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



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

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| **Code :** | **17CH2006** | **Duration :** | **3hrs** |
| **Sub. Name :** | **SURFACE CHEMISTRY AND CHEMICAL KINETICS** | **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. | Write in detail the interfacial tension and surface active agents. | CO1 | 8 |
| b. | What is liquid crystal? How does it differ from ordinary solid? Explain in detail the types of liquid crystals. | CO1 | 12 |
| **(OR)** | | | | |
| 2. | a. | Give in detail the separation of colloids by peptization and condensation methods. | CO1 | 10 |
| b. | Discuss the classification of colloids based on molecular size and appearance. | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Discuss in detail the types of emulsifying agents. | CO2 | 10 |
| b. | Explain the factors that affect critical micelle concentration (CMC) in aqueous media. | CO2 | 10 |
| **(OR)** | | | | |
| 4. | a. | Write in detail the electrophoresis method with a neat diagram. | CO2 | 10 |
| b. | Explain the factors that determine the stability of macro-emulsion. | CO2 | 10 |
|  |  |  |  |  |
| 5. | a. | Give any three methods of preparation of colloidal solutions. | CO2 | 10 |
| b. | Derive the integration of first order rate expression when both the reactants are the same. | CO2 | 10 |
| **(OR)** | | | | |
| 6. | a. | What are the three types of gels? Give the applications of gelsin food and medical field. | CO2 | 10 |
| b. | Explain the general characteristics of catalysts. | CO2 | 10 |
|  |  |  |  |  |
| 7. | a. | The gas phase thermal decomposition of one mole of di-tertiary butyl peroxide, in a constant volume apparatus, yields two moles of acetone and one mole of ethane. If the reaction obeys first order kinetics, develop expression for the rate constant as a function of time, initial pressure and total pressure. | CO3 | **5** |
| b. | Derive Michaelis-Menten equation for enzyme catalysed reaction. | CO3 | 15 |
| **(OR)** | | | | |
| 8. | a. | Derive the integration of second order rate expression when both the reactants are the same. | CO3 | 15 |
| b. | Derive the integrated Arrehenius equation. | CO3 | 5 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Derive the Langmuir adsorption equation and give its significance and limitations. | CO2 | 10 |
| b. | Give the applications of adsorption. Mention the difference between physisorption and chemisorption. | CO2 | 10 |