

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2018****Subject Code:2153606****Date:04/12/2018****Subject Name:Polymer & Rubber Material-II****Time: 10:30 AM TO 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.

**MARKS**

- Q.1**
- (a) Draw The Structure of Epoxy, MF, UF **03**
  - (b) Name the polymer with structure for following applications and give reason for choice: mold release agent & mattress **04**
  - (c) Explain in detail synthesis and applications of Amino resin. **07**
- Q.2**
- (a) Write a Application of Epoxy Resin in Coating Industry. **03**
  - (b) Describe the Application & Properties of Novolac Resin **04**
  - (c) Explain the reaction mechanism between phenol and formaldehyde and process of forming PF resins **07**
- OR**
- (c) Why curing is important in case of thermosets? Discuss briefly the mechanism of curing of epoxy system with various curing agents **07**
- Q.3**
- (a) Compare sulfur vulcanization vs peroxide vulcanization. **03**
  - (b) Write an explanatory note on epoxy-novalac & epoxy-acrylate system. **04**
  - (c) Explain in short the vulcanization of rubber and also the cross linking technology. **07**
- OR**
- Q.3**
- (a) Give the Name of Modified alkyds **03**
  - (b) Write Application of UF & MF **04**
  - (c) Thermoset polymers are very useful in the coating application. Name a thermoset polymer used for this purpose in washing machine application. Justify and describe the synthesis and properties of the polymer **07**
- Q.4**
- (a) Define i) Acid Value ii) Iodine Value iii) Epoxy Equivalent Weight **03**
  - (b) Write an explanatory note on epoxy-novalac & epoxy-acrylate system. **04**
  - (c) Describe the synthesis; curing and applications of polyurethane resins **07**
- OR**
- Q.4**
- (a) Write unique properties polyurethane resins. **03**
  - (b) Explain silicones rubber? Mention its important application **04**
  - (c) Illustrate with example vulcanization & de-vulcanization of rubbers. **07**
- Q.5**
- (a) What is fiber reinforced polyester? **03**
  - (b) Justify: Why Thermosetting Polymers are Amorphous? **04**
  - (c) Explain the reaction mechanism between phenol and formaldehyde and process of forming PF resins? **07**
- OR**
- Q.5**
- (a) Explain CNSL Resin **03**
  - (b) Write application & Properties of Kevlar Fiber **04**
  - (c) Write a short note on alkyd resin. Explain with types. **07**

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