saddlery leather.
3.2.3 List out the Selection of raw materials for manufacture of saddlery leather.
3.2.4 Explain the Process for manufacture of saddler leather.
3.3.0 Belting leather.

3.3.1 List out the Uses of belting leather.
3.3.2 Spell the Properties of belting leather.
3.3.3 Compare the Differences between vegetable tanned and chrome tanned belting leather.
3.3.4 Identify the Selection of raw materials for manufacture of belting leathers.
3.3.5 Explain the Process for manufacture of vegetable tanned belting leathers.
3.3.6 Explain the Process for manufacture of chrome tanned belting leather.

3.4.0 Industrial glove leather.
3.4.1 Identify the utility of leather gloves in various industries.
3.4.2 List out the Properties required for industrial glove leather.
3.4.3 Identify the Selection of raw materials for manufacture of industrial glove leather at wet blue stage.
3.4.4 Explain the Manufacture of industrial glove leather from wet blue splits.
3.4.5 Explain the Manufacture of industrial glove leather with grain.

3.5.0 Cup and pump washer leather.
3.5.1 Identify the places where cup and pump washers are used.
3.5.2 Tell the Properties required for the leather used for manufacturing cup washers and pump washers.
3.5.3 Select the raw materials required for making cup and pump washer leather.
3.5.4 Explain the Process for manufacturing cup and pump washer leathers.

Unit IV: Hydraulic Leathers:

3.6.0 Oil seal leather.
3.6.1 List the Uses of oil seal leather
3.6.2 List the Properties required for oil seal leathers.
3.6.3 Identify the Selection of raw material for making oil seal leather.
3.6.4 Explain Process for manufacture of oil seal leather from vegetable tanned leather.

3.7.0 Gas meter or diaphragm leather.

3.7.1 List the Uses of diaphragm leather.
3.7.2 List out the Properties required for diaphragm leather.
3.7.3 Mention the Selection of EI leathers for making diaphragm leathers.
3.7.4 Explain the Process for manufacture of diaphragm leathers.

3.8.0 Hydraulic and mechanical leather.
3.8.1 List the Uses of hydraulic and mechanical leathers.
3.8.2 List out the Properties required for hydraulic and mechanical leather.
3.8.3 Identify the Selection of raw materials for manufacture of hydraulic leather & mechanical leathers
3.8.4 Explain the Process for manufacture of vegetable tanned hydraulic and mechanical leather.
3.8.5 Explain the Process for manufacture of chrome tanned hydraulic and mechanical leathers.

3.9.0 Orthopaedic leathers.

3.9.1 List the Uses of orthopaedic leathers.
3.9.2 List the Properties required for orthopaedic leathers.
3.9.3 Identify Selection of raw materials required for making orthopaedic leathers.
3.9.4 Explain the Process for making orthopaedic leathers.

3.10.0 Parchment leathers.

3.10.1 List the Uses of parchment leathers.
3.10.2 Mention the Properties of parchment leather.
3.10.3 List the Selection of raw material for making parchment leather.
3.10.4 Explain the Process for making parchment leather.

Unit V:Textile Leathers

4.1.0 Picking band leathers.

4.1.1 List the Uses of picking band leathers.
4.1.2 List the Properties required for picking band leather.
4.1.3 Explain the Methods of selecting raw material for making picking band leather.
4.1.4 Explain the Manufacturing of picking band leathers by sulphur – oil – vegetable tannin method.
4.1.5 Explain the Manufacture of picking band leathers by chrome tanning methods.

4.2.0 Pickers.

4.2.1 List the Uses of pickers.
4.2.2 List the Properties of pickers.
4.2.3 List the Selection of raw material.

4.2.4 Explain the Manufacture of raw hide pickers.
4.2.5 Explain the Manufacture of chrome tanned pickers.

4.3.0 Condenser leathers.
4.3.1 List the Uses of condenser leathers.
4.3.2 List the Properties required for condenser leathers.
4.3.3 Identify the Selection of raw material for making condenser leathers.
4.3.4 Explain the Process for manufacture of condenser leather.
4.3.5 Explain the Reasons for using butts for most of the industrial leather.

Unit VI: Sports Goods Leathers:

5.1.0 Foot ball leather.

5.1.1 List the Properties required for football leather
5.1.2 Identify the Selection of raw material required for manufacture of football leather
5.1.3 Explain the Process for manufacture of football.
5.2.0 Volley ball leather.

5.2.1 List the Properties of volley ball leathers.
5.2.2 Identify the Selection of raw material for making volley ball leather.
5.2.3 Explain the Process for making volley ball leather.
5.3.0 Hockey ball leather.

5.3.1 List the Properties required for hockey ball leather.
5.3.2 Mention the Selection of raw material for making hockey ball leathers.
5.3.3 Explain the Process for making hockey ball leather.
5.4 Cricket ball leather.
5.4.1 List the Properties required for cricket ball leather.
5.4.2 Identify the raw material for making cricket ball leather.
5.4.3 Explain the Process for making cricket ball leather.
5.5 Glove Leathers.

5.5.1 List out the Properties required for leathers used for making wicket keeper hand gloves.
5.5.2 List out Selection of raw material used for making glove leather for wicket keeper.
5.5.3 Explain the Process for making leather for wicket keeper gloves.

Suggested Student Activities

1. Student visits Library to refer Text books, reference books and manuals to find their assigned Leather manufacture.
2. Student inspects the available Leather in the Tannery section
3. Quiz
4. Seminar
5. Group discussion
6. Surprise test

References:

1. Choichi Ogiwara, 'A practical guide to heavy leather processing', Fuel and leather research centre Kavachi – 1980.

2. K.T.Sarkar. Theory and Practice of leather manufacture. Ajoy Sorcar. Madras – 1981.

3. S.S. Dutta Introduction to the principles of leather manufacture.Indian leather technological association. Calcutta – 1980.C LRI, Publication, Chennai.

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

MID-I EXAMINATION QUESTION PAPER

THIRD SEMESTER MID-I EXAMINATION **C-18**(MPEC) FOR 3 YEARS

DIPLOMA COURSE IN LEATHER TECHNOLOGY

SUBJECT CODE & NAME OF THE SUBJECT: 18LT – 304C,

PROCESS OF HEAVY INDUSTRIAL AND SPORTGOODS LEATHER MANUFACTURE

Time: 1 Hours **Max Marks: 20**

PART – A **Marks: 4X1 = 4M**

Note: Answer all questions. Each question carries one mark.

.

1) What is a sole leather?

2) Define water proofing?

3) What is Kattai leather?

4) What is the thickness required for Zag grain Leather?

PART-B **Marks: 2x3 = 6M**

Note: Answer the following questions and each question carries three marks

5) A) Outline the selection of Raw material for the manufacture of sole leather?

(OR)

B) List some water proofing agents?

6) A) write the uses of Welting Leathers?

(OR)

B) Compare the properties of chrome Tanned and Vegetable tanned sole leather?

PART-C **Marks: 2x5 = 10M**

Note: Answer the following questions and each question carries FIVE marks

7) A) Explain the manufacture of Sole leather by Pit tanning?

(OR)

B) Explain the manufacture of chrome tanned Sole leather?

8) A) Explain the process for the manufacture of Banwar Leathers From E I stock?

