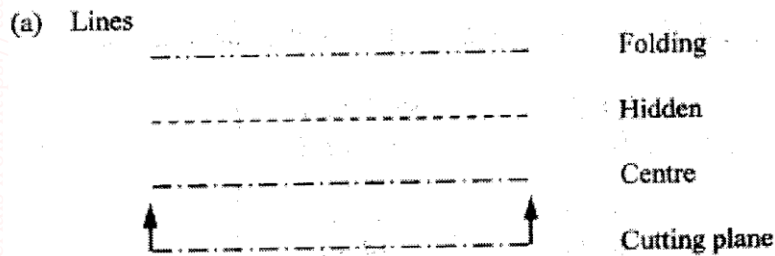


DRAWING AND DESIGN (449)
FORM THREE (3)
TERM 1 - 2024

MARKING SCHEME

Time: 2½ Hours

1. (a) sketch each of the following conventions (2marks)
- (b) State the meaning of each of the following conventions.((2 marks)



(b) CONVENTIONS

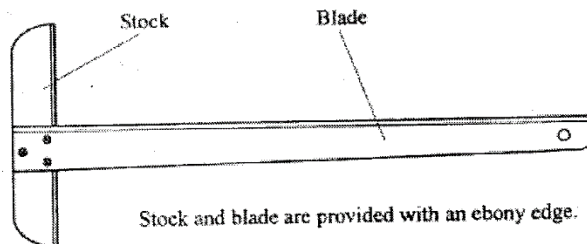
- (i) external thread
- (ii) diameter
- (iii) battery or cell
- (iv) planed timber

2. With the aid of sketches, describe the use and construction of a Tee-square indicating the materials used. (3 marks)

Uses

- ✓ used for drawing both horizontal and vertical lines
- ✓ Support set-squares when being used to draw lines at 30°, 45° or 60°

Construction



3. (a). Give the following information regarding parastatal organizations in Kenya with respect to: (3 marks)

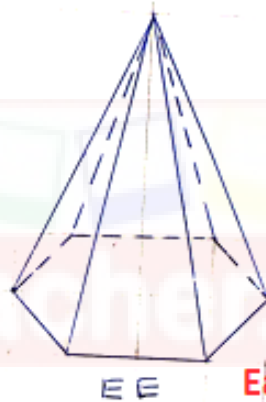
- ✓ Ownership – they are largely owned by the government.
- ✓ Management- they are managed by government appointees
- ✓ Services-they provide services to the customers who find it expensive to afford them if they are left to private establishments

4. Describe each of the following manufactured boards: (3 marks)

- (i) Ply woods are made thin sheets of wood (veneers) that are glued together with the grain of each layer perpendicular to the next.
- (ii) Chipboards are manufactured by compressing chips of wood which are then glued to the required density.
- (iii) Block boards are made up of blocks of timber joined on edge and faced suitably with plywood on both faces.

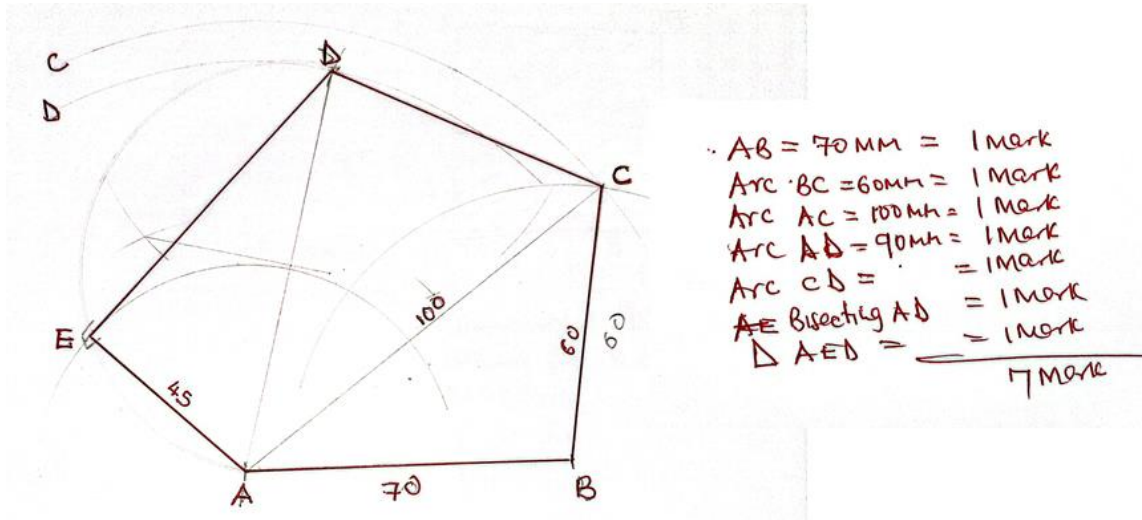
5. Fig 1 shows the front elevation of a tilted right hexagonal pyramid of side 30mm (6 marks)

