Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (old) - EXAMINATION – SUMMER 2017

Subject Code:182103 **Date:04/05/2017**

Subject Name: Composite Materials (Department Elective - 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.**

Q.1	**(a)**	Define composite materials in brief and state reasons with suitable examples – Why composite materials are the best suitable for the advanced applications	**02+05**
	(b)	Give detailed classification of composites on the basis of their construction	**07**
Q.2	**(a)**	Give role of matrix and reinforcement in a composite material. Describes various properties of materials making them suitable to use as matrix materials & reinforcing material	**03+04**
	(b)	Draw labelled sketch and give suitable examples, Dispersion strengthening and Particulate strengthened composites	**03+04**
		OR	
	(b)	Write Properties & Application of Carbon-fiber, Glass Fiber and Aramid fiber reinforced composites	**07**
Q.3	**(a)**	What do you mean by fiber? What is significance of L/D ratio? What is critical length (l/c) of fiber?	**02+05**
	(b)	Explain Structural composites & their application with suitable examples	**07**
		OR	
Q.3	**(a)**	Explain stages of manufacturing of carbon fibers	**07**
	(b)	Explain the role of interfaces in composites and explain various types of interfaces developed in the composite.	**04+03**
Q.4	**(a)**	Derive an expression of rule of mixture to calculate stresses on composites	**07**
	(b)	Compare Properties of Metal Matrix composite & Ceramic Matrix composites. What are advantages of ceramic matrix composites over other two classes of composites?	**04+03**
		OR	
Q.4	**(a)**	Describe the toughening mechanism in CMC With necessary diagram	**07**
	(b)	Describe fabrication techniques for ceramic matrix composites (CMC).	**07**
Q.5	**(a)**	Describe the hand lay-up processes of fabricating polymer composites.	**07**
	(b)	Describe the method of filament Winding of producing polymer composites	**07**
		OR	
Q.5	**(a)**	Explain with schematic process of Pultrusion also give examples of the components produced using this technique	**05+02**
	(b)	Draw a layout of synthesis of "Nano-composites" and explain unique properties exhibited by Nano- composites	**07**

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