(OR)

B) Describe the process for the manufacture of Lace Leathers ?

MID-II EXAMINATION QUESTION PAPER

THIRD SEMESTER MID-II EXAMINATION **C-18**(MPEC) FOR 3 YEARS
DIPLOMA COURSE IN LEATHER TECHNOLOGY

SUBJECT CODE & NAME OF THE SUBJECT: 18LT – 304C,
PROCESS OF HEAVY INDUSTRIAL AND SPORTGOODS LEATHER MANUFACTURE

Time: 1 Hours **Max Marks: 20**

PART – A **Marks: 4X1 = 4M**

Note: Answer all questions. Each question carries one mark.

1) What is a saddlery leather?

2) Name some Rawmaterial for making Harness Leather?

3) What is oil Seal Leather?

4) List any two uses of Hydraulic leathers?

PART-B **Marks: 2x3 = 6M**

Note: Answer the following questions and each question carries three marks

A) Write the properties required for Belting leather?

(OR)

B) List out the properties required for industrial Glove leathers?

5) A) List the uses of parchment Leathers?

(OR)

B)) List out the properties required for orthopedic leathers ?

PART-C **Marks: 2x5 = 10M**

Note: Answer the following questions and each question carries FIVE marks

6) A) Explain the process for the manufacture of chrome tanned belting leather ?

(OR)

B) Explain the process for the manufacture of saddlery leather?

7) A) Explain the process for the manufacture of oil Seal Leathers From V T leathers?

(OR)

B) Describe the process for the manufacture of Parchment Leathers ?

THIRD SEMESTER END EXAMINATION **C-18**(MPEC) FOR 3 YEARS

DIPLOMA COURSE IN LEATHER TECHNOLOGY

SUBJECT CODE & NAME OF THE SUBJECT: 18LT – 304C,

PROCESS OF HEAVY INDUSTRIAL AND SPORTGOODS LEATHER MANUFACTURE

Time: 2 Hours Max.Marks : 40

PART – A

Instructions: Answer **all** questions. Each question carries **one** mark. 8 X 1 = 8 marks

1. List the chemicals used in water proofing of Sole Leathers?
2. List some of the uses of Parchment Leathers?
3. List the uses of Pickers?.
4. Name the properties of hockey ball leathers?
5. List the properties for making the condenser Leather?
6. What are textile Leathers?
7. Mention some of the sports goods Leathers?
8. Name the properties required for sports goods Leathers ?

PART – B

Instructions: Answer the **following** questions. Each question carries **three** marks 4 x 3 =12 Marks

9. a. Summarize the properties of Kattai Leathers ?

   or

   b. Summarize the properties of Picking band Leathers .
10. a. Outline the manufacture of the oil seal leathers?

    or

    b. Outline the raw material required for football Leathers?
11. a. Summarize the properties of Raw hide Pickers?

    or

    b. Summarize the properties of orthopedic Leathers?
12. a. Outline the properties required for wicket keeper glove leathers?.

    or

    b. Identify the selection of raw material for volley ball leathers?.

PART – C

Instructions: Answer the **following** questions. Each question carries **five** marks 4 x 5 =20 Marks

13. a. Explain the manufacture of vegetable tanned sole Leather by drum method?.

or

b. Explain the manufacture of picking band leather?

14. a. Explain the manufacture of industrial glove leather from w/b cow sides?

or

b. Explain the manufacture of cricket ball leather?

15. a. Explain the manufacture of Zag grain Upper Leather?

or

b. Explain the manufacture of chrome tanned pickers?

16. a. Explain the process for the manufacture of volley ball leathers?.

Or

b. Explain the process for the manufacture of wicket keeper glove leathers

Leather Goods Fabrication Technology

Course Title	**Leather Goods Fabrication Technology**	**Course Code**	**18LT-305C**
Semester	**III**	**Course Group**	**Elective**
Teaching Scheme in Pds/Hrs(L:T:P)	**30:15:0**	**Credits**	**3**
Type of course	**Lecture+Assignments**	**Total Contact Hrs**	**60Pds**
CIE	**60 Marks**	**SEE**	**40 Marks**

Rationale:
The objective of this course is to make student familiar materials used, design, develop patterns for small leather goods.

Pre requisites

Basic knowledge of Footwear materials, leather goods

Course Outcomes

CO1	Explain Leather Goods Industry effect on economy of India, Job opportunities in Leather Goods industries.
CO2	Classify leather goods based on utility
CO3	Classify leather goods based on method of manufacturer
CO4	Explain different Leathers, materials used in leather goods fabrication.
CO5	Explain the working principle of Machinery and Hand tools used in Leather goods fabrication.
CO6	Design and Develop the patterns for Small leather goods.

COURSE CONTENTS:

1. **Profile of Leather goods Industry.**
   Define Leather goods, need of leather goods, and growth of industry in India, various government policies for development of leather goods industry in India, incentive facilities provided by government of India, research and training facilities, institutions involved in growth of leather goods industry.

2. **Classification of leather goods based on utility and manufacture.**

Classification of leather goods based on utility. ladies bags, small leather goods, solid leather goods, fancy leather goods, belts, sports leather goods, Upholstery leather goods, classification of leather goods based on method of manufacturing, cut edge articles, Turn edge articles, Turn over edge articles, stiffened articles, moulded articles, Box work.

3. **Selection of leathers, linings and materials for leather goods.**

Different defects of leather, different types of leathers, Need of leather linings different types of leather linings, characteristics of different linings, non leather linings, grinderies, fittings and fasteners used in leather goods making.

4. **Hand tools and machinery used for leather goods.**

Cutting tools, various Carving and stamping tools, finishing tools various

Punching tools used in leather goods making, operating principles of

Clicking machine, splitting machine, strap cutting machine, sewing

achine, skiving machine.

5. Principle involved in making of Gusset, small leather goods.

Function of the gusset, types of gussets, running gusset, side wide gusset,

Continuous gusset, fabrication process of key case, coin purse, wallet,

Credit card case, cell phone case, combs case, circular hand bag, Thonging.

Specific Learning Outcomes

1. Profile of Leather goods Industry.

1.1 Define Leather goods.
1.2 List the need of leather goods.
1.3 Explain government policy pertaining to the leather, footwear sector for development of leather goods industry in India.
1.4 Define foreign exchange.
1.5 State the need of foreign exchange to the country.
1.6 Give examples of industries that are earning foreign exchange.
1.7 Define import duty, Duty drawback.
1.8 What is income tax
1.9 What is tax exemption.
1.10 Explain different incentive and development facilities provided by government to encourage the leather product manufacturer.
1.11 List different institutions that are providing research and training facilities in leather, footwear sector.

1.12 Explain the activities of these institutions in the growth of leather goods industry.
1.13 Explain the Corporations like Council for leather exports role in growth of Leather, footwear sector.

2.0 Classification of leather goods based on utility.

2.1 Classify the leather goods based on utility.
2.2 Describe ladies bags.
2.3 Name different type of ladies bags like hand bag, shoulder bag.
2.4 Describe small leather goods.
2.5 Give examples for small leather goods like Key case, wallet.
2.6 Describe solid leather goods.
2.7 Give examples for solid leather goods like suitcase, Trunk case.
2.8 Describe fancy leather goods.
2.9 Give examples for fancy leather goods like Jewelery case, Tie case.
2.10 Describe belts.
2.11 Give examples for belts like Mens belt, Dog collar.
2.12 Explain sports leather goods.
2.13 Give examples for sports leather goods like Cricket ball, Football.
2.14 Describe Upholstery leather goods.
2.15 Give examples for upholstery leather goods.

