Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2017**

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| **Code :** | **15CH3021** | **Duration :** | **3hrs** |
| **Sub. Name :** | **APPLIED ELECTROCHEMISTRY** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Describe the types of dry corrosion. Explain the mechanism of different types of dry corrosion. | CO1 | 10 |
| b. | Explain the concept of galvanic corrosion. How to avoid this corrosion? | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Describe the principle of pitting corrosion. Explain the mechanism of pitting with a diagram. | CO1 | 10 |
| b. | Write the mechanism of passivity? Describe the Pourbaix diagram for iron in water. | CO1 | 10 |
| 3. | a. | Define cathodic protection. Illustrate the principles involved in sacrificial anodic protection and impressed current cathodic protection methods. | CO1 | 10 |
| b. | Give a short account on i. Microbiological corrosion; ii. Erosion corrosion. | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | Define the throwing power of a bath? How to determine the throwing power of a bath by Haring – Blum Cell experiment? | CO1 | 10 |
|  | b. | Explain any five methods of cleaning articles before electro-deposition process? | CO1 | 10 |
| 5. | a. | Describe the importance of electroplating of copper. Explain its all bath compositions and appropriate operating conditions. | CO1 | 10 |
| b. | Discuss the principle of gold electroplating? Give an account on different types of gold electroplating. Describe the formulations and composition of various gold electroplating baths. | CO1 | 10 |
| (OR) | | | | |
| 6. | a. | Explain the operating principle and electrochemistry of a solid oxide fuel cell (SOFC) with a schematic diagram. | CO1 | 10 |
|  | b. | Write note on the principle, construction, working concept, advantages and disadvantages of lithium-ion batteries. | CO1 | 10 |
| 7. | a. | Elaborate the operating principle of photo electrochemical cells. | CO1 | 10 |
|  | b. | How standard hydrogen electrode and saturated calomel electrodes are fabricated - Explain. | CO1 | 10 |
| (OR) | | | | |
| 8. | a. | Define an electrocatalyst? Explain the role of elactrocatalysts in the reactions involving adsorbed species. | CO1 | 10 |
|  | b. | Define a transducer. Explain the operating principle of a transducer. Mention few of its applications. | CO1 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Illustrate the principle of operation of Tast polarography. | CO1 | 10 |
|  | b. | Describe the principle and instrumentation of cyclic voltammetry. | CO1 | 10 |

ALL THE BEST