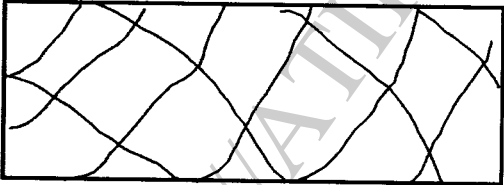
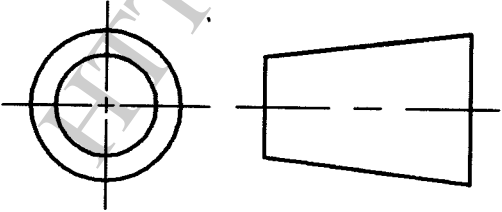
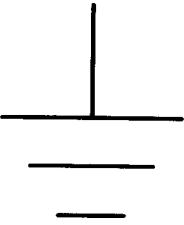


**4.22 DRAWING AND DESIGN (449)**

**4.22.1 Drawing and Design Paper 1 (449/1)**

<p>1. (a)</p> <p>(b)</p>	<p><b>Roles of 'NITA'</b></p> <ul style="list-style-type: none"> <li>(i) Controls training of personnel in the industry.</li> <li>(ii) Offers technical training in various institutions.</li> <li>(iii) Examines and certifies various technical trades.</li> <li>(iv) Controls the type of examinations and certificates to be awarded for Artisan Courses in Kenya.</li> <li>(v) Gives guidance on the scope of training in the technical fields.</li> </ul> <p>Sharpening pencil leads:</p> <ul style="list-style-type: none"> <li>(i) Chisel → used with a compass for drawing arcs and circles. Used for drawing of construction lines and guidelines</li> <li>(ii) Pointed /conical → for general purpose e.g. lettering and outlines.</li> </ul>	<p>Any 3 x 1 = 3 marks</p> <p>(2 x 1) = 2 marks</p>
<p>2. (a)</p>	<p>Symbols for:-</p> <ul style="list-style-type: none"> <li>(i) Plan timber </li> <li>(ii) Third angle projection </li> <li>(iii) Earth Wire </li> </ul>	<p>(3 x 1 = 3 marks)</p>



3. (a) **Advantages of plywood over solid timber**

- It is stronger.
- It can be shaped by folding into intricate shapes.
- It is available in large sheets.
- Does not require planing
- Does not split if nailing is done at the edges.

(b)

Any 2 x 1 =

2 marks

Factors that relate to good or bad design with regard to:

