



GOVERNMENT ENGINEERING COLLEGE, DAHOD
MECHANICAL ENGINEERING (19) – ENGINEERING GRAPHICS

LAB MANUAL

SUBJECT CODE: 2110013 (B.E. 1ST & 2ND SEMESTER)

SUBJECT TEACHER: H. N. PATEL & S. S. PATEL

SHEET NO. : 01

NAME OF SHEET: - *PRACTICE SHEET (Introduction to Engineering Graphics)*

1. Types of lines and applications.
2. Types of dimensioning and methods of dimensioning
3. Drafter practice: parallel lines, inclined lines by 30^0 , 60^0 and 45^0 in 10×10 cm two different boxes.
4. Plot regular pentagon with the side of base 50mm.
5. Plot regular hexagon with the side of base 40mm.
6. Divide 107 mm line in 9 equal divisions of parts.
7. Bisecting a line and Trisect an angle.

SHEET NO. : 02

NAME OF SHEET: - *SCALE AND PROJECTIONS OF POINTS*

1. Construct the plain scale of R.F. 1:50 to show meters and decimeters and long enough to measure the length of 4 meters and 9 decimeters. Mark on the scale (I) 2.5 meters (II) 3 meters and 4 decimeters.
2. Construct the plain scale to show kilometers and hectometers when 25 mm is equal to 1 km and long enough to measure up to 7 km. Find RF and show a distance of 4 km and 2 hectometer on the scale.
3. The length of the GEC Dahod on the dahod-zalod road is 330m. On the road map, it is shown by a 16.5 cm long line. Construct a scale to show meters and to measure up to 400m. Show the length of a 270 meter long on the way.

4. Draw the projection of the points detailed in the following table. Take a common reference line XY for all points. Take the distance between the projectors of each point as 20 mm. Also decide the location of the point with respect to the quadrant.

POINT	POSITION OF THE POINT	
A	15 mm above HP	20 mm in front of VP
B	10 mm above HP	25 mm behind VP
C	10 mm below HP	15 mm behind VP
D	20 mm below HP	15 mm in front of VP
E	On the HP	20 mm in front of VP
F	On the HP	10 mm behind VP
G	15 mm above HP	On the VP
H	25 mm below HP	On the VP
I	On the HP	On the VP

SHEET NO. : 03

NAME OF SHEET: - ENGINEERING CURVES

1. Draw a straight line AB of any length. Mark a point F, 65 mm from AB. Trace the path of a point P moving in such a way that the ratio of its distance from the point F, to its distance from AB is 4:9. Plot at least 8 points. Name the curve formed. Draw a normal and a tangent to the curve, 50 mm from F.
2. A circle of 50 mm diameter rolls along a straight line without slipping. Draw a curve traced out by a point P on the circumference, for one complete revolution of the circle. Name the curve formed. Draw a tangent to the curve at a point on it 40 mm from line.
3. Draw involutes of a regular pentagon of side 20 mm.
4. Draw ellipse by Oblong method. Draw a parallelogram of 100 mm and 70 mm long sides with included angle of 75° . Inscribe Ellipse in it.
5. A Ball Thrown In Air Attains 100 M Height and Covers Horizontal Distance 150 M On Ground. Draw The Path of the Ball (Projectile)

SHEET NO. : 04

NAME OF SHEET: - *PROJECTIONS OF LINES*

1. Two points P and Q are 4 m above the ground and on the ground respectively. They are seen at an angle of depression of 30° and 40° respectively from a point O on a hill 8 m above the ground level. P is due north – west and Q is 10° west of O. Find the length, slope and direction of road joining points P and Q.
2. The front view of a 100 mm long line AB measures 65 mm. A is 50 mm above H.P. and 25 mm in front of V.P. B is 20 mm above H.P. and in front of V.P. Draw the projections of line and find out the length of top view, true inclination of the line and apparent inclination with both the reference planes.
3. A pipe line from a point A, running due north – east has a downward gradient of 1 in 5. Another point B is 12 m away from and due east of A and on the same level. Find the length and slope of a pipe line from B which runs due 40° west of north and meets the pipe line from A.
4. Line AB 75mm long makes 45° inclinations with VP while its FV makes 55° . End A is 10 mm above Hp and 15 mm in front of VP. If line is in 1st quadrant draw its projections and find it's inclination with HP.