3.0 Classification of leather goods based on Method of Manufacture.

3.1 Classify leather goods based on method of manufacturing.
3.2 Describe cut edge articles.
3.3 Give examples for cut edge articles like Key case.
3.4 Describe Turn edge articles.
3.5 Give examples for turn edge articles.
3.6 Describe Turn over edge articles.
3.7 Give examples for turn over edge articles Like Wallet.
3.8 Describe stiffened articles.
3.9 Give examples for stiffened articles.
3.10 Describe moulded articles.
3.11 Give examples for moulded articles like Camera case.
3.12 Describe box work.
3.13 Give examples for box work like Jewelery case.

4.0 **Selection of leathers, linings and materials for leather goods**.

4.1 List different defects of leather.
4.2 Write the reasons for above defects.
4.3 Explain the properties of the following leathers used in leather goods making.

a. Goat leathers.
b. Sheep leathers.
c. Cow leathers.
d. Buff leathers.
e. Glazed kid leathers.
f. Morocco leathers.
g. Suede leathers.
h. Upholstery leathers.
i. Corrected grain leathers.
j. Printed leather leathers.

k. Napa leather.
l. Brush off Leather.
m. Burnished leather.
n. Nubuck leather.
o. Patent leather.
p. Split leather.
q. Oil pull up leather.
r. Film coated leather.
s. Milled leather.
t. Zug grain leather.

4.4 Explain why we have to use lining in leather goods.
4.5 List different types of leather linings.
4.6 State the characteristics of leather linings.
4.7 List different types of non leather linings.
4.8 State the characteristics of non leather linings.
4.9 Describe following grinderies, fittings and fasteners used in leather goods making.

a. Rivets.
b. Press buttons.
c. Zips.
d. Locks.
e. Fasteners.
f. Buckles.
g. Handles.
h. Handle Holders.
i. Studs.
j. Hooks
k. Nails.
l. Laces.

4.10 Write the purpose of the above grinderies.
4.11 Write different materials with which above grinderies will be made.
4.12 Explain what ornamentation is.
4.13 Explain the purpose of Mock stitching.
4.14 List Different type of Reinforcements used in leather goods making.
4.15 Explain the suitability of different reinforcements for different type of Leather goods.

5.0 Hand tools and machinery used for leather goods.

5.1 Describe following cutting tools used in leather goods manufacture.

5.1.1 Bevel edge knife.
5.1.2 Skiving knife.
5.1.3 Adjustable strap cutter.
5.1.4 Hand knife.
5.1.5 Safety beveller.
5.1.6 Scissors.

5.2 Describe following Carving and stamping tools used in leather goods manufacture.

5.2.1 Swivel knife.
5.2.2 Camouflage.
5.2.3 Pear shader.
5.2.4 Beveller.
5.2.5 Veiner and shell tool.
5.2.6 Seeder.

5.2.7 Back grounding tool.

5.3 Describe following finishing tools used in leather goods manufacture.
- 5.3.1 Adjustable creaser.
- 5.3.2 Beveleze.

5.4 Describe following Punching tools used in leather goods manufacture.
- 5.4.1 Rotary punch.
- 5.4.2 Single point punch.
- 5.4.3 Oblong punch.
- 5.4.4 English point punch.

5.5 Describe following stitching tools used in leather goods manufacturing.
- 5.5.1 Stitching groover.
- 5.5.2 One prong thonging chisel.
- 5.5.3 Four prong thonging chisel.
- 5.5.4 Fid.
- 5.5.5 Lacing pliers.
- 5.5.6 Over stitch spacer.

5.6 Explain the operating principles of Clicking machine.
5.7 Explain the operating principles of splitting machine.
5.8 Explain the operating principles of strap cutting machine.
5.9 Explain the operating principles of sewing machine.
5.10 Explain the operating principles of skiving machine.

6.0 **Principle involved in making of Gusset, small leather goods.**
- 6.1. Explain the function of the gusset.
- 6.2. List different types of gussets.
- 6.3. Distinguish different type of gussets.
- 6.4. Describe running gusset.
- 6.5. Describe side wide gusset.
- 6.6. Describe continuous gusset.
- 6.7. Draw the patterns of key case.
- 6.8. Explain the fabrication process of key case.
- 6.9. Draw the patterns of coin purse.
- 6.10. Explain the fabrication process of coin purse.
- 6.11. Draw the patterns of wallet.
- 6.12. Explain the fabrication process of wallet.
- 6.13. Draw the patterns of credit card case.
- 6.14. Explain the fabrication process of credit card case.
- 6.15. Fabrication of Credit card case by Thonging.
- 6.16. Draw the patterns of cell phone case.
- 6.17. Explain the fabrication process of cell phone case.
- 6.18. Draw the patterns of comb case.
- 6.19. Explain the fabrication process of comb case.
- 6.20. Explain fabrication of Comb case by Thonging.
- 6.21. Draw the patterns of Ladies circular hand bag.
- 6.22. Explain the fabrication process of Circular hand bag.

Suggested Student Activities

Each student should do any one of the following type activity or any other similar activity related to the course and before conducting , get it approved from concerned Teacher and HOD.

ACTIVITIES

1. Collect samples, sketches as an example for various types of leather goods.
2. Collect various type of Leathers, Footwear Materials.
3. Practice Hand tools, Machineries used in leather goods fabrication.
4. Survey of Fashion magazines for new Leather goods styles.

REFERENCE BOOKS:

1. The complete hand book of Leather crafting Jame Co. Gramed. Robert E.Krieges Publishing company, Malabar, Floride.
2. Leather Craft by chris. H Groneman, Head Mechanical College of Teases Chas A Bermett Co Inc. Peoria, Illimois.
3. How to sew Leather suede by G.Phillips. W.Sehewlke, Macmillan, Newyork – 1979.

Suggested E-Learning references

1. http://icanmakeshoes.com>shoemaking.
2. **www.simpleshoemaking.com**
3. http://shoemakingcoursesonline.com

CO PO Mapping Matrix

Course outcomes		**CL**	**Linked PO**	**Teaching periods**
CO1	Explain Leather Goods Industry effect on economy of India, Job opportunities in Leather Goods industries.	**U**	**1,2**	**8**
CO2	Classify leather goods based on utility	**U/A**	**1,2**	**8**
CO3	Classify leather goods based on method of manufacturer	**U/A**	**1,2**	**8**
CO4	Explain different Leathers, materials used in leather goods fabrication.	**U/A**	**2,6**	**10**
CO5	Explain the working principle of Machinery and Hand tools used in Leather goods fabrication.	**U/A**	**3,4**	**10**
C06	Design and Develop the patterns for Small leather goods.	**A**	**4, 7,10**	**16**

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

BOARD DIPLOMA EXAMINATIONS (C-18)

MID SEM-I
THIRD SEMESTER EXAMINATION

Subject Name : LEATHER GOODS FABRICATION TECHNOLOGY

Subject Code : 18LT-305C

[Time Duration : 1 Hour] [Total marks :20]

PART-A

Answer ALL Questions and each question carries 01 marks 4 x 1= 4 marks

1. Define Leather goods.
2. List the need of Leather goods.
3. What is Tote bag?
4. What is Cosmetic bag?

PART-B

Answer any TWO Questions s and each question carries 03 marks 2 x 3 = 6 marks

5. a) Explain the corporations like Council of Leather Exports role in growth of Leather, Footwear Sector.

