Question Paper Code	13773

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

First Semester

Computer Science and Engineering

(Common to All Branches)

24BSCY101 – ENGINEERING CHEMISTRY

Regulations - 2024

Duration: 3 Hours   Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)
Answer ALL Questions

		Marks	*K – Level*	*CO*
1.	Which of the following is an example of a natural polymer?	1	K1	CO1
	(a) Polyethylene (b) Nylon (c) Cellulose (d) Polystyrene			
2.	The polymer which is used for making non-stick utensils is	1	K2	CO1
	(a) Polyurethane (b) Bakelite (c) Teflon (d) All the above			
3.	Spontaneity of redox reaction can be predicted from the emf (E°) value of the complete cell reaction. If the E° of the cell is positive	1	K2	CO2
	(a) the reaction is spontaneous (b) the reaction is not feasible			
	(c) both (d) None of the above			
4.	An cathode of lithium-ion battery is	1	K1	CO2
	(a) $LiCoO_2$ (b) Graphite (c) Polymer electrode (d) Li metal			
5.	According to the Lambert-Beer Law, the absorbance (A) of a solution is directly proportional to:	1	K1	CO3
	(a) The concentration of the solute (b) The intensity of the incident light			
	(c) The path length of the light through the solution (d) Both A and B			
6.	In a heat engine, some energy is always lost as waste heat. This is a consequence of _____.	1	K1	CO4
	(a) The First Law of Thermodynamics (b) The Second Law of Thermodynamics			
	(c) The Zeroth Law of Thermodynamics (d) The Law of Conservation of Mass			
7.	When ΔH = +ve & ΔS = -ve, then	1	K2	CO4
	(a) The reaction is spontaneous (b) The reaction is non-spontaneous			
	(c) The reaction is at equilibrium (d) Heat of the system is constant			
8.	The minimum temperature at which a substance catches fire is called its:	1	K1	CO5
	(a) Combustion point (b) Boiling point (c) Ignition temperature (d) Melting point			
9.	What is the function of excess air in combustion?	1	K1	CO5
	(a) To increase the efficiency of the combustion process.			
	(b) To cool down the combustion chamber.			
	(c) To ensure complete combustion.			
	(d) To reduce the formation of nitrogen oxides.			
10.	Quantum dots are used in which of the following applications?	1	K1	CO6
	(a) Solar cells (b) Biological imaging (c) LED displays (d) All of the above			

PART - B (12 × 2 = 24 Marks)
Answer ALL Questions

		Marks	*K – Level*	*CO*
11.	Define the term - Degree of polymerization (DP).	2	K1	CO1
12.	Differentiate thermosetting and thermoplastic polymers with examples for each.	2	K2	CO1
13.	Define Standard electrode potential.	2	K1	CO2

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

14.	What are primary and secondary batteries? Given an example.	2	K1	CO2
15.	Define the term: Bathochromic Shift.	2	K1	CO3
16.	In IR spectra mention the important uses of finger print region.	2	K1	CO3
17.	What are the needs for second law of thermodynamics?	2	K2	CO4
18.	List out any four examples of spontaneous process.	2	K1	CO4
19.	Distinguish between coal and coke.	2	K2	CO5
20.	List out the advantages of CNG over LPG.	2	K1	CO5
21.	Distinguish between bulk particles and nano-particles.	2	K2	CO6
22.	Mention any four salient properties of CNT.	2	K1	CO6

PART - C (6 × 11 = 66 Marks)
Answer ALL Questions

23.	(a)	How are the following polymers prepared? Give their uses. (i) Kevlar and (ii) Bakelite	11	K2	CO1
		OR			
	(b)	Discuss the mechanism of free radical polymerization in detail.	11	K2	CO1
24.	(a)	Describe in detail the construction and working of lead-acid battery. Write its advantages and uses.	11	K2	CO2
		OR			
	(b)	Write an informative note on next generation batteries. Write their advantage over Li ion battery.	11	K2	CO2
25.	(a)	Explain the main features of working of IR spectrometer with a neat block diagram.	11	K2	CO3
		OR			
	(b)	With neat diagram explain the mechanism of fluorescence and phosphorescence.	11	K2	CO3
26.	(a)	Derive all the four Maxwell relations.	11	K3	CO4
		OR			
	(b)	Derive an expression of Van't Hoff isotherm for the general equation.	11	K3	CO4
27.	(a)	Describe the fractional distillation of petroleum in detail.	11	K2	CO5
		OR			
	(b)	Describe the manufacturing of metallurgical coke and the recovery of various by-products.	11	K2	CO5
28.	(a)	Discuss the CVD and electrode position techniques for the synthesis of nanoparticles.	11	K2	CO6
		OR			
	(b)	Which method used for the synthesis of carbon nanotubes? Explain and write its applications.	11	K2	CO6