

22352

11819

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 answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Assume suitable data, if necessary.
  - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (7) 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 any four properties of vinyl esters.
- (c) Enlist any four applications of polyamides.
- (d) Define reinforcement.
- (e) Enlist FRP processing techniques.
- (f) State any two merits of spray up process.
- (g) Define bio-composites.

2. Attempt any THREE of the following :

12

- (a) Select the curing agent for manufacturing composite doors with unsaturated polyester resin. Justify your answer.
- (b) Classify the composites with examples.
- (c) Describe direct melt process for glass fibre manufacturing with neat figure.
- (d) Explain hand lay-up method for composite processing.

- 3. Attempt any THREE of the following : 12**
- (a) Select and explain preparation of composite matrix for chemical storage tank.
  - (b) Describe PAN process for manufacturing of carbon fibre with neat figure.
  - (c) Explain with neat figure the process of filament winding.
  - (d) State any four applications of composites in telecommunication and marine products.
- 4. Attempt any THREE of the following : 12**
- (a) State any four applications of phenolic composites. Justify your answer with its properties.
  - (b) Enlist any four properties and applications of aramide fibres.
  - (c) Identify and state the causes & remedies for any four faults in composite product.
  - (d) State any four applications of nano-composites and bio-composites each.
  - (e) Enlist any four applications of composites in automobiles and construction.
- 5. Attempt any TWO of the following : 12**
- (a) State the functions and examples of the following :
    - (i) Curing agents
    - (ii) Inhibitors
    - (iii) Accelerators
  - (b) Explain the manufacturing of sheet moulding compounds (SMC) with neat figure.
  - (c) Describe pultrusion process with neat figure. Name any four products produced by this method.
- 6. Attempt any TWO of the following : 12**
- (a) Explain with neat figure the working of vertical treater for making prepregs from solution.
  - (b) Describe the construction of sandwich composites with neat figure and its advantages.
  - (c) Explain with neat figure the resin transfer moulding (RTM) process and its utility.
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