| RCHE-004 |

M.Phil/Ph.D. IN CHEMISTRY
(MPHILCHEM/PHDCHEM)

Term-End Examination

⊓⊓285   **June, 2018**

RCHE-004 : ADVANCES IN SMART MATERIALS

Time : 3 hours   *Maximum Marks : 100*

Note : *Answer any* **ten** *questions. All questions carry equal marks.*

1. What are smart materials ? Give an account of their classification.   *10*

2. What is step growth polymerisation ? Derive an expression for the rate of uncatalysed polyesterification reaction.   *10*

3. What are pH-responsive polymers ? Discuss applications of these polymers in drug delivery.   *10*

4. Explain the principle of action of thermoresponsive polymers and give an application of these polymers in drug delivery.   *10*

5. What is Biomimetics ? Give innovative applications of biomimetic materials. *10*

6. What are conducting polymers ? Explain different types of doping employed in conducting polymers. *10*

7. Describe the process of micelle formation by taking the example of dissolution of exceeding amounts of Sodium Dodecyl Sulphate (SDS) to water at a given temperature. *10*

8. What are liquid crystals ? Explain the essential molecular structural features for a liquid crystal with suitable examples. *10*

9. What are biodegradable polymers ? Discuss the mechanisms of their degradation. *10*

10. Briefly discuss biomedical application of shape memory polymers. *10*

11. What are ionic liquids ? Give their applications. *10*

12. What is meant by HLB in the context of surfactants ? Explain its significance. *10*