

Roll No.

o/c

Total Pages : 3

322504

December 2023

B.Sc. (Chemistry) Vth SEMESTER

Polymer Chemistry (DECC 502)

Time : 3 Hours]

[Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) What are gelation and gel point? (1.5)
- (b) Name any two chain modifiers. (1.5)
- (c) Differentiate between addition and condensation polymerization. (1.5)
- (d) Write the conditions of free radical polymerization. (1.5)
- (e) Write applications of conducting polymers. (1.5)
- (f) What are internal and external plasticizers? (1.5)
- (g) What are the IUPAC name of Polyvinyl alcohol) and PTFE. (1.5)

322504/90/111/356

[P.T.O.]

- (h) What is the relationship between kinetic chain length and average degree of polymerization? (1.5)
- (i) What is the criteria of polymer solubility? (1.5)
- (j) What is ceiling temperature? (1.5)

PART-B

2. (a) Explain bulk and suspension polymerization technique and give its applications. (10)
- (b) Write the mechanism and kinetics of cationic polymerization. (5)
3. (a) Classify the polymers based on its sources and types of monomers. (5)
- (b) Explain the kinetics of self-catalyzed polycondensation reaction. (10)
4. Discuss the synthesis, properties and applications of Nitrile Rubber(SBR), UF resins and Nylon 6,6. (15)
5. (a) Explain the formation of spherulites and shish kebab morphology. (5)
- (b) What are the factors which affect properties of polymer? (10)
6. (a) What are Zeigler- Natta catalysts? Write its mechanism. (10)

- (b) If 1000 g of a polymer of molecular weight 1000 g/mole is mixed with 1000 g of another polymer of molecular weight 10^6 g/mole, what is the ratio of M_w/M_n . (5)

7. What is the glass transition temperature? Explain the factors and determination technique of T_g . (15)
-