(OR)

b) Name different Institutions that are providing research and training facilities in leather, Footwear sector.

6. a) With suitable examples explain Fancy Leather Goods.

(OR)

b) With suitable examples explain Shoe bag, Framed Bag.

PART-C

Answer any TWO Questions and each question carries 05 marks 2 x 5= 10 marks

7. a) Explain how various incentives and development facilities provided by government will Augument the growth of Leather Sector.

(OR)

b) What is Foreign exchange and explain why India requires Foreign Exchange?

.

8. a) Identify and draw the sketches of Solid Leather Goods which you can see daily

(OR)

b) Develop Various Designs of Small Leather Goods.

BOARD DIPLOMA EXAMINATIONS (C-18)
MID SEM-II
THIRD SEMESTER EXAMINATION

Subject Name : LEATHER GOODS FABRICATION TECHNOLOGY

Subject Code : 18LT-305C
[Time Duration : 1 Hour] [Total marks :20]

PART-A

Answer ALL Questions and each question carries 01 marks 4 x 1= 4 marks

1. Draw the block diagram of Turn Edge construction Method of Leather Goods Making.
2. Explain Turn Edge construction Method of Leather Goods Making.
3. What are Flay Cuts?
4. Briefly explain Tick marks.

PART-B

Answer any TWO Questions and each question carries 03 marks 2 x 3 = 6 marks

5. a) Explain the Cut Edge construction Method of Leather Goods Making.

(OR)

b) Briefly explain the Limped, Semi Limped Articles.

6. a) Name and Explain different type of Leather Linings used in Leather Goods manufacturing.

(OR)

b) With suitable examples explain different type of locks used in leather goods manufacturing.

PART-C

Answer any TWO Questions and each question carries 05 marks 2 x 5= 10 marks

7. a)Explain how you can make Suit case by Box work construction method of Leather goods making.

(OR)

b) Explain how you can make Camera case by Moulded construction method of Leather goods making.

8. a) Suggest different type of Leathers for different type of Leather goods.

(OR)

b) Explain how to make Leather goods attractive by mock stitching and Ornamentation

18LT-305C

BOARD DIPLOMA EXAMINATION, (C-18)
DIPLOMA IN LEATHER TECHNOLOGY
– III SEMESTER EXAMINATION

LEATHER GOODS FABRICATION TECHNOLOGY

Time : 2 Hours] [Total Marks: 40

PART-A

08X01=08

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

2. Each question carries **ONE** mark.

1. What is Duty draw back?
2. Name different synthetic linings used in leather goods manufacturing.
3. Explain the Function of the gusset.
4. Explain why india requires foreign exchange.
5. Explain the following hand tools used in leather goods manufacturing.
   a. Safety beveller.
   b. Adjustable Strap cutter.
6. Explain English point punch, Round Punch.
7. With the help of the neat sketch explain Running Gusset.
8. Draw the neat sketch of Ladies circular hand bag.

PART-B

04X03=12

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

2. Each question carries **THREE** marks.

9. (a) Name different Institutions that are providing Training in the Field of Leather Goods and Footwear Sector.

(or)

9. (b) Explain the operating principle of the Strap cutting machine..

10. (a) With suitable examples explain different type of Rivets used in leather goods manufacturing.

(or)

10. (b) Explain how to develop the patterns for the Comb case.

11. (a) Briefly explain the Working Principle of Splitting Machine.

(or)

11. (b) Explain One Prong, Four Prong Thonging Chisels.

12. (a) Briefly Explain Side wide Base Gusset.

(or)

12. (b) Explain how to develop Patterns for Comb case.

PART-C

04X5=20

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

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

13. (a) Explain how Government policy, incentives provided by the government will help the growth of Leather product industries.

(or)

13. (b) Suggest carving design on leather and explain how you will carve the suggested design on leather by using different carving tools.

14. (a) Explain how you will fabricate case for High speed sports camera by using moulded construction method of Leather goods manufacturing.

(or)

14. (b) Design and explain how to develop Patterns, fabrication procedure for a case in which you can keep your Currency, Debit cards, etc.

15. (a)Explain how you will use different type of Cutting tools for different situations.

(or)

15. (b) With example explain how you will use different type of Punches for different type of situations.

16. (a) Design and explain how to develop the patterns, fabrication procedure for Case in which you can keep your smart phone.

(or)

16. (b) Design and explain how to develop the patterns, fabrication procedure for Case in which you can keep your coins.

*****

VEGETABLE TANNED LEATHERS LAB

Course Title	Vegetable Tanned Leathers Lab	**Course Code**	18LT-306P
Semester	Semester-III	**Course Group**	Core
Teaching Scheme in Pds/Hrs(L:T:P)	15:0:30	**Credits**	1.5
Type of course	Lecture+Practice	**Total Contact Hrs**	45Pds
CIE	60 Marks	**SEE**	40 Marks

Course outcomes:

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

CO 1: Select suitable raw materials for making Vegetable tanned Leathers

CO 2: List out different chemicals and machineries for processing Hides/Skins into V T leathers.

CO 3: Demonstrate the physio- chemical changes that take place in processing and List the chemicals discharged in to the environment

CO 4: Determine the completion of the process and the machines used in processing.

Course contents

1. List some of the Vegetable Tanned Leathers.
2. Demonstrate the Manufacture of vegetable tanned cow sides.
3. Experiment with Manufacture of vegetable tanned kips.
4. Demonstrate the Manufacture of EI goatskins.
5. Demonstrate the Manufacture of EI tanned sheepskins.
6. Demonstrate the Manufacture of EI skins from pickled sheepskins.
7. Demonstrate the Manufacture of Zug grain Upper leather.
8. Demonstrate the Manufacture of split upper leather.

Specific learning outcomes

Upon the completion of study of this subject the student will be able to manufacture different types of vegetable tanned leathers from given rawmaterials..