- (a) Copy the given front elevation
- (b) Draw the plan
- (c) Draw the left end elevation of the pyramid

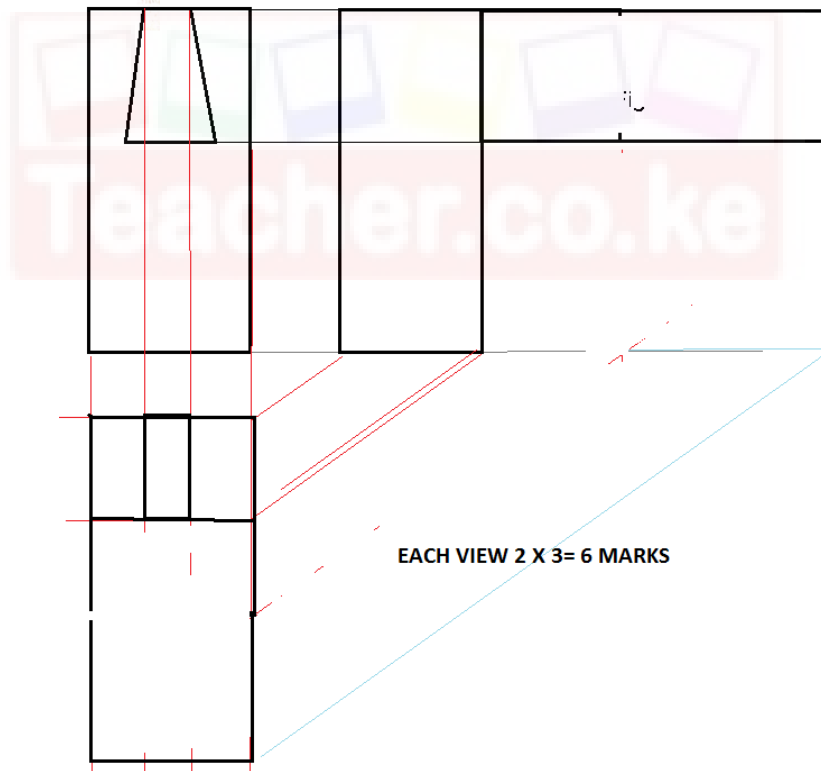


Each view correctly drawn 2x3= 6 marks

6. Draw full size, a pentagon **ABCDE** having the following dimensions: sides **AB**= 70mm, **BC**= 60mm, **CD**=65mm, **EA**=45mm, **diagonals AC**=100mm **AD**=90mm and Angle **AED**=90°. (7 marks)



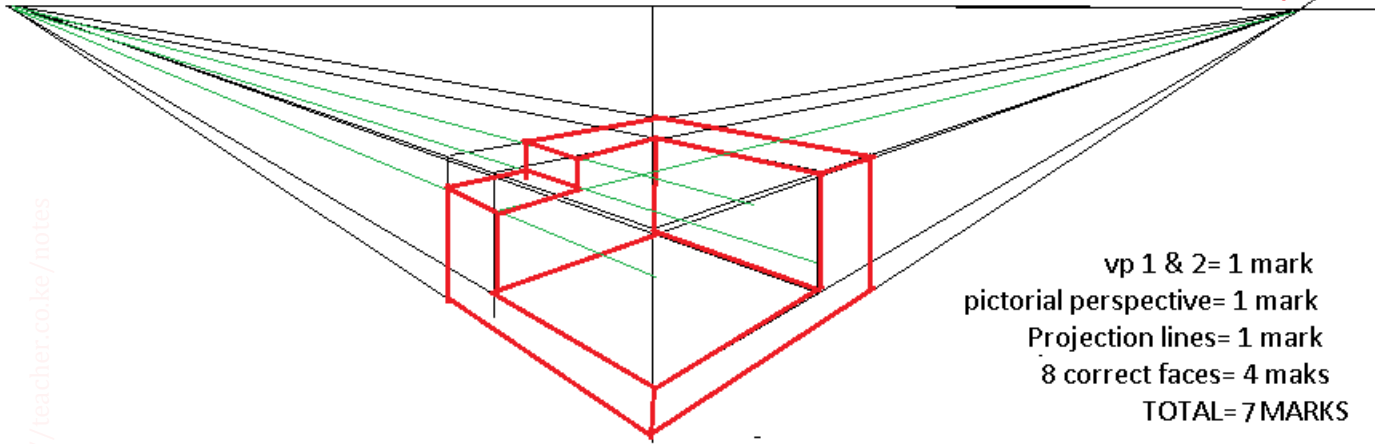
7. Exploded Pictorial drawing of a dovetail joint is shown in **Fig 2**, assemble the parts and draw the following views. (8 marks)
- Front Elevation in the direction of arrow A
 - End Elevation in the direction of arrow B
 - The Plan



