



HDY-003-1103003 Seat No. _____

M. Sc. (Sem. III) (CBCS) Examination

November / December – 2017

Chemistry : C (PM) - 303

*(Physical & Material Chemistry -
Macromolecular Physical Chemistry - II)
(New Course)*

Faculty Code : 003

Subject Code : 1103003

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- Instructions :** (1) All questions are compulsory.
(2) All questions carry equal marks.

1 Answer the following : (Any **Seven**)

- Define : Morphology, Plasticizer, Fiber, Free volume.
- Explain first order and second order phase transitions.
- What are the applications of composites ?
- Discuss chain branching.
- Explain Hand lay method.
- Give account on optical microscopy.
- Discuss glass transition temperature and molecular weight.
- Explain Zimm plot method.
- What is plastic? State different types of plastics with examples.
- What is viscosity? State the different types of viscosities.

2 Write notes on : (Any **Three**)

- Spherulites
- Cryoscopy and Ebulliometry
- Pultrusion method.
- Natural fibers.

3 Answer the following :

- (a) Give detail account of mechanism and kinetics of polymer crystallization.
- (b) Discuss compression molding and foaming.

OR

3 Answer the following :

- (a) What is composite? Discuss the classification of composite based on its both the components in detail.
- (b) Discuss fractionation of polymers by Gel permeation chromatography.

4 Answer the following : (Any **Three**)

- (a) Describe filament winding technique. What are the advantages and disadvantages of this technique?
- (b) Explain the determination of free volume in polymers.
- (c) Give an account of end group analysis.
- (d) What are biocomposites? Explain in detail. Give its classification with suitable examples.

5 Answer the following : (Any **Two**)

- (a) Explain Lamellar single crystals in detail. Discuss Fibrillar and globular crystals also.
- (b) Discuss thermodynamics of melting and crystallization of polymers.
- (c) Explain the determination of intrinsic viscosity and viscosity average molecular weight.
- (d) Discuss number average molecular weight determination by vapor pressure osmometry.