Computer Aided Engineering Drawing Laboratory

Lab Manual

I B.Tech. (2016-2017)

(Common to All Branches)

Department of Mechanical Engineering

SREE VIDYANIKETHAN ENGINEERING COLLEGE

(Autonomous)

Sree Sainath Nagar, A. Rangampet, Tirupati – 517 102

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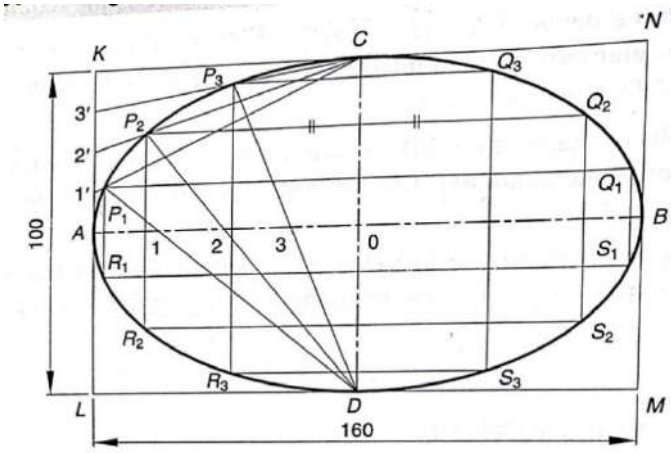
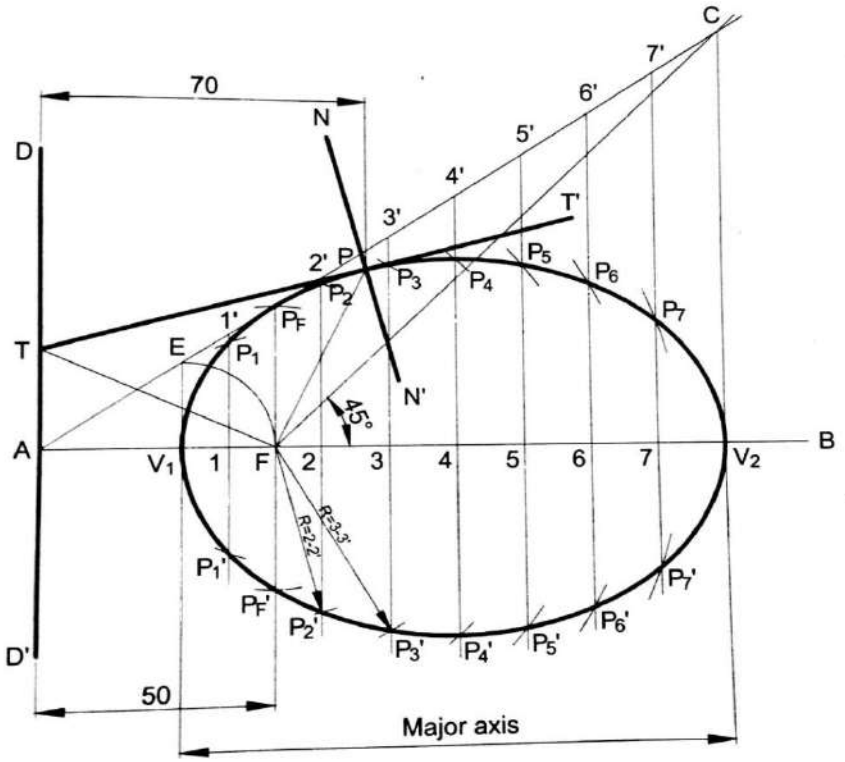
SHEET- 1

Conics

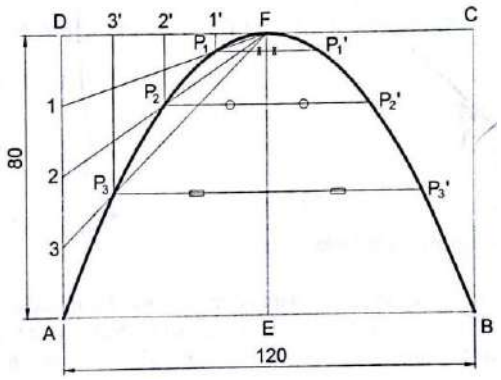
1. Construct an ellipse with major axis 160 mm and minor axis 100 mm by Rectangle Method.



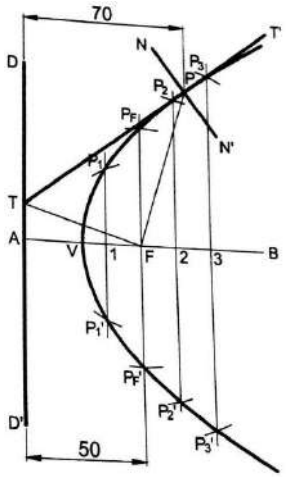
2. Draw an ellipse when the distance of its focus from its directrix is 50 mm and eccentricity is 2/3. Also, draw a tangent and a normal to the ellipse at a point 70 mm away from the directrix.



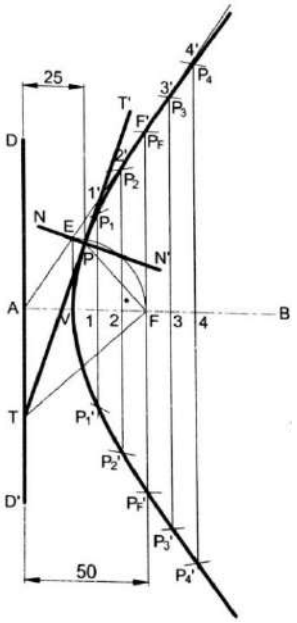
3. Draw a parabola of base 120 mm and axis 80 mm by Rectangle Method.



4. Draw a parabola when the distance between its focus and directrix is 50 mm. Also, draw a tangent and a normal at a point 70 mm from the directrix.



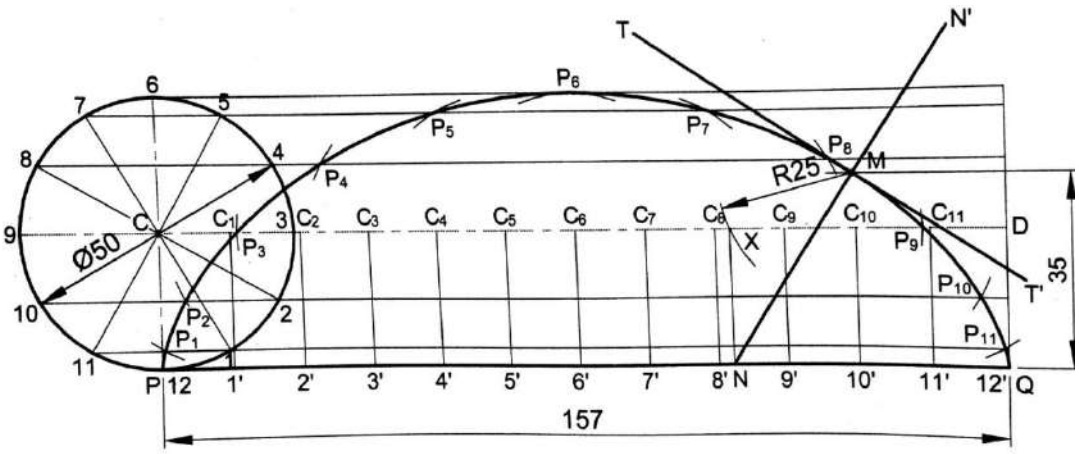
5. Draw a hyperbola when the distance of its focus from its directrix is 50 mm and eccentricity is 3/2. Also, draw a tangent and a normal to the hyperbola at a point 25 mm from the directrix.



