

GUJARAT TECHNOLOGICAL UNIVERSITY
M. E. - SEMESTER – IV • EXAMINATION – SUMMER • 2014

Subject code: 744001**Date: 04-06-2014****Subject Name: Thermosetting Resins and Silane Technology****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. Write the different important Thermosetting resins and their field of application. **10**
- b. Give the comparisons between Novalac and Resole Phenolic Resin. **04**
- Q.2** a. Explain the effect of Vitrification on Polymerisation rate. **07**
- b. Discuss the effect of Cure conversion on Glass Transition Temperature. **07**
- OR**
- b. Which phenomenon occurs when thermoset resin cures? Explain in detail. **07**
- Q.3** a. Give the comparisons of the properties of different types of curing agents for epoxy resin. **07**
- b. List the mechanism of toughening of thermoset. Explain any two in detail. **07**
- OR**
- Q.3** a. Discuss in detail about application of Epoxy resin. **07**
- b. Why thermoset resins should be toughened? List and explain the strategies used to toughen thermoset resins in detail. **07**
- Q.4** a. List the reasons for functionalized acrylic oligomers to utilize as toughening agent for Epoxy resin. **05**
- b. Name the surface treatment techniques through flow chart for modification of fibres to improve interfacial adhesion in fibre-reinforced thermoset composites. **09**
- OR**
- Q.4** a. Short note on Core-shell particle toughening. **05**
- b. Discuss about analysis and testing of thermoset composites. **09**
- Q.5** a. Write the applications of Polymer nanocomposites. **08**
- b. What is a Silane coupling agent? How does it work? List the factors influencing silane coupling agent selection. **06**
- OR**
- Q.5** a. List the advantages of nanocomposites over conventional composites. **06**
- b. How many processes are used to make PEX? Discuss in detail. **08**