Avinashilingam Institute for Home Science and Higher Education
Coimbatore-641043

Master's Degree Examination -November-2017
III Semester

Class: II PG **Max. Marks: 60**
Major: Chemistry **Time: 3 Hours**

12MCHC14-Polymer Chemistry

Part- A **(10 x 1/2 = 5)**

(1) Which of the following alkenes is most reactive towards cationic polymerization?
(a) $CH=CHCH_3$ (b) $H_2C=CHCl$ (c) $H_2C=CHC_6H_5$ (d) $H_2C=CHCO_2CH_3$

(2) Which of the following act as inhibitor in vinyl polymerization?
(a) P-Benzoquinone (b) Benzophenone
(c) Phthalic anhydride (d) Benzoyl peroxide

(3) A polymer which is used as a suture material, for stitching of wound after operation is
(a) PHBV (b) Nylon-2-Nylon-6 (c) Dextron (d) Dacron

(4) Synthetic human hair wigs are made from a copolymer of vinyl chloride and acrylonitrile and called as
(a) PVC (b) Polyacrylonitrile (c) Cellulose (d) Dynel

(5) The process involving heating of rubber with sulphur is known as
(a) Galvanization (b) Vulcanization (c) Besemerisation (d) Sulphonation

(6) If $N_1, N_2, N_3, \ldots\ldots\ldots$ are the number of molecules with molecules with molecular masses $M_1, M_2, M_3, \ldots\ldots$ respectively then mass average mass is expressed as

(a) $\frac{\Sigma N_i M_i^2}{\Sigma N_i M_i}$ (b) $\frac{\Sigma N_i M_i}{\Sigma N_i}$ (c) $\frac{\Sigma M_i^2}{\Sigma N_i}$ (d) $\frac{\Sigma N_i M_i}{\Sigma M_i}$

(7) The monomer units of silicones, a water repellent, acid resistant, and heat resistant polymer is
(a) Si (b) SiO_2 (c) R_2SiO (d) None of these

(8) The Catalyst used for the polymerization of olefins is
(a) Zieglar-Natta Catalyst (b) Wilkinson's Catalyst (c) Pd-Catalyst (d) Zeolite

(9) The technique of determination of molecular weight of a polymer by the depression of freezing point is called
(a) Osmometry (b) Cryoscopy (c) Viscometry (d) End group analysis

(10). Which of the following polymers is used for insulation in electrical items and in the manufacture of gasket and valves?
(a) Bakelite (b) Polyaniline (c) Teflon (d) Polypyrrole

Part- B (5 x 4 = 20)

Answer ALL questions

Each answer should not exceed 200 words (or) one page

(11). (a)What are natural and synthetic polymers? Explain with suitable examples.

(OR)

(b) Write short notes on Ziegler Natta catalyst? Give its uses.

(12). (a) Explain weight average molecular weight.

(OR)

(b) Write short notes on end group analysis with examples.

(13). (a) Discuss the relationship between glass transition temperature and molecular weight.

(OR)

(b) What is thermal degradation of polymer? Explain with examples.

(14). (a)Write short notes on (i) Plasticizers and (ii) Fillers.

(OR)

(b) Explain with neat sketch on fiber processing of polymers.

(15). (a)Discuss about electroluminescent polymers.

(OR)

(b) Write a short note on biomedicalpolymers.

Part- C (5 x 7 = 35)

Answer ALL questions

Each answer should not exceed 600 words (or) three pages

(16). (a) What is degree of polymerization? Explain anionic and ring opening polymerization with examples.

(OR)

(b) Explain briefly on bulk and emulsion polymerization.

(17). (a) Explain the following with suitable examples:

(i) Number average molecular weight and (ii) Viscosity average molecular weight

(OR)

(b) Explain in detail the colligative properties of polymers with suitable examples.

(18). (a)What is glass transition temperature? Explain the relationship between Tg and Tm. Give the importance of Tg.

(OR)

(b) Discuss about high- energy degradation and oxidative degradation.

(19). (a) Discuss the functions and examples of the following polymer additives:

(i) Heat stabilizers (ii) Flame retardants

(OR)

(c) Explain the compression moulding and blow moulding of plastics .

(20). (a) Write short note on (i) Polyelectrolytes and (ii) Ionomers.

(OR)

(b) Give an account on liquid crystalline polymers and conducting polymers.

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