8. Fig 3. Shows three views of a block drawn in first angle projection. Make a sketch of the block in two point perspective with Y as the lowest point (7 marks)

vp 1

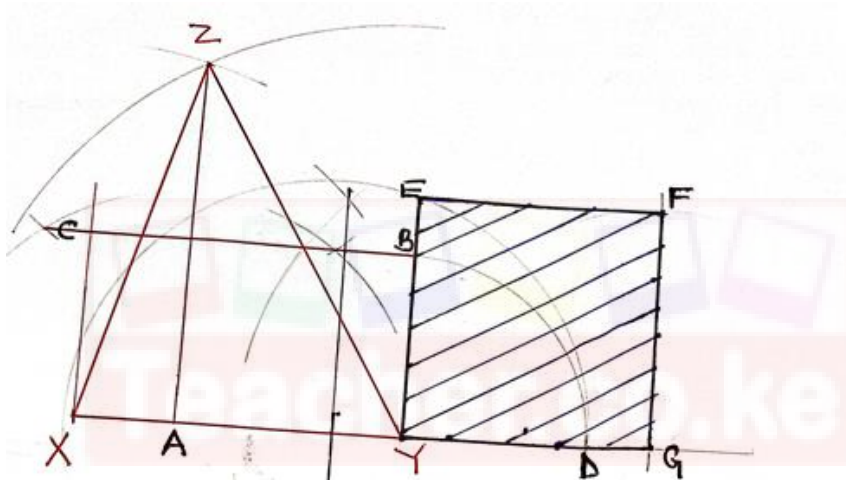
vp 2



vp 1 & 2= 1 mark
 pictorial perspective= 1 mark
 Projection lines= 1 mark
 8 correct faces= 4 marks
 TOTAL= 7 MARKS

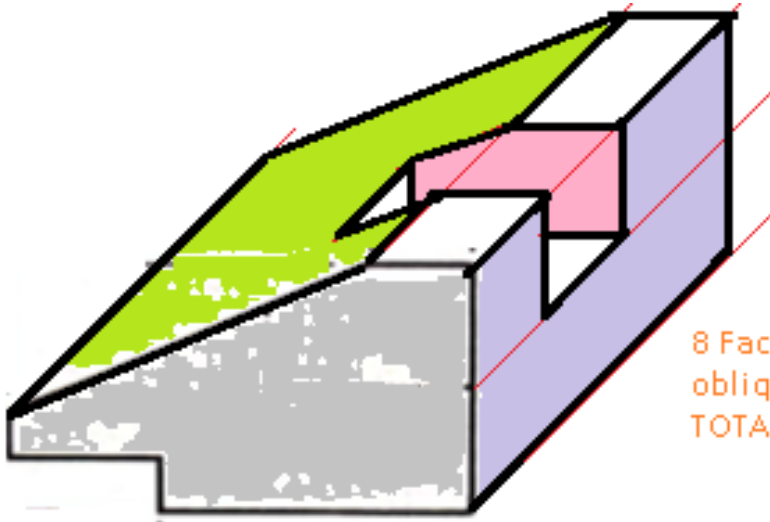
9. Draw a square of equal area to the triangle XYZ in figure 4.

