

00512

**M.Phil./Ph.D. IN CHEMISTRY
(MPHILCHEM/PHDCHEM)****Term-End Examination****December, 2018****RCHE - 004 : ADVANCES IN SMART MATERIALS***Time : 3 hours**Maximum Marks : 100*

- Note : (i) Answer any ten questions.
(ii) All questions carry equal marks.*

1. What are stimuli-responsive polymers ? Discuss their classification based on physical stimulants. 10
2. "Polymers play a significant role in modern drug delivery". Justify the statement. 10
3. Explain the free radical mechanism for chain growth polymerisation and derive an expression for the rate of polymerisation by this method. 10
4. Explain the principle of action of pH - responsive polymers. Give any one application of these in drug delivery. 10
5. What are thermoresponsive polymers ? Give an application of thermoresponsive polymers in drug delivery. 10
6. Define biomimetics and explain the principle behind self cleaning paints. 10

7. Briefly explain the mechanism of conduction in conducting polymers with degenerate state. 10
 8. What are surfactants ? Explain the terms "Cloud point" and "Kraft's temperature" in the context of surfactants. 10
 9. What are biodegradable polymers ? Discuss the desirable characteristics of biodegradable polymers for biomedical applications. 10
 10. What are hydrogels ? Give one application of smart hydrogels. 10
 11. What are liquid crystals ? Discuss the structured aspects of polymeric liquid crystals. 10
 12. What is meant by polymer degradation ? Briefly describe different methods of studying polymer degradation ? 10
-