B.E. /B.Tech. (Full Time)DEGREE END SEMESTER EXAMINATION, NOV/DEC 2012

Manufacturing Engineering

SIXTH SEMESTER- (REGULATION 2008)

ME 9301 - DESIGN OF JIGS, FIXURES AND PRESS TOOLS

Time: 3 hr Max. Marks: 100

Note: i) Use of Approved Design Data Books permitted
ii) Drawing sheets will be provided
iii) Drawings need not be drawn to scale but should follow standards.
iv) Assume missing dimensions suitably

Answer ALL Questions

PART - A (10x 2= 20 Mark)

1. Distinguish between jigs and fixtures?
2. What is meant by "Foolproofing"?
3. What are the advantages of Box jigs?
4. List the different types of special bushes.
5. What is the function of a tenon? In which fixture tenon was used.
6. What are modular fixtures? Give typical uses for the same.
7. What is meant by a combination die? How is it different from a compound die?
8. What is bend allowance? How is it computed?
9. What is the difference between blanking and piercing?
10. Differentiate between partings and cut off dies.

PART - B (5 x16 = 80 Mark)

11 Design and draw two views of a progressive die for producing the component shown in Fig.11.The sheet metal is of 1.63mm thickness and made of Cold Rolled Steel of Ultimate Strength 580 N/mm^2 16

i) Determine the press tonnage and the various stations required
ii) Design all the parts of the die.
iii) Draw two fully dimensioned views of the die in engaged position.
iv) Give a parts list.

16

12.a Design a drill Jig for drilling the holes of ϕ 10 in the component shown in Figure, 12.a;
i) Draw two views of the jig.

Or

12.b Design a drilling jig for use when drilling the ϕ12 holes in the component shown in Figure.12.b, 16

i) Draw two views of the Jig.

13.a Design a Turning Fixture for use when finish boring the ϕ50 bore in the shaft support shown in Figure.13.a, 16

i) Draw two views of the fixture.

Or

13.b Design a Milling fixture for milling the faces marked ∇^{M} in the component shown in Figure 13.b, 16

i) Draw two views of the fixture.

14.a Design and draw 2 views of a combination Blanking and drawing die for the component shown in Figure.14.a, Assume yield strength 45kN/cm^2 16

i)Calculate the size of Blank required

ii)Determine the press tonnage and the various stations required

iii) Design all the parts of the die.

iv) Draw two fully dimensioned views of the die in engaged position.

Or

14.b Write short notes on the following: 16

i) Center of Pressure

ii) Direct and indirect piloting

iii) Automatic stops

15.a Briefly describe the following. 16

(i)Welding fixtures

(iii)Inspection fixtures.

Or

15.b Write short notes on the following: 16

i) Press tonnage for V, Edge and Channel Bending

ii) Shut height of a press and shut height of a die.

iii) Redraw dies in deep drawing

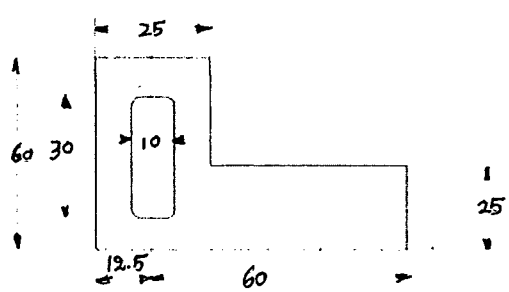

Fig.11

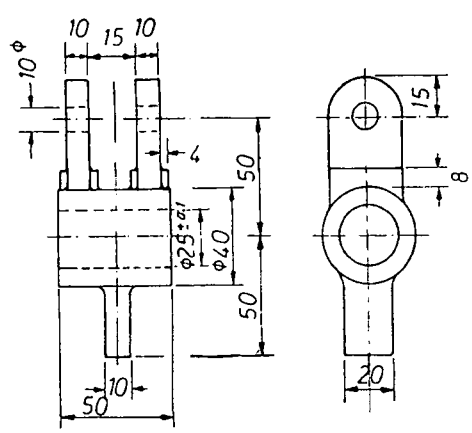

Fig.12.a

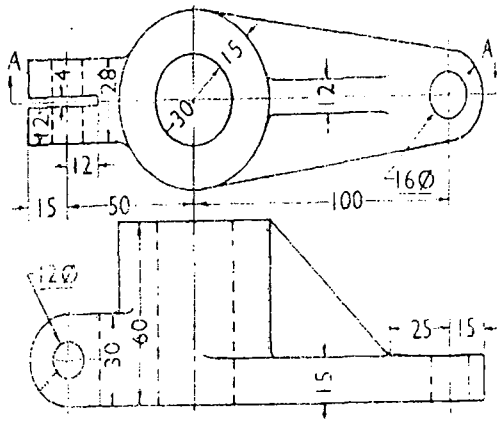

Fig.12.b

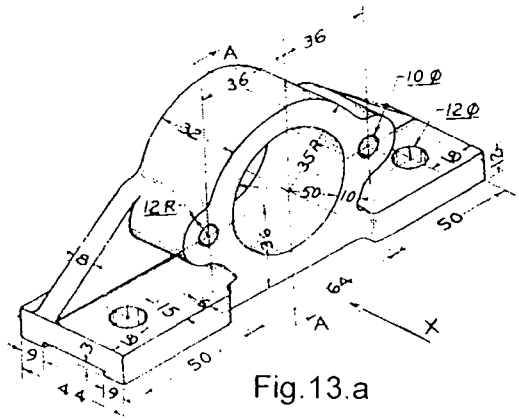

Fig.13.a

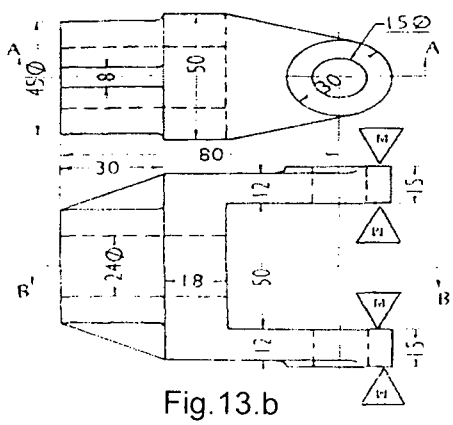

Fig.13.b

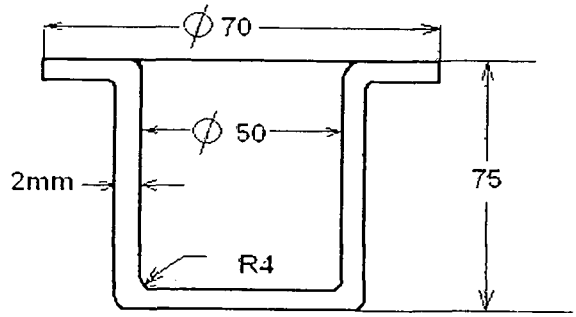

Fig.14.a