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VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 40002

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – JAN. / FEB. 2026
First Semester
Electrical and Electronics Engineering
U23CH101 – ENGINEERING CHEMISTRY
(Common to ECE, BME, BT, AE, CE and CSE (AI & ML))
(Regulation 2023)

Time : Three Hours — Maximum : 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Differentiate between temporary and permanent hardness.	2	K2	CO1
2.	State two requisites for boiler feed water.	2	K1	CO1
3.	Identify the meaning of degree of polymerization.	2	K1	CO2
4.	Define tacticity.	2	K1	CO2
5.	Differentiate between nanoparticles and bulk materials.	2	K2	CO3
6.	Highlight any two applications of carbon nanotubes (CNTs).	2	K1	CO3
7.	List two types of wind power plants (WPPs).	2	K1	CO4
8.	Identify the key advantage of lithium batteries over conventional batteries.	2	K2	CO4
9.	Define galvanic corrosion.	2	K1	CO5
10.	Mention the constituents of paint.	2	K1	CO5

PART – B

(5 x 16 = 80 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Determine the hardness of water using EDTA method with the principle, step-by-step procedure, and calculations.	16	K2	CO1
		(OR)			
	b)	Discuss a water treatment sequence for a textile industry starting from hard water, by incorporating ion-exchange and reverse osmosis methods.	16	K2	CO1
12.	a)	Illustrate the mechanism of free radical addition polymerization.	16	K3	CO2
		(OR)			
	b)	Examine the factors influencing glass transition temperature (Tg) with suitable examples.	16	K3	CO2
13.	a)	Illustrate the synthesis of nanoparticles using laser ablation and spray pyrolysis technique.	16	K2	CO3
		(OR)			
	b)	Evaluate the role of nanomaterials in medical and electronic applications with suitable examples. Highlight both the advantages and limitations in each case.	16	K2	CO3
14.	a)	Explain the principle, construction, and working of a light water nuclear power plant with a neat diagram.	16	K2	CO4
		(OR)			
	b)	Explain the construction, working and applications of the following: i. Lead–acid battery ii. H_2–O_2 fuel cell with neat diagrams.	16	K2	CO4
15.	a)	Discuss the sacrificial anodic and impressed current cathodic method of controlling corrosion.	16	K3	CO5
		(OR)			
	b)	Compare the principle involved in the processes of electroplating of gold (Au) and electro less plating of nickel (Ni). Evaluate their effectiveness and discuss key industrial applications.	16	K3	CO5