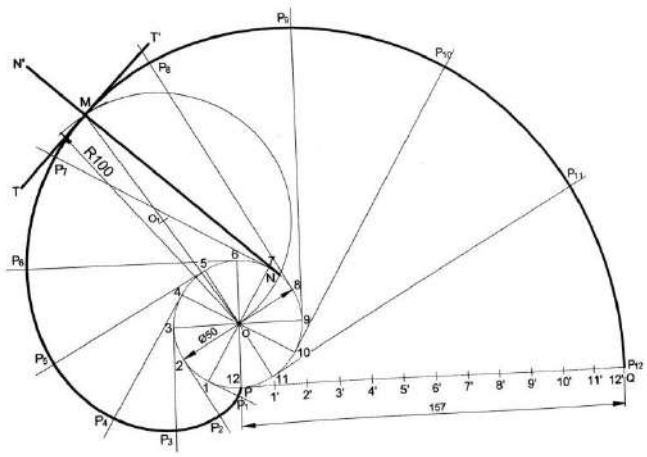
SHEET- 2

Special Curves

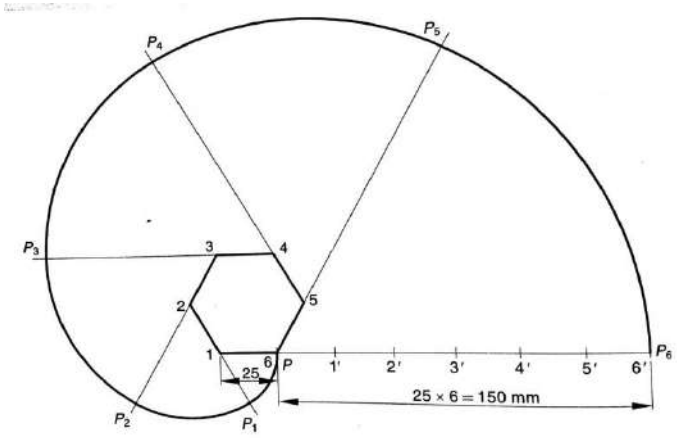
6. Draw a cycloid of a circle of diameter 50 mm for one revolution. Also, draw a tangent and a normal to the curve at a point 35 mm above the base line.



7. Draw the involute of a circle of diameter 50 mm. Also, draw normal and tangent at a point 100 mm from the centre of the circle.

