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



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

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| **Code :** | **17CH3001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **CHEMICAL KINETICS AND PHOTOCHEMISTRY** | **Max. Marks :** | **100** |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Derive the rate equation for the kinetics of 2nd order reaction. | CO1 | 10 |
| b. | Derive the rate equation for A ⇋ B reaction. | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Discuss Lindmann’s theory. | CO1 | 10 |
| b. | Discuss the kinetics of fast reactions. | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Explain various types of kinetic isotopic effects. | CO2 | 10 |
| b. | What is reaction dynamics? Discuss molecular beam reactions. | CO2 | 10 |
| **(OR)** | | | | |
| 4. | a. | Derive Hammett equation and explain the significances of σ and ρ. | CO2 | 10 |
| b. | Explain flow techniques for studying reaction kinetics. | CO2 | 10 |
|  |  |  |  |  |
| 5. | a. | Derive general rate equation for acid base catalysis. | CO3 | 10 |
| b. | Define heterogeneous catalytic reaction. Explain with suitable examples. | CO3 | 10 |
| **(OR)** | | | | |
| 6. | a. | Define and derive the mathematical expression of Hammett Acidity Function. | CO3 | 10 |
| b. | Discuss in detail the Langmuir-Hinshelwood mechanism. | CO3 | 10 |
|  |  |  |  |  |
| 7. | a. | Explain the concepts absorption and adsorption with suitable examples. | CO4 | 10 |
| b. | Derive an expression for Freundlisch’s adsorption isotherm. | CO4 | 10 |
| **(OR)** | | | | |
| 8. | a. | Explain various methods of purification of colloidal solution. | CO4 | 10 |
| b. | Write short notes on Emulsions and Micelles. | CO4 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain Jablonski diagram with proper schematic representation. | CO5 | 10 |
| b. | Explain the concept delayed fluorescence. How does it differ from phosphorescence? Give its applications. | CO5 | 10 |