

**GUJARAT TECHNOLOGICAL UNIVERSITY**  
**BE - SEMESTER-V• EXAMINATION – SUMMER 2015**

**Subject Code: 153610****Date: 15/05/2015****Subject Name: Polymeric Material (Institute Elective-II)****Time: 02.30pm-05.00pm****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 do you understand by the term “average molecular weight” of a polymer sample? Give equations for any two averages explaining the terms involved. **07**
- (b) Explain the influence of geometrical structure, branching, and polarity of molecules on crystallization behaviour of polymer melts **07**
- Q.2** (a) Name different types of average molecular weight of a polymer sample and write their equations. **07**
- (b) Define with the help of equations, specific and intrinsic viscosities of a polymer solution. Explain with diagram Ubbelohde viscometer. **07**
- OR**
- (b) With reference to average molecular weight determination of polymers write basic principles of Ultracentrifugation and Vapour Phase Osmometry. Write Mark-Houwink equation and explain all terms in it. **07**
- Q.3** (a) Explain five different causes occurring in injection moulding process with their remedies. **07**
- (b) How melamine formaldehyde is synthesized? Explain with chemical reaction, its properties and applications. **07**
- OR**
- Q.3** (a) Explain the injection moulding process with well labelled machine diagram and explain the terms compression ratio and L/D ratio of screw. **07**
- (b) Explain the term, “natural rubber”. How it is obtained from the rubber trees. **07**
- Q.4** (a) Explain the solution polymerisation technique its merits and demerits. **07**
- (b) Explain the compression moulding process and its applications. **07**
- OR**
- Q.4** (a) Explain the suspension polymerisation technique its advantages and disadvantages. **07**
- (b) What is composite? Explain the pultrusion process for the manufacturing of composite. **07**
- Q.5** (a) Differentiate addition and condensation polymerisation. **07**
- (b) Explain the synthesis, properties and application of polyester resin. **07**
- OR**
- Q.5** (a) Explain the synthesis, properties and application of butyl rubber. **07**
- (b) What is ionic polymerisation? Explain the anionic polymerisation with suitable example. **07**

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