

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**B. E. - SEMESTER – III • EXAMINATION – WINTER 2012**

**Subject code: 132804****Date: 03-01-2013****Subject Name: Polymer Chemistry****Time: 10.30 am – 01.00 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) What is polymerization? Give note on Step polymerization mechanism in detail. **07**  
(b) Explain Emulsion and Bulk polymerization with figure. **07**

- Q.2** (a) Explain geometry of polymers in detail. What is Tacticity of polymers? **07**  
(b) Discuss Chain polymerization mechanism with two no. of examples. **07**

**OR**

- (b) Explain number average and weight average molecular weight in detail and derive related equations. **07**

- Q.3** (a) What is Viscosity? Derive Mark Hauwink equation. **07**  
(b) Discuss Glass Transition temperature. Explain DTA technique in detail. **07**

**OR**

- Q.3** (a) What is amino polymer? Give structure, preparation, properties, important copolymers and uses of it. **07**  
(b) What is Mw? Explain Light scattering technique to determine the polymer molecular weight. **07**

- Q.4** (a) Describe addition and substitution reaction with examples. **07**  
(b) Explain blow and extrusion molding to prepare types of articles. **07**

**OR**

- Q.4** (a) Discuss hydrolysis and hydrogenation reaction with examples. **07**  
(b) What distinguish between polyamides and polyamines? Explain polyamides and related polymers. **07**

- Q.5** (a) Describe thermosetting polymers. Write preparation, properties and uses of melamine formaldehyde crosslink polymer in detail. **07**  
(b) Explain any one spectroscopic technique for testing of polymers. **07**

**OR**

- Q.5** (a) Who invented vulcanization process? Explain vulcanization process in detail. **07**  
(b) What type of awareness for future all over the world we should maintain to minimize the global warming? **07**

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