



NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

FACULTY OF SCIENCE AND TECHNOLOGY EDUCATION

DEPARTMENT OF TECHNICAL AND ENGINEERING EDUCATION AND TRAINING

Engineering Drawing

PTE 1145/PDT1145

Main Examination

November 2024

This examination paper consists of 9 printed pages

Time allowed	:	3 hours 15 minutes
Total marks	:	100
Special Requirements	:	A2 size plain papers
Examiner	:	Mr. S. Ndlovu
External Examiner	:	Dr. Kahanji

INSTRUCTIONS

1. Answer **QUESTION 1** and **ANY OTHER TWO QUESTIONS**.
2. Sub-division marks are shown in brackets
3. Begin each question on a fresh page and number it.
4. Unless otherwise stated, all dimensions are in millimetres. Dimensions not given are left to your discretion.
5. Credit will be given for accuracy, legibility and neatness.

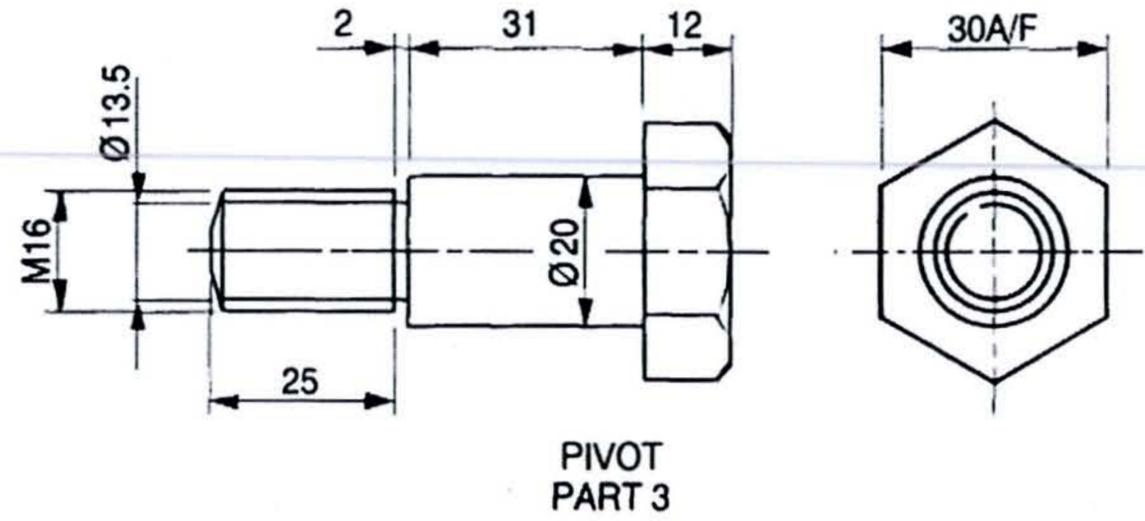
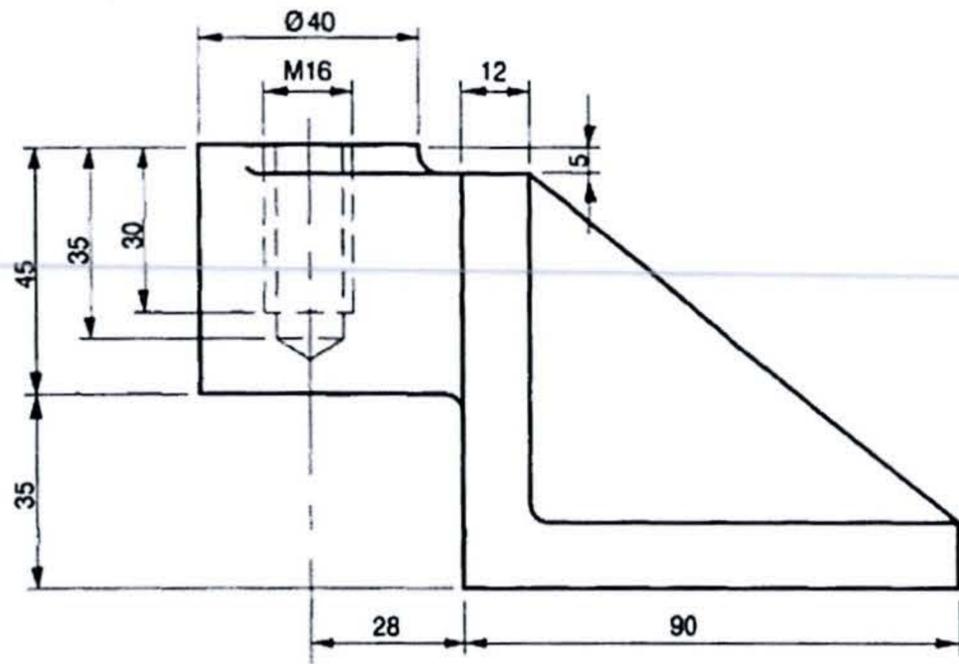
MARK ALLOCATION

