

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024

Subject Code:3172919

Date:07-12-2024

Subject Name: Textile Reinforced Composites

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.
4. Simple and non-programmable scientific calculators are allowed.

- Q.1** (a) Give the classification of composites based on matrix material and disperse phase. **03**
(b) State important characteristics of polymer matrix composite. **04**
(c) Write short note on any two thermoset matrix materials. **07**

- Q.2** (a) State advantages and disadvantages of natural fibres as composite. **03**
(b) Compare thermoplastic polymer with thermoset polymers. **04**
(c) Discuss various natural fibers used in the composite manufacturing. **07**

OR

- (c) Discuss use of glass and carbon fibre as reinforcement. **07**

- Q.3** (a) Compare epoxy resin with polyester resin. **03**
(b) Explain, how the properties of composite are function of the geometrical and spatial characteristics of reinforcement? **04**
(c) List and explain the reinforcements used in the composites. **07**

OR

- Q.3** (a) Enlist the disadvantages of composites. **03**
(b) Explain briefly about green composites. **04**
(c) Explain the hand layup process in composite manufacturing with diagram. **07**

- Q.4** (a) State advantages the vacuum bag molding of composite manufacturing. **03**
(b) Compare open mould and close mould processes of composite. **04**
(c) Explain pultrusion forming of composite manufacturing with advantages over other processes. **07**

OR

- Q.4** (a) Define term: pre-preg and laminates. **03**
(b) State advantages, disadvantages and uses of Injection moulding process. **04**
(c) Write short note on Compression molding. **07**

- Q.5** (a) Define term: Poisson's ratio and young's modulus. **03**
(b) With a neat labeled sketch explain the Autoclave process. **04**
(c) Suggest the manufacturing process with neat sketch to produce cylindrical components. **07**

OR

- Q.5** (a) Discuss about short beam Inter-laminar shear testing of composite. **03**
(b) Suggest the experimental setup to test composite for tension properties. **04**
(c) Explain brief the application of composite materials in following fields **07**
i) Automobile and ii) Sports Equipment
