

22352

21819

3 Hours / 70 Marks

Seat No.

--	--	--	--	--	--	--	--	--

- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.

Marks

1. Attempt any FIVE of the following :

10

- (a) State any two important functions of a composite.
- (b) State any four important applications of unsaturated polyester resin in composite construction.
- (c) State two important properties of glass fibre.
- (d) Draw a neat labelled diagram of spray-lay up machine.
- (e) Define continuous sheet manufacturing.
- (f) State any four important applications of composites in sports.
- (g) State any four important applications of composites in marines.

2. Attempt any THREE of the following :

12

- (a) State any two functions of the following :
 - (i) release agent
 - (ii) coupling agent

- (b) Describe the preparation of unsaturated polyester with suitable reaction.
- (c) Describe the manufacture of aramid fibre with a neat sketch.
- (d) State any four important applications of composites in construction industry.

3. Attempt any THREE of the following :

12

- (a) Define composite and state the elements of composites. State any two important advantages of composites.
- (b) Select the suitable method for the manufacture of tube. Explain this method with a labelled sketch.
- (c) State any two important properties and any two important applications of polyimides.
- (d) Describe the manufacture of hybrid composites.

4. Attempt any THREE of the following :

12

- (a) Select the suitable curing agent and a method of manufacture of 10 litre capacity water tank with the help of polyester resin. Justify your answer with sketch.
- (b) State the long form of BMC. Explain the process involved in the production of BMC with a labelled sketch.
- (c) Select the material and process for manufacture of a moulding compound having a sheet like consistency with labelled sketch. Justify your answer.
- (d) Differentiate natural fibre and polymeric fibre on the basis of their properties and application. (any four points)
- (e) Explain pultrusion process with neat figure.

5. Attempt any TWO of the following :**12**

- (a) Explain the process of compression moulding and hand-lay-up with a labelled sketch.
- (b) Select the suitable resin material for the production of airplane wings. Explain the process for the production of same. Also, select a method for the production of rocket motor cases. Justify your answer.
- (c) Define Nano-Composites and bio-composites. State any four applications of each.

6. Attempt any TWO of the following :**12**

- (a) State any three faults observed in the composite production. State their causes and remedies.
 - (b) State the types of reinforcement. Explain the effect of loading and orientation on the strength of composites.
 - (c) Select the method for the production of golf clubs. Explain this method with a labelled sketch. Also, explain the method for the manufacture of a dish-shaped object.
-

