VR20 Reg. No: | | | | | | | | | | |

VELAGAPUDI RAMAKRISHNA

SIDDHARTHA ENGINEERING COLLEGE

(AUTONOMOUS)

I/IV B.Tech. DEGREE EXAMINATION, JULY - 2023

20BS1102 / 2102 ENGINEERING CHEMISTRY

(Regular Branches of AI&DS, AI&ML, CSE & IT and all Branches of Supplementary)

Time: 3 hours ***Max. Marks: 70***

Part-A is compulsory

Answer One Question from each Unit of Part - B

Answer to any single question or its part shall be written at one place only

PART-A

10 x 1 = 10M

1.	a.	What are the Reasons for Caustic Embrittlement?	**(CO1 K1)**
	b.	Outline the Control measures of Boiler corrosion.	**(CO1 K2)**
	c.	Define Calgon conditioning.	**(CO1 K1)**
	d.	Explain the Phase rule equation with terms involved in it.	**(CO2 K2)**
	e.	What are fuel cells and write examples of fuel cells?	**(CO2 K1)**
	f.	Outline the reasons for corrosion.	**(CO3 K2)**
	g.	List the advantages of electroplating.	**(CO3 K1)**
	h.	What are applications of Conducting polymers?	**(CO4 K1)**
	i.	Explain the relation between HCV and LCV.	**(CO4 K2)**
	j.	Identify the elements used in P-doping in conducting polymers and write them.	**(CO4 K2)**

PART-B

4 x 15 = 60M

UNIT-I

2. a. Construct a graph to explain the concept of breakpoint chlorination and write its significance. **(CO1 K3) 7M**
   b. Explain the reasons, mechanism and control methods of Caustic embrittlement with a suitable chemical reaction. **(CO1 K2) 8M**

(or)

3. a. Construct proper diagrams to explain the concept of Electrodialysis and Reverse osmosis. **(CO1 K3) 8M**
   b. Define boiler troubles and explain any two boiler troubles in detail. **(CO1 K2) 7M**

UNIT-II

4. a. Explain the terms Phase, component, degrees of freedom involved in phase-rule. **(CO2 K2) 7M**
   b. Demonstrate the working of H_2-O_2 fuel cell with a neat diagram and with suitable chemical reactions. **(CO2 K2) 8M**

(or)

5. a. Explain the phase diagram of two component system with a suitable example. **(CO2 K2) 8M**
   b. Summarize the working of Calomel electrode with a neat diagram. **(CO2 K2) 7M**

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UNIT-III

6. a. Make use of the concept of corrosion to explain the types of electrochemical corrosion. **(CO3 K3) 8M**
   b. Outline the types and mechanism of inhibition by corrosion inhibitors. **(CO3 K2) 7M**

(or)

7. a. Distinguish Electroplating and Electroless plating with suitable examples. **(CO3 K4) 7M**
   b. Construct a suitable diagram to explain the concept of differential aeration corrosion. **(CO3 K3) 8M**

UNIT-IV

8. a. Examine the process of proximate analysis of coal. **(CO4 K4) 8M**
   b. Explain the intrinsic conducting polymers with suitable examples. **(CO4 K2) 7M**

(or)

9. a. Select a method to do the flue gas analysis and explain it. **(CO4 K3) 8M**
   b. Explain the mechanism of conduction of undoped polyacetylene. **(CO4 K2) 7M**

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