(i) **Material**

- Availability
- Workability
- Cost
- Suitability
- Safety
- durability

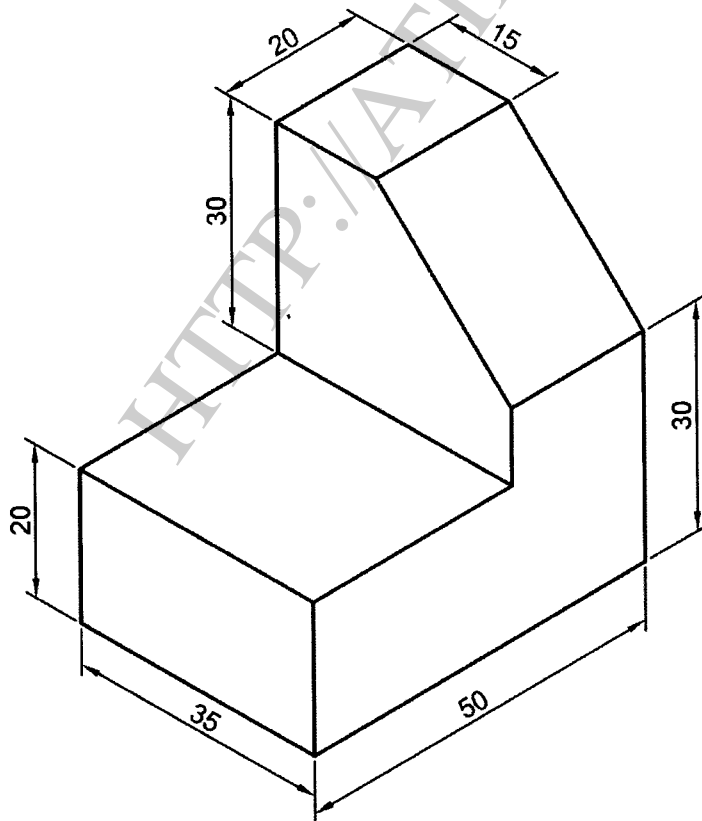
(ii) **Proportion**

- Aesthetics
- Application
- Use-ability
- Ergonomics

Any 2x1/2x1 =

2 marks

4. Drawing with the correct dimensions = 1 mark  
Any 6 dimensions 6x1/2=3 marks

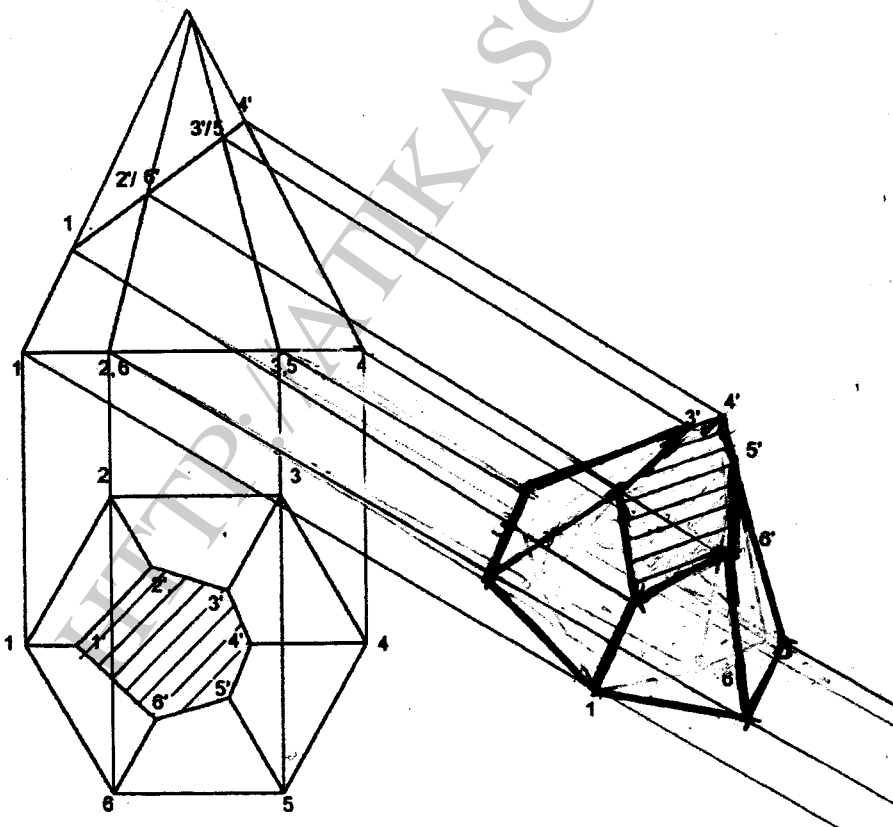


4 marks



<p>5. (a)</p>	<p><b>Reasons for care when storing drawing instruments.</b></p> <ul style="list-style-type: none"> <li>• To preserve their accuracy.</li> <li>• To avoid breakages that may occur.</li> <li>• For durability thus reducing the cost of replacement.</li> <li>• To prevent deformation</li> </ul> <p>(b) <b>Components of a computer</b></p> <ul style="list-style-type: none"> <li>• Monitor – Displays information to the user.</li> <li>• CPU – It is the central processing unit where processing of data and information takes place.</li> <li>• Mouse – It is used for selecting, pointing, and highlighting.</li> <li>• Keyboard – It is used for capturing and entering numeric and alphabetical commands.</li> </ul>	<p>(Any 2 x ½ = 1 mark)</p> <ul style="list-style-type: none"> <li>• 4 components 4 x ½ = 2 marks</li> <li>• Correct use of each component stated 4 x ½ = 2 marks</li> </ul> <p><b>4 marks</b></p>