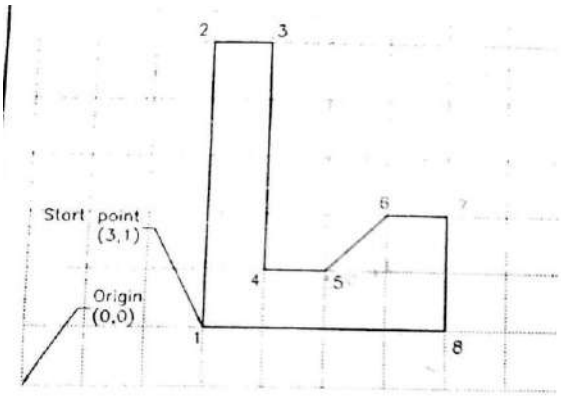


8. Draw an involute of a hexagon of side 25 mm.

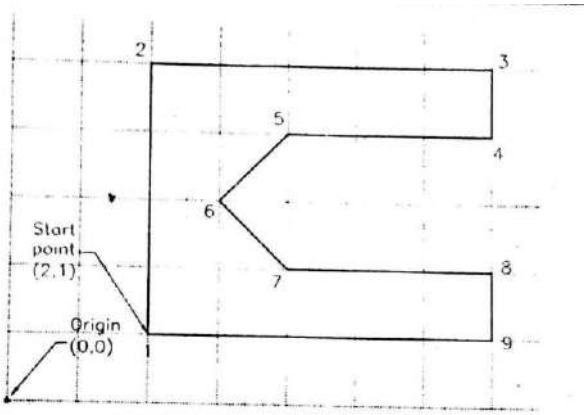


SHEET- 3

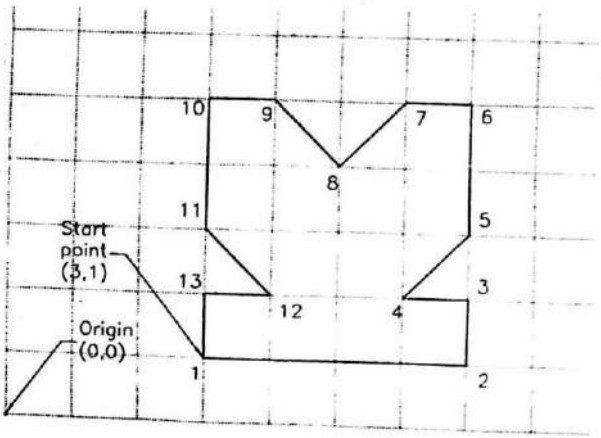
Co-ordinate Systems in AutoCAD



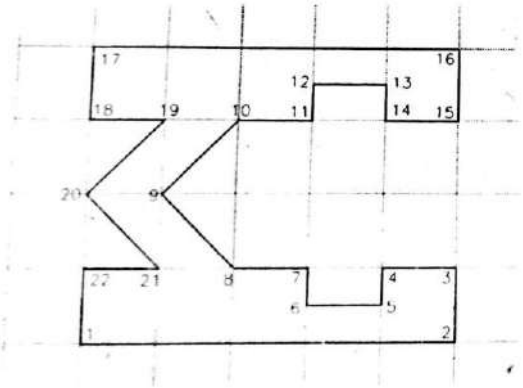
1. Absolute Co-ordinate System



2. Absolute Co-ordinate System



3. All Co-ordinate Systems.

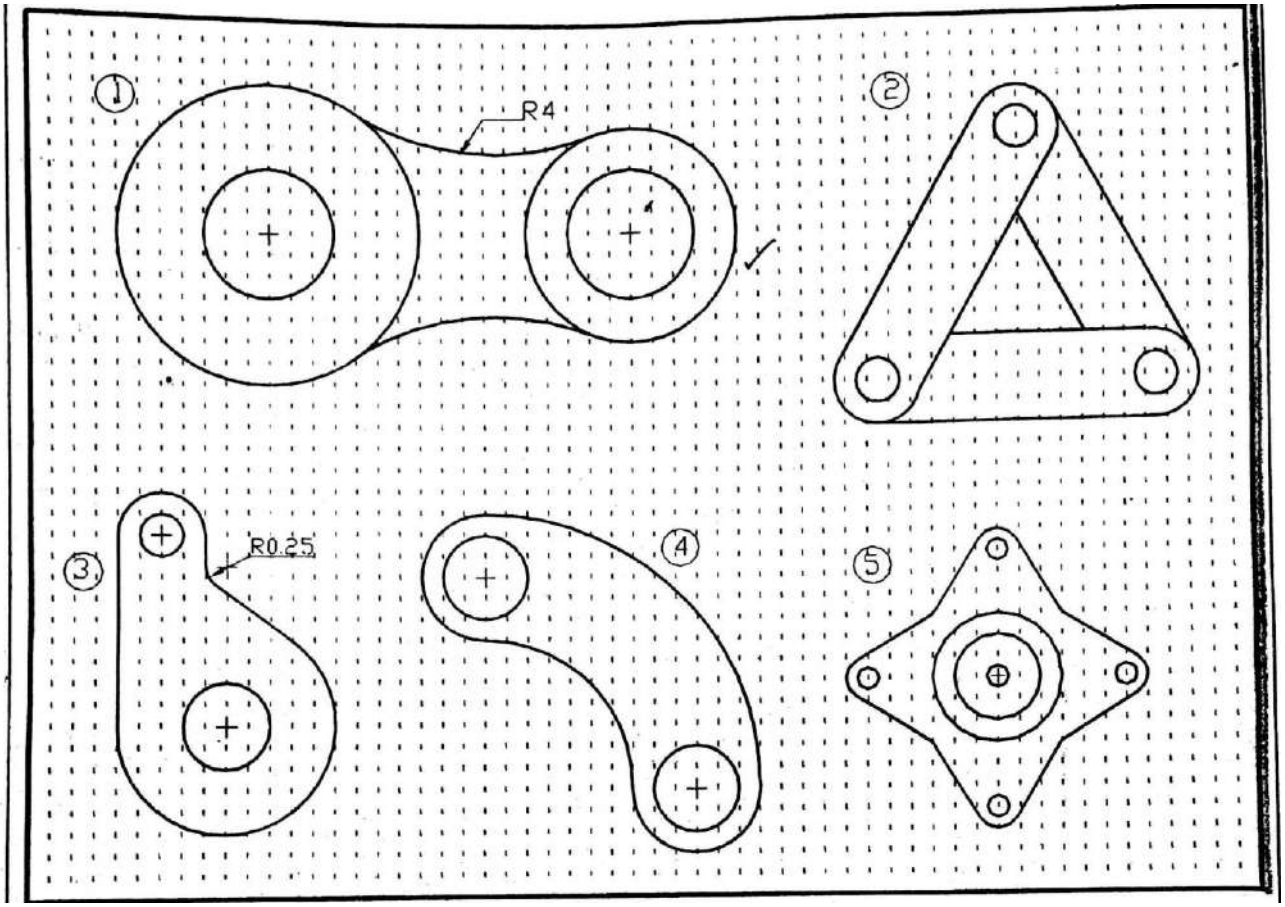


4. Relative Rectangular System.

SREE VIDYANIKETHAN ENGINEERING COLLEGE SREE SAINATH NAGAR, A.RANGAMPET-517102 DEPARTMENT OF MECHANICAL ENGINEERING			
TITLE: COORDINATE SYSTEMS-1			
NAME: ENTER YOUR NAME			
BRANCH :	MECH	ROLL No: 14121A0301	GRADE
SECTION :	A	DATE : 10-09-2014	
SHEET No :	01	DIMENSIONS: MM	
PROBLEM No:	01 - 04	SCALE: 1:1	VERIFIED BY

