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

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**End Semester Examination – Nov/Dec– 2018**

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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. | a. | What is surface energy? Explain the effect of temperature on surface tension. | CO1 | 10 |
| b. | Write a short note on free volume in a liquid. | CO1 | 5 |
| c. | How does a liquid crystal differ from ordinary solid? Mention the types of liquid crystal. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Explain the relationship between the vapour pressure and temperature of ordinary substance and liquid crystal. | CO1 | 10 |
| b. | Write a note on interfacial tension and surface active agents. | CO1 | 10 |
|  |  |  |  |
| 3. | a. | Discuss the electro-osmosis method with a neat diagram. | CO2 | 10 |
| b. | Narrate the working principle of ultra microscope with a neat sketch. | CO2 | 10 |
| (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. | Explain the role of an electrolyte in coagulating the colloidal sol. | CO2 | 10 |
| b. | Elucidate the formation of micelle in detail. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Discuss the chemical methods involved in the preparation of colloidal sols. | CO2 | 10 |
| b. | Comment on the DLVO theory of stability of lyophobic colloid. | CO2 | 10 |
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| 7. | a. | Derive Michaelis-Menten equation for enzyme catalysed reaction. | CO3 | 15 |
| b. | Write a short note on BET isotherm. | CO2 | 5 |
| (OR) | | | | |
| 8. | a. | Derive the integration of second order rate expression when both the reactants are the same. | CO3 | 15 |
| b. | Point out the general characteristics of enzyme catalysts. | CO3 | 5 |
|  | |  |  |  |
|  | | **Compulsory**: |  |  |
| 9. | a. | Derive the Langmuir theory of adsorption. | CO2 | 10 |
| b. | Write a note on LEED and PES techniques for investigating surfaces. | CO2 | 10 |