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



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **17CH1002** | **Duration :** | **3hrs** |
| **Sub. Name :** | **APPLIED CHEMISTRY** | **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. | With neat sketch, explain the softening of water by Zeolite process. | CO1 | 10 |
| b. | Differentiate between scales and sludges. | CO1 | 5 |
| c. | Discuss the principle of estimation of hardness by EDTA method. | CO1 | 5 |
| **(OR)** | | | | |
| 2. | a. | Define reverse osmosis. Explain its application in water purification. | CO1 | 10 |
| b. | Identify the factors that result in boiler corrosion and suggest a method to prevent boiler corrosion. | CO1 | 6 |
| c. | Differentiate between temporary and permanent Hardness. | CO1 | 4 |
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| 3. | a. | Define the following terms in thermodynamics i) isolated system  ii) system iii) Adiabatic process iv) Hess’ Law. | CO2 | 10 |
| b. | Derive Gibb’s Helmholz Equation. | CO2 | 10 |
| **(OR)** | | | | |
| 4. | a. | Explain the following: i) Zeroth law of thermodynamics ii) First law of thermodynamics iii) entropy iv) Isothermal Process  v) Carnot theorem . | CO2 | 10 |
| b. | Prove Cp-Cv = R. | CO2 | 10 |
|  |  |  |  |  |
| 5. | a. | Derive the Nernst equation for electrode potential at 25 oC. | CO3 | 10 |
| b. | Elaborate the working of H2-O2 fuel cell. Analyze the advantages over conventional batteries. | CO3 | 8 |
| c. | Define specific conductance. | CO3 | 2 |
| **(OR)** | | | | |
| 6. | a. | What is electrochemical series? List down the applications of Electrochemical Series. | CO3 | 8 |
| b. | Demonstrate the construction and working of Lead Acid battery. | CO3 | 12 |
|  |  |  |  |  |
| 7. | a. | Identify the factors that result in corrosion. | CO4 | 8 |
| b. | What are moulding constituents? Explain with suitable examples. | CO5 | 8 |
| c. | Analyze the applications of polymer in medical field. | CO5 | 4 |
| **(OR)** | | | | |
| 8. | a. | Suggest any five methods to control / prevent corrosion. | CO5 | 10 |
| b. | Explain with neat diagram any one method of moulding of plastics. | CO4 | 6 |
| c. | Compare and contrast between biopolymer and biodegradable polymer. | CO4 | 4 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Illustrate the synthesis of nanoparticles by sol-gel process. Analyze the advanges of sol-gel process over ball milling. | CO6 | 10 |
| b. | Identify the applications of nanomaterials in;  i) medical field ii) textile industry iii) automobile industry. | CO6 | 10 |