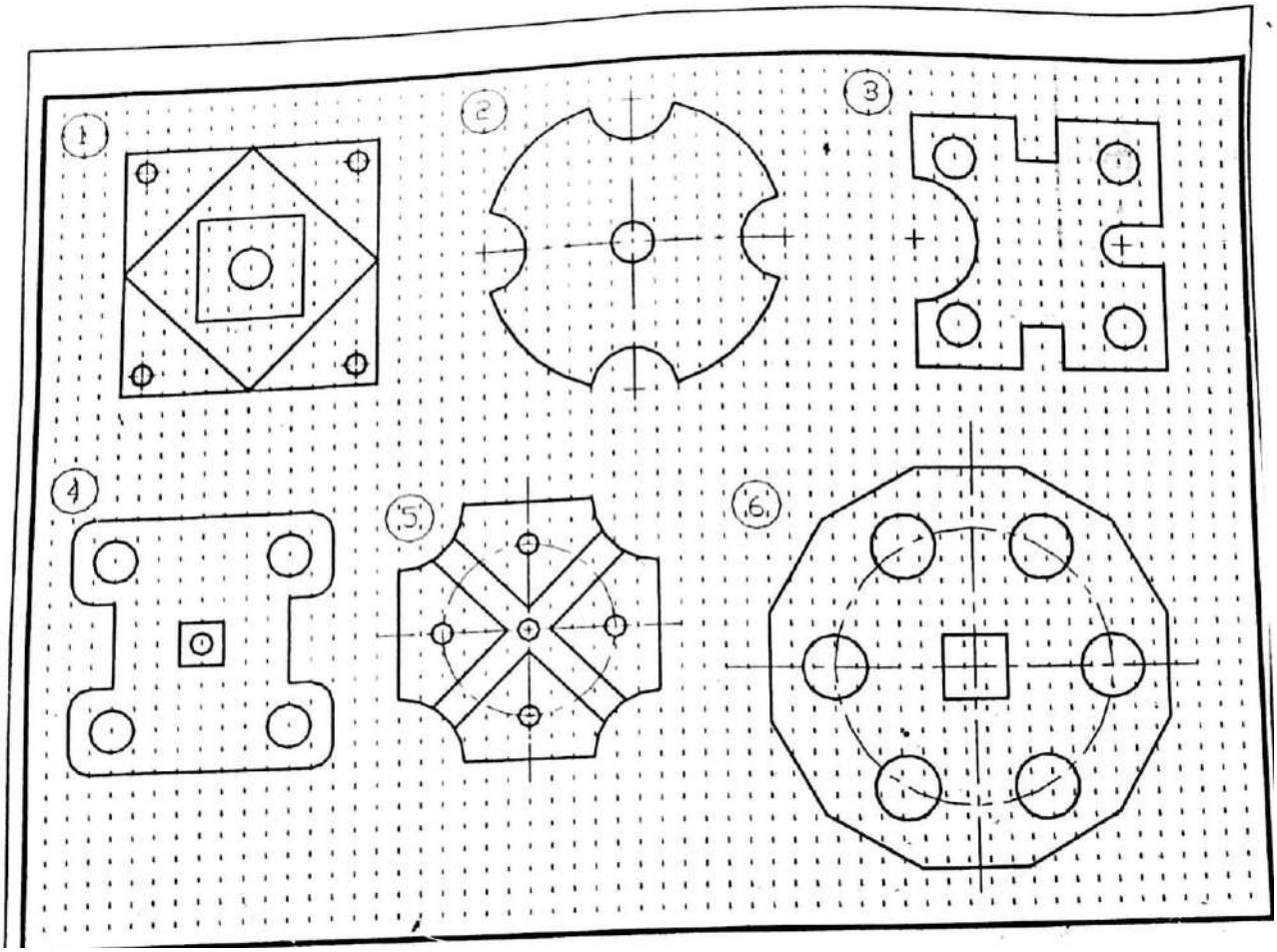
SHEET- 4

AutoCAD Basics-1



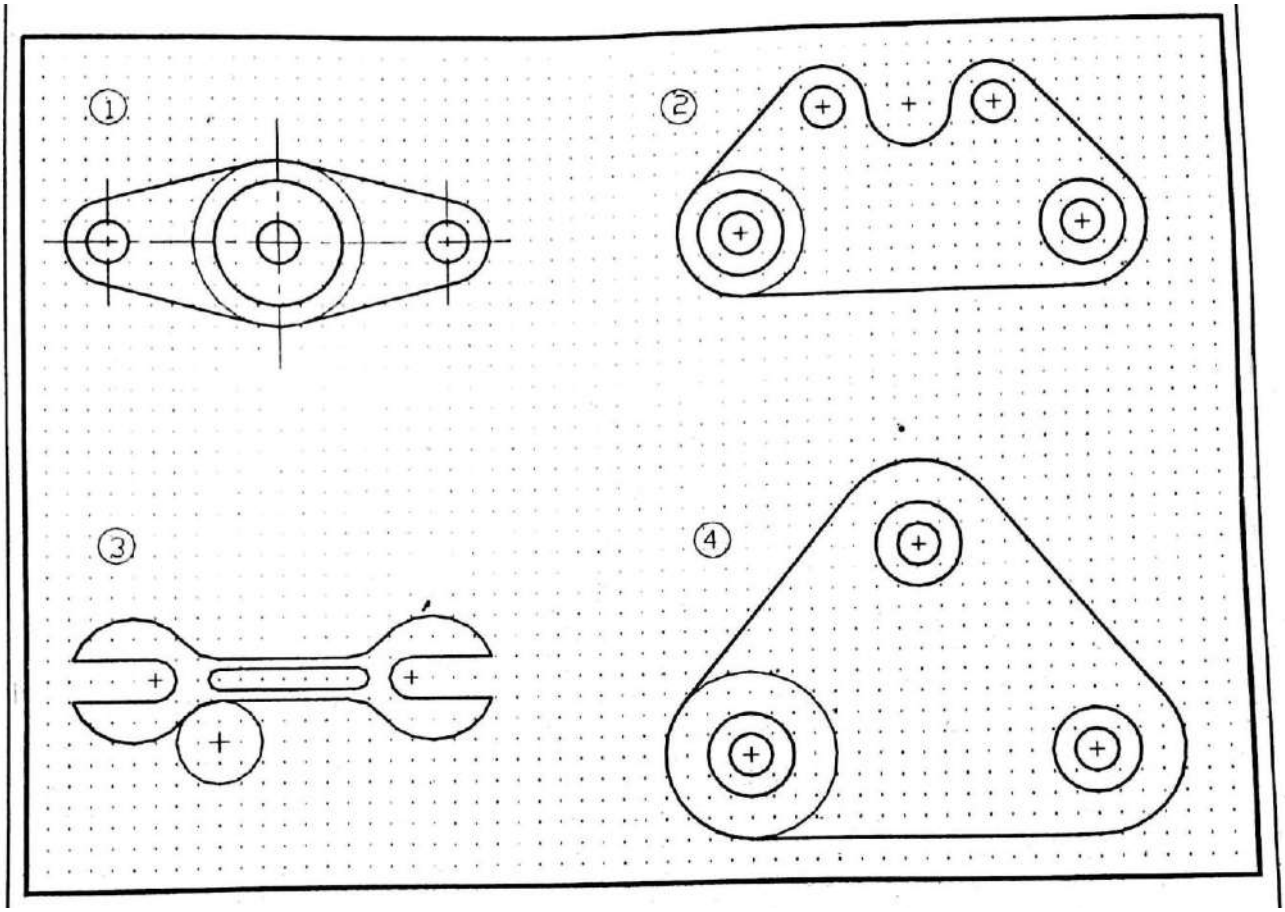
SHEET- 5

AutoCAD Basics-2



SHEET- 6

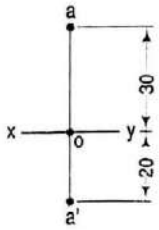
AutoCAD Basics-3



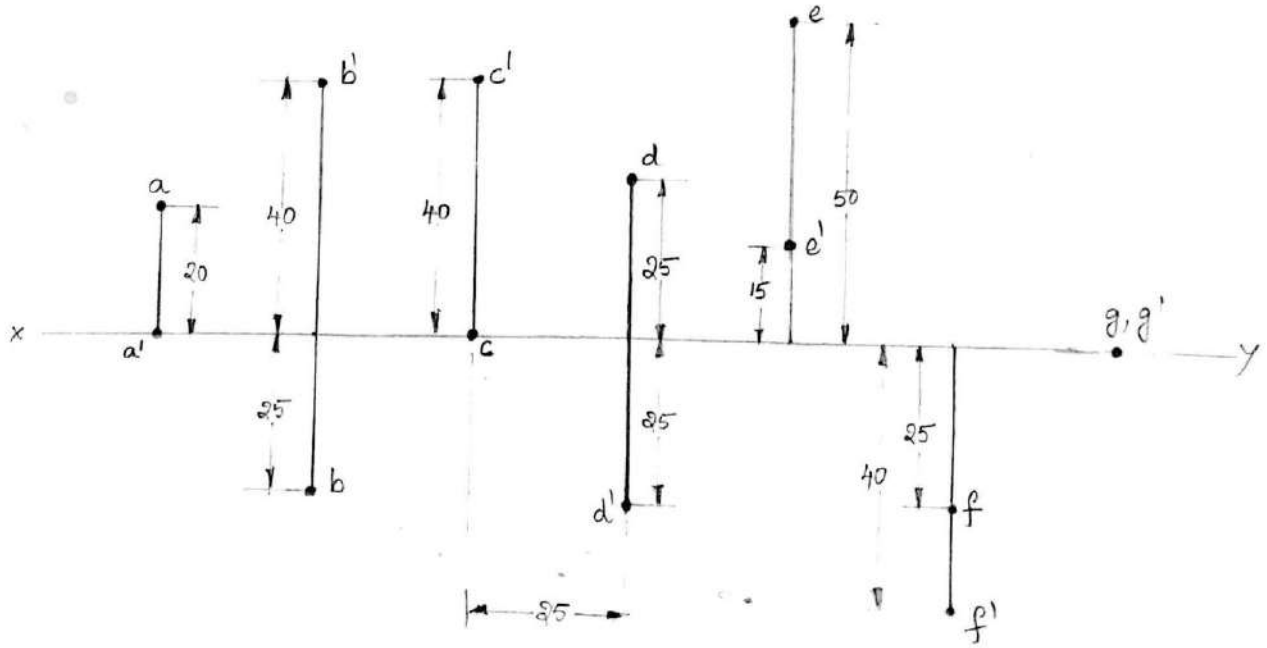
SHEET- 7

Projection of Points

1. A Point A is 20 mm below the H.P. and 30 mm behind the V.P. Draw its projections.



2. Draw the projections of the following points on the same ground line, keeping the projectors 25 mm apart.
   A, in the H.P. and 20 mm behind the V.P.
   B, 40 mm above the H.P. and 25 mm in front of the V.P.
   C, in the V.P. and 40 mm above the H.P.
   D, 25 mm below the H.P. and 25 mm behind the V.P.
   E, 15 mm above the H.P. and 50 mm behind the V.P.
   F, 40 mm below the H.P and 25 mm in front of the V.P.
   G, in both the H.P. and the V.P.



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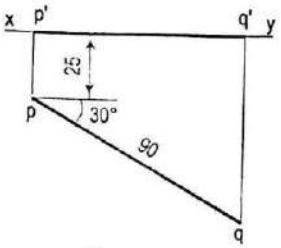
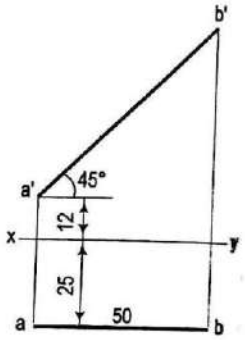
SHEET- 8

Projection of Lines

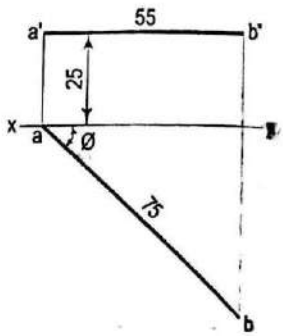
1. A line PQ, 90 mm long, is in the H.P. and makes and angle of 30^0 with the V.P. Its end P is 25 mm in front of the V.P. Draw its projections.



