

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER-I(New course)• EXAMINATION – WINTER- 2015

Subject Code: 2711607

Date: 04/01/2016

Subject Name: Polymer Science & Synthesis of Polymers (PSSP)

Time: 2:30 pm to 5:00 pm

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q. 1** (a) Give detailed classification of polymers with suitable examples. (07)
(b) Derive & Explain the Carotherø Equation. (07)
- Q. 2** (a) Give a comparative account of chain growth and step growth polymerization reactions. (07)
(b) What are the natural polymers? Give suitable examples. Describe the manufacturing process of any two of them. (07)

OR

- (b) Answer the following.
(i) Define number average and weight average molecular weight. A sample of polystyrene has number average molecular weight of 100,000. Determine its weight average molecular weight if, its polydispersity index is 5. (04)
(ii) Differentiate between a polymeric molecule and a normal macromolecule. (03)
- Q. 3** (a) Derive kinetic expression for free radical polymerization reaction, considering steady state assumption. (07)
(b) Write note on following biopolymers: Nucleic acid and protein. (07)

OR

- Q. 3** (a) Give a brief account of emulsion and suspension polymerization techniques. (07)
(b) Write a note on -The Mayo equation & Evaluation of the Chain Transfer Constantø (07)
- Q. 4** (a) What do you understand by øEnd group analysisö. With example explain determination of molecular mass by End group analysis. (07)
(b) Explain cryoscopy to determine number average molecular mass. (07)

OR

- Q. 4** (a) Giving example, illustrate the mechanism of cationic addition polymerization. (07)
(b) Write a note on polyaddition polymerization giving suitable example. (07)
- P.T.O.-----
- Q. 5** (a) With the help of Merrifield synthesis, explain polymer supported reactions. Also write advantages of solid phase peptide synthesis. (07)

- (b) Explain optical isomerism in polymers giving a brief note on Isotactic, atactic & syndiotactic polymers. (07)

OR

- Q. 5** (a) What do you understand by Geometric isomerism in polymers? (07)
(b) Explain chemical reactions a polymer shown due to presence of various functional groups. (07)
