2211E775

Candidate's Seat No :_____

M.Sc Sem-3 Examination

503

Chemistry (Polymer)

November-2024

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

Answer the following questions:

Que.1 (a) Name the methods used to determine the molecular weights of polymer. How molecular weights of polymer can be determined by viscosity measurements? 07

OR

(a) Explain briefly the size and shapes of actual polymer molecules in solution. 07

(b) Explain briefly molecular weight of polymer and degree of polymerization. Explain polydispersity and molecular weight distribution in polymer using molecular weight distribution curve. 07

OR

(b) Why molecular weights of polymers are taken as average? Explain how the molecular weights of polymer can be determines by measuring the osmotic pressure. 07

Que.2 (a) Explain the relation of glass transition temperature, T_g and melting temperature, Tm. What is the importance of glass transition temperature, T_g 07

OR

(a) Explain the microstructures of polymer which is based on chemical structure. 07

(b) Name the various mechanical properties of polymer. Explain various properties of polymer affected by crystalanity of polymer. How mechanical properties of polymer can be characterized? 07

OR

(b) Explain the deformation behavior of polymeric materials. 07

Que.3 (a) Explain the Die casting process of polymer. 07

OR

(a) Explain briefly Dry spinning and Wet spinning processes of polymer. 07

(b) Explain Extrusion moulding and Injection moulding processes of polymer. 07

OR

(b) Explain various post treatments given to fiber to make them more useful. 07

Que.4 (a) Explain the Flory-Huggins theory of polymer solution. 07

OR

(a) Explain the general principles of polymer dissolution process. 07

(b) Explain the nature of the polymer molecules in solution. 07

OR

(b) Explain the size and shape of polymer molecules in solutions. 07

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Que.5 Answer the following (Any seven – each two marks) 14

(i) What are the basics of polymer processing?
(ii) Which are the factors on which the viscosity of diluted solution depends?
(iii) Explain the factors affecting the mechanical properties of polymer.
(iv) What are the advantages of polymer processing?
(v) Under which condition $M_n = M_w$?
(vi) What in intrinsic viscosity. How it is related with molecular weight of polymer?
(vii) Which properties are used to determine the glass transition temperature?
(viii) What are the advantages of Flory-Huggins theory?
(ix) Explain briefly the classification of polymer on the basis of their physical properties.
(x) Why plasticizer is used in during moulding process?