(5 marks)



- Construction of $\Delta XYZ = \frac{1}{2}$
 - Dropping perpendicular $ZA = \frac{1}{2}$
 - BISECTION of $AZ = \frac{1}{2}$
 - RECTANGLE $XYBC = \frac{1}{2}$
 - Extension $XYD = \frac{1}{2}$
 - Bisection of $XD = \frac{1}{2}$
 - Locating of $E = \frac{1}{2}$
 - SQUARE $YEFQ = \frac{1}{2}$
- 8 marks

10. Two views of a machine component are shown 5 draw the object in oblique cabinet projection .
 (6marks)

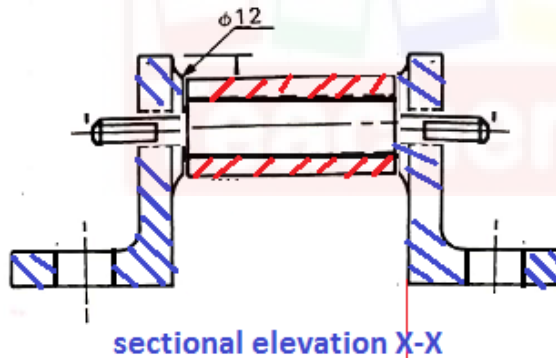


8 Faces = $8 \times 1/2 = 4$ marks
 oblique = 2 mark
TOTAL = 6 MARKS

Section B (20 marks)

This Question Is Compulsory And Students Are Advised To Spend Not More Than One Hour

11. **Figure 6** shows pulley support bracket drawn in first angle projection. Assemble the parts and draw full size the following views in first angle projection:



sectional elevation X-X

SECTIONAL FRONT ELEVATION

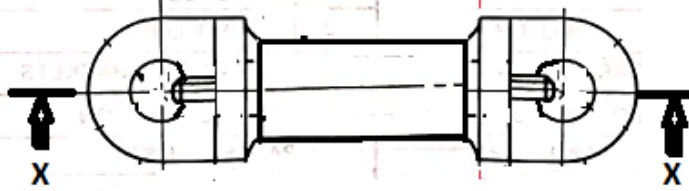
4 Parts correctly assembled = 4 marks
 bush hatched = 1 mark
 2 support bracket hatched = 2 mark
 2 holes exposed = 2 marks
 centre lines = 1 mark

PLAN

CUTTING PLANE LINE X-X = 2 marks
 10 Faces shown = 5 mark

correct projection = 1 mark
 scale indicated = 1 mark
 line work / neatness = 1 mark

