

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VIII (old) - EXAMINATION – SUMMER 2018****Subject Code:182103****Date:04/05/2018****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. **07**
- (b) Give detail classification of the composite materials on the basis of reinforcement & Matrix materials. **07**
- Q.2** (a) What do you mean by fiber? What is significance of L/D ratio? What is critical length (l/c) of fiber? **07**
- (b) Write Properties & Application of Carbon-fiber, Glass Fiber and Aramid fiber reinforced Composites. **07**
- OR**
- (b) Compare Properties of Metal Matrix composite & Ceramic Matrix composites **07**
- Q.3** (a) What is rule of mixture?? Derive the equation of modulus of composite under Longitudinal loading (Force parallel to fibre direction) & transverse loading condition (force perpendicular to fibre direction). **07**
- (b) Explain the role of matrix materials & reinforcements. Also distinguish their mechanical/chemical/physical properties, in brief. **07**
- OR**
- Q.3** (a) Justify the statement “Design of composite means design of interface”. **07**
- (b) Explain with suitable examples & neat schematic various Particulate reinforced composites and also discuss in brief, about their strengthening mechanisms. **07**
- Q.4** (a) Explain in brief, various types of interfaces develop in composites and also state the significance of “wettability” in the design of interfaces. **07**
- (b) Describe the toughening mechanism in MMC. (Metal Matrix Composites) **07**
- OR**
- Q.4** (a) Explain with Neat schematic the “filament winding process” & the components/parts being manufactured using this method **07**
- (b) Mention various strengthening Mechanisms in composite and explain any one. **07**
- Q.5** (a) Briefly describe Sandwich Panels and explain prime reason for fabricating these structural Composites. **07**
- (b) Explain with Schematic Vacuum Bag assembly process of manufacturing of composite & mention common products manufactured by this method **07**
- OR**
- Q.5** (a) Draw & explain schematic of glass fibre manufacture. **07**
- (b) Describe fabrication techniques for ceramic matrix composites (CMC). What are advantages of ceramic matrix composites over other two classes of composites? **07**