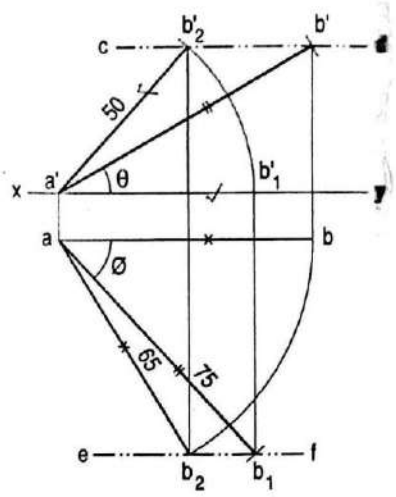
2. The length of the top view of a line parallel to the V.P. and inclined at 45^0 to the H.P. is 50 mm. One end of the line is 12 mm above the H.P. and 25 mm in front of the V.P. Draw the projections of the line and determine its true length.



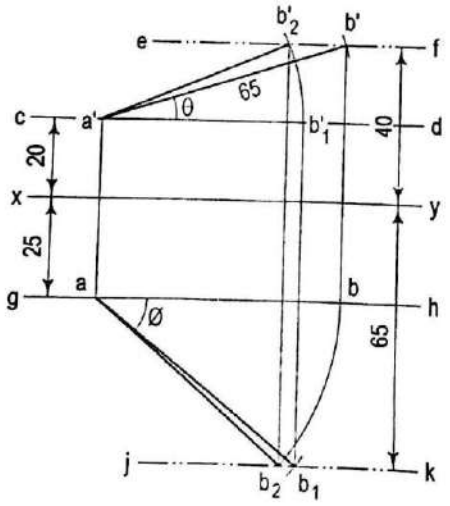
3. The front view of a 75 mm long line measures 55 mm. The line is parallel to the H.P. and one of its ends is in the V.P. and 25 mm above the H.P. Draw the projections of the line and determine its inclination with the V.P.



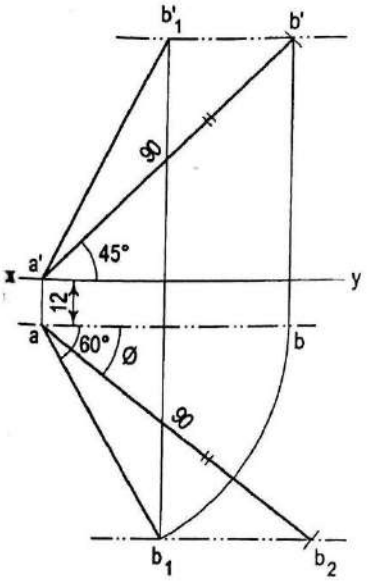
4 The top view of a 75 mm long line AB measure 65 mm, while the length of its front view is 50 mm. Its one end A is in the H.P. and 12 mm in front of the V.P. Draw the projections of AB and determine its inclinations with the H.P. and the V.P.



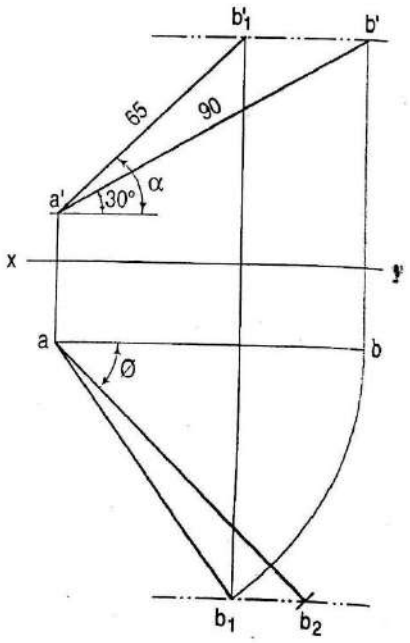
5 A line AB, 65 mm long, has its end A 20 mm above the H.P. and 25 mm in front of the V.P. The end B is 40 mm above the H.P. and 65 mm in front of the V.P. Draw the projections of AB and show its inclinations with the H.P. and the V.P.



6. A line AB, 90 mm long, is inclined at 45° to the H.P. and its top view makes an angle of 60° with the V.P. The end A is in the H.P. and 12 mm in front of the V.P. Draw its front view and finds its true inclination with the V.P.



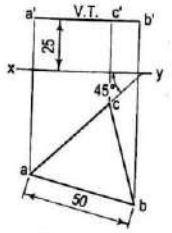
7 A line AB, 90 mm long, is inclined at 30^0 to the H.P. Its end A is 12 mm above the H.P. and 20 mm in front of the V.P. Its front view measures 65 mm. Draw the top view of AB and determine its inclination with the V.P.



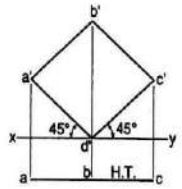
SHEET- 9

Projection of Planes

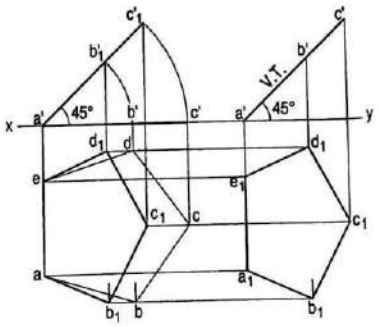
1. An equilateral triangle of 50mm side has its V.T. parallel to and 25mm above XY. It has no H.T. Draw its projections when one of its sides is inclined at 45^0 to V.P.



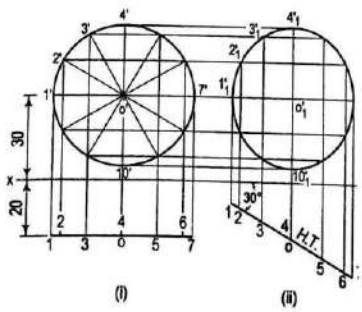
2. A Square ABCD of 40mm side has a corner on the H.P. and 20mm in front of the V.P. All the sides of the square are equally inclined to H.P. and parallel to the V.P. draw its projections and show its traces.



3. A regular pentagon of 25mm side has one side on the ground. Its plane is inclined at 45^0 to the H.P. and perpendicular to the V.P. Draw its projections and show its traces.



4. Draw the projections of circle of 50mm diameter, having its plane vertical and inclined at 30^0 to the V.P. Its center is 30mm above the H.P. and 20mm in front of the V.P. show its traces.



SHEET- 10

Projection of Solids-1

1. Draw the projections of a triangular prism, base 40mm side and axis 50mm long, resting on one of its bases on the H.P. with a vertical face perpendicular to the V.P.

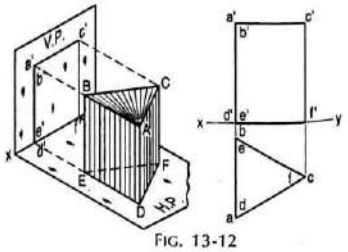
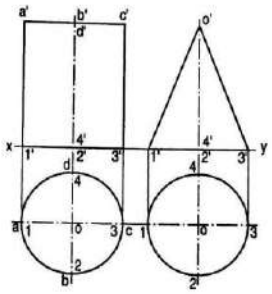
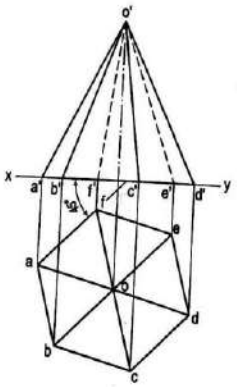


FIG. 13-12

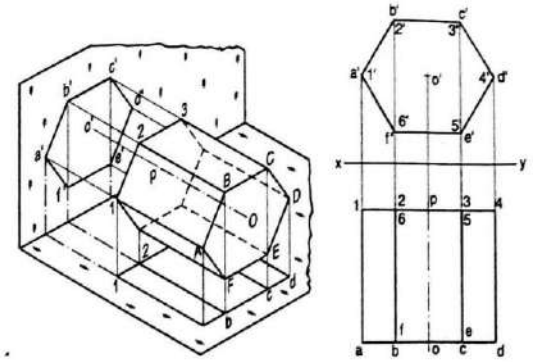
2. Draw the projections of (i) a cylinder, base 40mm, diameter and axis 50mm long, and (ii) a cone, base 40mm diameter and axis 50mm long, resting on the H.P. on their respective bases.