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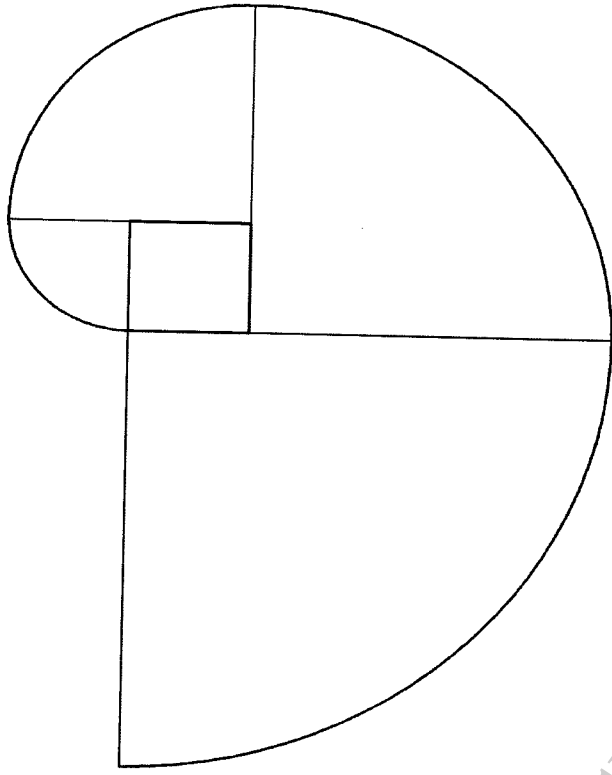
6.



Copying the front elevation - ½ mk  
 Construction of plan correctly - 1 mk  
 Projection from the front elevation - ½ mk  
 Correct centre line for Auxiliary view - ½ mk  
 Transfer of points from plan - ½ mk  
 Joining points for upper part - 1 mk  
 Joining points for the base - 1 mk  
 Completion of Auxiliary view

- 2 mks  
**7 marks**

7.



**M/S.**

- Drawing the square – 1
- Drawing the 4 radii –  $4 \times \frac{1}{2} = 2$
- Drawing the 4 quadrants –  $4 \times \frac{1}{2} = 2$

**5 marks**

8. (a) The accuracy of the scale is 0.01 m (1cm)

1

(b) Reading 'P'

- Main reading 1.50m

1

- 1 Horizontal Div. represents  $\frac{0.5}{10} = 0.05m$

3 Horizontal Divisions =  $0.05 \times 3 = 0.15m$

1

- 1 Vertical Divisions =  $\frac{0.05}{5} = 0.01$

3 Vertical Divisions =  $3 \times 0.01 = 0.03$

1

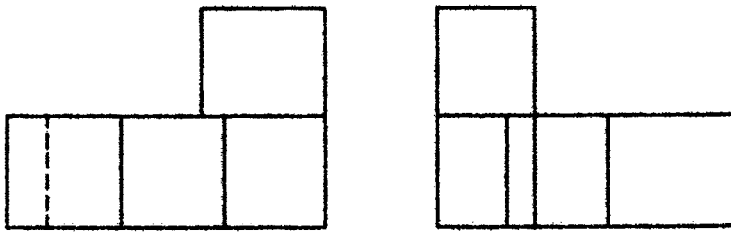
Total reading =  $(1.50 + 0.15 + 0.03) = 1.68m$

1

**5 marks**



9.



M/S.

