Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-III Remedial Examination March 2010

Subject code: 132301

Subject Name: Introduction to Plastic Material Science

Date: 10 / 03 /2010 **Time: 11.00 am – 01.30 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)** Classify polymers based on thermal behavior, internal structure, applications, and source. **07**

(b) Differentiate between amorphous v/s. crystalline polymers **07**

Q.2 **(a)** Fill in the blanks : **07**

1. Polymer is defined as _____
2. For polymerization to occur, functionality should be at least _____
3. Polymers exhibit average molecular weight due to _____
4. Tg is defined as _____
5. Function of inhibitor is _____
6. Difference between cationic and anionic polymerization is_____
7. _____method of polymerization is used for manufacture of PVC resin.

(b) Discuss in detail, states of aggregation in polymers. **07**

OR

(b) Differentiate between polymers and low molecular weight compounds. **07**

Q.3 **(a)** Discuss free radical polymerization in detail. **07**

(b) What are methods of polymerization? Discuss any one in detail. **07**

OR

Q.3 **(a)** Discuss difference between free radical , anionic and cationic polymerization. **07**

(b) Discuss polydispersity. **07**

Q.4 **(a)** What is polymer degradation? Discuss mechanical degradation. **07**

(b) Discuss specific volume v/s. temperature in case of polymers **07**

OR

Q.4 **(a)** What is Carothers' Principle? Discuss **07**

(b) Define : Plastic, tacticity, functionality, initiator, crosslinked polymer, thermoplastic , contour length **07**

Q.5 **(a)** What is tacticity? Discuss in detail . **07**

(b) What kind of polymerization is used for making paints ? Discuss in detail. **07**

OR

Q.5 **(a)** Differentiate between linear v/s. branched v/s. crosslinked polymers. **07**

(b) What is glass transition temperature ? Discuss in detail the importance of glass transition temperature . **07**

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