

313353

12526

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 composite.
  - b) State the chemical structure of vinyl ester.
  - c) Enlist two properties and two applications of epoxy resin.
  - d) State any four reinforcing materials used in thermoset composite.
  - e) State any two properties and two applications of nylon fiber.
  - f) Define bio-composite.
  - g) State any four fields where composites are used.

P.T.O.

- 2. Attempt any THREE of the following: 12**
- a) State any four advantages and four disadvantages of composite.
  - b) Enlist any four properties and four applications of unsaturated polyester.
  - c) State A, E, C and D type of glass.
  - d) Describe hand lay up technique with neat figure.
- 3. Attempt any THREE of the following: 12**
- a) State the functions and examples of curing agents and release agents used in composite.
  - b) Describe PAN process of preparation of carbon fiber.
  - c) Describe filament winding process with neat figure.
  - d) Describe nano-composite with its any four applications.
- 4. Attempt any THREE of the following: 12**
- a) Enlist any four properties and four applications of PP matrix.
  - b) Explain with neat figure the pultrusion technique.
  - c) Describe vacuum bag technique with neat figure.
  - d) Enlist any four applications of composites in sports and construction.
  - e) Describe pressure bag moulding technique with neat figure.
- 5. Attempt any TWO of the following: 12**
- a) Describe curing reaction for unsaturated polyester resin.
  - b) Explain with neat figure the direct melt process for preparation of glass fiber.
  - c) Describe with neat figure the bulk moulding compound (BMC) technique for composite.

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**Marks**

**6. Attempt any TWO of the following:**

**12**

- a) Explain with neat figure the preparation of aramide fiber.
  - b) Describe with neat figure the sheet moulding compound (SMC) technique for composite.
  - c) Enlist any four applications of composites in chemical industry, aerospace and marine field.
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