QUESTION	MARKS
1	50 marks
2	25 marks
3	25 marks
4	25 marks
5	25 marks

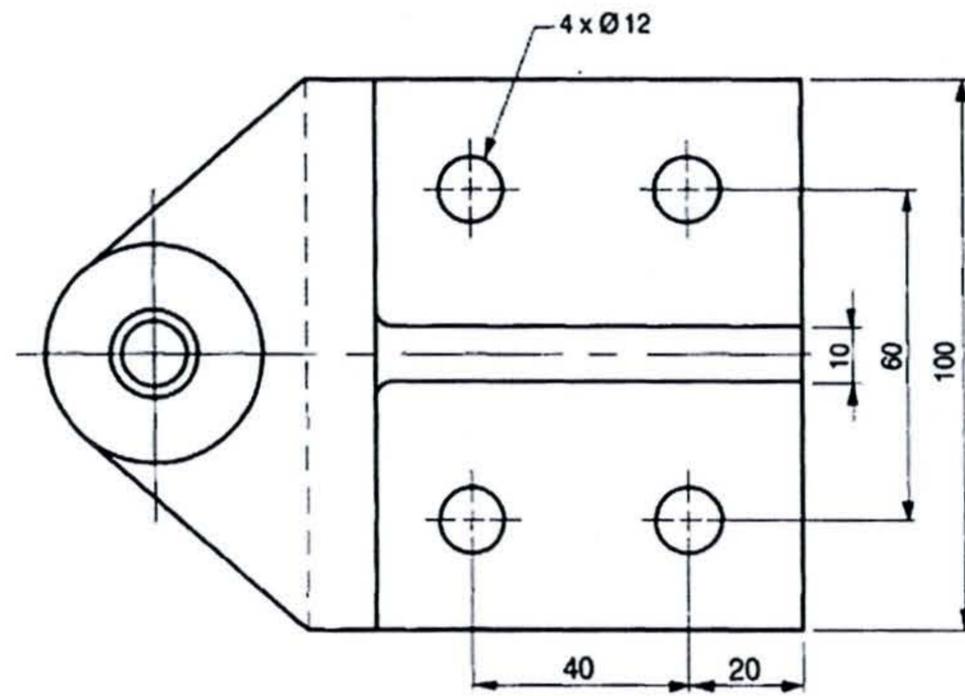
Question 1

Three parts of a Lever Assembly are detailed in Fig. Q1. Using a radius of 3mm for all of the fillet radii. In Third Angle projection, draw.

- a) A sectional elevation X – X [15 marks]
- b) The plan [15 marks]
- c) Create a parts list for the assembly, indicating the part description, part numbers, materials and number of parts. [7 marks]
- d) Show 6 major dimensions [6 marks]
- e) Draw the title block [3 marks]
- f) Show the projection symbol [2 marks]
- g) Indicate the cutting plane [2 marks]