F/Elevation

4 faces @  $\frac{1}{2} = 2$

1 H/Detail @  $\frac{1}{2} = \frac{1}{2}$

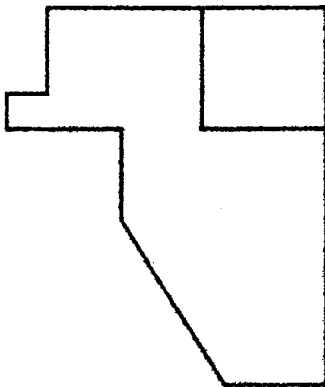
PLAN

2 faces @  $\frac{1}{2} = 1$

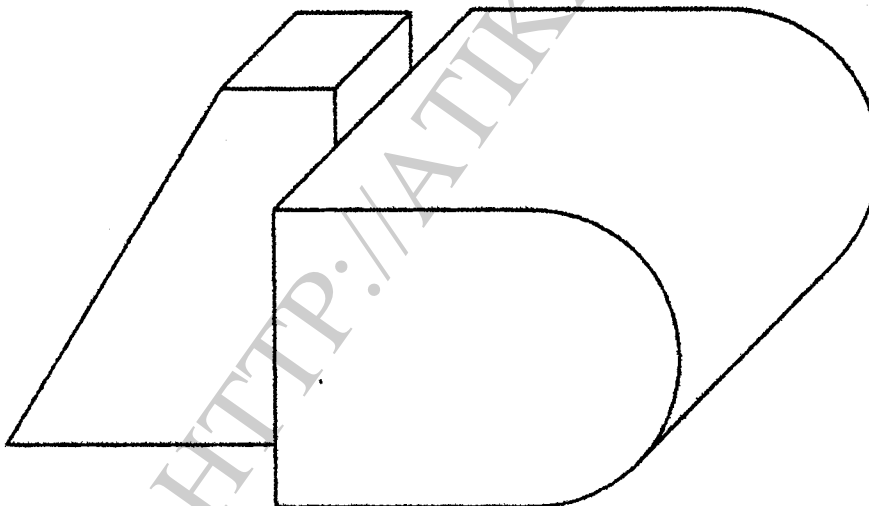
E/Elevation

5 faces @  $\frac{1}{2} = 2\frac{1}{2}$

6 marks



10.



M/S.

