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



**End Semester Examination – Nov/Dec - 2017**

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| **Code :** | **16CH2006** | **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 |  | Give a detailed account of the principles and applications of X-ray photoelectron spectroscopy. | CO2 | 20 |
| (OR) | | | | |
| 2. | a. | Describe the factors affecting reaction rate. | CO2 | 10 |
| b. | List out the characteristics of catalysts with suitable explanations. | CO2 | 10 |
| 3. | a. | Derive the expression for Langmuir adsorption isotherm. | CO2 | 10 |
| b. | Give B.E.T adsorption isotherm equation and explain the terms in it. | CO2 | 5 |
| c. | Explain the kinetics of radioactive decay. | CO2 | 5 |
| (OR) | | | | |
| 4. | a. | Derive an expression for the rate constant of first order reaction. | CO3 | 10 |
| b. | Derive the Arrhenius relationship between rate constant and energy of a reaction. | CO3 | 10 |
| 5. | a. | Derive an expression for the rate constant of a second order reaction of the type A + B → Products. | CO3 | 10 |
| b. | Explain activation energy with suitable illustration. | CO3 | 5 |
| c. | Mention the characteristics of catalysts. | CO3 | 5 |
| (OR) | | | | |
| 6. | a. | Give two examples for fast reaction. | CO3 | 2 |
| b. | Explain pseudo-unimolecular reaction with examples. | CO3 | 4 |
| c. | Give the differences between order and molecularity of reactions. | CO3 | 4 |
| d. | Derive an expression for the second order reaction of the type  2A → Products. | CO3 | 10 |
| 7. | a. | Give an account of the types of liquid crystals. | CO1 | 10 |
|  | b. | Explain the applications of liquid crystals. | CO1 | 10 |
| (OR) | | | | |
| 8. |  | Explain i. sols ii. gels iii. electrophoresis and iv. electro-osmosis. | CO1 | 20 |
|  | | **Compulsory:** |  |  |
| 9. |  | Elaborate with illustration the properties of surfactants and micelles. Give examples. | CO1 | 20 |

ALL THE BEST