2/21

1204E173

Candidate's Seat No : _____

M.Sc. Sem.-4 Examination

508

Polymer Science

April-2025

Time : 2-30 Hours] **[Max. Marks : 70**

QUESTION – 1 Write the following

(i)	What are the most effective strategies for enhancing the fire resistance and heat tolerance of low-performance polymers while ensuring compliance with low-hazard safety standards for high-temperature environments?	**7 MARKS**
(ii)	Illustrate the molecular structure of polyimide's and describe their key properties and Application.	**7 MARKS**

OR

(i)	Why are fire-resistant polymers necessary? Explain the mechanism of thermal oxidation in Polymer.	**7 MARKS**
(ii)	Write down the Heterocyclic polymers with their performance and their application?	**7 MARKS**

QUESTION – 2 write the following

(i)	What are the benefits of using polymer as Insulators in high-voltage electric equipment?	**7 MARKS**
(ii)	What is the mechanism of conducting polymers, and how do they differ from insulating and semiconducting polymers?	**7 MARKS**

OR

(i)	What are piezoelectric and pyroelectric properties in polymers?	**7 MARKS**
(ii)	What are liquid crystalline polymers (LCPs), what are their types, and what are their applications?	**7 MARKS**

QUESTION – 3 write the following

(i)	What is an ionic polymer and what are the different types based on the nature of their bound ions.	**7 MARKS**
(ii)	What are ionomers, and what is the method of producing ionomers based on polystyrene?	**7 MARKS**

OR

(i)	Provide a brief note on ion-exchange polymers and illustrate a diagram of ion-exchange dialysis.	**7 MARKS**
(ii)	What is the Demineralization, what is the direct synthesis of Phenol – Formaldehyde resin?	**7 MARKS**

QUESTION – 4 Write the following

(i)	Discuss the Polymer Concrete and Polymer Impregnated Polymer write the application of polymer Concrete.	**7 MARKS**
(ii)	Describe the schematic representation of the method used to produce polymer-impregnated concrete.	**7 MARKS**

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OR

(i)	What is partial impregnation in concrete? Discuss its applications and limitations.	**7 MARKS**
(ii)	What is a polymer gel? What are the different types of polymer gels, and what are their applications?	**7 MARKS**

QUESTION – 5 Attempt any Seven out of Twelve. **(7X2) = 14**
MARKS

I.	Write down any two examples or Aromatic Polymer.
II.	..... Are a type of photoactive polymer that has a highly cross linked backbone structure
III.	---------- is a used for Cable Insulation.
IV.	What type of properties required for an Insulation property.
V.	What is the definition of Dielectric Strength and write down the Unit of Dielectric Strength.
VI.	Which type of factor affecting on Capacitance?
VII.	Write down the any four types of comparison of Electronic and Ionic behaviour.
VIII.	Write down the application of Polyphenylene Sulphide.
IX.	What is the structure of Heterocyclic Polymer with example?
X.	What is the structure of Heterocyclic Polymer with example?
XI.	Write down the structure of Polybutylene terephthalate (PBT).
XII.	Write down the any four Example of Conducting Polymer.

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