Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER IV – • EXAMINATION – SUMMER 2015

Subject Code: 143605 **Date: 05/06/2015**

Subject Name: Composite Materials

Time: 10.30am-01.00pm **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)**	Explain the free radical polymerization technique with suitable example.	**07**
	(b)	What is Composite Material? Explain the applications of composite materials in various fields.	**07**
Q.2	**(a)**	Define and explain the following terms with examples: 1. Polymer 2. Polymerization 3. Polymer Composite	**07**
	(b)	Explain the Stress concentration for laminate with neat sketches.	**07**
		OR	
	(b)	Enlist the assumption taken in laminate theory and state the stress strain law for single ply in the material axes for unidirectional laminate.	**07**
Q.3	**(a)**	Write a note on Fibre Reinforced Composites.	**07**
	(b)	Classify manufacturing process of composite material. Explain pultrusion method for FRP composites.	**07**
		OR	
Q.3	**(a)**	Write down the properties of elastomers, rubbers and phenolic resins.	**07**
	(b)	Describe with neat sketch, the different wave pattern of fibers used in composite.	**07**
Q.4	**(a)**	Explain filament winding process with suitable diagram.	**07**
	(b)	Explain the extrusion process of wire and cable coatings.	**07**
		OR	
Q.4	**(a)**	Draw the well diagram of die and explain die parts, die materials and the function of die.	**07**
	(b)	Explain the synthesis, properties and application of Nylon 6,6 and polyvinyl chloride.	**07**
Q.5	**(a)**	What is nanocomposite? Explain the synthesis of polypropylene nanocomposite.	**07**
	(b)	Explain the stress stain law for a single ply in laminate axes for off-Axis Laminates.	**07**
		OR	
Q.5	**(a)**	Explain how the tensile testing of composite material is carried out.	**07**
	(b)	What are fillers? Explain different types of fillers used in composites with its function.	**07**

****