

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-III• EXAMINATION – WINTER 2014

Subject Code: 2132301**Date: 01/01/2015****Subject Name: Introduction to Plastic Material Science****Time: 02.30 pm - 05.00 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)** (1) Which of the following is a conducting polymer? **07**
(a) PC (b) Polyacetal (c) PTFE (d) Polyacetylene
(2) Which of the following is one of the monomer of Nylon 66?
(a) Caproic acid (b) acetic acid (c) adipic acid (d) amino acid
(3) _____ type of polymerization takes place by positively charged carbonium ions. (a) Cationic (b) Anionic (c) Both (1)&(2) (d) Free radical
(4) Which of the following is used as an initiator for polymerization reactions?
(a) Hydroquinone (b) nitrobenzene (c) Oxygen (d) Benzoyl Peroxides
(5) In emulsion polymerization, the initiator is
(a) Soluble in monomer (b) soluble in water (c) soluble in both monomer & water (d) insoluble in both monomer & water
(6) In Bulk Polymerization methods, the monomer is taken in gas state and the initiator is dissolved in solvent. [True/False]
(7) _____ Polymerization is accompanied by elimination of small molecule.
(a) Addition (b) Co-polymerization (c) Condensation (d) All
- (b)** Define Monomer & Polymers? Give detail classification of polymers with suitable examples. **07**
- Q.2 (a)** Explain bulk polymerization technique along with advantages, disadvantages and applications. **07**
(b) Which polymerization technique forms CMC? Explain in detail with diagram. **07**
- OR**
- (b)** List various steps of free radical polymerization and explain each with suitable Example. **07**
- Q.3 (a)** Differentiate between polymers and low molecular weight compounds. **07**
(b) Explain Addition Polymerization and Condensation Polymerization with suitable example. **07**
- OR**
- Q.3 (a)** What is glass transition temperature? How is the glass transition temperature of a polymer affected by hydrogen bonding in the polymers? **07**
(b) Write down the effect of crystallinity on the mechanical, chemical and thermal properties of polymer. **07**
- Q.4 (a)** Write down the differences between the thermoplastics and thermoset polymers. **07**
(b) Short Note: (1) Initiator (2) Inhibitor **07**
- OR**
- Q.4 (a)** Explain about number average and weight average molecular weight concept for polymer. **07**
(b) Give difference between amorphous & crystalline polymers. **07**

- Q.5 (a)** What is Glass transition temperature? Explain factors influencing the Glass transition temperature. **07**
- (b)** Explain Polydispersity & Molecular weight distribution in polymers. **07**
- OR**
- Q.5 (a)** What do you mean by isomerism in polymers? Write down with examples about the stereoisomerism and geometrical isomerism of polymers. **07**
- (b)** Write down the differences between graft and block copolymer. Give examples. **07**
