

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER- IV(NEW) EXAMINATION – SUMMER 2015**

**Subject Code: 2142807****Date: 08/06/2015****Subject Name: Polymer Chemistry****Time: 10:30am-1.00pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) What is polymer tacticity? Describe geometry of polymer in detail with example. **07**  
(b) Explain Solution polymerization? Explain with example. **07**
- Q.2** (a) Discuss step polymerization mechanism with two no. of examples **07**  
(b) Explain number average and weight average molecular weight in detail and derive related equations. **07**
- OR**
- (b) Explain X – ray diffraction method in detail. **07**
- Q.3** (a) What is polyvinylacetate? Give structure, preparation, properties, copolymers and uses of it. **07**  
(b) Explain Mark-Houwink equation in detail with related viscosity. **07**
- OR**
- Q.3** (a) Classify polymers. Write preparation, properties and uses of polyethylene in detail. **07**  
(b) Draw structure of Natural rubber. Name few artificial rubber with structure. Explain Vulcanization process with example. **07**
- Q.4** (a) Discuss Substitution & addition reaction with examples. **07**  
(b) What distinguish between polyamides and polyamines? Explain polyamides and related polymers. **07**
- OR**
- Q.4** (a) Describe cyclization and cross linking reactions with examples. **07**  
(b) Discuss Injection molding to prepare types of articles. **07**
- Q.5** (a) What is scattering ? Discuss Light scattering technique with equations. **07**  
(b) Notes on awareness to minimize pollution. What type of precaution we will take to minimize pollution of plastics? **07**
- OR**
- Q.5** (a) Discuss DSC and DTA technique to measure molecular weight of polymer sample. **07**  
(b) Write preparation, properties and uses of Phenol formaldehyde crosslink polymer in detail. **07**

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