

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III(NEW) EXAMINATION – SUMMER 2023****Subject Code:3132304****Date:28-07-2023****Subject Name:Thermoset Plastics: Materials and Processing Techniques****Time:02:30 PM TO 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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Define thermoset materials. Draw cross linked structure of a thermoset.	03
	(b) Define- (i) Saturated bond (ii) Unsaturated bond	04
	(c) Write differences between thermoplastic and thermosetting materials with examples.	07
Q.2	(a) What is the process cycle of compression moulding process?	03
	(b) Define- (i) Crosslinking (ii) Functionality (iii) Pot life (iv) Shelf life	04
	(c) Draw Compression Moulding Machine diagram. Explain the purpose of each part of the machine in details.	07
	OR	
	(c) Write the manufacturing process of- (i) Urea (ii) Melamine (iii) Formaldehyde (iv) Hexamethylene Tetramine	07
Q.3	(a) Write properties and application of Silicon resin.	03
	(b) Define- (i) Preheating (ii) Breathing time (iii) Bulk factor (iv) Compression pressure	04
	(c) Write which raw materials are used for synthesis of Phenol Formaldehyde. Explain the manufacturing process of phenol by 2 any two processes.	07
	OR	
Q.3	(a) Write properties and applications of Epoxy resin	03
	(b) Write polymerization reaction of Polyester resin	04
	(c) Explain the synthesis and manufacturing of Melamine formaldehyde.	07
Q.4	(a) Write the difference between Novolac and Resole.	03
	(b) Define silicon resin and state its general characteristics.	04
	(c) State the difference between compression moulding and transfer moulding.	07
	OR	

Q.4	(a) Define-	03
	(i) Epoxy Resin	
	(ii) Unsaturated polyester Resin	
	(iii) Melamine Formaldehyde	
	(b) State the advantages and disadvantages of Thermoset materials.	04
	(c) What are different types of compression moulds? Explain any one with diagram.	07
Q.5	(a) Write properties and application of Polyurethane	03
	(b) Write any 4 faults and its remedies observed in compression moulded products.	04
	(c) What are the types of transfer moulding machines? Explain in detail all the types.	07
OR		
Q.5	(a) Write properties and application of Melamine Formaldehyde	03
	(b) Write the structure, properties and applications of Urea Formaldehyde	04
	(c) How is Urea Formaldehyde manufactured? Explain in details	07
