Q.P. Code: 27166

Total Marks : 80

(3 hours)

N.B. (1) Question **No. 1** is **compulsory**

(2) Attempt **any three** questions out of the remaining five questions.

(3) Assume suitable data wherever necessary and justify it.

(4) Figures to the right indicate full marks

1. (a) For a component shown in Figure 1,

(i) Calculate economic strip layout considering the sheet size 1500 mm x 800 mm. (Material : Brass with shear strength as 35 kgf./mm^2, Thickness : 2 mm.)   **4**

(ii) Calculate tonnage of press required   **3**

(iii) Design for stripper plate, die block and punches. Determine the shut height of press.   **3**

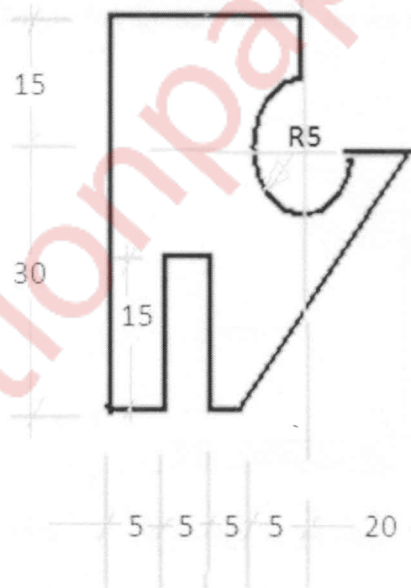(iv) Draw sectional front view and top view of bottom assembly of the die set.   **5**

Figure No. 1

1685EEF251B9899113CE47ECAC43A835

(b)   Explain Resistance Seam Welding with neat labeled diagram   5

2. Explain the following in point form (any five):-   20
    (a) Interstage Annealing for Multi stage Drawing operation
    (b) Why are the edges of the drawn components not straight ?
    (c) Material requirements for die tool
    (d) Give the advantages of sectional die blocks.
    (e) Advantages of Press working over other manufacturing processes
    (f) Enlist two safety procedures adopted for safety of press operator.
    (g) Thermal effects in welding and remedial measures.
    (h) Enlist advantages of use of fixtures in welding.

3. (a) Draw free hand sketch of types of pilots and punches used in cutting dies.   06
    (b) Find the Centre of Pressure for the Figure No. 1 and discuss on the use of COP.   08
    (c) Classify cutting operations in press working. Give its applications.   06

4. (a) Enlist the causes and remedies for burr formation in press working operations.   06
    (b) Find the Developed length for the figure no. 2 drawn below. Width = 15 mm. UTS =   08
    35 kgf/mm^2

90°   3 mm
              90°

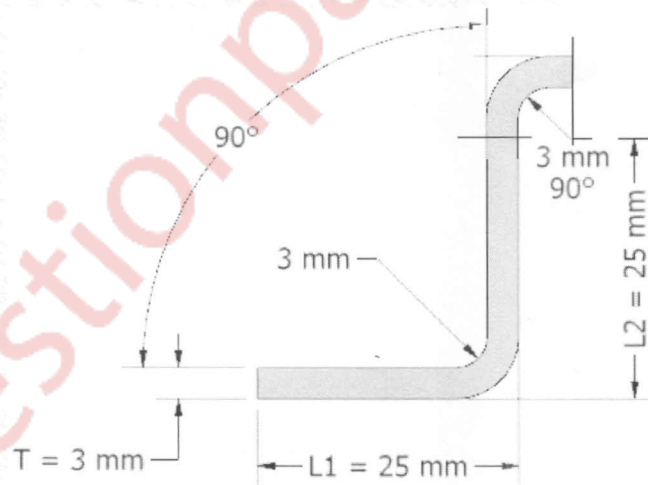3 mm — $L2 = 25$ mm

T = 3 mm $L1 = 25$ mm

Figure No. 2 (Bending Component)

(c) Explain Coining operation with neat diagram? How is it different from Embossing   06
operation ?

5. (a) Explain the following (any three)   12
      (i)   Need of shear in press tools
      (ii) Staggering of punches
      (iii) Energy requirements in different bending operations.
      (iv)Defects in deep drawing and its prevention
      (v) Die Life

(b) A 35 mm side regular pentagonal hole is to be cut in sheet metal of 1.5 mm thick.   05
The shear strength of material is 30 kgf/mm^2. Calculate the cutting force required.

(c) Discuss about burr and Roll over radius observed at the sheared end during   03
cutting die operations.

6. (a) Explain working principle of Brazing operation with neat labeled diagram.   06
(b) Explain on Safety in welding .   04
(c) To deep draw a straight cup of thickness of 1.2 mm, height of 55 mm, and mean   10
diameter of cup as 25 mm, with inside corner radius of 1.5 mm, Calculate the
developed blank size, No. of draws required to get final size. and reduction ratios.
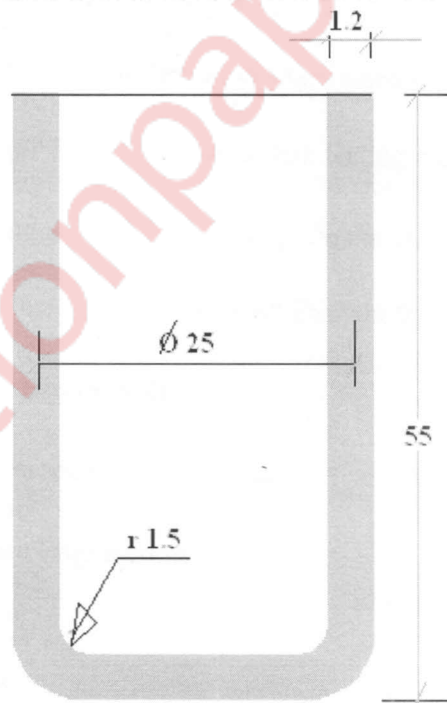Assume suitable additional data.

Figure No. 3