

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-V • EXAMINATION – WINTER • 2014

Subject Code: 150106**Date: 08-12-2014****Subject Name: Composite Materials and Smart Structure****Time: 10.30 am - 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 material and give its detail classification. **07**
(b) Explain shape memory alloy. Enlist its advantages. **07**
- Q.2** (a) Enlist the different types of fibers and list its properties and application. **07**
(b) Write a short note on micro electro mechanical systems (MEMs). **07**
- OR**
- (b) Write a short note on filament winding method **07**
- Q.3** (a) Classify the materials on the basis of mechanical properties & explain in brief. **07**
(b) Derive reduced stiffness and compliance matrix for a thin lamina. **07**
- OR**
- Q.3** (a) Explain about Transformation of stress and strain. **07**
(b) Explain maximum stress and strain theory. **07**
- Q.4** (a) Write a short note on smart materials. **07**
(b) Explain piezoelectric materials and write its application. **07**
- OR**
- Q.4** (a) What is electrorheological (ER) effect? Explain ER fluids. **07**
(b) Write a short note on pultrusion method. **07**
- Q.5** (a) Derive the equation for Inplane shear modulus. **07**
(b) Write a properties of cross & angle ply laminate. **07**
- OR**
- Q.5** (a) Describe with neat sketch, the different wave pattern of fibers used in composite. **07**
(b) Write a short note on lamina & Laminate. **07**
