

22565

23242

3 Hours / 70 Marks

Seat No.

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- 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.
 - (5) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (6) 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) Define “Chip thickness ratio”.
- (b) List any four tool material.
- (c) Define the term “Fool Proofing”.
- (d) Define the term “Fixture”.
- (e) Define “Scrap Strip Layout”.
- (f) State meaning of “Bend Allowance”.
- (g) Define the term “Die Clearance”.

2. Attempt any THREE of the following :

3 × 4 = 12

- (a) Explain “Merchant Circle’ with neat sketch.
- (b) Enlist the properties of cutting tool material.
- (c) Define Centre of pressure & state it’s significance.
- (d) Explain 3-2-1 principal of location with neat sketch.



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

- (a) Explain the following term :
 - (i) Shut height
 - (ii) Press tonnage
- (b) Explain Template Jig with example.
- (c) Differentiate between clamping & locating device. (any four points)
- (d) Explain 'Spring back' in bending operation. State it's causes.
- (e) Give the detailed classification of 'Press Tool'.

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

- (a) Explain term 'Degrees of Freedom'. State it's importance while selecting, locating & clamping devices.
- (b) Explain with suitable sketch, "Tool Sharpening method for single point cutting tool".
- (c) During machining of C-25 steel with 0 – 10 – 6 – 6 – 8 – 90 – 1 mm (ORS), shaped double carbide cutting tool, the following observations have been made :

depth of cut = 1.5 mm,

feed = 0.15 mm/rev,

speed = 120 m/min,

tangential cutting force = 1600 N,

feed thrust force = 850 N,

chip thickness = 0.30 mm

Calculate :

- (i) Shear force
- (ii) Normal force at shear plane
- (iii) Friction force

5. Attempt any TWO of the following :

 $2 \times 6 = 12$

- (a) Determine the developed length for part given in Figure 1. Take
- $K = t/3$
- .

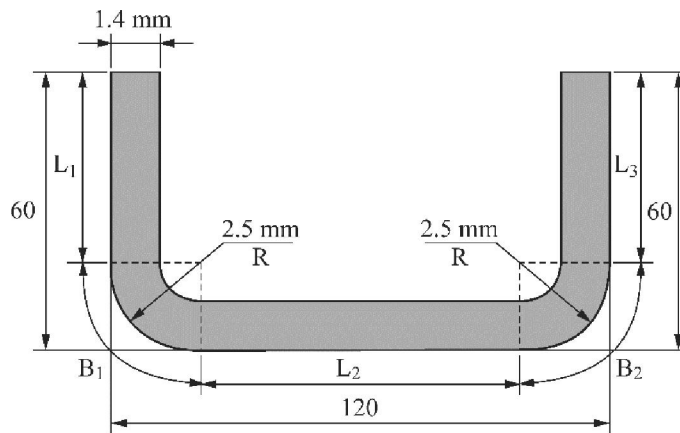
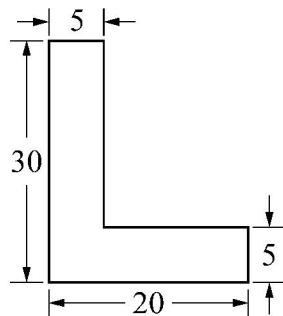


Fig. 1

- (b) Calculate the centre of pressure for following blanked shape shown in Figure 2.



All dimensions are in cm.

Fig. 2

- (c) Compare Jigs & Fixtures (any six points).

6. Attempt any TWO of the following :

 $2 \times 6 = 12$

- (a) The Figure 3 given below shows a cup to be drawn.

- Shell diameter $d = 120$ mm,
- Radius of bottom inner corner of shell $r = 4.0$ mm,
- Height of cup $h = 100$ mm

P.T.O.

Neglect trimming of blank.

Determine :

- (i) Diameter of blank
- (ii) Percentage reduction
- (iii) Number of draws

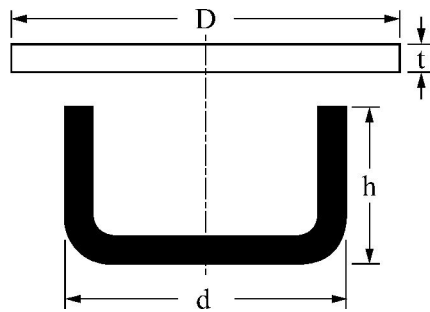


Fig. 3

- (b) Explain with neat sketch the construction of jig for drilling four equispaced through radial holes in a ring.
 - (c) Draw the general assembly sketch of 'Progressive Die' showing all the components.
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