Reg. No.															

Question Paper Code	12549

B.E. / B.Tech - DEGREE EXAMINATIONS, NOV / DEC 2023

First Semester

(Common to All Branches except Computer Science and Business Systems)

20BSCY101 - ENGINEERING CHEMISTRY

(Regulations 2020)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	What is Calgon conditioning? How is it functioning in water treatment?	*2,K2,CO1*
2.	Define catalytic poisons.	*2,K1,CO1*
3.	What is an electrochemical series?	*2,K2,CO2*
4.	What is sacrificial anode? How does it protect a submerged pipeline?	*2,K2,CO2*
5.	Distinguish between coal and coke.	*2,K1,CO3*
6.	Define calorific value.	*2,K1,CO3*
7.	Define: Nuclear chain reaction.	*2,K1,CO4*
8.	Mention the advantages of lithium ion cells?	*2,K2,CO4*
9.	Why thermosetting plastics cannot be remolded?	*2,K2,CO5*
10.	Distinguish between bulk particles and nano-particles.	*2,K2,CO5*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	Explain the demineralization of water by the ion-exchange process. How are exhausted cation and anion exchange resins regenerated?	*13,K2,CO1*
		OR	
	b)	Explain the role adsorbent in pollution abatement.	*13,K2,CO1*
12.	a)	(i) Derive Nernst equation for single electrode potential and give its significance.	*8,K2,CO2*
		(ii) Calculate the reduction potential of Cu/Cu^{2+} (0.5 M) at 25°C. given that $E^o = 0.337$: ($Cu^{2+} = 0.5M$).	*5,K2,CO2*
		OR	
	b)	What is electroplating? Discuss the plating composition, mechanism of copper plating.	*13,K2,CO2*
13.	a)	Explain flue gas analysis by ORSAT method with suitable diagrams.	*13,K2,CO3*

OR

b) Describe the Otto – Hoffman of coke manufacture and the recovery of various by-products. *13,K2,CO3*

14. a) What is a nuclear reactor? Describe the components of a light-water nuclear power plant with a suitable block diagram. *13,K3,CO4*

OR

b) Explain the construction and working of Hydrogen-Oxygen fuel cells with a neat diagram. *13,K3,CO4*

15. a) Illustrate the preparation of the following polymers. *13,K2,CO5*
Nylon 6,6 b) Teflon c) Kevlar

OR

b) Discuss the CVD and Laser ablation techniques for the synthesis of nanoparticles. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) (i) How is the softening of water carried out using the zeolite process? *8,K2,CO1*

(ii) What is synthetic petrol? How is it manufactured by the Bergius process? *7,K2,CO3*

OR

b) (i) What is desalination? Describe the reverse osmosis method with neat diagram. *8,K2,CO1*

(ii) Write notes on: Bio-diesel. *7,K2,CO3*