

313353

12425

3 Hours / 70 Marks

Seat No.

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- Instructions* – (1) All Questions are *Compulsory*.
(2) Answer each next main Question on a new page.
(3) Illustrate your answer with neat sketches wherever necessary.
(4) Figures to the right indicate full marks.
(5) Assume suitable data, if necessary.
(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following: 10
- a) Define composites.
 - b) State the functions of matrix in composites.
 - c) Enlist the resins used in FRP.
 - d) State any two examples of natural reinforcements.
 - e) State any four types of glass fibers used in FRP.
 - f) State any two applications of Bio-composites.
 - g) Define Bio-composites.

P.T.O.

- 2. Attempt any THREE of the following:** **12**
- a) State the roles and examples of reinforcement in composites.
 - b) Explain in detail the classification of composites.
 - c) State various applications and properties of phenolics resin in composites.
 - d) Explain in detail preparation of epoxy resin.
- 3. Attempt any THREE of the following:** **12**
- a) Name curing system used for unsaturated polyester and explain any one system with example.
 - b) Explain in detail the criteria for selection of polymer resin for polymer composites.
 - c) Describe manufacturing of glass fiber by marble process with neat sketch.
 - d) Compare properties of glass fiber with carbon fiber used in composite.
- 4. Attempt any THREE of the following:** **12**
- a) List out types of Aramicle fiber and state its properties and applications.
 - b) State any four properties and related applications of Nylon fibres used in composite.
 - c) Explain in detail the effect of loading and orientation on strength of composites.
 - d) Describe pultrusion process with neat sketch.
 - e) Describe the process to manufacture the composite storage tank with neat sketch.

- 5. Attempt any TWO of the following:** **12**
- a) Describe in detail the resin transfer moulding process in composites.
 - b) With neat sketch explain any one method used for production of bath tub.
 - c) Explain in detail reaction injection moulding process for composite manufacturing.
- 6. Attempt any TWO of the following:** **12**
- a) State any six causes and remedies in composite.
 - b) State any two applications of composite, each in following area.
 - i) Sports
 - ii) Construction
 - iii) Chemical industries
 - iv) Aerospace
 - v) Marine field.
 - c) define nano-composite and give any four applications of it.
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