23124

3 Hours / 70 Marks   Seat No.

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.

Marks

1. **Attempt any FIVE of the following :**   **5 × 2 = 10**

(a) Define Material Extrusion.

(b) State the need of Data Translation.

(c) Define Stereo-Lithography.

(d) State powder bed fusion.

(e) Define bonding Mechanism in additive manufacturing.

(f) Define curing in 3D printing.

(g) Define CAD.

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 fibers.

(d) List and explain any 4 common Faults in 3D printing.

3. **Attempt any THREE of the following :** **3 × 4 = 12**

    (a) Explain Selective laser sintering is an additive manufacturing technology.

    (b) Explain different troubleshooting methods in 3D printing.

    (c) Explain the need of Slicing in 3D printing.

    (d) Explain Anisotropic properties of materials.

4. **Attempt any THREE of the following :** **3 × 4 = 12**

    (a) Explain different errors in STL files.

    (b) Compare BJ (Binder Jetting) and MJ (Material Jetting) (4 Points).

    (c) Define polymer. Explain any three properties of it.

    (d) Explain the Process Design Post Processing requirements in 3D printing.

    (e) List and explain any four applications of 3D printing.

5. **Attempt any TWO of the following :** **2 × 6 = 12**

    (a) Draw and explain the block diagram for 3D Printing Process.

    (b) Explain different methods for inspection and testing in 3D printing.

    (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) Explain the Process Design Post Processing requirements in 3D printing.

    (b) Explain in detail the use of additive manufacturing process in the Construction domain.

    (c) List and explain 6 types of 3D printing materials with their applications.

————————————