

DEPARTMENT OF CHEMISTRY
UNIVERSITY COLLEGE OF ENGINEERING (A)
Osmania University, Hyderabad-07
ENGINEERING CHEMISTRY
CLASS TEST-I

Class: B.E (Civil, EEE, Mech. & Mining)
Semester: II
Academic Year: 2021-2022

Max Marks: 20
Duration: 1hr
Date: 17-06-2022

PART-A
Answer All Questions (6 M)

Marks BT CO

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| 1. | | | | |
| a) | Define scale and sludge. Give an example of each. | 1 | 1 | 1 |
| b) | Calculate the efficiency of the heat engine working between 0°C and 100°C. | 1 | 3 | 2 |
| c) | State and explain Pilling Bed Worth's Rule. | 2 | 2 | 1 |
| d) | Distinguish between Galvanic cells and Electrolytic cells. | 2 | 4 | 2 |

PART-B
Answer Any Two Questions (14 M)

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| 5. | | | | |
| a) | What is the Principle of EDTA method? Describe the estimation of hardness of water by EDTA method. 50ml. of standard hard water containing 1mg. of pure CaCO ₃ /ml consumed 20ml. of EDTA. 50ml of hard water sample consumed 25ml. of same EDTA solution. After boiling and filtering the same water sample consumed 12ml. of EDTA. Calculate the total, permanent and temporary hardness of water. | 5 | 5 | 1 |
| b) | What is Cathodic protection? Explain Sacrificial anodic protection method. | 2 | 2 | 1 |
| 6. | | | | |
| a) | Deduce an expression for the efficiency of Carnot's engine. | 4 | 5 | 2 |
| b) | Derive Nernst equation for the calculation of cell EMF? | 3 | 5 | 2 |
| 7. | | | | |
| a) | Define corrosion. Discuss wet or electrochemical corrosion and its mechanism? | 4 | 6 | 1 |
| b) | Determine the P ^H of a solution using Quinhydrone electrode. | 3 | 5 | 2 |

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