Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B.Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, APR / MAY 2024

PRINTING AND PACKAGING TECHNOLOGY
Semester II
CY5201 & Chemistry for Printing Technology
(Regulation 2019)

Time: 3 hrs | Max. Marks: 100

CO1	To identify and apply basic concepts of surface chemistry in the preparation of colloids, gels and micelles and apply in printing technology methods and applications to futuristic material fabrication needs.
CO2	To recognize and apply basic knowledge on lubricants and their application in printing press and adhesives for packaging technology.
CO3	To recognize and apply basic knowledge on different types of polymeric and composite materials, their manufacturing and applications to innovative high performance material needs.
CO4	To identify and recognize the usage of alloys and powder metallurgy in the field of printing technology.
CO5	To demonstrate the knowledge of various instrumental methods of analysis in characterisation of materials.

BL – Bloom's Taxonomy Levels
(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A (10 x 2 = 20 Marks)
(Answer all Questions)

Q.No.	Questions	Marks	CO	BL
1	Why are Brownian movement and Tyndall effect shown by colloidal solutions only?	2	CO1	L4
2	Why does corrosion of water filled steel tanks occur below the waterline?	2	CO1	L4
3	Define the term viscosity index.	2	CO2	L1
4	Point out the uses of epoxy resin adhesives.	2	CO2	L4
5	Give two examples for commodity polymers.	2	CO3	L2
6	How polyethersulfone is prepared?	2	CO3	L1
7	Point out the purpose of heat treatment of steel.	2	CO4	L4
8	Write a note on non-ferrous alloys.	2	CO4	L1
9	State the principle of Tunneling Electron Microscopy.	2	CO5	L1
10	What is the purpose of TLC?	2	CO5	L3

PART- B (5 x 13 = 65 Marks)

Q.No.	Questions	Marks	CO	BL
11 (a) (i)	Differentiate between multimolecular, macromolecular, and associated colloids.	8	CO1	L4
(ii)	How corrosion can be minimized using cathode protection technique?	5	CO1	L3
	OR			
11 (b) (i)	Derive Langmuir adsorption isotherm and analyze the effect of pressure on extent of adsorption.	8	CO1	L4
(ii)	Why is it necessary to purify colloidal solutions? Outline any one method in detail.	5	CO1	L3
12 (a) (i)	Illustrate with structure the solid lubricants: graphite and	8	CO2	L4

Q.No.	Questions	Marks	CO	BL
12 (b) (i)	Outline the bonding process of adhesives.	8	CO2	L4
(ii)	Analyze the importance of flash and fire point of the lubricant.	5	CO2	L4
13 (a) (i)	Outline the properties of (a) polyether ether ketone and (b) polyurethane foam.	8	CO3	L4
(ii)	Discuss the applications of composite materials.	5	CO3	L2
	OR			
13 (b) (i)	Elaborate on any one foaming method and also give its advantages of disadvantages.	8	CO3	L4
(ii)	With a flow sheet, give the classification of composites.	5	CO3	L2
14 (a) (i)	Outline the advantages and limitations of powder metallurgy.	8	CO4	L4
(ii)	Discuss about the functions and effect of alloying elements.	5	CO4	L2
	OR			
14 (b) (i)	Elaborate on any two methods for the preparation of metal powders.	8	CO4	L4
(ii)	Write a note on (a) compacting and (b) sintering.	5	CO4	L2
15 (a) (i)	With a neat diagram discuss the principle and instrumentation of scanning electron microscopy.	8	CO5	L4
(ii)	Oultine the working principle of column chromatography.	5	CO5	L4
	OR			
15 (b) (i)	With a neat block diagram discuss the instrumentation of thermo gravimetric analysis and its applications.	8	CO5	L4
(ii)	Point out the applications of X-Ray diffraction analysis.	5	CO5	L4

PART- C (1 x 15 = 15 Marks)

(Q.No.16 is compulsory)

Q.No.	Questions	Marks	CO	BL
16.(i)	'Painting metals help prevent corrosion'. Elaborate on the paints constituents and their functions.	10	CO1	5
(ii)	How polymers are used in printing? Support with suitable examples	5	CO3	5