

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B.E SEM-V Examination-Nov/Dec.-2011**

**Subject code: 152302**

**Date: 24/11/2011**

**Subject Name: Physics of Plastics**

**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) Discuss Gel Permeation chromatography **07**  
(b) Discuss the Boltzmann's superposition Principle **07**
- Q.2** (a) Explain the Flory Huggins Lattice theory **07**  
(b) What are the factors affecting Tg? Discuss **07**
- OR**
- (b) Discuss Fox- flory equation and its significance **07**
- Q.3** (a) Discuss Mark Houwink equation and its significance **07**  
(b) Discuss about electronic polymers **07**
- OR**
- Q.3** (a) Draw molecular architectures for linear, branched, crosslinked and dendritic conformations. **07**  
(b) What is structural and stereo isomerism? Explain with examples **07**
- Q.4** (a) Discuss Gaussian distribution **07**  
(b) Discuss Polypyrrole microstructures **07**
- OR**
- Q.4** (a) Discuss Size Exclusion Chromatography **07**  
(b) Explain the effects of chemical structure on Tg **07**
- Q.5** (a) Discuss RANDOM WALK Probability **07**  
(b) Define : polymer Melts; Polymer solutions; Mesogens; Nematic phase; Rayleigh ratio; Intrinsic viscosity ; Crystallites **07**
- OR**
- Q.5** (a) What is Avogadro's number? If a PE molecule has 3000 nos.of monomers , each with a molar mass of 28 g/mol, calculate the weight of each molecule? **07**  
(b) Discuss polymer configuration v/s. polymer conformation **07**

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