4 faces @ 1 = 4

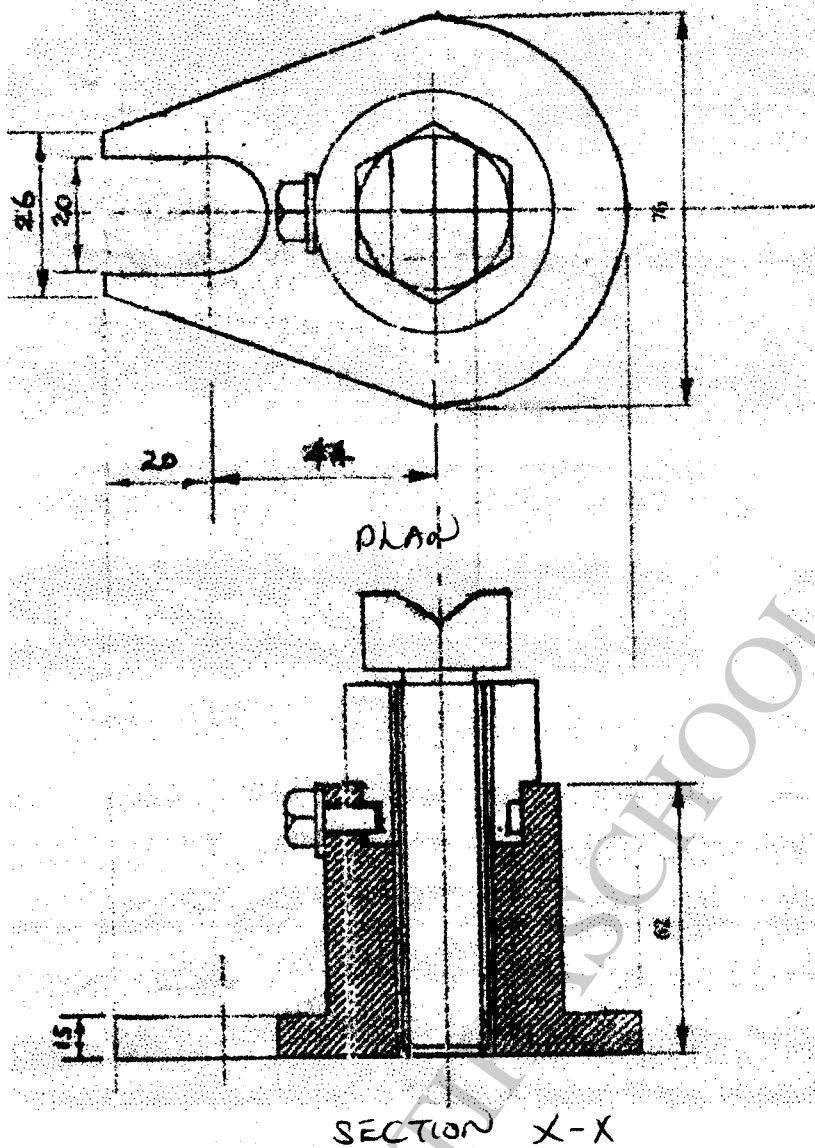
Proportionality = 1

Smooth curve = 1 (use of compass)

6 marks



11.



Correct angle of projection used

= 1 mark

4 parts assembled

correctly  $4 \times 2 =$

8 marks

Nut and post not sectioned

= 2 marks

Correct hatching of the base =

1 mark

Centre lines across and horizontally

= 2 marks

Screw threads shown correctly

= 2 marks

Hexagonal head rep.

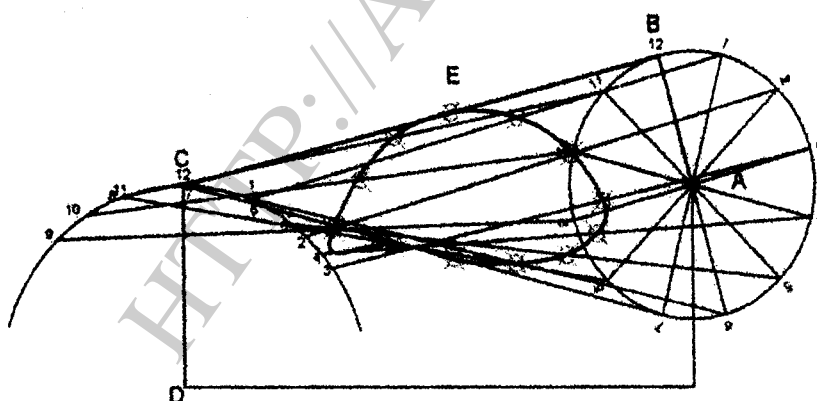
correctly on plan

= 2 marks

Dimensions shown correctly  $4 \times \frac{1}{2} =$  2 marks

20 marks

12.



M/S

(i) Copying the initial mechanism - 2

(ii) Drawing circle radius AB - 2

(iii) Dividing the circle into 12 divisions - 2

(iv) Projects points on circle to different points of C - 2

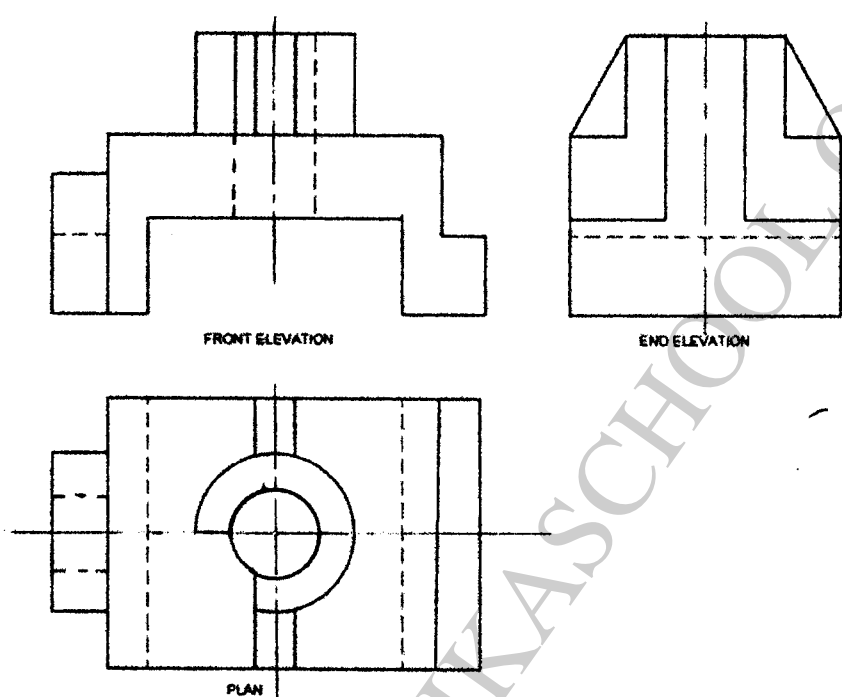
(v) Locating different positions of E - 2

