

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER- VII EXAMINATION-SUMMER 2023****Subject Code: 3172312****Date: 27/06/2023****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) | List various advantages and limitations of using Fiber reinforced plastics. | 03 |
| | (b) | List different types of molds used in FRP. Discuss GRP mold in brief. | 04 |
| | (c) | For designing of a FRP product, which factors are to be considered for material and process selection? Discuss. | 07 |
| Q.2 | (a) | Classify Composites. State the role of resin and reinforcements. | 03 |
| | (b) | Explain Vacuum bag molding process with neat diagram. | 04 |
| | (c) | Give properties and applications of Glass fibers, Carbon fibers and Aramid fibers. | 07 |
| OR | | | |
| | (c) | List various molding compounding techniques. Explain preparation of Sheet molding compound (SMC) with neat diagram. | 07 |
| Q.3 | (a) | List types of glycols, saturated acids, unsaturated acids and monomers used in the preparation of unsaturated polyester resin. | 03 |
| | (b) | With neat diagram describe Resin Injection Molding process with along with its advantages. | 04 |
| | (c) | Describe Spray lay-up process along with its advantages and limitations. | 07 |
| OR | | | |
| Q.3 | (a) | Define: Gelation, Hardening and Critical temperature | 03 |
| | (b) | Give properties and applications of Wood Polymer Composites. | 04 |
| | (c) | With neat flow diagram explain manufacturing of Carbon fiber. | 07 |
| Q.4 | (a) | Explain manufacturing of Glass fiber with neat diagram. | 03 |
| | (b) | Write about preparation of Prepregs with neat diagram. | 04 |
| | (c) | Explain Pultrusion process with neat diagram. Give various FRP pultruded profiles. | 07 |
| OR | | | |
| Q.4 | (a) | State the role of diluents in Epoxy resin. Discuss about Reactive diluents and Non-reactive diluents used in Epoxy resin. | 03 |
| | (b) | Explain types of catalysts and accelerators used in unsaturated polyester resin. | 04 |
| | (c) | List various commercially available polyester resins. Explain about Gelcoat and Topcoat resins used in FRP. | 07 |

- Q.5 (a)** Explain Dough and bulk molding compounds (DMC/BMC). **03**
(b) With neat diagram explain preparation of Plaster Mold. **04**
(c) Explain Filament winding process with neat diagram and give its applications. **07**

OR

- Q.5 (a)** Describe preparation of epoxy resin mould using single stage casting. **03**
(b) Explain Vacuum injection moulding along with its advantages and applications. **04**
(c) Explain curing reaction of Epoxide resin. List various curing agents used in epoxy resin system. **07**
