

**SECOND SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/  
TECHNOLOGY — MARCH, 2016**

**ENGINEERING GRAPHICS**

(Common to all branches except DCP and CABM)

[Time : 3 hours

(Maximum marks : 100)

- [Note :—1. Missing data if any suitably assumed.  
2. Sketches to be accompanied.]

PART — A

(Maximum marks : 10)

Marks

- I Answer the following questions in one or two sentences. Each question carries 2 marks.
1. Define representative fraction of a scale.
  2. Define eccentricity of conic section.
  3. What is an involute ?
  4. Write four applications of CAD
  5. What do you mean by development of surfaces ?
- (5×2=10)

PART — B

(Maximum marks : 50)

(Answer *any five* of the following questions. Each question carries 10 marks.)

- II Redraw the given figure 1 and dimension as per BIS.
  - III Construct a regular heptagon of side 40 mm.
  - IV Draw a plain scale of 1cm = 5 meters and shown on it 37 meters.
  - V Orthographic projection of points P, Q, R, S and T are shown in figure 2. Read the views and state their position with respect to HP and VP.
  - VI Draw the projection of the line AB 100 mm long inclined at 30° to HP and 45° to VP. The end A of the line AB is 50 mm below HP and 25 mm behind VP, mark the angle made by the line with the xy plane.
  - VII A pentagonal lamina of 40 mm side has an edge on the HP. The surface of the plane is inclined at 45° to HP and perpendicular to the VP. Draw its projections.
  - VIII Draw the Development of the tray shown in figure 3.
- (5×10 = 50)

## PART — C

(Maximum marks : 40)

(Answer *any two* of the following questions. Each question carries 20 marks.)

- IX Figure 4 shows the pictorial view of a bearing. Draw its front view in the direction of the arrow F and top view.
- X The pictorial view of a lever shown in figure 5. Draw full sectional front view in the direction F and top view.
- XI The orthographic view of the letter H shown in figure 6. Draw its isometric projection. (2×20 = 40)
-

