Q.P. Code: 19HS0802 **R19**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations February-2022

ENGINEERING CHEMISTRY

(Common to CE, ME & AGE)

Time: 3 hours Max. Marks: 60

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

UNIT-I

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

OR

2		Explain the ion exchange process used to soften water. Why is it considered as the best method to soften the water and mention various advantages and disadvantages?	12M

UNIT-II

3	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?	8M
	b	Calculate the single electrode potential of zinc in 0.05M ZnSO4 solution at 25^0C. E^0 Zn/Zn^{2+} = 0.763V.	4M

OR

4	a	Discuss sacrificial anode cathodic protection. What is the condition for a metal to act as a sacrificial anode?	6M
	b	Explain impressed current cathodic protection method to prevent corrosion.	6M

UNIT-III

5		What is the necessity and significance of elemental analysis of coal? How can you analyze coal with the help of proximate and ultimate analysis?	12M

OR

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

UNIT-IV

7		What is viscosity? How will you determine the viscosity of lubricating oil with the help of Redwood viscometer?	12M

OR

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

UNIT-V

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

OR

10		Discuss the principle, instrumentation and applications of Transmission electron microscopy (TEM).	12M

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