

Reg. No.

Question Paper Code

11523

**B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV/DEC 2022**  
Sixth Semester  
**Mechanical Engineering**  
(Common to Production Engineering)  
**ME8095 - DESIGN OF JIGS, FIXTURES AND PRESS TOOLS**  
(Regulations 2017)

(Use of approved design data book is permitted)

Duration: 3 Hours

Max. Marks: 100

Answer ALL Questions

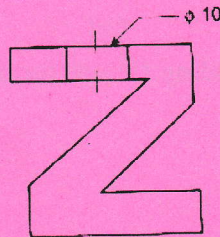
**PART-A (10 × 2 = 20 Marks)**

- |  | <i>Marks,</i><br><i>K-Level, CO</i> |
|--|-------------------------------------|
| 1. Define the term Tool design.  | 2,K1,CO1                            |
| 2. State any two important conditions while locating the workpiece.                      | 2,K1,CO1                            |
| 3. When slip bushes are used?  | 2,K1,CO2                            |
| 4. What are the different types of fixtures?   | 2,K2,CO3                            |
| 5. Distinguish between blanking and piercing.  | 2,K1,CO4                            |
| 6. What factors should be considered for selecting an appropriate press for a given job? | 2,K1,CO4                            |
| 7. Write down the formula to calculate bending force.                                    | 2,K1,CO5                            |
| 8. What are the variables affecting metal flow in drawing operation?                     | 2,K2,CO5                            |
| 9. What is meant by Coining?   | 2,K1,CO6                            |
| 10. Write the Advantages of SMED.  | 2,K1,CO6                            |

**PART - B (5 × 13 = 65 Marks)**

Answer ALL Questions

- |   |           |
|---|-----------|
| 11. a) Describe the design principles for jigs and fixtures.  | 13,K2,CO1 |
| OR  |           |
| b) Explain briefly 3-2-1 location of principle.   | 13,K2,CO1 |
| 12. a) Explain any four types of drill bushes with sketch.  | 13,K2,CO2 |
| OR  |           |
| b) Design a drill jig to make hole of 10 mm, as shown in Figure below and also mention the part list. | 13,K3,CO2 |





13. a) Write short notes on the following:

(i) Die block.

(ii) Punch holder.

(iii) Guide plates.

4.K2,CO4

4.K2,CO4

5.K2,CO4

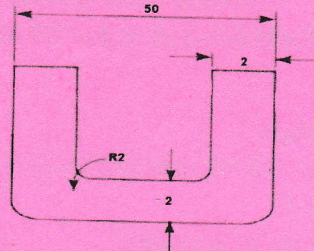
OR

b) Sketch and design a piercing die to make 35 mm square part from 2 mm thick carbon steel sheet metal. 13.K2,CO4

14. a) Write short notes on Bending die, forming die and fanning die. 13.K2,CO5

OR

b) Sketch and design a drawing die as shown in Figure below from medium carbon steel  $F = 3600 \text{ kg/cm}^2$ . 13.K2,CO5



All Dimension are in mm

15. a) Discuss the following process with sketches.

(i) Bulging.

(ii) Swaging.

(iii) Embossing.

4.K2,CO6

4.K2,CO6

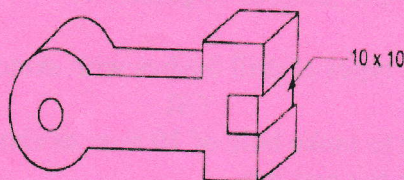
5.K2,CO6

OR

b) Explain the importance of various tooling in NC machines. 13.K2,CO6

### PART C (1 × 15 = 15 Marks)

16. a) Design a milling fixture to make a slot of 70mm x 10mm x 10 mm as shown in figure below. 15.K3,CO3



OR

b) Sketch and explain a welding fixture for door frame fabrication. 15.K2,CO3