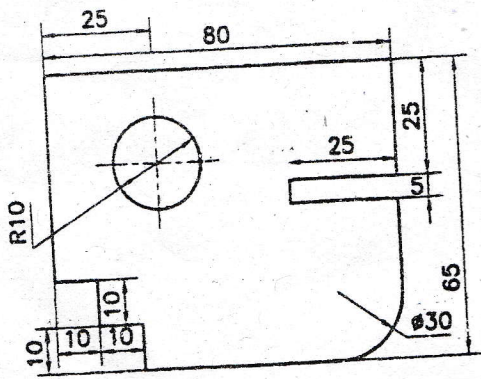


Fig-1

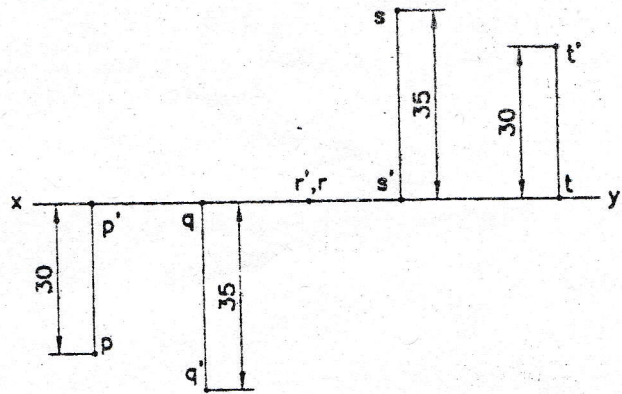


Fig-2

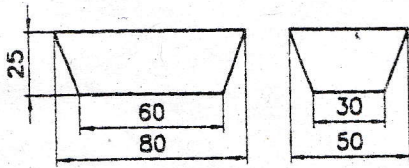


Fig-3

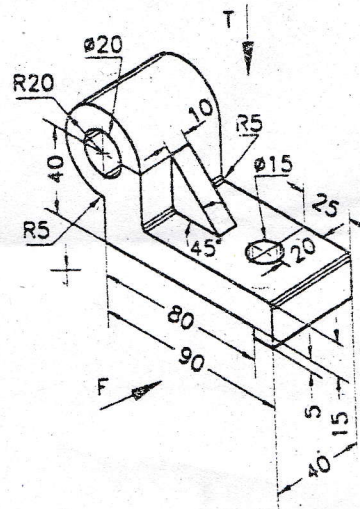


Fig-4

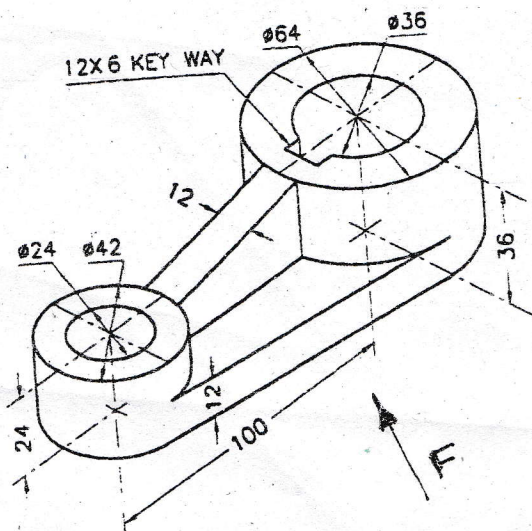


Fig-5

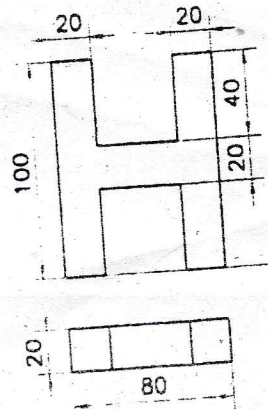


Fig-6

MARCH - 2016.

## ENGINEERING GRAPHICS

### PART - A

- I 1. Representative fraction is the ratio of the distance between any two points on the object in the drawing to the actual distance between the same points on the object. It is usually abbreviated as RF.
- $$\text{R.F.} = \frac{\text{Length of the object in the drawing}}{\text{Actual length of the object.}}$$
2. Eccentricity of a conic is the ratio of the distance of the point from the focus to its perpendicular distance from the directrix. It is constant for a conic and is usually denoted by  $e$ .
- If  $e < 1$ , curve is called ellipse.  
If  $e = 1$ , curve is called parabola.  
If  $e > 1$ , curve is called hyperbola.
3. Involute is a curve traced out by a point on an inextensible string which is being wound around a circle or polygon. It is also a curve traced out by a point on a straight line which rolls around a circle or polygon without slipping.

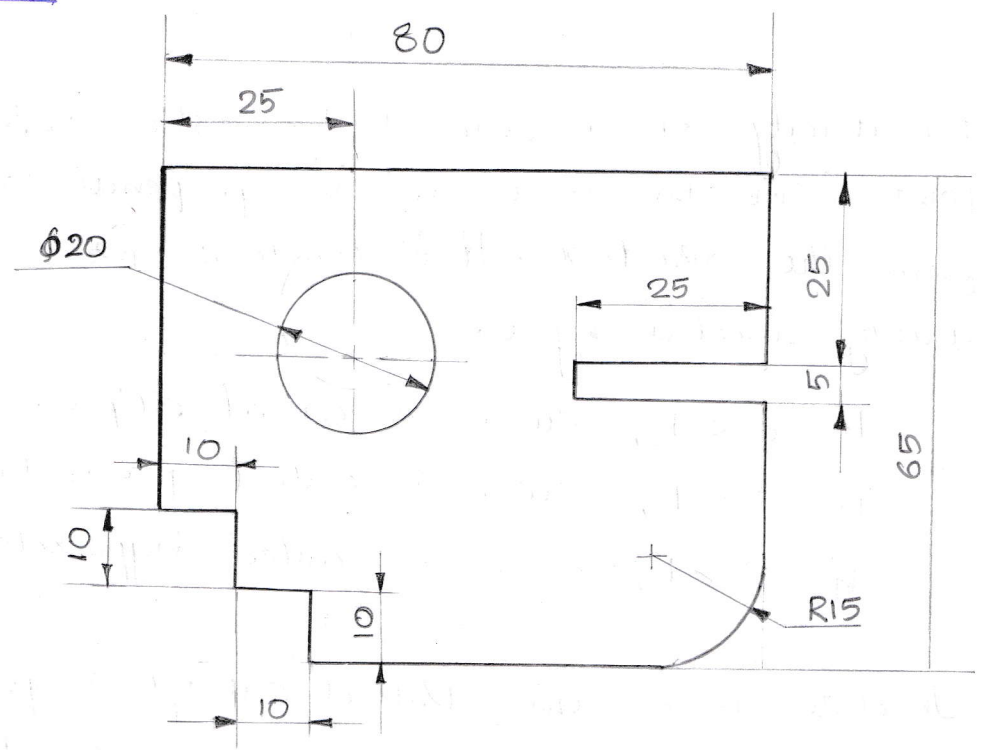
four applications of CAD.

