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



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

|  |  |  |  |
| --- | --- | --- | --- |
| **Code :** | **16CH2003** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ATOMIC STRUCTURE, THERMODYNAMICS AND ELECTROCHEMISTRY** | **Max. Marks :** | **100** |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Explain the different concept of atomic orbital and explain the differences between orbit and orbital with suitable examples. | 10 | CO2 |
| b. | Calculate the frequency and wave number of yellow light having wavelength equal to 4000o A0? | 10 | CO3 |
| **(OR)** | | | | |
| 2. | a. | Discuss Ruther Ford’s Gold foil experiment with neat diagram. | 10 | CO2 |
| b. | Write a note on Quantum Numbers. | 10 | CO2 |
|  |  |  |  |  |
| 3. | a. | Derive Gibbs Duhem equation. | 10 | CO2 |
|  | b. | State the Second law of thermodynamics. Explain it. | 10 | CO2 |
| **(OR)** | | | | |
| 4. | a. | Describe the following terms.  i)Isobaric ii) Steam Point iii) Intensive property  iv) Endothermic process v) Isochroic Process | 10 | CO2 |
|  | b. | Explain the relationship between pressure, volume and work. | 10 | CO2 |
|  |  |  |  |  |
| 5. | a. | Give the description of Alkaline batteries and its functioning during discharging and recharging. | 10 | CO2 |
|  | b. | i) Calculate the reduction potential of Cu2+/Cu = 0.5 M at 25oC.  EoCu2+/Cu­­= 0.337V.  ii) What are lithium batteris? Give the merits. | 10 | CO3 |
| **(OR)** | | | | |
| 6. | a. | Explain the construction of Fuel cells with advantages. | 10 | CO2 |
|  | b. | Derive Nernst equation and give its application. | 10 | CO2 |
|  |  |  |  |  |
| 7. | a. | Discuss in detail about Differential aeration corrosion with neat diagram. | 10 | CO2 |
|  | b. | How does modification of the properties of the metal help in inhibiting corrosion control? | 10 | CO2 |
| **(OR)** | | | | |
| 8. | a. | Explain the following mechanism with neat diagram and examples.  i) Corrosion by hydrogen ii) Corrosion by liquid metal. | 10 | CO2 |
|  | b. | Give an outline of the various inhibitors with examples. | 10 | CO2 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Explain Planck’s quantum theory and its present application. | 10 | CO2 |
|  | b. | Derive Schrodinger’s wave equation. | 10 | CO2 |