TOTAL = 20 MARKS

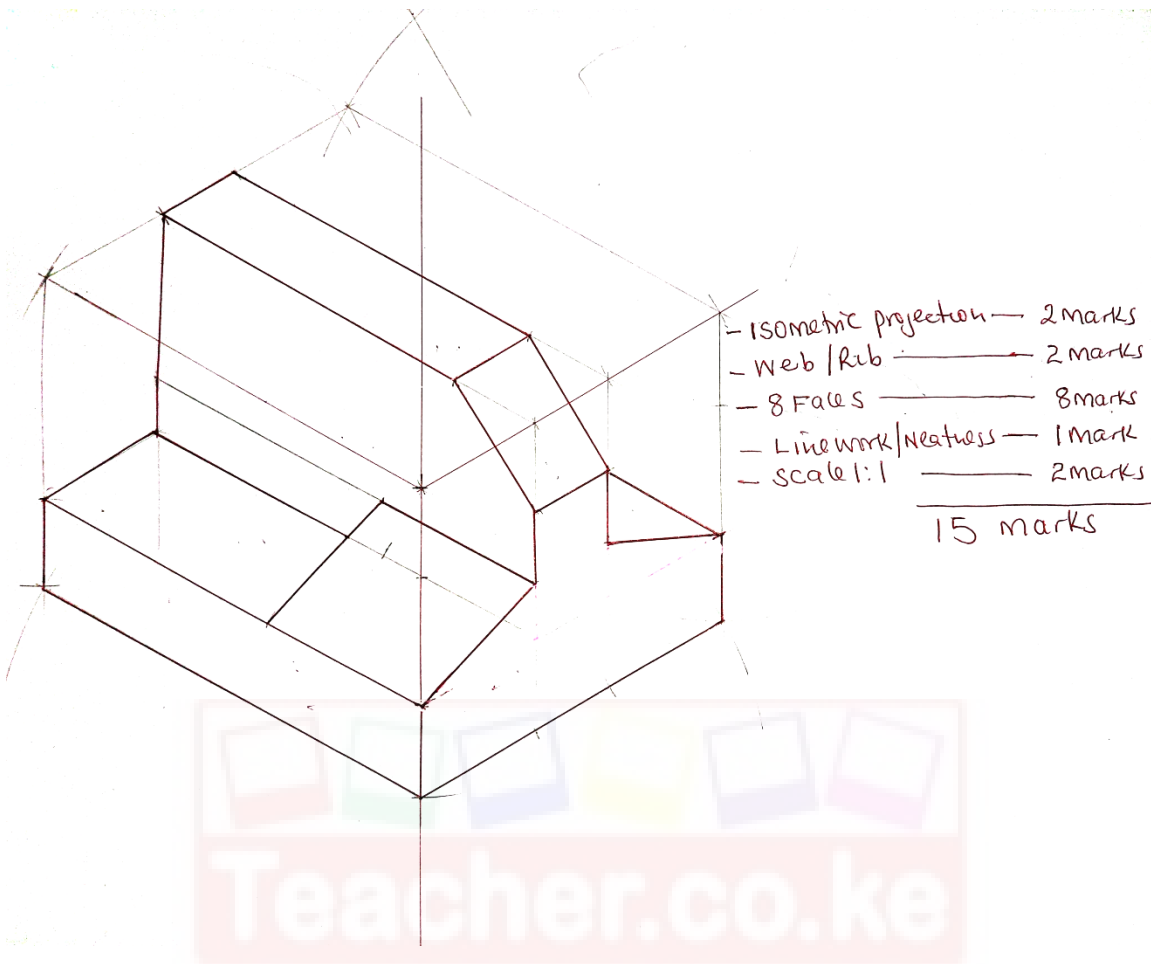


PLAN

Section C (30 marks)

Answer Any Two questions in this section in the A3 provided

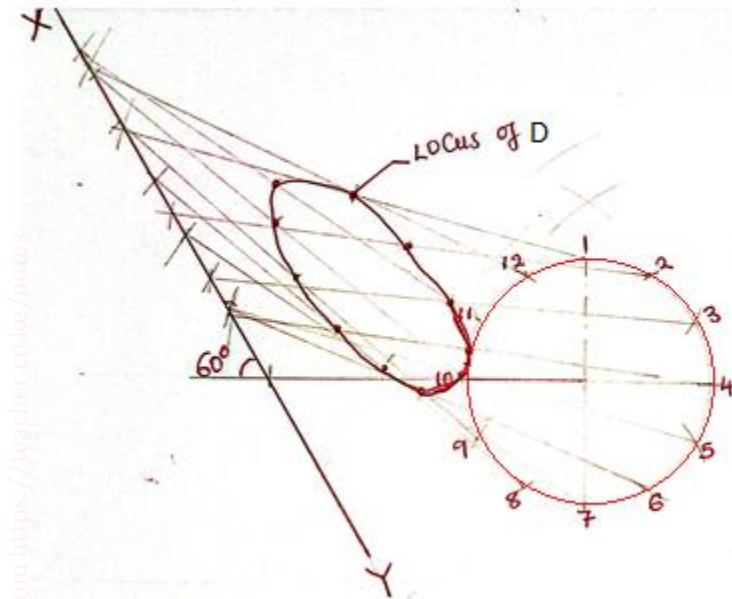
12. Figure 7 shows two views of a block. make full size isometric drawing of the block taking corner “A” as the lowest point (15 marks)



13. Figure 8 shows a line diagram of a slider crank mechanism. The slider A is constrained to move along groove “XY” tilted at 60° . While the crank OB rotates about center “O”, plot the locus of “P” connected to rod AB at D. D is a fixed point at right angle to the rod.

