

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023****Subject Code:3172312****Date:12-12-2023****Subject Name: Fiber Reinforced Plastics and 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.

MARKS

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| Q.1 | (a) Give advantages of FRP and give any three applications of FRP. | 03 |
| | (b) Explain hand lay-up process with neat diagram. | 04 |
| | (c) Describe Resin Injection Molding process with neat diagram along with its advantages. | 07 |
| Q.2 | (a) Give advantages and limitations of hand layup technique. | 03 |
| | (b) Describe preparation of plaster Mold with neat diagram. | 04 |
| | (c) Explain preparation of Sheet molding compound (SMC) with neat diagram. | 07 |
| | OR | |
| | (c) Explain Vacuum bag molding process with neat diagram. Give difference between Vacuum bag and Pressure bag molding. | 07 |
| Q.3 | (a) Give properties and applications of Wood Plastic Composites (WPC). | 03 |
| | (b) Explain spray layup technique with neat diagram. | 04 |
| | (c) Give classification of reinforcements used in FRP. Explain manufacturing of Glass fiber with neat diagram. | 07 |
| | OR | |
| Q.3 | (a) Give role of (i) Gelcoat (ii) Topcoat and (iii) Surfacing tissue. | 03 |
| | (b) Give properties and applications of (i) Glass fiber and (ii) Aramid Fiber. | 04 |
| | (c) Explain curing reaction of unsaturated polyester resin. | 07 |
| Q.4 | (a) Give types of catalyst and accelerators used in unsaturated polyester resin. | 03 |
| | (b) List various factors to be considered for material and process selection for designing FRP product. | 04 |
| | (c) Explain Pultrusion process with neat diagram. Give types of products prepared from pultrusion. | 07 |
| | OR | |
| Q.4 | (a) Explain about low styrene emission unsaturated polyester resin. | 03 |
| | (b) Explain Reactive and Non-reactive diluents used in Epoxy resin. | 04 |
| | (c) List various curing agents used in epoxy resin system. Explain curing reaction of Epoxy resin. | 07 |
| Q.5 | (a) State the role of resin and reinforcements. | 03 |
| | (b) Explain single one part GRP mold with neat diagram. | 04 |
| | (c) Explain with flow diagram manufacturing of Carbon fiber. | 07 |
| | OR | |
| Q.5 | (a) Explain Dough/bulk molding compounds (DMC/BMC). | 03 |
| | (b) List types of glycols, saturated acids, unsaturated acids and monomers used in the preparation of unsaturated polyester resin. | 04 |
| | (c) Explain Filament winding process with neat diagram along with Filament winding patterns and its applications. | 07 |