- (i) To make all types of drawings easily.
- (ii) To convert drawings into 3D models.
- (iii) Easy conversion to different scales.
- (iv) To get printed form of drawings.

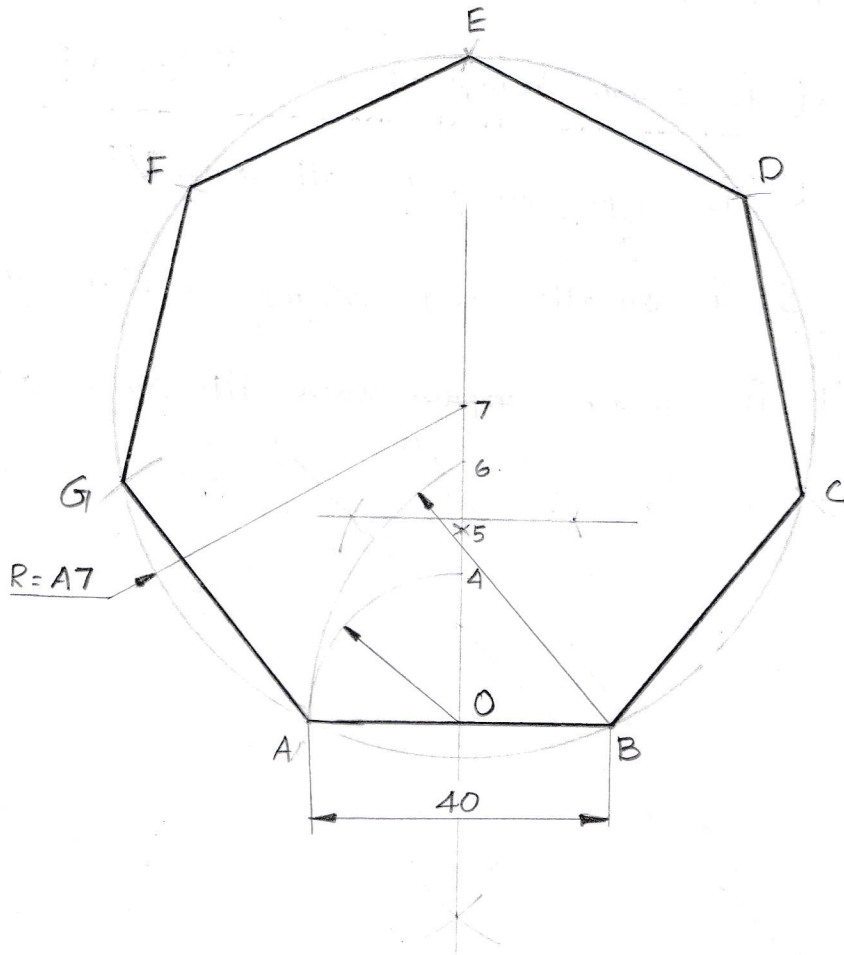
5. The process of opening out all the surfaces of a three dimensional body onto a flat plane is called development of surfaces. The resulting shape is called pattern and the surface so laid out is termed as its development.

Part - B

II



III



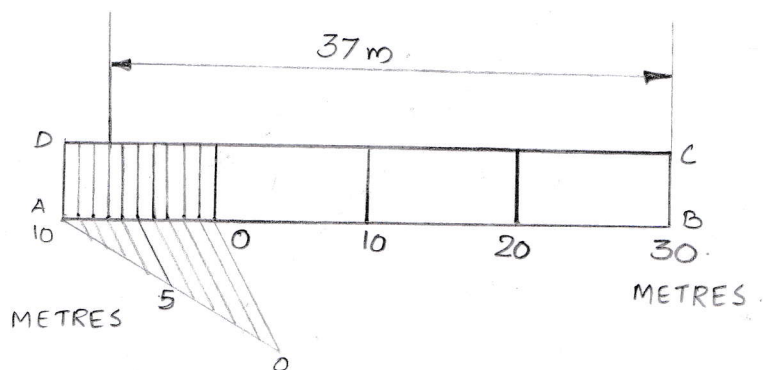
IV

$$RF = \frac{\text{Distance on drawing}}{\text{Distance on object}} = \frac{1 \text{ cm}}{5 \text{ m}} = \frac{1 \text{ cm}}{5 \times 100 \text{ cm}} = \frac{1}{500}$$

Length of scale required = R.F. × length to be measured.