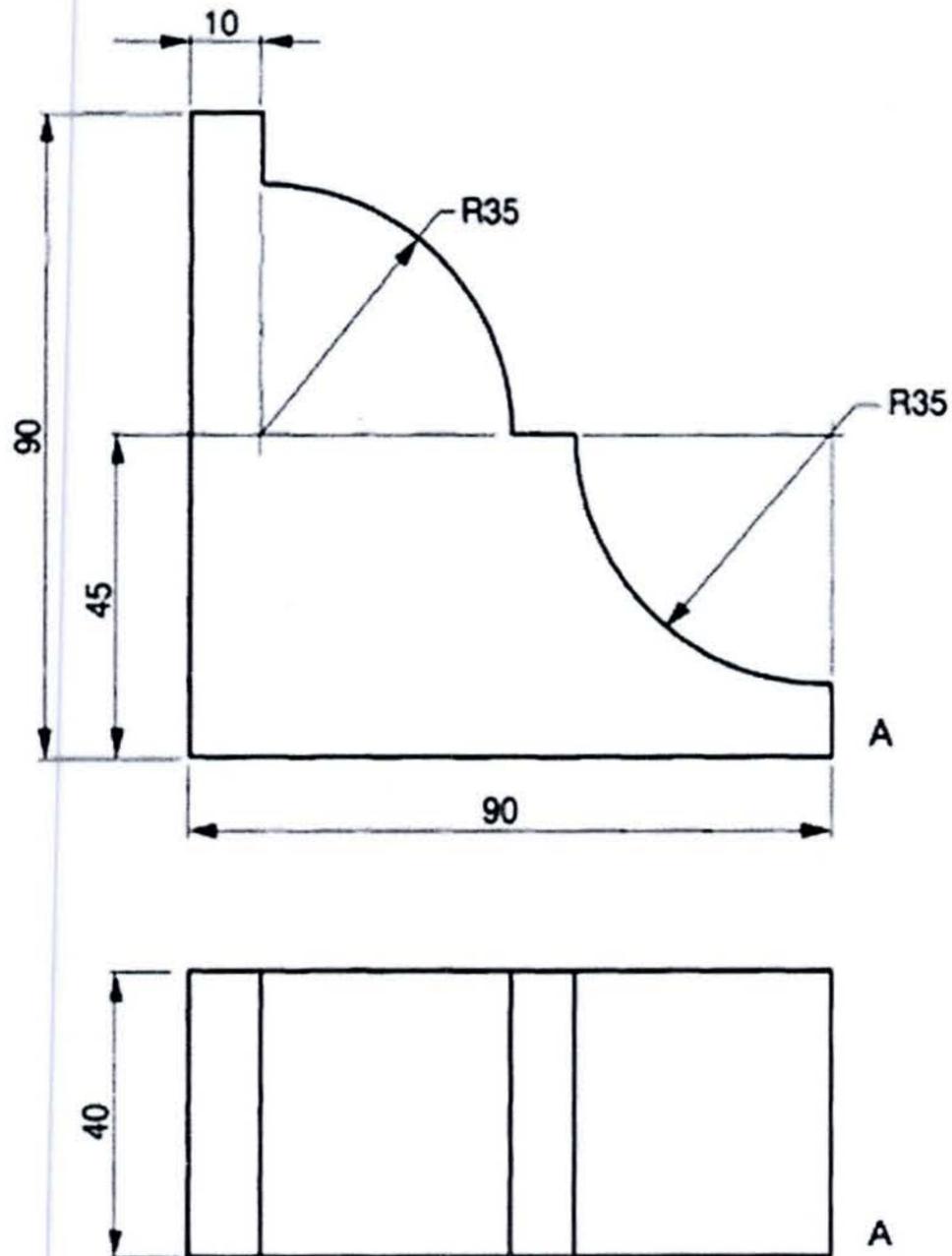
PIVOT
PART 3



PIVOT BASE
PART 1

Question 2.

- a) Explain the difference between an Isometric projection and an Isometric drawing. **[5 marks]**
- b) Orthographic views of an extruded moulding are shown in Fig Q2(b). Draw full size, the extruded moulding in Isometric, with corner A in the foreground. **[20 Marks]**



Question 3

- a) A point P moves such that it maintains a fixed ratio of 1:1 from a straight line DD to a fixed point F. Given that F is 30mm from the line DD, draw the locus of P up to the point where the span is 100mm. **[10 marks]**
- b) Draw the profile of the **Metal Worker's Dolly** shown in Fig. Q3(b). The curve XYZ is a semi-ellipse. **[15 marks]**