VEGETABLE TANNED LEATHERS LAB		
Name of the Experiment	**Competencies**	**Key Competencies**
1.Manufacture of Vegetable tanned leathers from wet salted Cow hides	• To do soaking to pickling of the given wet salted hides/skins • To do vegetable tanning for the given pelt in pits • To do beaming for the given pelts • To increase the strength of vegetable tan Liquor • To do vegetable tanning for the given pelt in drum • To do the Myrobing operation of the tanned leather • To do the bleaching operation for the vegetable tanned Leather • To do the oiling with pungam oil operation for the vegetable tanned Leather • To bring the vegetable tanned leather to a semi dry condition • To do slickering on the grain side of the Vegetable leather • To do complete drying of the VT leather • To do conditioning operation for the	❖ Study the preparation of veg tan liquor ❖ Leaching method of tan liquor preparation ❖ Duration of vegetable tanning for diff types of leather ❖ Test for completion of vegetable tanning ❖ Ph changes observed during vegetable Tanning
2.Manufacture of Vegetable tanned leathers from wet salted Buffallo hides		❖ Different strength of V T Leach liquors
3.Manufacture of Vegetable tanned leathers from wet salted cow calf skins		❖ Barkometer readings importance ❖ Use of mellow liquors ❖ Use of astringent Liquors
4.Manufacture of Vegetable tanned leathers from wet salted buff calf skins		❖ To check the V T Tannins in the pelt at the thickest portion ❖ To check the fullness of leather ❖ To identify the physio chemical changes ❖ The condition of the setted leather ❖ The grain condition of the setted leather ❖ various setting proceedures
5.Manufacture of Vegetable tanned leathers from wet salted Goat skins		
6.Manufacture of Vegetable tanned leathers from wet		❖ The measure thickness of the Vegetable tanned leather

salted sheep skins	vegetable tanned Leather • To do Staking operation for the vegetable tanned Leather • To do thebuffing operation for the vegetable tanned Leather • To doTrimming operation for the vegetable tanned Leather • To do measuring for the vegetable tanned Leather • •	❖ The condition of the sammed leather ❖ The moisture content of the sammed leather ❖ various conditioning methods
		❖ The condition of the setted leather ❖ The grain condition of the setted leather ❖ various setting proceedures
		❖ The condition of the dried leather ❖ The grain condition of the leather ❖ Different methods of drying like air drying, drying by nailing, toggle drying
		❖ The condition of the conditioned leather ❖ The moisture content of the conditioned leather ❖ Different methods of conditioning like saw dusting spraying etc.,
		❖ The change in softness of leather ❖ The condition of the staked leather ❖ Different methods of staking machines
		❖ The change in softness of toggled leather ❖ The condition of the toggled leather ❖ different methods of toggling procedures

		❖ The change in condition of buffed leather ❖ The various emery papers used for buffing ❖ Observation of the nap of buffed leather ❖ Dust off proceedure
		❖ The change in condition of buffed leather ❖ The various emery papers used for buffing ❖ Observation of the nap of buffed leather ❖ Dust off proceedure
		❖ The change in condition of glazed leather ❖ Observe the gloss& appearance of the glazed leather
		❖ The change in condition of plated leather ❖ Observe the grain & appearance of the plated leather
		❖ Observe the weight ❖ Precautions to be observed during the practicals in the tannery
		• Assortment grades in wet blue. • Grading in EI stage. • Grading of finished leathers • Defects observed in finished leathers

SUGGESTED STUDENT ACTIVITIES:

Each student should do any one of the following type activity or any other similar activity related to the course and before conducting , get it approved from concerned Teacher and HOD.

1. Collect samples of different vegetable tanned Leathers.
2. Prepare a chart about the Properties of Vegetable tanned leathers from different rawmaterials.

3. Practice by Hand of sammying, oiling , setting operations.
4. Study the latest manufacturing method from magazines and submit a report.

References:

1. Practical Leather Technology – J H .Sharphouse
2. C L R I publications

CO and PO Mapping

CO	PO1	PO2	PO 3	PO 4	PO5	PO6	PO7	PO8	PO9	PO10	MAPPIN OF POs WITH CO
CO 1	2	2	3		-	-	-	-	-	-	1,2,3,
CO 2	2	2	3	3	-	-	-	-	-	-	2,3,4,6
CO 3	2	2	-	-	-	2	-		-	-	1,2,6
CO 4	3	3	3	-	-	-	-	3	-	-	1,2,8

5. Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

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 PAPER

BOARD DIPLOMA END-SEMESTER EXAMINATIONS (C-18)

DLT –III -SEMESTER

18LT-306P- VEGETABLE TANNED LEATHERS LAB

Duration:3 Hours **Maximum Marks: 40**

Answer any <u>One</u> of the following Questions.

Do the given experiment as per allotted to you from the given WETBLUE/EI / crust Leather

1. List some of the Vegetable Tanned Leathers.
2. Demonstrate the Manufacture of vegetable tanned cow sides.
3. Experiment with Manufacture of vegetable tanned kips.
4. Demonstrate the Manufacture of EI goatskins.
5. Demonstrate the Manufacture of EI tanned sheepskins.
6. Demonstrate the Manufacture of EI skins from pickled sheepskins.
7. Demonstrate the Manufacture of Zug grain Upper leather.
8. Demonstrate the Manufacture of split upper leather

SOLE LEATHERS LAB

Course Title	**SOLE LEATHERS LAB**	**Course Code**	**18LT-307P**
Semester	**Semester-III**	**Course Group**	**Core**
Teaching Scheme in Pds/Hrs(L:T:P)	**10:0:35**	**Credits**	**1.5**
Type of course	**Lecture+Practice**	**Total Contact Hrs**	**45Pds**
CIE	**60 Marks**	**SEE**	**40 Marks**

Course outcomes:

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

CO 1: Select suitable raw materials for making Sole Leathers

CO 2: List out different chemicals and machineries for processing Hides in to Sole leathers.

CO 3: Demonstrate the physio- chemical changes that take place in processing and List the chemicals discharged in to the environment

CO 4: Determine the completion of the process and the machines used in processing.

The student will be given any one experiment from the above units for 40 marks

Course contents

1.0 Sole Leather.

1.1 Experiment with Leaching of tan liquor and preparation of tan solution.
1.2 Demonstrate the Manufacture of sole leather by slow tanning technique.
1.3 Demonstrate the Manufacture of sole leather by rapid tanning process.
1.4 Outline the Bag Tanning Technique for making sole leather (Explanation only)
1.5 Demonstrate the Manufacture of sole leather by Chrome Tanning Process.
1.6 Demonstrate the Manufacture of wax soles
1.7 Illustrate the Waterproofing of sole leathers
1.8 Outline the Oiling, setting and rolling of sole leathers.

Specific learning outcomes

Upon the completion of study of this subject the student will be able to manufacture different types of sole leathers from the given w/s heavy buffalo and cow hides.

Understand and do the various techniques in each of the leather processing Operations and perform the tests for their proper completion.

SOLE LEATHERS LAB		
Name of the Experiment	**Competencies**	**Key Competencies**
1.Leaching of tan liquor and preparation of tan solution	• To do soaking to pickling of the given wet salted hides/skins • To do vegetable tanning for the given pelt in pits • To do beaming for the given pelts • To increase the strength of vegetable tan Liquor • To do vegetable tanning for the given pelt in drum • To do the Myrobing operation of the tanned leather • To do the bleaching operation for the vegetable tanned Leather • To do the oiling with pungam oil operation for the vegetable tanned Leather • To bring the vegetable tanned leather to a semi dry condition • To do slickering on the grain side of the Vegetable leather • To do complete drying of the VT leather • To do conditioning operation for the vegetable tanned Leather • To do Staking operation for the	❖ Study the preparation of veg tan liquor ❖ Leaching method of tan liquor preparation ❖ Duration of vegetable tanning for diff types of leather ❖ Test for completion of vegetable tanning ❖ Ph changes observed during vegetable Tanning
2.Manufacture of sole leather by slow tanning technique.		Different strength of V T Leach liquors
3.Manufacture of sole leather by rapid tanning process.		❖ Barkometer readings importance ❖ Use of mellow liquors ❖ Use of astringent Liquors
4. Manufacture of sole leather by Chrome Tanning Process		❖ To check the V T Tannins in the pelt at the thickest portion ❖ To check the fullness of leather ❖ To identify the physio chemical changes ❖ The condition of the setted leather ❖ The grain condition of the setted leather ❖ various setting proceedures

	vegetable tanned Leather • To do thebuffing operation for the vegetable tanned Leather • To doTrimming operation for the vegetable tanned Leather • To do measuring for the vegetable tanned Leather • •	
5.Manufacture of wax soles		❖ The measure thickness of the Vegetable tanned leather
		❖ The condition of the sammed leather ❖ The moisture content of the sammed leather ❖ various conditioning methods ❖
6. Oiling, of sole leathers		❖ The condition of the setted leather ❖ The grain condition of the setted leather ❖ various setting proceedures ❖

