



MCB-003-1102003

Seat No. _____

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

April / May - 2018

Chemistry : C - 203

(Macromolecular Physical Chemistry) (New Course)

Faculty Code : 003

Subject Code : 1102003

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 : Polymer, Telomerization; Inhibitor, Copolymer.
- What is functionality? Give one example each of bi, tri and tetra functional compounds.
- Give an account of gradient elution method.
- What is step-wise polymerization? Give at least three examples.
- Distinguish between syndiotactic and atactic polymers.
- Explain the effect of activator concentration on the rate of ring scissor polymerization and molecular weight of the polymer.
- Discuss vulcanization of rubbers.
- What are initiators? Give two examples and their decomposition reactions into free radicals.
- Give the repeat unit structure and full forms of PAN, CA, PET and Teflon.
- Explain solution polymerization.

2 Write notes on : (any **three**)

- Fractional precipitation method.
- Discuss non-linear polycondensation reaction.
- Addition and substitution reactions.
- Cationic polymerization.

- 3** Answer the following :
- (a) Answer the following :
 - (i) Explain Fineman-Ross method for the determination of reactivity ratios.
 - (ii) Describe chemical degradation of different types with suitable examples.
 - (b) Discuss the statistics of linear polycondensation.

OR

- 3** (a) Discuss the kinetic of chain transfer reaction.
(b) Discuss the kinetics and mechanism of ring scissior polymerization.

- 4** Answer the following : (any **three**)

- (a) Explain curing reactions of phenol-formaldehyde and epoxy resins.
- (b) Effect of monomer concentration and temperature on polycondensation reactions.
- (c) Discuss the factors affecting free radical polymer and polymer molecular weight.
- (d) Give an account of coordination polymerization.

- 5** Answer the following : (any **two**)

- (a) Discuss polycondensation equilibrium and molecular weight of polymer.
- (b) Explain gel permeation chromatographic method in detail.
- (c) Describe emulsion polymerization.
- (d) Discuss the reactivity ratios and copolymerization behavior.
