DBY-003-1102009 Seat No. _____

M. Sc. (Sem. II) Examination

July - 2022

C-203 : Physical Chemistry

(Macromolecular Physical Chemistry)

(New Course)

Faculty Code : 003
Subject Code : 1102009

Time : $2\frac{1}{2}$ Hours] [Total Marks : **70**

Instructions : (1) All questions are compulsory.
(2) All questions carry equal marks 14
(3) Total 5 questions.

1 Answer the following (any seven). **14**

(1) What is degradation? Give the classification of degradation.

(2) Define : Gel point, polymer, regulator, chain polymerization.

(3) Give the repeat unitstructure.

(i) PS

(ii) Natural Rubber

(iii) Cellulose

(iv) PVA

(4) Explain non-linear polycondensation.

(5) Discuss cyclization reaction.

(6) Explain Gradient elution method.

(7) Discuss cross linking.

(8) Give the name of the methods of initiating free radical polymerization. Explain any one.

(9) Explain the formation of polyurea by stepwise polymerization and why its rate is higher than polyurethane.

(10) What is the effect of temperature on the rate of ring-scission polymerization and molecular wieght of the polymers.

2 Answer the following. (any two) **14**

(1) Discuss thermodynamics of ring transformation to linear polymer.

(2) What are the factors affecting free radical polymerization and properties of resulting polymer.

(3) Describe gel permeation chromatography.

3 Answer the following. **14**

(1) Discuss chemical degradation in detail.

(2) Explain :

(i) Polyrecombination with examples.

(ii) Bulk polymerization.

OR

3 Answer the following. **14**

(1) Discuss any two methods of polycondensation.

(2) Discuss addition and substitution reactions.

4 Answer the following. **14**

(1) Discuss molecular weight control in polycondensation.

(2) Explain :

(i) Co-ordination polymerization.

(ii) Partial dissolution method.

5 Answer the following. (any two) **14**

(1) Discuss the statistics of linear polycondensation.

(2) Differentiate between :

(i) Thermoplastic and Thermosetting.

(ii) Syndiotactic polymer and Atactic polymers.

(iii) Homopolymers and Heteropolymers.

(3) Emulsion polymerization.

(4) Discuss thermal effect with rupture of main chain in physical degradation.
