

MSc Sem.-2 Examination

407

Polymer Science

May-2025

Time : 2-30 Hours]

[Max. Marks : 70

QUESTION – 1 Write the following

- (i) What you mean by Degree of crystallinity, how to measure degree of crystallinity by XRD method. **7 MARKS**
- (ii) Describe topological techniques, write down the relationship in between pressure volume and temperature? **7 MARKS**

OR

- (i) What is a definition of Copolymer? Write down the arrangement of copolymer. **7 MARKS**
- (ii) Write short note on –
 (a) What do you mean by linear thermal expansion
 (b) What do you mean spherulite and fringed micelle theory. **7 MARKS**

7 MARKS**QUESTION – 2 Write the following**

- (i) Define –
 (a) Tensile strength (b) Flexural (c) Impact strength (d) Yield strength **7 MARKS**
- (ii) What do you mean by Creep, write down the stage of creep by plotting of graph? **7 MARKS**

OR

- (i) Write down the solubility parameter of polymer, explain it? **7 MARKS**
- (ii) Define Cohesive energy? what you mean by Crazeing in glassy polymer? **7 MARKS**

QUESTION – 3 Write the following

- (i) Give brief explanations of transition temperature in polymer? **7 MARKS**
- (ii) What is the relationship in between glass transition temperature and melt transition temperature? **7 MARKS**

OR

- (i) Write short note on Heat capacity and latent heat of crystallization? **7 MARKS**
- (ii) Explain the Enthalpy and calculate of heat capacities of polymer? **7 MARKS**

QUESTION – 4 Write the following

- (i) Dielectric Constant? Write down the effect of frequency of temperature on Define Dielectric properties? **7 MARKS**
- (ii) Describe the Molar Polarization, which type of factor affect dipole moment? **7 MARKS**

OR

- (i) What is an Optical property, how to effect of polymer structure on optical properties. **7 MARKS**
- (ii) Write down short note on –
 (a) Clarity (b) Transparency (c) Transmittance **7 MARKS**

7 MARKS

(P.T.O)

QUESTION – 5 Attempt any Seven out of Twelve.

14 MARKS

- I. Below the T_g , a polymer is in which state?
(a) Rubbery (c) Liquid
(b) Glassy (d) Crystalline
- II. What happens to the internal energy of a substance during the melt transition?
(a) It decreases (c) It remains constant
(b) It Increases (d) It fluctuates
- III. What type of properties measured by Creep Test?
- IV. A measure of how fast light travels through a medium is called as a -----
- V. Write down the formula of Enthalpy & Entropy?
- VI. What is a polymer? Which type of polymer based on thermal properties with example
- VII. What is the definition of Specific heat?
- VIII. Metal fatigue failure can only occur at stresses above the yield stress of the material.
(True/False)
- IX. At Low temperature, dielectric do not exhibit superconducting properties.
(True/ False)
- X. Define Refractive indices?
- XI. What is a super molecular structure?
- XII. What is the relationship in between Rapture strength and failure time?
