

Code: 23BS1204

**I B.Tech - II Semester – Regular / Supplementary Examinations
JUNE 2026****ENGINEERING CHEMISTRY
(Common for CE, ME)****Duration: 3 hours****Max. Marks: 70**

Note: 1. This question paper contains two Parts A and B.

2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.

3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.

4. All parts of Question paper must be answered in one place.

BL – Blooms Level**CO – Course Outcome**

PART – A

		BL	CO
1.a)	What is permanent hardness?	L2	CO1
1.b)	Explain Priming and Foaming in boiler troubles.	L2	CO2
1.c)	Define batteries and give their classification.	L3	CO2
1.d)	Mention pilling Bedworth ratio for protective behavior of oxides.	L2	CO2
1.e)	Define Functionality and give their significance.	L2	CO1
1.f)	Give Dulong's formulae for HCV calculation.	L2	CO1
1.g)	Briefly explain the classification of refractories.	L2	CO3
1.h)	Discuss the applications of fibre reinforced composites.	L3	CO3
1.i)	Discuss the applications of colloids.	L2	CO3
1.j)	Explain the Braggs method for colloids synthesis.	L2	CO3

PART – B

			BL	CO	Max. Marks
UNIT-I					
2	a)	List the specifications for portable water according to the Bureau of Indian Standards (BIS).	L3	CO2	5 M
	b)	Distinguish between scale and sludge in boiler troubles.	L4	CO4	5 M
OR					
3	a)	Describe the estimation of dissolved oxygen to determine hardness of water.	L4	CO4	5 M
	b)	Make use of a neat diagram to explain electro-dialysis process.	L3	CO2	5 M
UNIT-II					
4	a)	Derive Nernst Equation and give its applications.	L3	CO2	5 M
	b)	Explain metal oxide formation by chemical corrosion.	L4	CO4	5 M
OR					
5	a)	Explain construction, working principle & applications of Zinc-air batteries.	L4	CO4	5 M
	b)	Discuss Impressed current cathodic protection for corrosion.	L3	CO2	5 M
UNIT-III					
6	a)	Explain free radical addition polymerization for Vinyl chloride.	L4	CO4	5 M

	b)	Discuss ultimate analysis of coal and give their significance.	L3	CO2	5 M
OR					
7	a)	Discuss the stepwise synthesis procedure of Bakelite using step growth polymerization.	L3	CO2	5 M
	b)	Explain Octane number and Cetane number and give their significance.	L4	CO4	5 M
UNIT-IV					
8	a)	Define composites and mention properties and engineering applications of Fiber reinforced composites.	L3	CO3	5 M
	b)	Distinguish flash point and fire point of lubricants.	L4	CO5	5 M
OR					
9	a)	Discuss the mechanism involved in setting and hardening of Portland cement.	L3	CO3	5 M
	b)	Mention the Properties, Applications and factors affecting the refractory materials.	L4	CO5	5 M
UNIT-V					
10	a)	Define colloids and mention their applications in catalysis, medicine, and sensors.	L3	CO3	5 M
	b)	Explain green synthesis of Gold Nanoparticles Using Neem Leaf Extract.	L4	CO5	5 M
OR					

11	a)	Make use of neat diagram to explain the synthesis of Nanomaterial using Sol-gel method.	L3	CO3	5 M
	b)	Explain Freundlich and Longmuir adsorption isotherm curves to demonstrate adsorption mechanism.	L4	CO5	5 M