7.setting of sole leathers		❖ The condition of the dried leather ❖ The grain condition of the leather ❖ Different methods of drying like air drying, drying by nailing, toggle drying
8. rolling of sole leathers		❖ The condition of the conditioned leather ❖ The moisture content of the conditioned leather ❖ Different methods of conditioning like saw dusting spraying etc.,
9.Trimming of Sole Leathers		❖ The change in softness of leather ❖ The condition of the staked leather ❖ Different methods of staking machines
10.Grading of sole leathers		❖ The change in softness of toggled leather ❖ The condition of the toggled leather ❖ different methods of toggling procedures
		❖ The change in condition of buffed leather ❖ The various emery papers used for buffing ❖ Observation of the nap of buffed leather ❖ Dust off proceedure

	•	❖ The change in condition of buffed leather ❖ The various emery papers used for buffing ❖ Observation of the nap of buffed leather ❖ Dust off proceedure
	•	❖ The change in condition of glazed leather ❖ Observe the gloss& appearance of the glazed leather
	•	❖ The change in condition of plated leather ❖ Observe the grain & appearance of the plated leather
	•	❖ Observe the weight ❖ Precautions to be observed during the practicals in the tannery
	•	• Assortment grades in wet blue. • Grading in EI stage. • Grading of finished leathers • Defects observed in finished leathers

SUGGESTED STUDENT ACTIVITIES:

Each student should do any one of the following type activity or any other similar activity related to the course and before conducting , get it approved from concerned Teacher and HOD.

1. Collect samples of different Sole Leathers.
2. Prepare a chart about the Properties of Vegetable tanned sole leathers and chrome tanned sole leather and prepare a comparison report.
3. Practice by Hand of sammying, oiling , setting operations.
4. Study the latest manufacturing method from magazines and submit a report.

5. Practice waxing of chrome tanned sole leather and record the observation.

References:

1. Practical Leather Technology – J H .Sharphouse
2. C L R I publications

CO and PO Mapping

CO	PO1	PO2	PO 3	PO 4	PO5	PO6	PO7	PO8	PO9	PO10	MAPPIN OF POs WITH CO
CO 1	1	2	3						-	-	1,2,3,
CO 2		2	3	4		6			-	-	2,3,4,6
CO 3	1	2				6			-	-	1,2,6
CO 4	1	2						8	-	-	1,2,8

6. Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

MODEL QUESTION PAPER

BOARD DIPLOMA END-SEMESTER EXAMINATIONS (C-18)

GOVERNMENT INSTITUTE OF LEATHER TECHNOLOGY, H.S.DARGA, HYDERABAD

DLT –III -SEMESTER

18LT-307P- SOLE LEATHERS LAB

Duration:3 Hours **Maximum Marks: 40**

Answer any <u>One</u> of the following Questions.

Do the given experiment as per allotted to you from the given WETBLUE/EI / crust Leather

1. Experiment with Leaching of tan liquor and preparation of tan solution.
2. Demonstrate the Manufacture of sole leather by slow tanning technique.
3. Demonstrate the Manufacture of sole leather by rapid tanning process.
4. Outline the Bag Tanning Technique for making sole leather (Explanation only)
5. Demonstrate the Manufacture of sole leather by Chrome Tanning Process.
6. Demonstrate the Manufacture of wax soles
7. Illustrate the Waterproofing of sole leathers
8. Do the Oiling, setting and rolling of sole leathers.

18LT-308P — LEATHER GOODS FABRICATION LAB

Course Title :	**LEATHER GOODS LAB**	Course Code	**18LT-308P**
Semester	**III**	Course Group	**Core**
Teaching Scheme in Periods(L:T:P)	**15:0:30**	Credits	**1.5**
Methodology	**Lecture + Practical**	Total Contact Hours :	**:45Pds**
CIE	**60 Marks**	SEE	**40 Marks**

Pre requisites

This course requires the Basic Knowledge of Leather goods fabrication.

Rationale:

The course is designed to make student to fabricate small leather goods with the given material.

Course outcomes

On successful completion of the course, the students will be able to attain below Course Outcome

Course Outcome		**Linked Exercises**	**CL**	**Linked PO**	**Teaching Hours**
CO1	Fabrication of key case.	2	R/U/A	2,4,7	6
CO2	Fabrication of Coin purse	3	R/U/A	2,4,7	6
CO3	Fabrication of Wallet	4	R/U/A	2,4,7	9
CO4	Fabrication of Credit card case.	5	R/U/A	2,4,7	6
CO5	Fabrication of Cell phone case	6	R/U/A	2,4,7	6
C06	Fabrication of Comb case.	7	R/U/A	2,4,7	6

Course Contents (Exercises)

1. Thonging practice.
2. Fabrication of key case.
3. Fabrication of Coin purse
4. Fabrication of Wallet
5. Fabrication of Credit card case.
6. Fabrication of Cell phone case.
7. Fabrication of Comb case.

Specific Learning Outcomes

1. Thonging practice.

    1.1Cut and Prepare the leather pieces for thonging operation.
    1.2Prepare Leather Laces for thonging.
    1.3 Attach components by thonging.

2 .Fabrication of Key case

    2.1 Develop patterns for cut edge key case
    2.2 Cut the components with leather or given material.
    2.3Split and skive the components.
    2.4 Stitch the components.
    2.5Attach hooks, press buttons.
    2.6 Finish the key case.

3. Fabrication of Coin purse

    3.1 Develop patterns for Coin purse.
    3.2 Cut the components with leather or given material.
    3.3 Split and skive the components.
    3.4 Stitch the components.
    3.5 Attach press buttons.
    3.6 finish the Coin purse.

4.Fabrication of wallet

    4.1 Develop patterns for Wallet.
    4.2 Cut the components with leather or given material.
    4.3 Split and skive the components.
    4.4 Stitch the components.
    4.5 Attach press buttons.

5.Fabrication of Credit card case.

    5.1 Develop patterns for Credit card case
    5.2 Cut the components with leather or given material.
    5.3 Split and skive the components.

5.4 Stitch the components.
5.5 Finish the Credit card case.
5.6 Make the credit card case by thronging.

6 .Fabrication of Cell phone case.
6.1 Develop patterns for Cell phone case.
6.2 Cut the components with leather or given material.
6.3 Split and skive the components.
6.4 Stitch the components.
6.5 Attach grinderies.
6.6 Finish the Cell phone case

7 .Fabrication of Comb case.
7.1 Develop patterns for Comb case.
7.2 Cut the components with leather or given material.
7.3 Split and skive the components.
7.4 Stitch the components.
7.5 finish the Comb case.
7.6 Make the comb case by Thonging

Suggested Student Activities

1. Survey of new designs in showrooms, shopping malls, Net, magazines.

2. Fabricate small leather goods with eco friendly and innovative materials.

3.Developing innovative new designs of small leather goods.

