

22681

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 answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Attempt any FIVE of the following :**

**5 × 2 = 10**

- (a) List any four CAD file formats.
- (b) State the need of STL model.
- (c) Define VAT photopolymerization.
- (d) Define CAD.
- (e) Define bonding Mechanism in additive manufacturing.
- (f) Define curing in 3D printing.
- (g) List any four of the strongest 3D printer materials available.

**2. Attempt any THREE of the following :**

**3 × 4 = 12**

- (a) Explain any four applications of 3D printing.
- (b) Write the short notes on :
  - (i) Advantages of CAD.
  - (ii) Applications of CAD packages.
- (c) Explain Fused Deposition Modelling (FDM) w.r.t extrude of fibres.
- (d) List and explain any four common Faults in 3D printing.



- 3. Attempt any THREE of the following :** **3 × 4 = 12**
- (a) Compare BJ (Binder Jetting) and MJ (Material Jetting).
  - (b) Explain different troubleshooting methods in 3D printing.
  - (c) Explain different errors caused in STL files.
  - (d) Explain various forms of RAW material. (any two)
- 4. Attempt any THREE of the following :** **3 × 4 = 12**
- (a) Explain different errors in STL files.
  - (b) Define Polymer. Explain any three properties of it.
  - (c) Explain the effect of Governing Bonding Mechanism in 3D printing.
  - (d) Explain – Selective laser sintering is an additive manufacturing technology.
  - (e) List and explain any four applications of 3D printing.
- 5. Attempt any TWO of the following :** **2 × 6 = 12**
- (a) Explain the Generic Additive Manufacturing Process with block diagram.
  - (b) Explain Post-Processing in Additive Manufacturing.
  - (c) List and explain six different types of 3D printing materials with their applications.
- 6. Attempt any TWO of the following :** **2 × 6 = 12**
- (a) List the defects and its causes in 3D-printing. (any three)
  - (b) Explain in detail the use of additive manufacturing process in Health-Care domain.
  - (c) List and explain six types of 3D printing materials with their applications.
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