

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-III • EXAMINATION – SUMMER • 2014****Subject Code: 132804****Date: 23-05-2014****Subject Name: Polymer Chemistry****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) What is Tacticity of polymers? Explain Geometry of polymers in detail. **07**  
(b) What is polymer? Give note on step polymerization mechanism in detail. **07**  
Give two examples which are prepared by step polymerization.
- Q.2** (a) Explain Emulsion and Solution polymerization with figure. **07**  
(b) What is Light scattering ? Discuss this technique with all equations. **07**
- OR**
- (b) Discuss X- ray diffraction pattern of higher crystalline and amorphous Polymer. **07**
- Q.3** (a) Describe substitution and addition reaction with examples. **07**  
(b) Explain blow and injection molding to prepare types of articles. **07**
- OR**
- Q.3** (a) Discuss Number average and Weight average molecular weight in detail and derive related equations. **07**  
(b) Classify polymers in detail. **07**
- Q.4** (a) Describe thermoplastic polymers. Write preparation, properties and uses of Amine polymer in detail. **07**  
(b) Explain any one spectroscopic technique for testing of polymers. **07**
- OR**
- Q.4** (a) What is acrylic polymer? Give structure, preparation, properties, important copolymers and uses of it. **07**  
(b) What is viscosity? Explain visco-metry technique to determine the polymer molecular weight. **07**
- Q.5** (a) What is End Group Analysis? Discuss this technique with equation. **07**  
(b) Discuss Tg. Explain DSC and DTA technique in detail. **07**
- OR**
- Q.5** (a) Which type of awareness spread to minimize global warming for future all over the world to usage of polymers? **07**  
(b) Who invented vulcanization process? **07**  
Explain vulcanization process in detail. Give two examples of artificial rubbers.

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