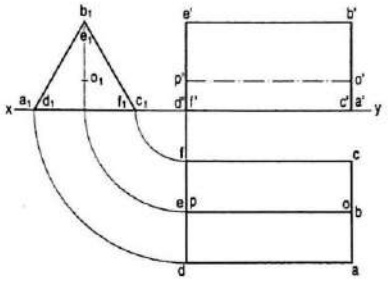
3. Draw the projections of a hexagonal pyramid, base 30mm side and axis60mm long, having its base on the H.P. and one of the edges of the base inclined at 45^0 to the V.P.



4. A hexagonal prism has one of its rectangular faces parallel to the H.P. Its axis is perpendicular to the V.P. and 3.5cm above the ground. Draw its projections when the nearer end is 2cm in front of the V.P. side of base 2.5cm long; axis 5cm long.



5. A triangular prism, base 40mm side and height 65mm are resting on the H.P. on one of its rectangular face with the axis parallel to the V.P. Draw the projections.



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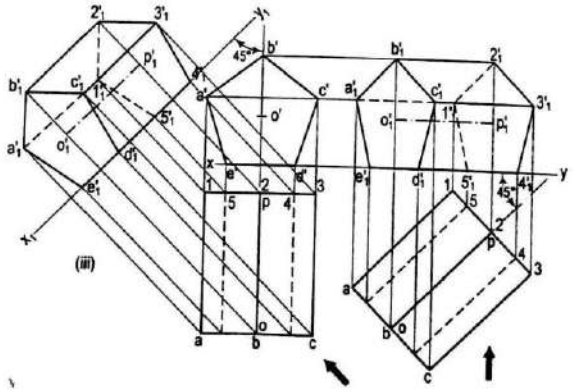
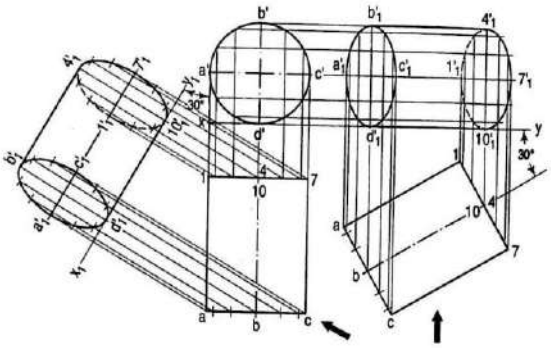
SHEET- 11

Projection of Solids-2

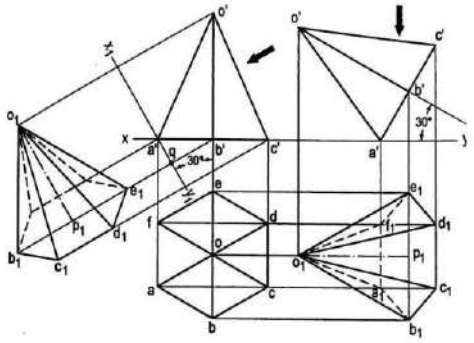
1. Draw the projections of a pentagonal prism, base 25mm side and axis 50mm long, resting on one of its rectangular faces on the H.P. with the axis inclined at 45^0 to the V.P.



2. Draw the projections of a cylinder 75mm diameter and 100mm long, lying on the ground with its axis inclined at 30^0 to the V.P. and parallel to the ground.



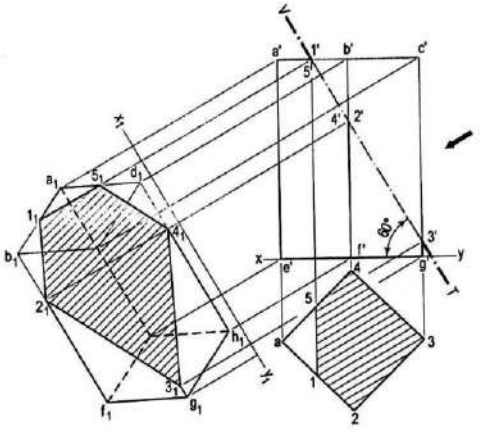
3. A hexagonal pyramid, base 25mm side and axis 50mm long, has an edge of its base on the ground. Its axis is inclined at 30^0 to the ground and parallels to the V.P. Draw its projections.



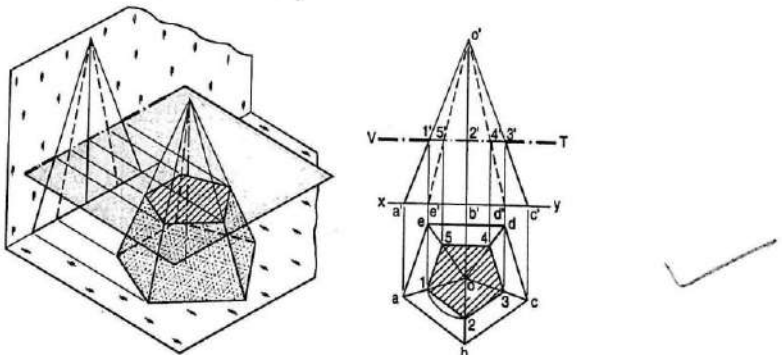
SHEET- 12

Section of Solids

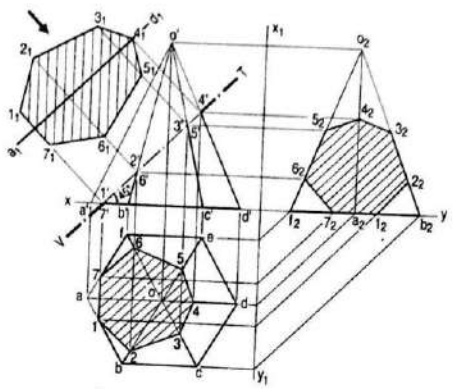
1. A square prism, base 40mm side, axis 80mm long, has its base on the H.P. and its face equally inclined to the V.P. It is cut by a plane, perpendicular to the V.P., inclined at 60^0 to the H.P. and passing through a point on the axis, 55mm above the H.P. Draw its front view, sectional top view and another top view on an A.I.P. parallel to the section plane.