REFERENCES

1) Manual of shoe making - Clarks.
2) Text book of Footwear manufacture - H.J.Thronton.
3) Lectures notes on Footwear Technology - Somanath Ganguly. (Series of Articles in JILTA)
4) Lecturer notes on Leather Products fabrication- CLRI.

E Learning Resources

http://icanmakeshoes.com>shoemaking.
2**. www.simpleshoemaking.com**
3. http://shoemakingcoursesonline.com

MODEL QUESTION PAPER

BOARD DIPLOMA END-SEMESTER EXAMINATIONS (C-18)

DLT –III -SEMESTER

18LT-308P- LEATHER GOODS FABRICATION TECHNOLOGY LAB

Duration:3 Hours **Maximum Marks: 40**

Answer any <u>One</u> of the following Questions.

Do the given experiment as per allotted to you from the given WETBLUE/EI / crust Leather

<u>Instructions to the Candidates:</u>
(i)Answer any <u>One</u> of the following Questions.

1. Fabricate Key case with the given material.
2. Fabricate coin case with the given material.
3. Fabricate Wallet with the given material.
4. Fabricate credit card case with the given material.
5. Fabricate Cell phone case with the given material.
6. Fabricate Comb case with the given material.

WEB DESIGN TECHNOLOGY LAB PRACTICE

Course Title **: WEB DESIGN TECHNOLOGY LAB PRACTICE**	Course Code : **18LT-309P**
Semester : **III**	Course Group : **Core**
Teaching Scheme in Hrs (L:T:P) : **0:1:2**	Credits : **3**
Type of course **: Tutorial + Practical**	Total Contact Hours : **37.5Hrs/45Pds**
CIE : **60 Marks**	SEE : **40 Marks**

Prerequisites

Knowledge of Computer basics and Internet

Course Outcome

On successful completion of the course, the students will be able to attain below Course Outcome (CO):

Course Outcome		CL	Linked PO	Practical hrs
CO1	1. Demonstrate the principle of Web page design 2. Demonstrate the basics in web design	**A**	**1,2,3,4,8,9,10**	**15**
CO2	3. Visualize the basic concept of HTML. 4. Recognize the elements of HTML.	**A**	**1,2,3,4,8,9,10**	**15**
CO3	5. Introduce basics concept of CSS. 6. Develop the concept of web publishing	**A**	**1,2,3,4,8,9,10**	**15**
		Total Sessions		**45**

1. To develop the skill & knowledge of Web page design.
2. Students will understand the knowhow and can function either as an entrepreneur or can take up jobs in the multimedia and Web site development studio and other information technology sectors.

Legends: R = Remember U= Understand; A= Apply and above levels (Bloom's revised taxonomy)

Course Contents:

1.0 Web Design Principles

1.1 Basic principles involved in developing a web site
1.2 Planning process
1.3 Five Golden rules of web designing
1.4 Designing navigation bar
1.5 Page design
1.6 Home Page Layout
1.7 Design Concept.

2.0 Basics in Web Design

2.1 Brief History of Internet
2.2 What is World Wide Web
2.3 Why create a web site
2.4 Web Standards
2.5 Audience requirement.

3.0 Introduction to HTML

3.1 What is HTML
3.2 HTML Documents
3.3 Basic structure of an HTML document
3.4 Creating an HTML document
3.5 Mark up Tags
3.6 Heading-Paragraphs
3.7 Line Breaks
3.8 HTML Tags.

4.0 Elements of HTML

4.1 Introduction to elements of HTML
4.2 Working with Text
4.3 Working with Lists, Tables and Frames
4.4 Working with Hyperlinks, Images and Multimedia
4.5 Working with Forms and controls.

5.0 Introduction to Cascading Style Sheets

5.1 Concept of CSS
5.2 Creating Style Sheet
5.3 CSS Properties
5.4 CSS Styling(Background, Text Format, Controlling Fonts)
5.5 Working with block elements and objects
5.6 Working with Lists and Tables
5.7 CSS Id and Class
5.8 Box Model(Introduction, Border properties, Padding Properties, Margin properties)
5.9 CSS Advanced(Grouping, Dimension, Display, Positioning, Floating, Align,Pseudo class, Navigation Bar, Image Sprites, Attribute sector)
5.10 CSS Color
5.11 Creating page Layout and Site Designs.

6.0 Introduction to Web Publishing or Hosting

6.1 Creating the Web Site
6.2 Saving the site
6.3 Working on the web site
6.4 Creating web site structure
6.5 Creating Titles for web pages
6.6 Themes-Publishing web sites

Suggested Student Activities:

1. Create a website for the college
2. Create webpage for course details
3. Host the website

Format for Student Activity Assessment

Internal Assesment

Activity	Marks
Writing the experiment, record evaluation	30
Execution of the given experiment	20
Viva-voce	10
Total	60

E learning Resources:
1. **HTML & CSS: Design and Build Websites** by Jon Duckett
ISBN: 1118008189
2. https://www.w3schools.com/html/

Composition of Educational Components:

Questions for CIE and SEE will be designed to evaluate the various educational components (Bloom's taxonomy) such as:

Sl. No.	**Bloom's Category**	**%**
1	Remembrance	20
2	Understanding	20
3	Application	60

Mapping Course Outcomes with Program Outcomes:
(Course Outcome linkage to Cognitive Level)

Course Outcome		Linked PO	CL	Practical Sessions
CO1	1. Define the principle of Web page design 2. Define the basics in web design	**1,2,3,4,8,9,10**	**A**	**15**
CO2	3. Visualize the basic concept of HTML. 4. Recognize the elements of HTML.	**1,2,3,4,8,9,10**	**A**	**15**
CO3	5. Introduce basics concept of CSS. 6. Develop the concept of web publishing	**1,2,3,4,8,9,10**	**A**	**15**

U-Understanding; A-application/ Analysis; App-Application

Course-PO Attainment Matrix

Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.

Course Delivery

The course will be delivered through tutorial of one hour and one & half hours of hands on practice per week.

List of Experiments

1. Create a HTML page that uses the tags like head, title, body etc.
2. Create a HTML page that uses frames and different presentation formats, colors.
3. Create a HTML page with a table consisting of a header, body and footer.
4. Create a HTML page with a form containing various controls.
5. Create a style sheet to set the background color, position and dimensions of a HTML element.
6. Create a simple XML file that contains student data.
7. Write JavaScript code using arithmetic operators.
8. Write JavaScript code to implement sorting.
9. Write JavaScript code that uses recursion.

10. Write JavaScript code that displays date in various formats.

11. Write PHP program using arithmetic operators.

12. Write PHP program to implement searching.

13. Write PHP program to perform various operations on a database table using functions.

14. Write a PHP program to set a cookie.

MODEL QUESTION PAPER

BOARD DIPLOMA END-SEMESTER EXAMINATIONS (C-18)

DLT –III -SEMESTER

18LT-309P- WEB DESIGNING TECHNOLOGY LAB

Duration:3 Hours **Maximum Marks: 40**

Answer any <u>One</u> of the following Questions.

