

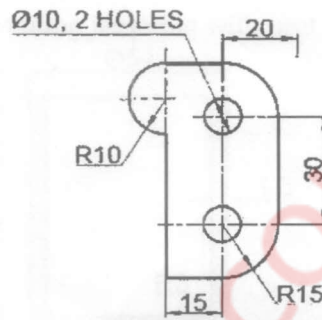
[Time: 3 Hours]

[Total Marks:80]



- N.B: 1. Question No.1 is compulsory. Attempt any three out of the remaining five questions.
 2. Assume and state suitable data wherever necessary.
 3. All dimensions are in mm.
 4. Figures to the right indicate full marks.

1. (a) For a component shown in Figure 1, calculate economic strip layout assuming suitable bridge values. Consider sheet size of 1200mm x 900mm.
 (b) Calculate the press tonnage required for component manufacturing.
 (c) Draw Sectional Front view of the tool & Top view of bottom half of the tool.



Material: Brass, 1.6mm thick
 Shear strength: 30 kg/mm²

Figure 1

2. Design a drill jig for drilling 14φ & 16φ holes in the work piece. Draw minimum two views of the Jig.

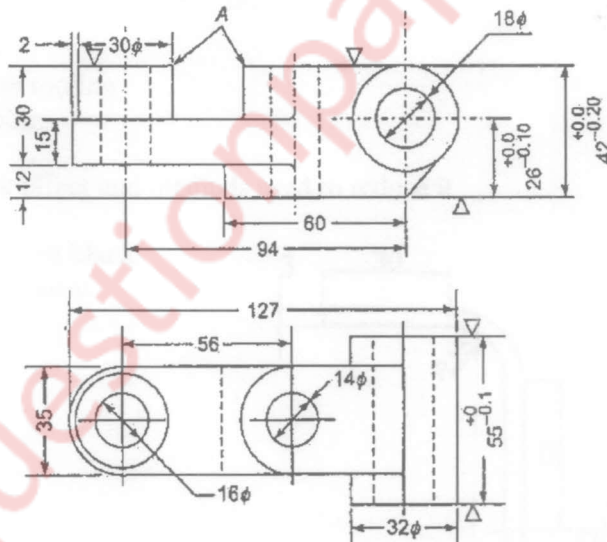


Figure 2

3. (a) State whether True or False. Give reasons. (any five):
 i) Dowels are used for locating work piece.
 ii) Favorable grain direction is not essential for severe bending operation.
 iii) Blank holding pressure is essential for deep drawing operation.
 iv) If tenons are provided in milling fixtures, setting blocks are not required.
 v) C-washer is a time saving device.
 vi) Diamond pins are provided to prevent jamming.

- (b) Differentiate between (any two): - [10]
 i) Progressive & Compound die.
 ii) Slip Bush & Renewable bush.
 iii) Allen Screws and Dowels.

4. (a) Explain 3-2-1 principle of location. [5]
 (b) What is Jamming? Explain different methods of preventing jamming with neat sketches. [5]

- (c) For a drawn cup shown in Figure 3, [10]
 Calculate the following: -
 Developed blank size, Number of
 draws required to get the final part,
 Drawing forces, blank holding
 forces and %age reduction in each
 draw.

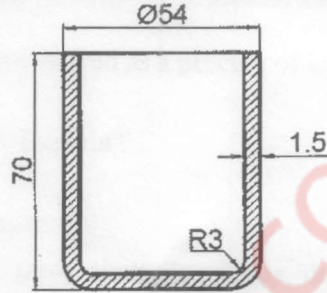


Figure 3

Yield Strength = 45 Kg/mm²

5. (a) Mention briefly main steps in designing a milling fixture. Describe important features of locating and clamping the work piece. State recommended materials and suitable hardness for the same, with example. [10]

- (b) Write short notes on: - [10]
 i) Importance of strip layout in press tool design.
 ii) Types of Strippers in press working.

6. (a) Write short notes on: - [5]
 i) Ejectors in production tooling. [5]
 ii) Principles of Clamping

- (b) (i) Explain Spring-back effect and methods used to reduce it. [5]

- (ii) Calculate the developed blank length for the bent component shown in Figure 4. [5]

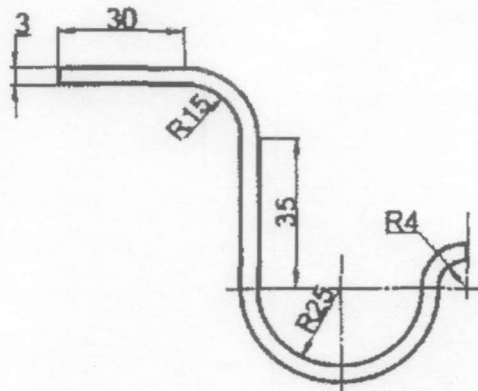


Figure 4