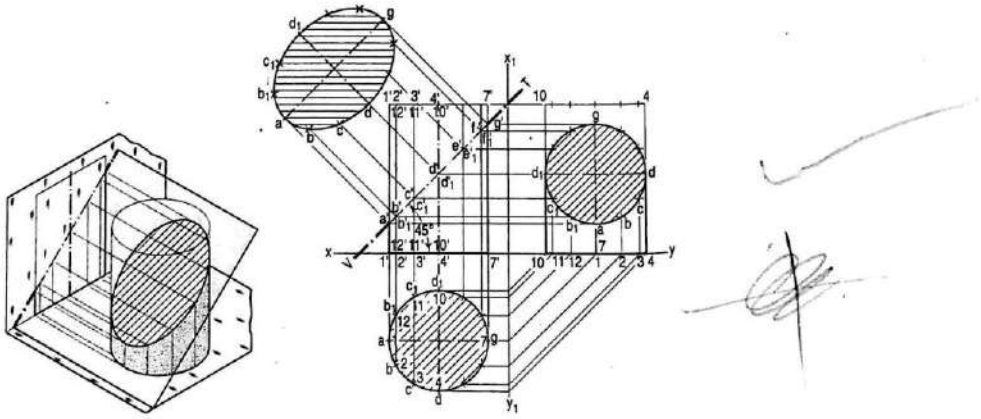
2. A pentagonal pyramid, base 30mm side and axis 65mm long, has its base horizontal and an edge of the base parallel to the V.P. A horizontal section plane cuts it at a distance of 25mm above the base. Draw its front view and sectional top view.



3 A hexagonal pyramid, base 30mm side and axis 65mm long, is resting on its base on H.P. with two edges parallel to the V.P. It is cut by a section plane, perpendicular to the V.P. inclined at 45^0 to the H.P. and intersecting the axis at a point 25mm above the axis. Draw the front view sectional top view, sectional side view and true shape of the section.



4 A cylinder of 40 mm diameter, 60mm height and having its axis vertical, is cut by a section Plane, perpendicular to the V.P, inclined at 45^0 to the H.P. and intersecting the axis 32 mm above the base. Draw its front view, sectional top view, sectional side view and true shape of the section.



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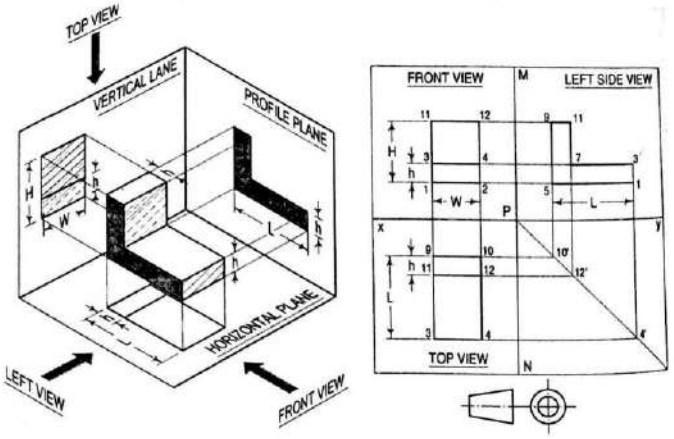
SHEET- 13

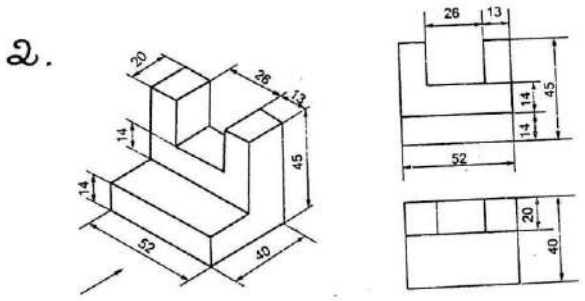
Orthographic Projections

Draw the Front, Top and Side views for the following objects:

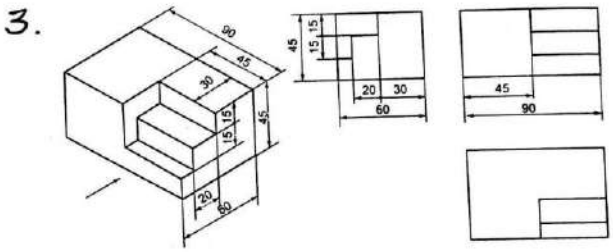
1.



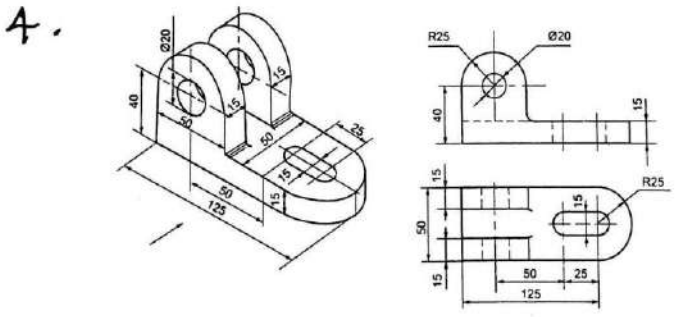
2.



3.



4.

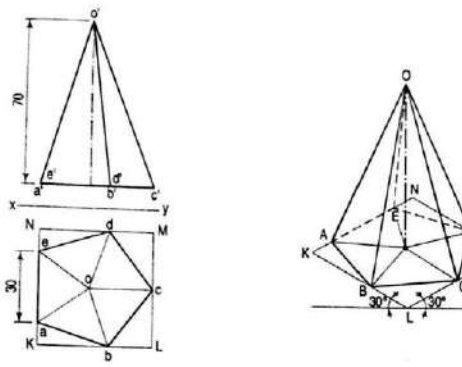


SHEET- 14

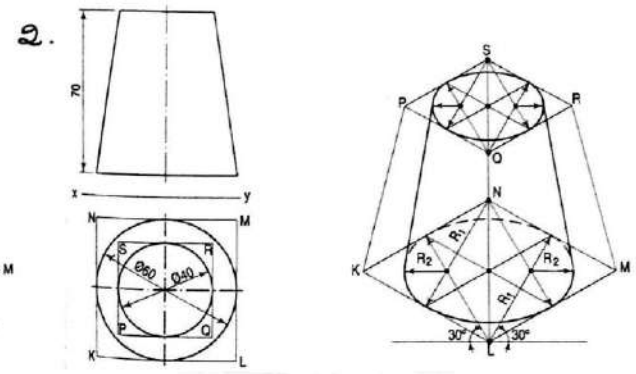
Isometric Projections

Redraw the following Isometric views

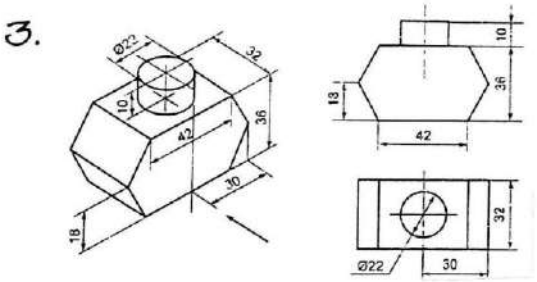
1.



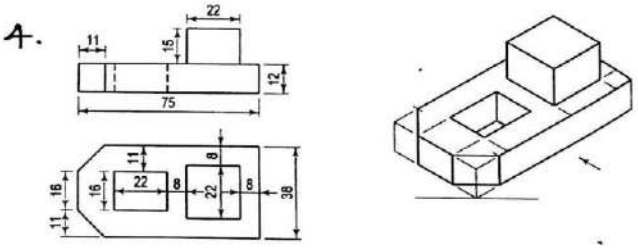
2.



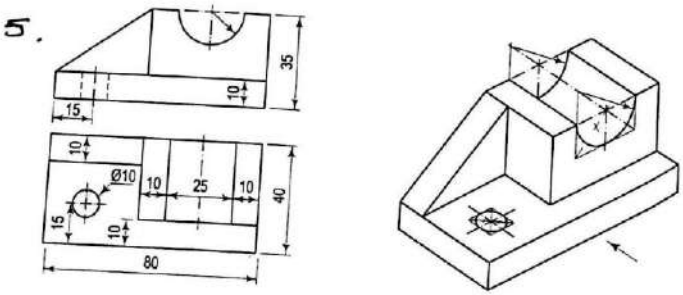
3.