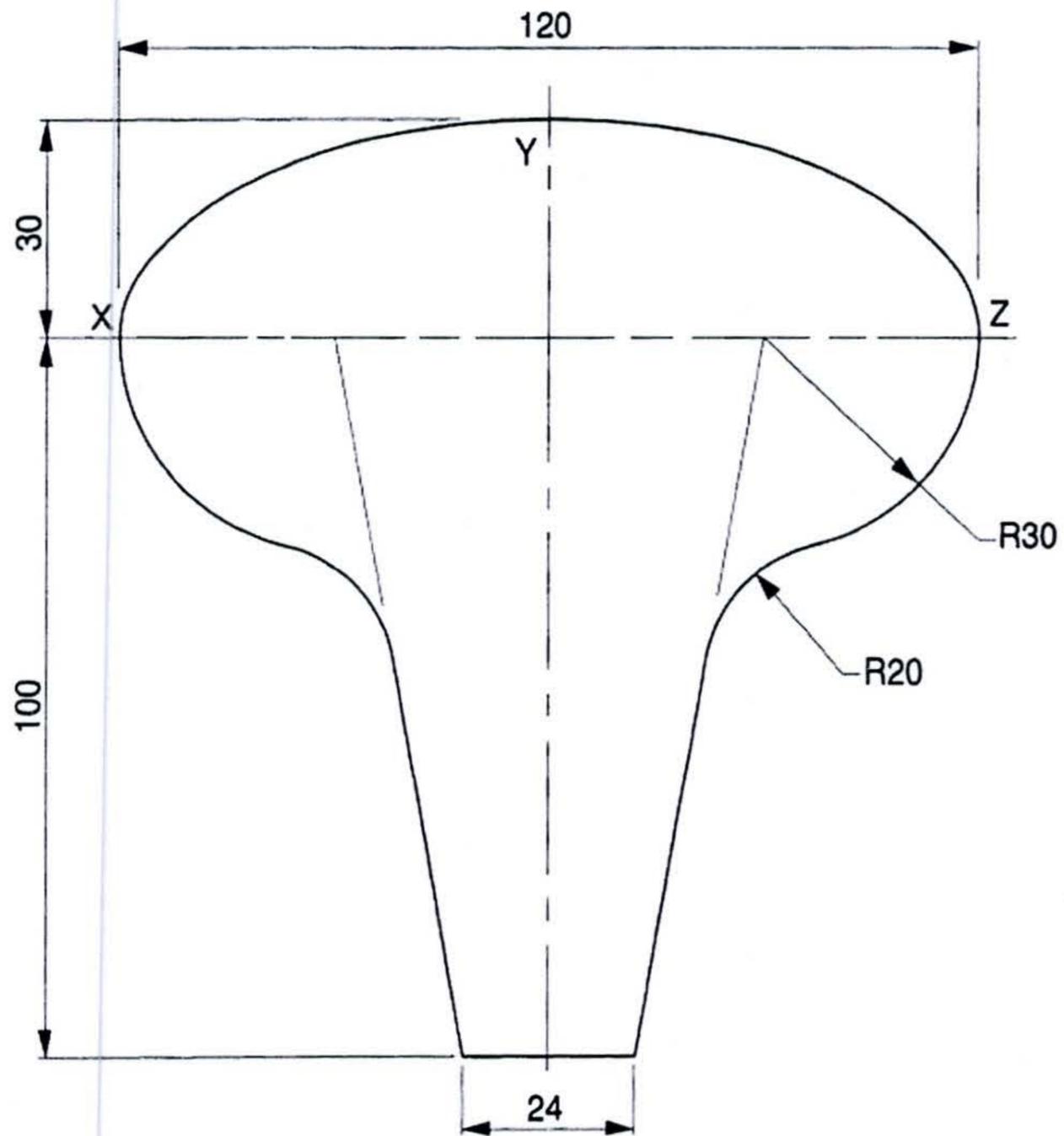


Fig Q3(b)

Question 4

Fig Q4 shows a designer's elevation of a small jug which is to be manufactured by cutting two conical patterns and soldering them together.

- a) Draw the given view of the jug [2 Marks]
- b) Project a Plan of the jug [3 Marks]
- c) Construct the development of the top part of the jug [12 Marks]
- d) Layout the development of the bottom part of the jug [8 Marks]