AB=90 OB=25 AD=OB DP=30

(15 marks)



CIRCLE=2 MARKS
 12 DIVISIONS= 2 MARKS
 LOCATION OF XY= 2 MARKS
 XY AT 60° = 1 MARK
 PROJECTIONS TO XY=2 MARKS
 TRACING D=2 MARKS
 SMOOTH CURVE= 2 MARKS
 LINE WORK= 2 MARKS

TOTAL= 15 MARKS

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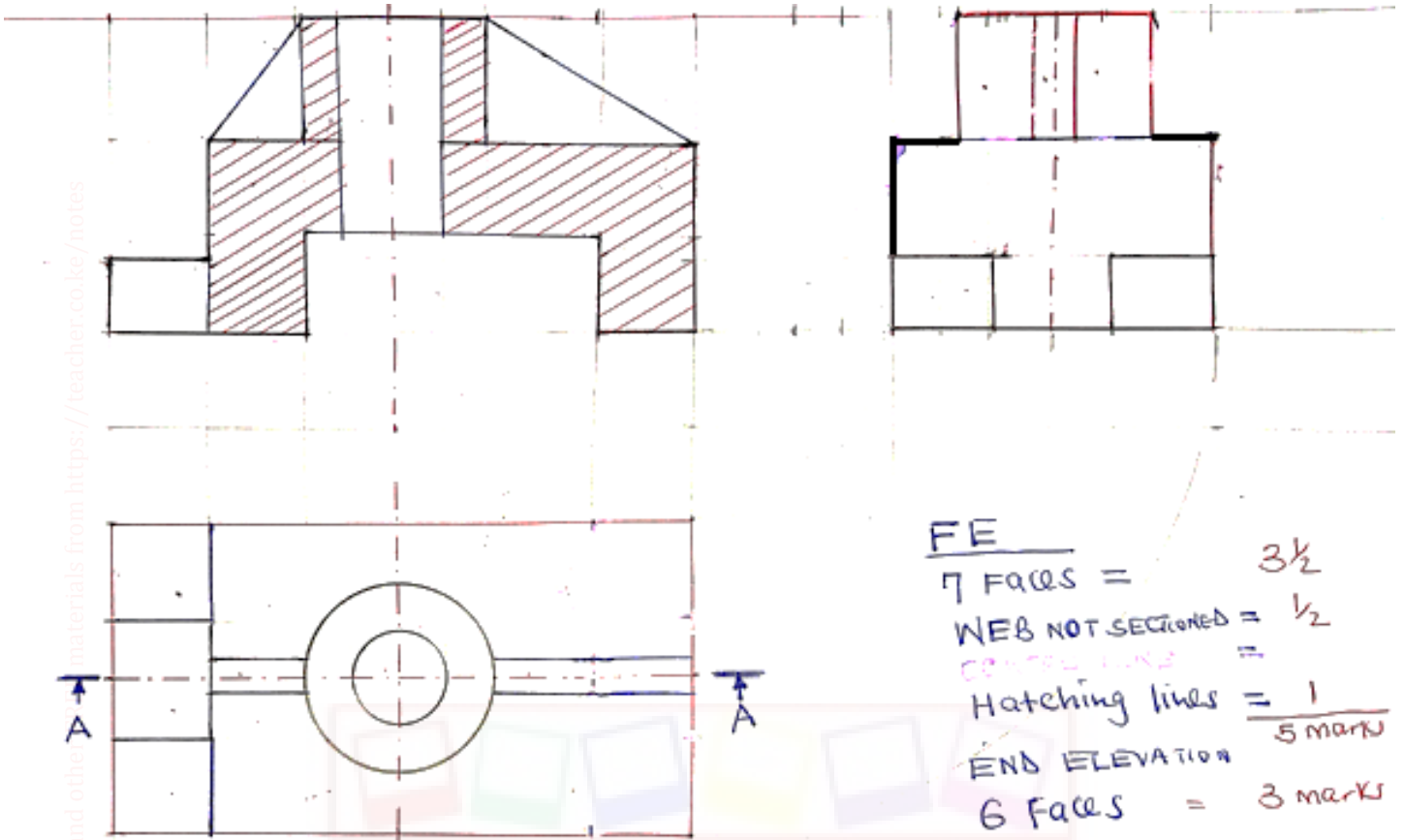
14. Figure 9 below shows a block drawn in oblique.

(15 marks)

Draw full size in first angle the following views of the block.

- (a) Sectional Front elevation **A-A**
- (b) End elevation

(c) The plan



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FE
 7 Faces = $3\frac{1}{2}$
 WEB NOT SECTIONED = $\frac{1}{2}$
 CENTRAL LINE =
 Hatching lines = 1
 END ELEVATION = 5 MARKS
 6 Faces = 3 MARKS

PLAN
 CENTRAL LINES = 2 MARKS
 CUTTING PLANE LINE = 1 MARK
 8 Faces = 4 MARKS
15 MARKS