SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year I Semester Supplementary Examinations February-2024
ENGINEERING CHEMISTRY
(Mechanical Engineering)

Time: 3 Hours   **Max. Marks: 60**

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	What is EDTA? Explain the determination of hardness using EDTA method.	CO1	L3	10M
	b	What are the units to express hardness of water?	CO1	L1	2M

OR

2	a	What are scales and sludges, how are they formed in boilers?	CO1	L2	6M
	b	What are the essential requirements of potable water? What are the specifications of the drinking water according to BIS & WHO Standards?	CO1	L1	6M

UNIT-II

3	Explain in detail the various factors affecting corrosion.	CO2	L3	12M

OR

4	a	Derive the Nernst equation. How does it explain the dependence of the electrode potential on concentration of the electrolyte solution? How can you determine the equilibrium constant of a reaction using Nernst equation?	CO2	L2	6M
	b	Calculate the single electrode potential of zinc in 0.05M ZnSO4 solution at 25^0C. E^0 Zn/Zn^{2+} = 0.763V	CO2	L3	6M

UNIT-III

5	a	Define plastics. Differentiate between thermoplastics and thermosetting plastics.	CO3	L4	4M
	b	Explain the preparation, properties and uses of Bakelite and PVC	CO3	L3	8M

OR

6	a	Define fuel. What are the different types of fuels and how are they classified?	CO3	L1	8M
	b	Calculate the gross and net calorific values of coal having the following composition , Carbon = 85% ,Hydrogen = 8%, Sulphur = 1% , nitrogen= 2%, Ash= 4 %, Latent heat of steam = 587 Cal/gm.	CO3	L1	4M

UNIT-IV

7	How does lubrication occur by hydrodynamic and boundary lubrication? Distinguish between thick and thin film lubrication.	CO4	L1	12M

OR

8	a	Define cement. What are the constituents of cement? Classify the different types of cements.	CO4	L1	6M
	b	Define composite material. Write any eight applications of Composite materials?	CO4	L1	6M

UNIT-V

9	a	What is the significance of the adsorption isotherm?	CO5	L1	6M
	b	What are the factors influencing Adsorption of gases on solids?	CO5	L1	6M

OR

10	a	Explain the BET Equation	CO5	L1	6M
	b	What is colloid? Classify the colloids based on the physical state.	CO5	L1	6M

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