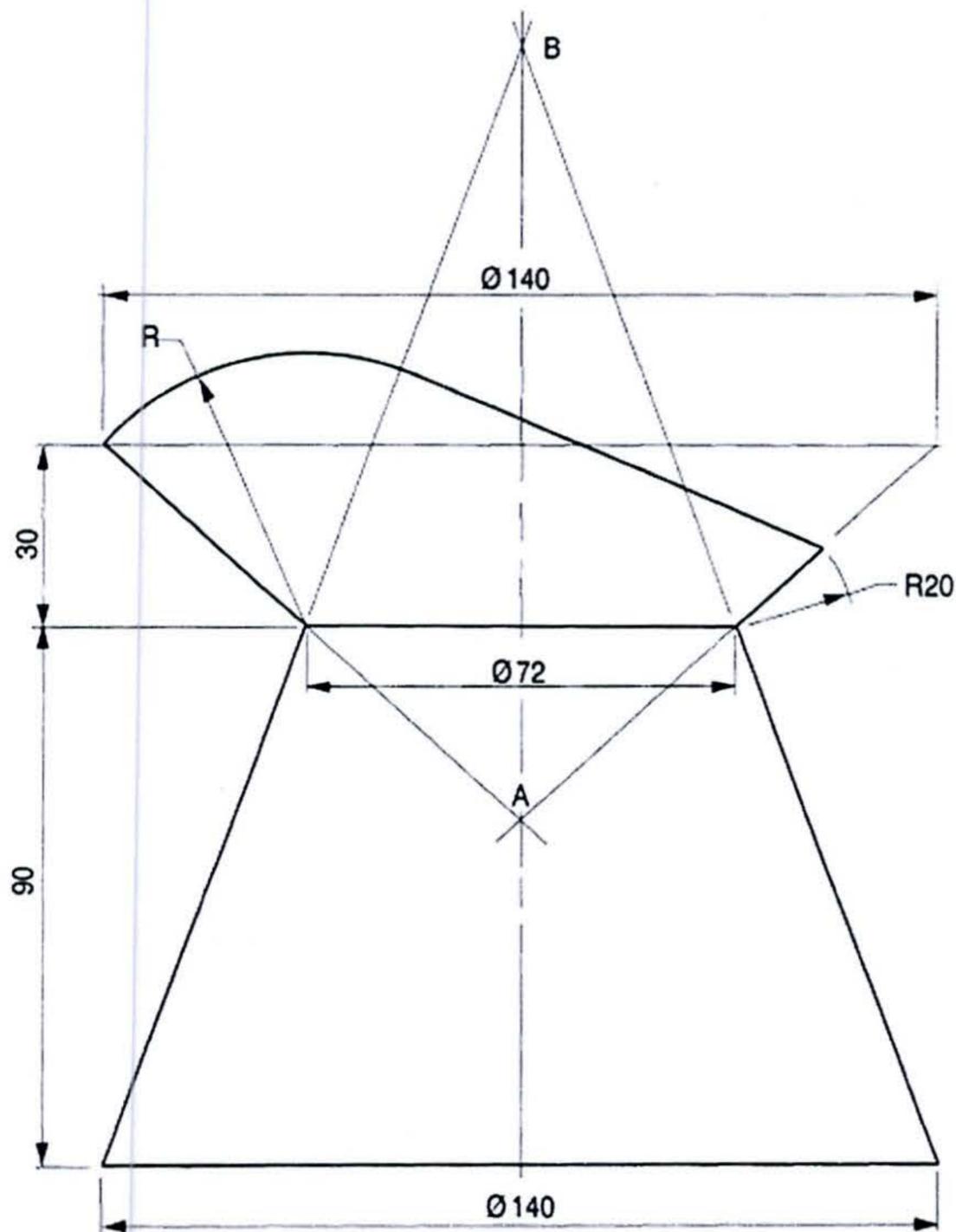


Fig Q4

Question 5

Draw the development of the transition piece connecting a 60mm diameter pipe and a 90mm square pipe shown in Fig Q5 **[25 Marks]**

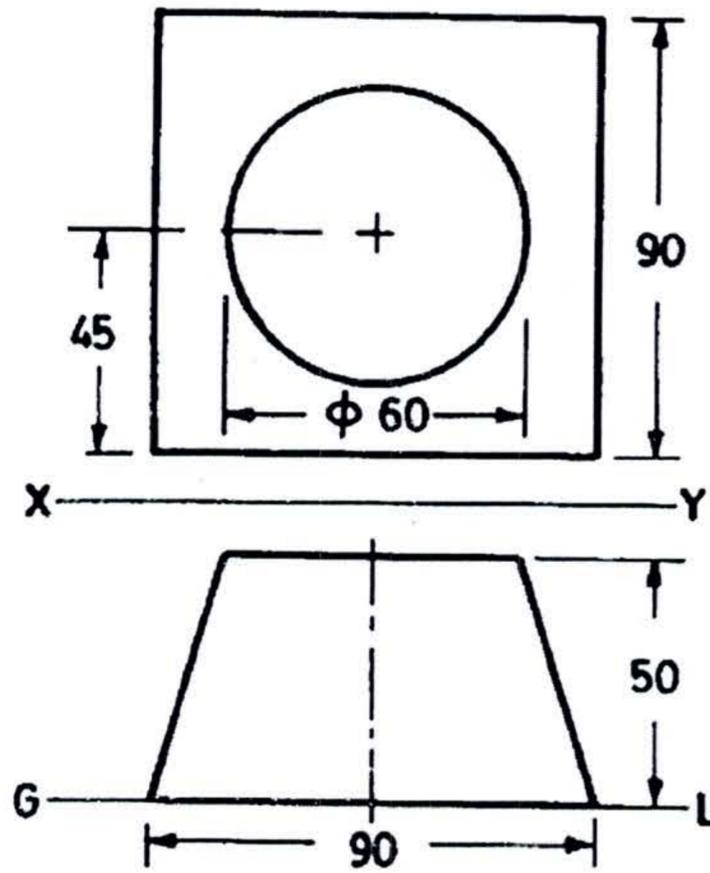


Fig Q5