1. Create a HTML page that uses the tags like head, title, body etc.
2. Create a HTML page that uses frames and different presentation formats, colors.
3. Create a HTML page with a table consisting of a header, body and footer.
4. Create a HTML page with a form containing various controls.
5. Create a style sheet to set the background color, position and dimensions of a HTML element.
6. Create a simple XML file that contains student data.
7. Write JavaScript code using arithmetic operators.
8. Write JavaScript code to implement sorting.
9. Write JavaScript code that uses recursion.
10. Write JavaScript code that displays date in various formats.
11. Write PHP program using arithmetic operators.
12. Write PHP program to implement searching.
13. Write PHP program to perform various operations on a database table using functions.
14. Write a PHP program to set a cookie.

Communication Skills and Life Skills

Course Title	**Communication Skills and Life Skills**	Course Code	**18 LT- 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 vocabulary relevant to make introductions. Learn introducing oneself in formal and informal situations. Learn to converse in various situations. Communicate using gestures. Use appropriate body language.
Communication Skills – II	Learn vocabulary and expressions useful for describing objects. Describe objects. Use technology in classroom effectively. 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. Adapt to any situation. Know the importance of setting goals. Set the goals using SMART features.
Life Skills – II	Know the reasons for a problem. Learn to avoid 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	Knowhow 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 the various time management techniques. Learn the importance of prioritisation.

Course Contents:

I. Listening Skills **Duration: 6**

1. Listening – I
2. Listening – II

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

3. Introducing Oneself
4. Everyday English
5. Non-Verbal Communication

III. Communication Skills – II **Duration:9**

6. Describing Objects
7. Using Technology in classroom
8. Just AMinute

IV. Life Skills – I **Duration:9**

9. Attitude
10. Adaptability
11. Goal Setting

V. Life Skills – II **Duration:9**

12. Problem Solving and Decision-Making Skills
13. Critical Thinking & Creativity

VI. Life Skills – III **Duration:6**

14. Leadership and Teamwork
15. Time Management

Specific Student Activities:

- Listening Comprehension
- Seminars
- Paper Presentations
- Lineups for introducing oneself
- Describing persons/places/things
- Picture description
- Role Plays
- Dumb charades
- What is in the bag? (Identifythe 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 using unusable things
- Creating advertisements
- Five-minute activities on Life Skills

Evaluation Pattern:

I. Continuous Internal Examination: 60 Marks

a. **Mid Sem- I (Oral & Individual)** 20 marks
Syllabus:
i. Listening Skills
ii. Communication Skills - I

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

c. **Internal assessment**: 20 marks

i. Seminars: 10 marks
ii. Assignments and Lab record submission: 10 marks

II. Semester End Examination : 40 Marks

a. Listening: 5 Marks
b. *Viva Voce* or JAM or Role plays: 10 Marks
c. An activity on life skills topics : 25 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

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://takeielts.britishcouncil.org/prepare-test/free-sample-tests/listening-sample-test-1/listening-section-1

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

III SEMESTER STUDENT ACTIVITIES:

III SEMESTER

SKILL UPGRADATION IN - APPLIED ENGINEERING MATHEMATICS

ACTIVITY ASSESSMENT Steps

6. **Mathematical concepts**
7. **Procedure**
8. **Explanation**
9. **Working with others**
10. **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 1st 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.

Suggested Student Activities18LT-302 C

STUDENT ACTIVITIES

1. Collect the data of different catalysts from internet and tabulate them with their activity. Choose six catalysts and outline their use in leather industry. **(PO- 8)**
2. Select a sample each of strong acid, weak acid, strong base, weak base, and a salt. Compare their pH using pH paper, universal indicator chart and pH meter. Submit a report. **(PO-3, 8)**
3. Categorize the chemicals used in leather processing. Study their impacts on environmental context. Record the observation. **(PO- 6)**
4. Draw the W.C, DNA model. Submit a recent case study which use DNA finger printing. **(PO- 7)**
5. Quiz on the IUPAC nomenclature of organic compounds. **(PO-1, 8)**
6. Prepare graphical power point presentation on colligative properties. **(PO- 9)**
7. Visit nearby chemical industry / or Lab and observe the recent procedures adapted in chemistry. **(PO- 10)**
8. Prepare different colloidal solutions and observe their physical, optical and electrical properties. Submit a report. **(PO- 3)**
9. Conduct seminar on the leather chemicals like lime in manufacturing. **(PO- 9)**
10. List out the essential amino acids and their source. Collect the materials from where these amino acids available. **(PO- 8)**

Suggested Student Activities for 18LT-303C

STUDENT ACTIVITES

1. Student visits Library to refer to Text books, reference books and journals and to find the different types of skins and their anatomy and submit a report.
2. Student inspects the available equipment in the tannery Lab to familiarize with the machinery and its operations.
3. Quiz on the microscopy and necessasity of staining ,methods of staining and mounting
4. Group discussion on various tannages in industries
5. Seminar presentation on liming ,soaking ,pickling degreasing and the necesssity of these methods in tannery. P8
6. Preparing charts on the microscopic view of raw stock and structural changes in leather processing and submit individual charts. P7,P8
7. Surprise test on anatomy of skin.
8. Give a seminar on the job opportunities on acquiring diploma in leather . P8
9. Give a seminar on the precaution to be taken in the lab during tannery.P5

Suggested Student Activities for 18LT-304C

ACTIVITIES:

1) Collect different vegetable tanning materials from plants and prepare a chart with their characteristics—P8

2) List different defects in hides and skins. Visit nearby raw material storage place. Observe the different defects present in hides and skins. Submit a record with necessary photos—P8

3) Discuss in a group about the job prospects in leather industry and give a presentation with necessary documents-P8, P9

4) Collect different heavy leather samples and prepare a chart with their characteristics—P8

5) Survey on different raw material prices for making sole leathers and submit a report—P8, P10

6) Visit a nearby tannery and prepare a flow chart about the processing of sole leather with necessary photos of machinery and chemicals –

7) Visit a nearby tannery and prepare a flow chart about the processing of effluents discharged into the environment—P5, P6, P8

8) Give a seminar presentation on purpose of tanning hides and skins into leathers by using power point presentation—P8

9) Give a seminar presentation on list of chemicals used in processing and their hazards, regulations by the government in using it.

10) Collect different tanned leathers samples and test for its hydrothermal resistance and submit a comparison report—P8

11) Collect from journals the recent vegetable tanning techniques adopted in tanneries to make sole leathers and submit a report—P8, P10

12) Prepare a chart about the responsibilities of a good citizen- P7, P8

Suggested Student Activities for 18LT-305C
LEATHER GOODS FABRICATION TECHNOLOGY

ACTIVITIES:

1) Collect different leather goods photos and prepare a chart with their characteristics—P8

2) List different defects observed in leather articles.Submit a record with necessary photos—P8

3) Discuss in a group about the job prospects in leather products industry and give a presentation with necessary documents-P8, P9

4) Collect different heavy leathergoods photos and prepare a chart with their characteristics—P8

5) Survey on different accessory prices for making leather goods articles and submit a report—P8, P10

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