Q.P. Code: 27167

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 2000 mm x 1100 mm. (Material : Brass with shear strength as 40 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**

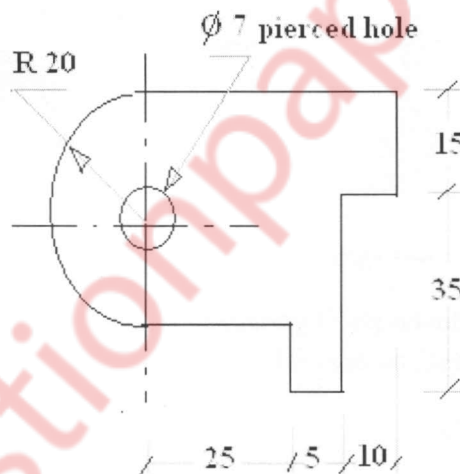   (iv) Draw sectional front view and top view of bottom assembly of the die set.   **5**

Figure No : 1
Progressive Die
Component

(b) Explain Thermit Welding with neat labeled diagram   **5**

2. Explain the following in point form (any five):-   **20**

    (a) Drawing speed is very important factor for consideration in Deep Drawing operation. Justify this statement.

    (b) Why are the edges of the drawn components not straight ?

    (c) Give design considerations in selection of Dowel pins w.r.t. screwed fasteners.

    (d) Give the advantages of sectional die blocks.

    (e) How are transfer dies advantageous over other press working dies?

(f) Enlist two safety procedures adopted for safety of press operator.

(g) What is solid state welding? Give an example.

(h) Enlist advantages of use of fixtures in welding.

3. (a) Draw free hand sketch of fixed stripper and movable stripper 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 forming operations in press working. Give its applications. 06

4. (a) Enlist the causes and remedies for burr formation in press working operations. 06

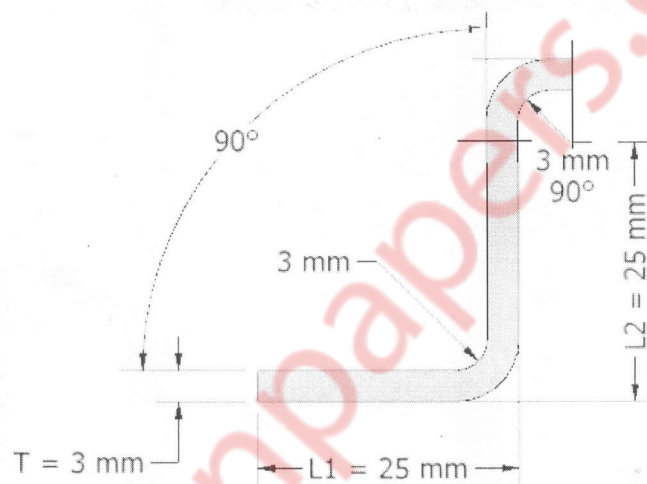(b) Find the Developed length for the figure no. 2 drawn below. Width = 15 mm. UTS = 35 kgf/mm^2 08

Figure No. 2 (Bending Component)

(c) What are the types of Bending operations? Discuss on Defects in bending and remedies to overcome it. 06

5. (a) Explain the following (any three) 12

    (i) Need of shear in press tools

    (ii) Staggering of punches and need of idle station in progressive dies.

    (iii) Condition of Energy overloading of press.

    (iv) Defects in deep drawing and its prevention

    (v) Die Life

(b) A 35 mm side regular hexagonal hole is to be cut in sheet metal of 1.2 mm thick. The shear strength of material is 40 kgf/mm^2. Calculate the cutting force required. 05

(c) Discuss about Burnished Band, Roll over radius observed at the sheared end during cutting die operations. 03

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6. (a) Explain working principle of Soldering operation with neat labeled diagram. 06

   (b) Give the Differences in Oxy Acetylene Welding and Argon Welding with applications. 04

   (c) To deep draw a straight cup of thickness of 1.2 mm, height of 55 mm, and mean 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. 10
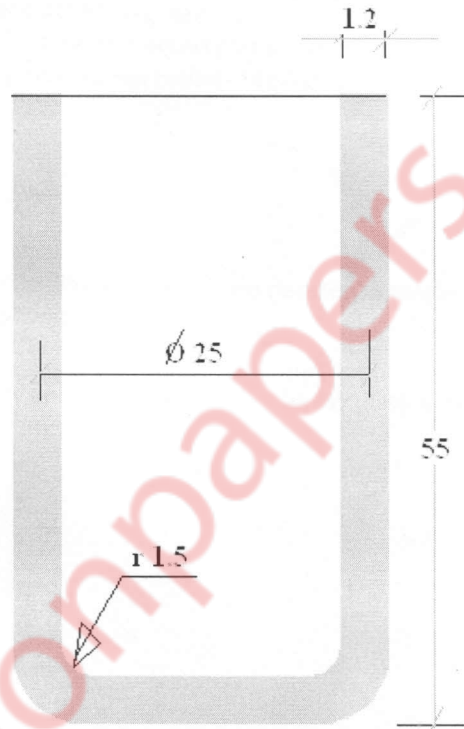

Figure No. 3