

22565

11920

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 :

5 × 2 = 10

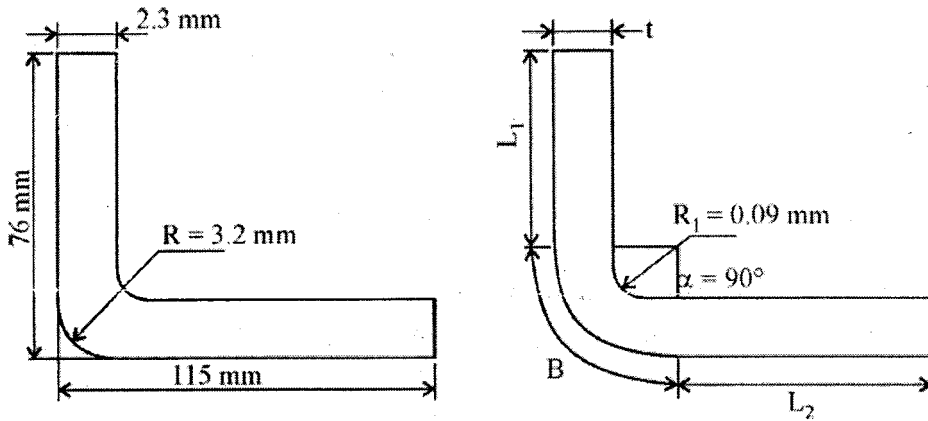
- (a) State the principle of Tool Engineering.
- (b) Define term 'Die clearance'.
- (c) List the applications of 'CBN' inserts.
- (d) State the functions of Locating Devices.
- (e) Define term 'Fixture'.
- (f) List any four applications of 'Press Tool'.
- (g) Name the operations performed using Drawing Operation.

[1 of 4]

P.T.O.

- 2. Attempt any THREE :** **3 × 4 = 12**
- (a) Explain 'Merchant Circle' with neat sketch.
 - (b) Enlist the properties of Cutting Tool Material.
 - (c) Differentiate between clamping and Locating Devices.
 - (d) Classify jigs.
- 3. Attempt any THREE :** **3 × 4 = 12**
- (a) Explain with neat sketch the importance of 'Scrap Strip Layout'.
 - (b) State the causes of 'Spring back'.
 - (c) Classify cutting Dies. List their applications.
 - (d) Explain with neat sketch construction of 'Solid heel clamp'.
 - (e) Explain following term :
 - (i) Bend Radii
 - (ii) Bend Allowance
- 4. Attempt any TWO :** **2 × 6 = 12**
- (a) Explain with neat sketch 'Orthogonal Cutting Process'.
 - (b) Write the applications of following Tool material-Ceramics, PCBN, HSS.
 - (c) Explain term degree of freedom. State its importance while selecting, locating and clamping devices.
- 5. Attempt any TWO :** **2 × 6 = 12**
- (a) Explain the procedure of designing Fixture for Milling Machine in detail.
 - (b) The washers of 25 mm outer diameter & 10 mm inner diameter are to be made by press operation from M.S. Sheet of 1 mm thickness.
Calculate :
 - (i) Clearance
 - (ii) Size of punch & die

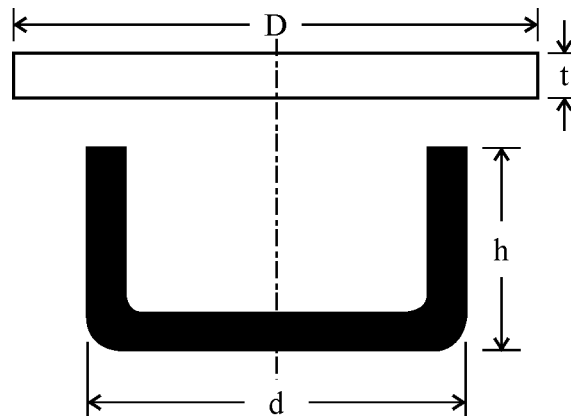
- (c) Determine the developed length of part shown in Figure. Assume $K = t/3$.



6. Attempt any TWO :

2 × 6 = 12

- (a) Explain with neat sketch the construction of jig for drilling four equispaced through radial holes in a ring.
- (b) The Figure given below shows a cup to be drawn.



Shell diameter $d = 60$ mm

Radius of bottom inner corner of shell $r = 2.0$ mm

Height of cup $h = 50$ mm

Do not consider trimming of blank.

- (i) Calculate the diameter of blank from it.
- (ii) Calculate the percentage reduction.
- (iii) Calculate number of draws.

P.T.O.

- (c) Explain following terms :
- (i) Centre of pressure for press tool
 - (ii) Die block
 - (iii) Die shoe
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