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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **16CH2006** | **Duration :** | **3hrs** |
| **Sub. Name :** | **Surface Chemistry and Chremical 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. | Explain the relationship between the vapour pressure and temperature of ordinary substance and liquid crystal. | CO1 | 10 |
| b. | Discuss some effects of surface tension in detail. | CO1 | 7 |
|  | c. | Write a short note on free volume in a liquid. | CO1 | 3 |
| (OR) | | | | |
| 2. | a. | What is surface energy? Explain the effect of temperature on surface tension. | CO1 | 8 |
| b. | Write a note on interfacial tension and surface active agents | CO1 | 8 |
|  | c. | What is liquid crystal? How does it differ from ordinary solid? | CO1 | 4 |
| 3. | a. | Explain the origin of charge on colloidal particle by considering AgI colloidal system as an example in detail. | CO2 | 10 |
|  | b. | Describe any five factors that determine the stability of macro-emulsion. | CO2 | 5 |
|  | c. | What are the different gel preparation methods? | CO2 | 5 |
| (OR) | | | | |
| 4. | a. | Discuss the electrophoresis method with a neat diagram. | CO2 | 10 |
|  | b. | Explain the factors that affect critical micelle concentration (CMC) in aqueous media. | CO2 | 10 |
| 5. | a. | What is micelle? Discuss its formation in detail. | CO2 | 10 |
|  | b. | Explain the role of an electrolyte in coagulating the colloidal sol. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Describe the general characteristics of catalysts. | CO2 | 10 |
|  | b. | Derive the integration of first order rate expression when both the reactants are the same. | CO2 | 10 |
| 7. | a. | Derive the integration of second order rate expression when both the reactants are the same. | CO3 | 12 |
|  | b. | Nitrous oxide N2O decomposes into N2 and O2, the reactants and the products being all gaseous. If the reaction is first order, develop expression for the rate constant as a function of time, initial pressure and the total pressure. | CO3 | 5 |
|  | c. | Write the unit of zero, first and second order rate constants. | CO3 | 3 |
| (OR) | | | | |
| 8. | a. | Derive Michaelis-Menten equation for enzyme catalysed reaction. | CO3 | 15 |
|  | b. | Derive the integrated Arrehenius equation. | CO3 | 5 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Derive the BET equation for adsorption of gas on solid surface. | CO2 | 12 |
|  | b. | List out the difference between chemisorption and physisorption. | CO2 | 8 |

ALL THE BEST