17402

21415

3 Hours / 100 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.

(6) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. a) **Attempt any SIX of the following:** **12**

(i) State applications of extrusion process.

(ii) What is drop forging? Explain.

(iii) Explain punching operation with neat sketch.

(iv) Explain two high rolling mill with sketch.

(v) Give basic steps in casting processes.

(vi) Name any four metals used for making patterns.

(vii) What is vertical core in moulding?

(viii) State two causes and two remedies of blow holes.

Marks

b) **Attempt any <u>TWO</u> of the following:** **8**

(i) Differentiate between TIG and MIG welding.

(ii) Explain counterbore and countersink operation of drilling machine.

(iii) What are the basic types of plastics? Give two applications of each.

2. Attempt any <u>FOUR</u> of the following: **16**

a) Explain notching and lancing operation with neat sketches.

b) State various types of dies, explain any one with neat sketch.

c) State the function of Stripper plate and Bolster plate.

d) Explain construction and working of Cupola furnace with neat sketch.

e) Explain any two types of allowances used in pattern making.

f) Explain following properties of sand:

(i) Porosity

(ii) Strength

(iii) Collapsibility

(iv) Adhesiveness

3. Attempt any <u>FOUR</u> of the following: **16**

a) Explain direct extrusion with neat sketch.

b) Compare hot rolling and cold rolling.

c) Explain split pattern with neat sketch.

d) Find the time required to turn a workpiece from 70 mm. diameter to 50 mm diameter having a length of 300 mm. The cutting speed is 40 m/min and the feed is 0.5 mm/rev. The radial depth of cut should not exceed 2 mm.

Marks

e) Explain Laser Beam Welding with neat sketch.

f) Draw the sketch of twist drill and show the following parts:

(i) Flutes

(ii) Helix angle

(iii) Lip

(iv) Point angle

4. Attempt any FOUR of the following: **16**

a) Differentiate between open die and closed die forging.

b) Explain two rolling mill with neat sketch.

c) Explain spot welding with neat sketch.

d) Explain all three cutting parameters of drilling operations.

e) Explain tool signature with suitable example. Why is it necessary?

f) Explain vacuum forming with neat sketch and give examples.

5. Attempt any FOUR of the following: **16**

a) Explain following two forging operations with neat sketches.

(i) Upsetting

(ii) Bending

b) Compare Direct and Indirect extrusion process.

c) What is blanking operation in press working?

d) Draw the block diagram of die set components and label it.

e) Describe centrifugal casting with neat sketch.

f) Give advantages, limitations and applications of die casting.

Marks

6. Attempt any TWO of the following: **16**

a) Describe with neat sketch Oxyacetylene gas welding. Give its advantages and disadvantages.

b) Explain with neat sketch Injection moulding. Give advantages, limitations and applications.

c) (i) State the methods of taper turning on lathe. Explain any one with neat sketch.

(ii) Find the time required for one complete cut on a workpiece of 60 mm diameter and 400 mm long. The cutting speed is 50 m/min and feed is 0.5 mm/rev.

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