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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

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

**Supplementary Examination – June – 2017**

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

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Desrcibe the mechanisms of electrochemical corrosion with suitable diagrams. | CO1 | 10 |
| b. | Define crevice corrosion. Describe the mechanism of crevice corrosion with a diagram. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Describe the principle involved in stress corrosion cracking. Illustrate it’s mechanism. | CO1 | 10 |
| b. | Define differential aeration corrosion. Explain with a diagram. | CO1 | 10 |
| 3. | a. | Define sacrificial anodic protection. Illustrate the mechanism with few examples. | CO1 | 10 |
| b. | Describe the factors involved in controlling corrosion by modifying the environment. | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | Describe an experiment with a diagram to measure the throwing power of the plating bath solution. | CO1 | 10 |
|  | b. | Describe any five methods of cleaning articles before electrodeposition. | CO1 | 10 |
| 5. | a. | Describe the following processes with suitable examples: (i) Anodizing; (ii) Electroforming | CO1 | 10 |
| b. | Describe the importance of electroplating of gold. Explain it’s bath composition. | CO1 | 10 |
| (OR) | | | | |
| 6. | a. | Explain the operating principle of a fuel cell system with a schematic diagram. | CO1 | 10 |
|  | b. | Describe the working principle of photoelectrochemical cells. | CO1 | 10 |
| 7. | a. | Define electrode potential. Derive Nernst equation. | CO1 | 10 |
|  | b. | Describe the fabrication process of Standard Hydrogen Electrode (SHE) Saturated Calomel Electrode (SCE) with suitable diagrams. | CO1 | 10 |
| (OR) | | | | |
| 8. | a. | Define electrocatalysts. Describe the role of elactrocatalysts in the reactions involving adsorbed species. Derive the equations for the same. | CO1 | 10 |
|  | b. | Explain the principle of operation of various of transducers. | CO1 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Illustrate the working principle of cyclic voltammetry with suitable diagram. | CO1 | 10 |
|  | b. | Illustrate the importance and operation principle of impedance spectroscopy. | CO1 | 10 |