

17652

15116

3 Hours / 100 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) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.
 - (7) Abbreviations used convey usual meaning.

Marks

- 1. a) Answer any THREE of the following:** **12**
- (i) Explain hand lay-up process for manufacturing of composite product.
 - (ii) Classify and give examples of polymer blends.
 - (iii) Explain mechanical properties of polymer blends with respect to blend performance.
 - (iv) List any four properties and four applications of EVA based blends.

P.T.O.

b) Answer any ONE of the following:

6

- (i) How are polyamide resins prepared? List its two properties and two applications.
- (ii) What are the types of reinforcement orientation? How do they effect the strength of the product?

2. Answer any FOUR of the following:

16

- a) What do you mean by composites? Explain the elements of composites with their role.
- b) How are glass fibres prepared? List its four properties.
- c) Explain matched die moulding for manufacturing of composite products.
- d) Differentiate: Compatible and incompatible blends. Give an example.
- e) Explain briefly the economy of blending.
- f) Explain the preparation of ABS based blend. Write its two general properties.

3. Answer any FOUR of the following:

16

- a) Define 'unsaturated polyester'. Name curing agents used for it and type of initiators used.
- b) Explain the manufacturing of hybrid composites. Give its two applications.
- c) What are the common faults observed in FRP? State causes and remedies of any one fault.
- d) Define prepregs. How is SMC prepared?
- e) Explain giving examples, use of electrically conductive blends.

4. a) Answer any THREE of the following: 12

- (i) Give the classifications of composites.
- (ii) Write any four properties and four applications of boron fibres.
- (iii) Explain vacuum bag process for manufacturing of a composite product.
- (iv) Define polymer blend. Explain its need.

b) Answer any ONE of the following: 6

- (i) Explain a curing system for polyamide resin.
- (ii) How are aramide fibres? List its two properties and two applications.

5. Answer any FOUR of the following: 16

- a) Explain preparation of BMC. List its two properties.
- b) Explain preparation of graphite fibre. Write its two applications.
- c) Explain principle of resin transfer moulding for manufacturing of a composite product.
- d) How is impact modification done by elastomers in polymer blends?
- e) Distinguish between polymer alloys and blends.
- f) List any four properties and four applications of PVC based blend.

6. Answer any FOUR of the following:**16**

- a) Explain 'degradation' of PVC. Name two types of stabilisers used.
 - b) Explain giving two examples, role of flame retardants.
 - c) Define 'Sandwich composites'. Write any four applications of Sandwich composite.
 - d) Explain the criteria for determination of miscibility in polymer blends.
 - e) Explain with examples, the role of compatibilisers in polymer blends.
 - f) Explain manufacturing of honeycomb structure.
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