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

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **17CH3021** | **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 different types of dry corrosion with respective mechanisms. | CO3 | 10 |
| b. | Explain the following: (i) Galvanic corrosion; (ii) Pitting corrosion | CO3 | 10 |
| (OR) | | | | |
| 2. | a. | Describe the concept of Phorbaix diagram. | CO3 | 10 |
| b. | Explain any two corrosion monitoring techniques with suitable diagrams. | CO4 | 10 |
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| 3. | a. | Describe the general procedure of an electroplating process with a neat diagram. | CO4 | 10 |
| b. | Explain the process of measuring the throwing power of an electrolyte bath. | CO4 | 10 |
| (OR) | | | | |
| 4. | a. | Discuss the principle of zinc electroplating process and factors relating to it. | CO4 | 10 |
| b. | Mention the advantages of gold electroplating with its bath compositions. | CO4 | 10 |
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| 5. | a. | Explain the basic principle of an electrochemical energy conservation process. | CO5 | 10 |
| b. | Describe the classification of batteries and write note on components of battery. | CO5 | 10 |
| (OR) | | | | |
| 6. | a. | Derive Gibbs equation and explain its role in measuring the emf of an electrochemical cell. | CO5 | 10 |
| b. | Explain any five characteristics of a battery. | CO5 | 10 |
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| 7. | a. | Elucidate the construction of an alkaline primary battery. | CO5 | 10 |
| b. | Describe the process involved in the construction of a lead-acid battery. | CO6 | 10 |
| (OR) | | | | |
| 8. | a. | Describe the operation principle of a fuel cell system. Mention the applications of fuel cells based on their operation temperature. | CO6 | 10 |
| b. | Explain the operation concept of a photoelectrochemical cell. | CO5 | 10 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Describe the fabrication of a standard hydrogen electrode and a saturated calomel electrode. | CO1 | 10 |
| b. | Explain the principle of electrochemical impedance spectroscopy technique. | CO2 | 10 |