$$= \frac{1 \times 40 \times 1000}{500} \text{ mm} = \underline{80 \text{ mm}}$$

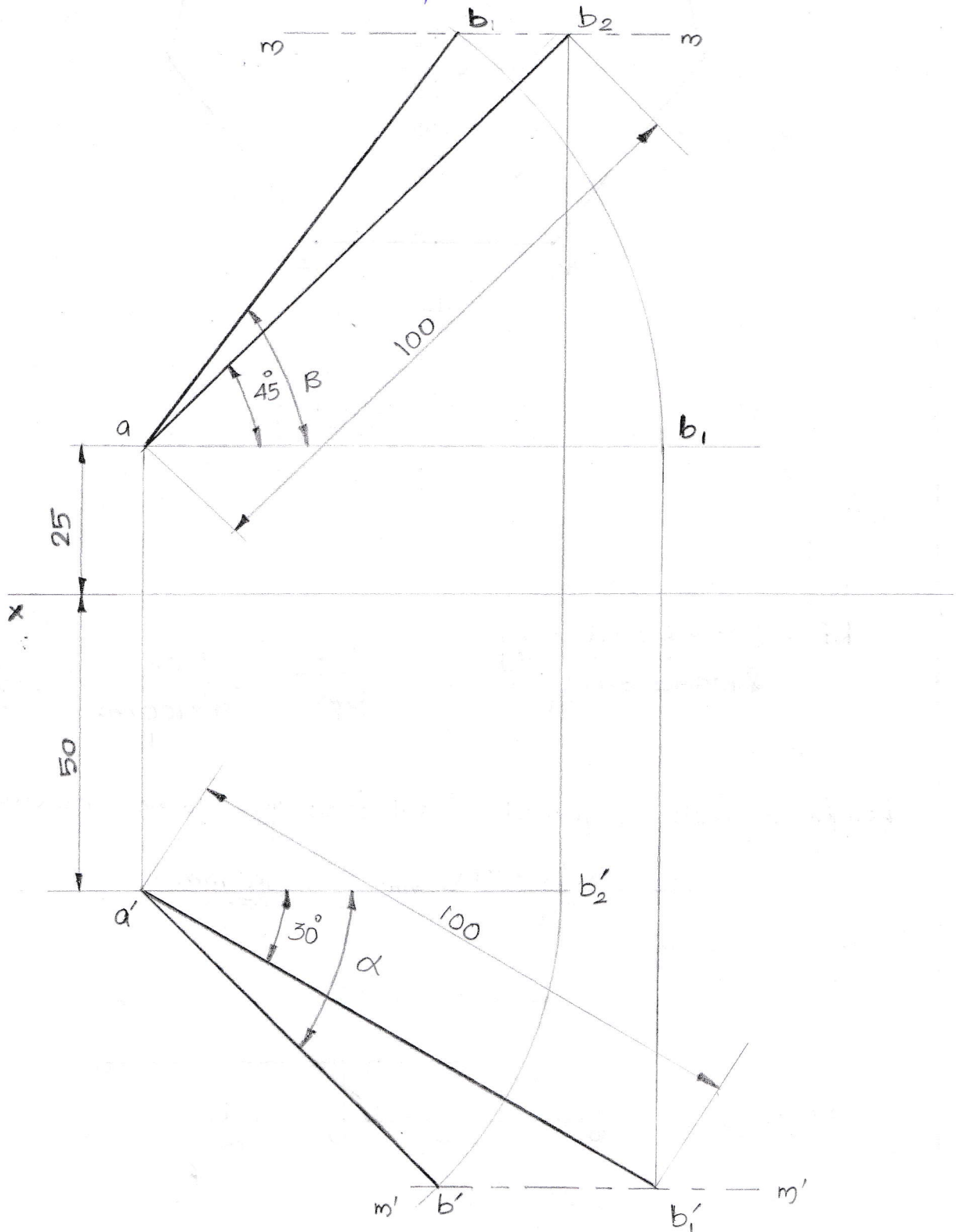
$$RF = 1/500$$