4.



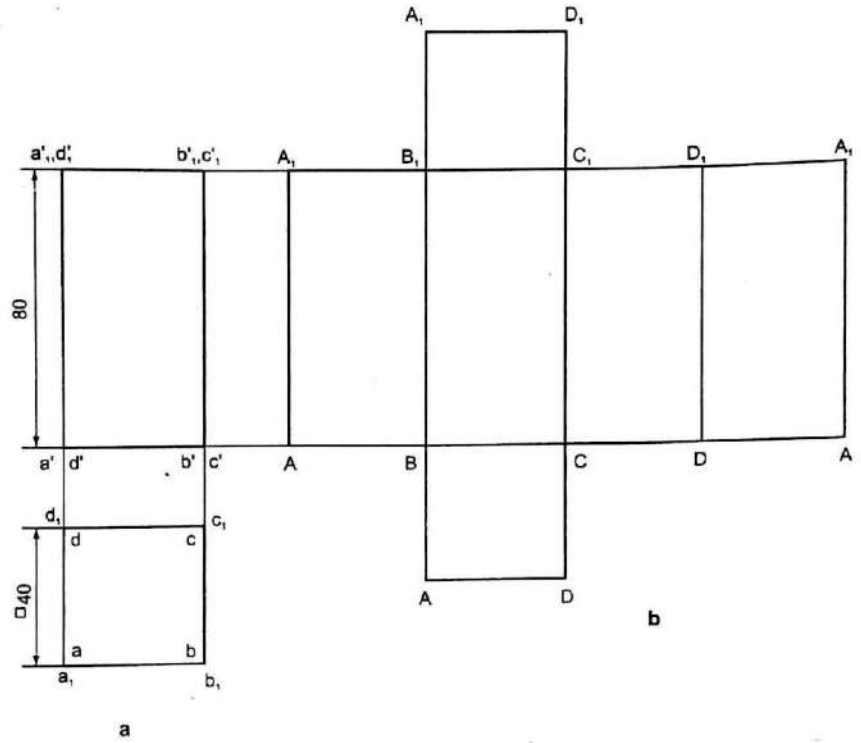
5.



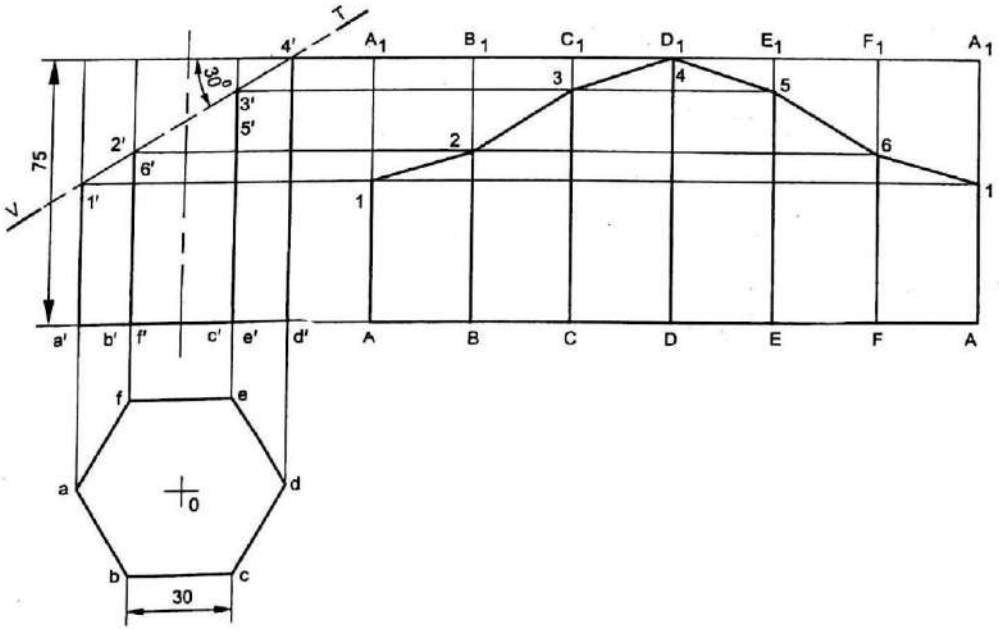
SHEET- 15

Development of Surfaces

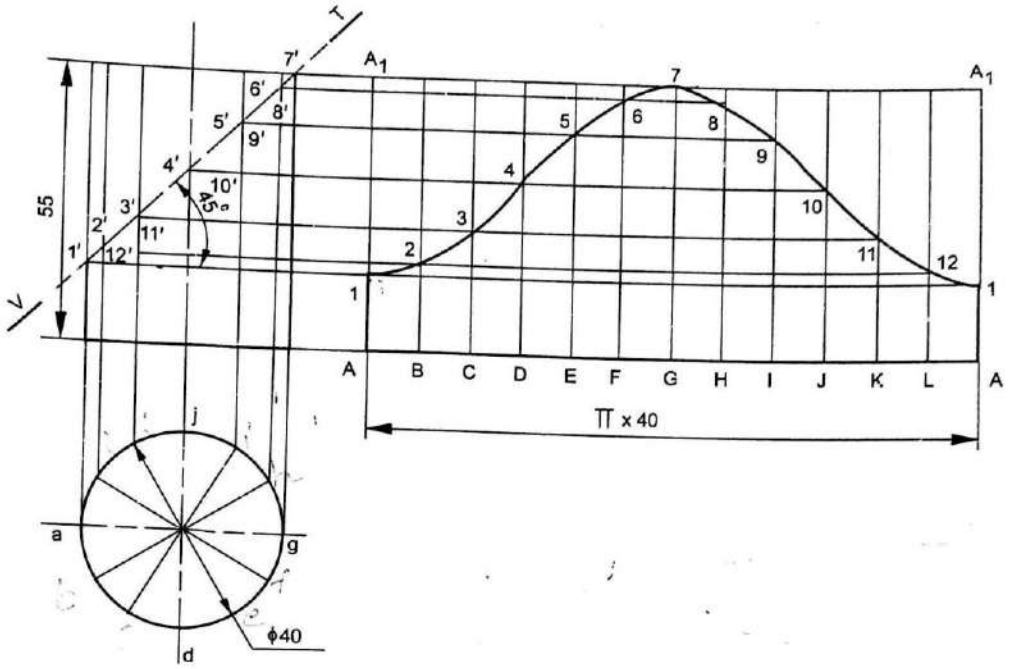
1 A square prism of side of base 40mm and axis 80mm long, is resting on its base on H.P such that, a rectangular face of it is parallel to V.P. Draw the development of the prism.



2. A hexagonal prism of side of base 30mm and axis 75mm long, is resting on its base on H.P such that, a rectangular face is parallel to V.P. It is cut by a section plane, perpendicular to V.P and inclined at 30^0 to H.P. The section plane is passing through the top end of an extreme lateral edge of the prism. Draw the development of the lateral surface of the cut prism.



3. A cylinder of diameter of base 40mm and axis 55mm long is resting on its base on H.P. It is cut by a section plane, perpendicular to V.P and inclined at 45^0 to H.P. The section plane is passing through the top end of an extreme generator of the cylinder. Draw the development of the lateral surface of the cut cylinder.



4. A pentagonal pyramid of side of base 30mm and axis 60mm long , is resting on its base on H.P, with an edge of the base parallel to V.P. Draw the development of the lateral surface of the pyramid.