

- N.B.** (1) Question No.1 is compulsory.
 (2) Attempt any **four** questions out of remaining **six** questions.
 (3) Assume and state **suitable**, whenever **necessary**.
 (4) **Figures** to the **right** indicate marks.

1. Part shown in **figure 1** is to be produced on the die :—

- (a) Draw a Economical Strip layout consider sheet size 1000 × 500 mm. 6
 (b) Calculate tonnage for layout 2
 (c) Draw the following views of die :— 12
 (i) Top view of bottom assembly
 (ii) Sectional front view of die.

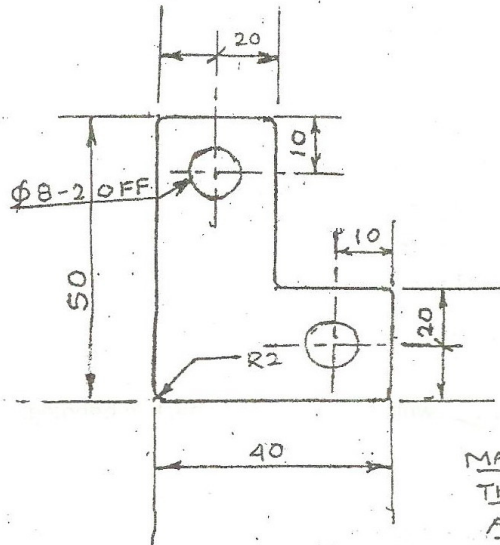


Fig.1 for Q1

MATERIAL: COPPER SHEET
THICKNESS: 1.2 MM
ALL DIMENSIONS ARE IN MM.
ULTIMATE SHEAR STRENGTH: 30 kg/mm²
SHEET SIZE: 300 MM × 1200 MM

2. (a) Explain flow of metal in drawing operation. When do we need to have multistage drawing? Explain different factors and their influence on flow of metal in drawing operation. 12
 (b) A circular cup shown in **figure 2** is to be manufactured by using deep drawing operation. Determine following parameters :— 8
 (i) Blank size (iii) No. of draws
 (ii) Percentage reduction (iv) Drawing force and blank holding force.

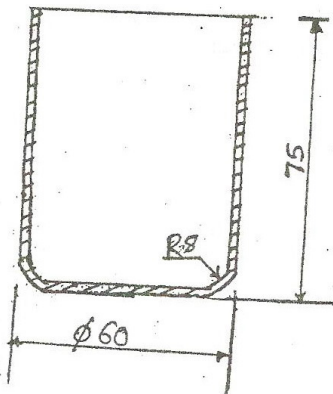


Fig:2 for Q2

Cup thickness = 2 mm
 Yield strength = 35 kg/mm²
 All Dimensions are in mm

Con. 6049-SP-8009-09.**2**3. Write short notes on any **four** of the following :—**20**

- (a) Curling dies
- (b) Coining
- (c) Classification of Presses
- (d) Impact machining
- (e) Transfer die.

4. (a) The end view of drawing board clip is shown in **figure 3**. The width of clip is 25 mm :— **10**

- (i) Calculate developed length of flat blank
- (ii) Indicate sequence of operation.

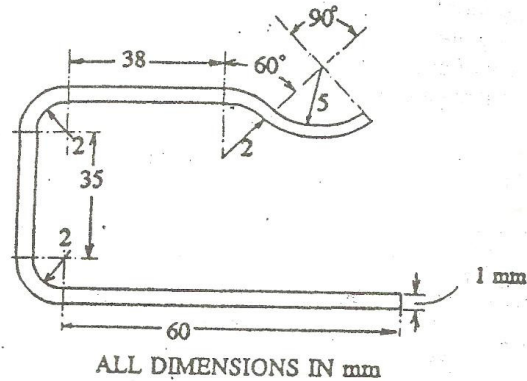


Fig 3 for Q4

(b) What is spring back ? Explain the variables which affect. Spring back in bending. **10**

5. Differentiate the following :—

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- (a) Fix stripper and Movable stripper
- (b) Blanking and Piercing
- (c) Progressive die and Compound die
- (d) Direct pilot and Indirect pilot.

6. (a) Explain, with the help of neat sketches various components of die set and concept of "shut height" and stroke of the press. **10**(b) Explain quality defects encountered in drawing operation and how they are overcome ? **10**7. Give reasons for following (any **four**) :—**20**

- (a) Hydraulic press is preferred over mechanical press for deep draw.
- (b) At, times, we need idle station in progressive die.
- (c) Knuckle type press is used for coining operation.
- (d) Compound die is used for closed tolerance components.
- (e) Insufficient clearance leads to secondary shear.