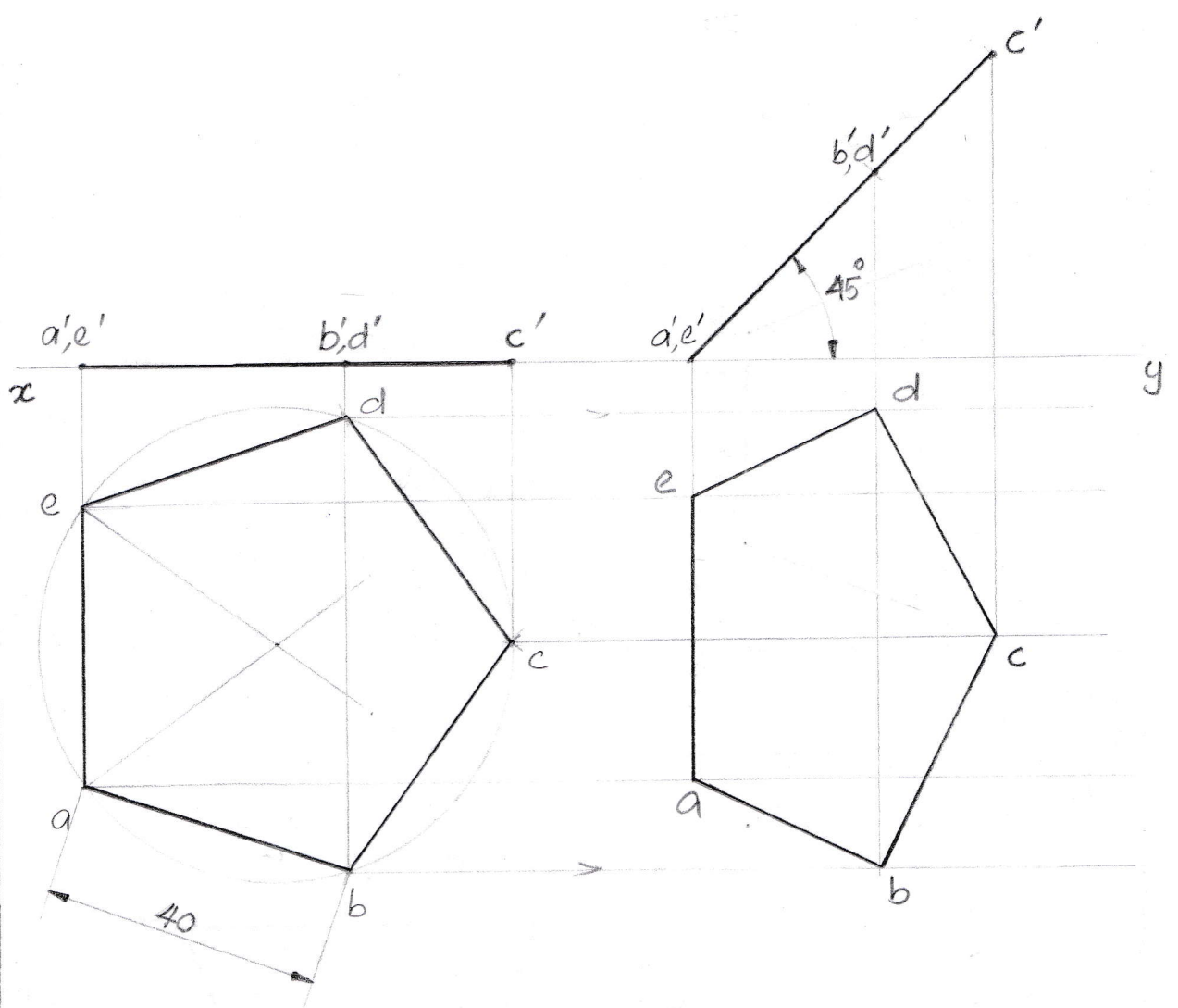
V

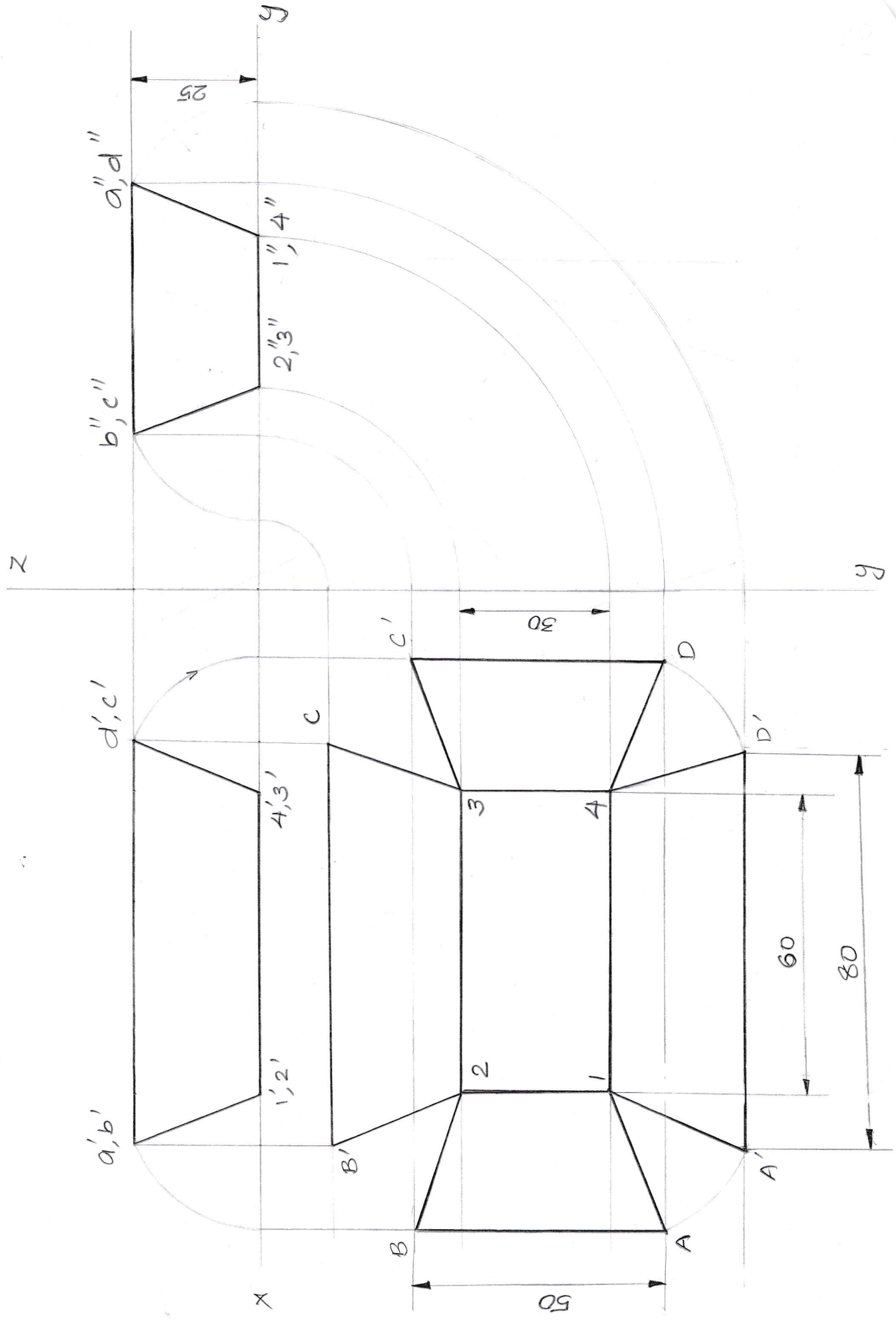
- (i) Point P is on HP and 30mm in front of VP.
- (ii) Point Q is 35mm below HP and is on VP.
- (iii) Point R is lying on both HP and VP.
- (iv) Point S is on HP and 35mm behind VP.
- (v) Point T is 30mm ~~in front~~ above HP and on VP.