(vi) Joining the points



		<p>to get a smooth curve. -</p> <p>3</p> <p>(vii) Line work and neatness - 2</p> <p><b>15 marks</b></p>
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13.



FRONT ELEVATION

END ELEVATION

PLAN

**Marking guide**

Front Elevation

6 faces @ 1/2 = 3 marks

3 hidden details @ 1/2 = 1 1/2 marks

Plan

8 faces @ 1/2 = 4 marks

4 hidden details @ 1/2 = 2 marks

Sectional End elevation

6 faces @ 1/2 = 3 marks

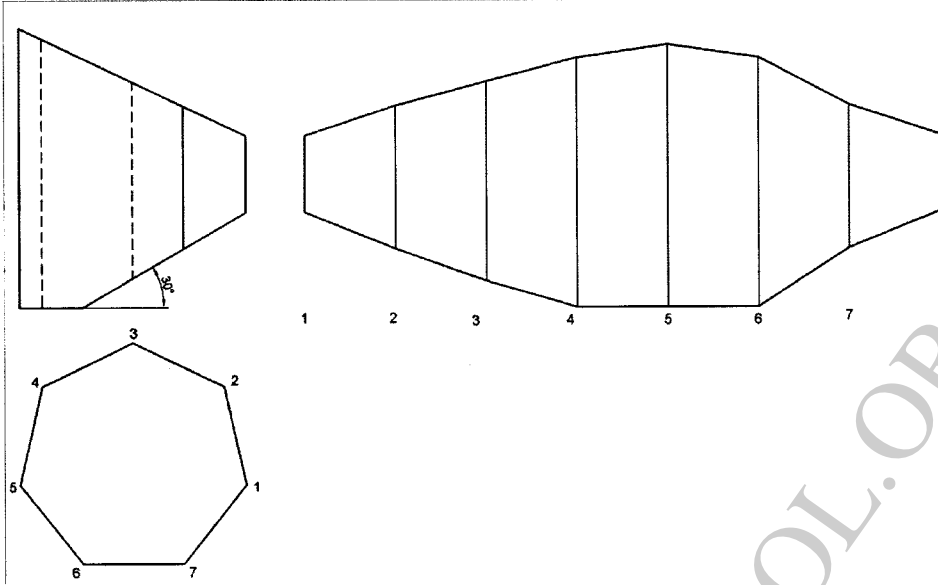
1 hidden details @ 1/2 = 1/2 marks

Hatching at 2 places @ 1/2 = 1 mark

**15 marks**



14.



M/S  
CONSTRUCTION OF  
THE PLAN- 2  
PROJECTING FROM  
PLAN - 1  
DEVELOPING FROM  
F/ELEVATION  
- 2  
PROJECTING  
VERTICAL LINES  
FROM BASE - 1  
PROJECTIONS FROM  
P/E TO DEV. 11 @ 1/2  
- 5 1/2  
DETERMINING THE  
POINTS  
- 2  
PLOTTING SHAPE - 1 1/2  
**15 MARKS**

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