

**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.

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

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