VI

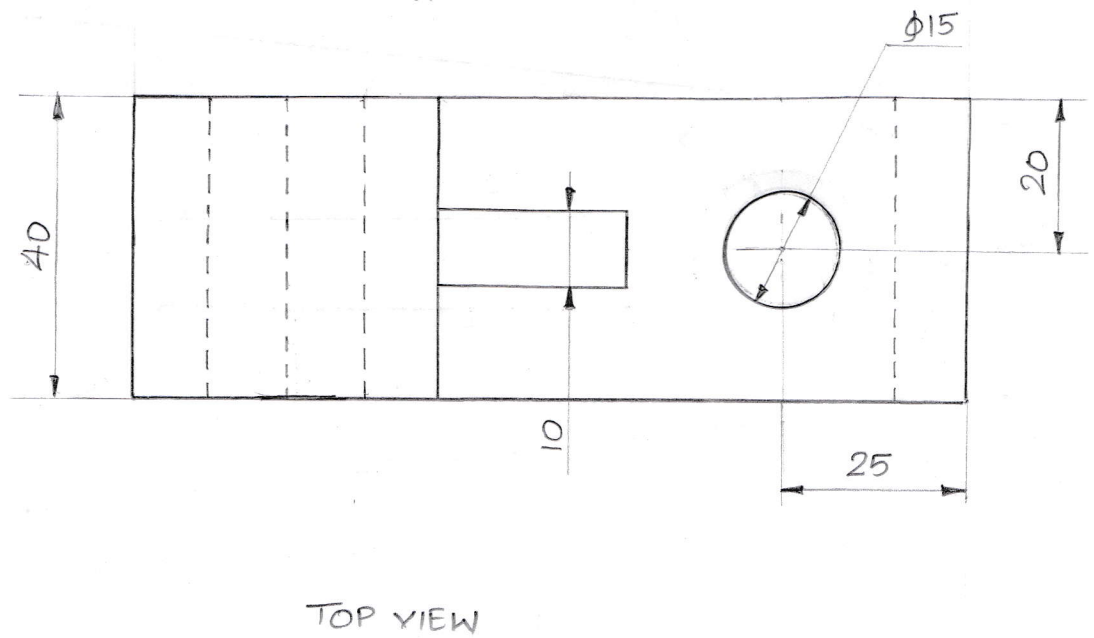
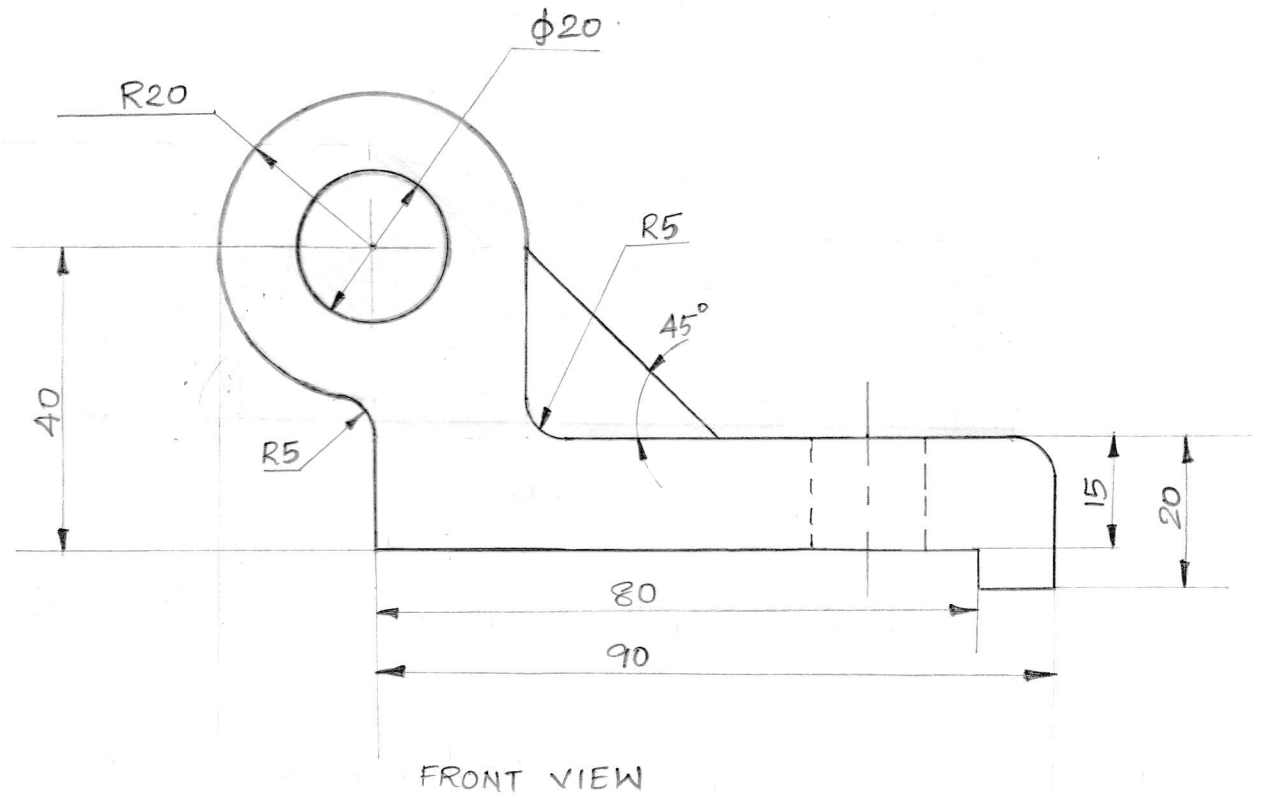


