16/12/2024 | Mech. | Sem VI | Choice based C-Scheme

Paper / Subject Code: 89425 / Press Tool Design (DLOC)

(3 Hours) **Total Marks : 80**

N.B. **(1)** Question no. **1** is **compulsory.**
(2) Attempt any **three** questions out of remaining **five** questions.
(3) Illustrate your answer with **necessary** sketch wherever **necessary.**
(4) Figures to the **right** indicate full **marks.**

1. Attempt **any FOUR** of the following : **(20)**
(a) Classify common press working operations.
(b) Write Selection of steels and its hardness for different elements of Press tools.
(c) Write short note on defects in drawn parts.
(d) Sketch combination die and label all the parts.
(e) Write short note on safety in press shop.

2. **(a)** Explain methods of reducing cutting loads on press tools. **(10)**
(b) Find the total pressure and dimensions of tools to produce a washer 4 cm outside diameter with 2 cm diameter hole from material 4 mm thick, having shear strength of 360 N/mm^2. **(10)**

3. **(a)** Design a die for shell size 60 mm diameter and 25 mm height, corner radius is 3 mm, material is mild steel and sheet thickness is 2 mm. Yield stress is 200 N/mm^2 and shear stress is $120N/mm^2$. **(10)**
(b) With the help of neat sketches explain metal flow in drawing & forming operations. **(10)**

4. **(a)** With the help of neat diagrams explain different types of bending dies. **(10)**
(b) Explain overloading of Presses with respect to load and energy considerations. **(10)**

5. **(a)** Explain basic hydraulic and pneumatic circuit used in press for stock feeding. **(10)**
(b) A press is designed to offer 90 ton of force at 20^o crank angle with a stroke of 15 cm. Stroke is variable from 1cm to 15 cm. Calculate tonnage available when the ram is 3 cm above BDC. Take stroke length equal to 10 cm. **(10)**

6. Attempt **any FOUR** of the following : **(20)**
(a) Write Benefits and limitations of using Press tools.
(b) With suitable example explain centre of pressure.
(c) Describe reduction ratio and redrawing limits
(d) With the help of neat sketch explain simple progressive die.
(e) Write short note on CNC press controller.