VII

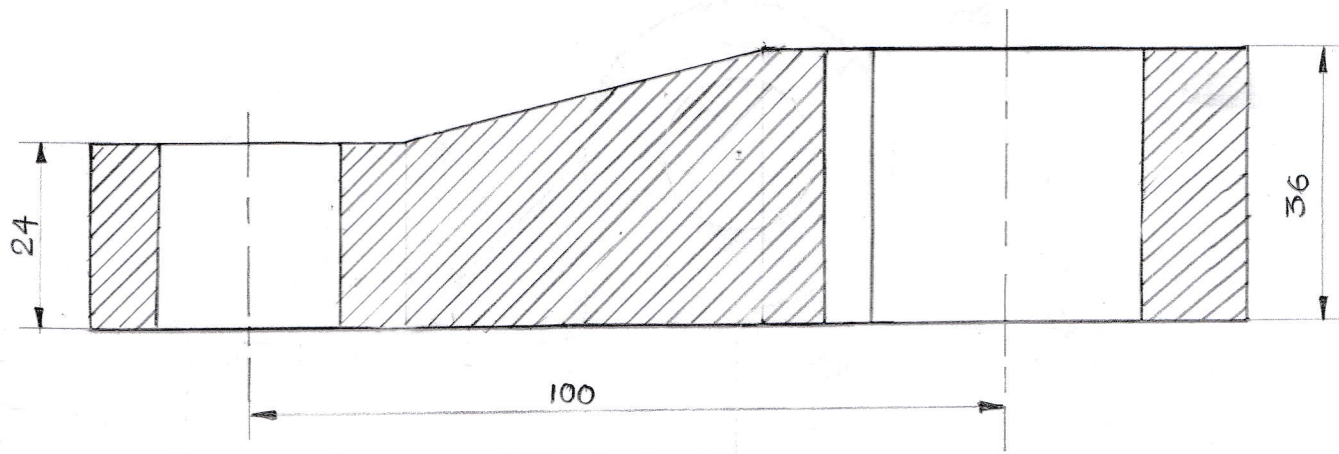




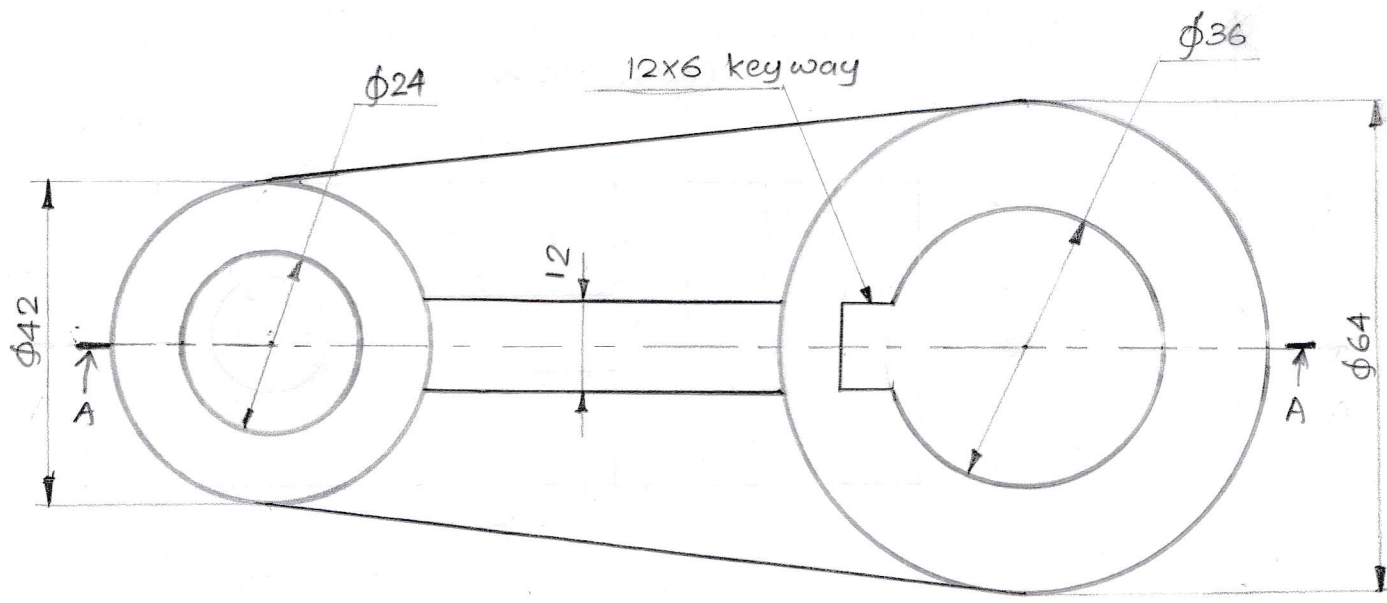
IX



X



Full sectional elevation (section AA)



Plan

XI