SHEET NO. : 05

NAME OF SHEET: - PROJECTIONS OF PLANES

1. Draw the projection of a circle of 50 mm diameter resting in the H.P. on the circumference, its plane inclined at 45° to the H.P. and (i) The top view of the diameter AB making 30° angle with the V.P. (ii) The diameter AB making 30° angle with the V.P.
2. A regular hexagon of 40 mm side has a corner in the HP. Its surface makes 45° with the HP and the top view of the diagonal through the corner, which is in the HP, makes 60° with VP. Draw its projections.
3. ABCDE is a regular pentagonal plate of 40mm sides, has its corner on the H.P. the plate is inclined at 30° to the H.P. such that the side CD is parallel to both the reference planes. Draw the projection of plate

SHEET NO. : 06

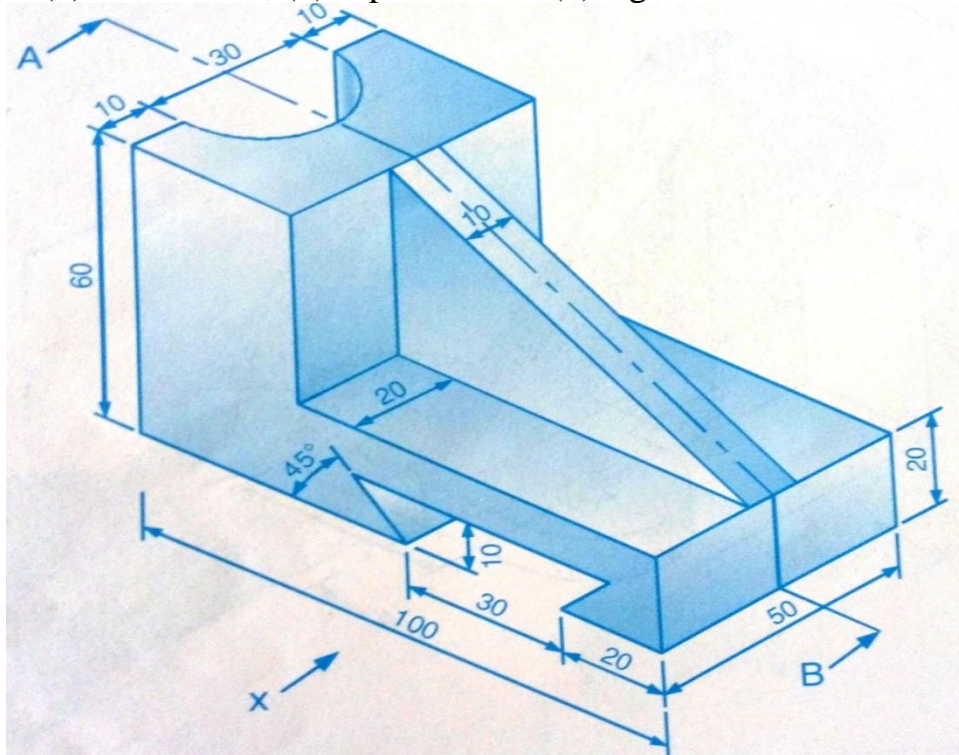
NAME OF SHEET: - PROJECTIONS OF SOLIDS

1. Draw the projection of a cone, base 30mm diameter and axis 50mm long, resting on a point of its base circle with (a) the axis making an angle of 30° with the HP and its top view making an angle of 45° the axis making an angle of 30° with the HP and 45° with VP.
2. Draw the projections of a hexagonal pyramid with the side of base 30mm and height of axis 75mm. It's one of its slant edges on the HP. A plane containing that edge and the axis is perpendicular to the HP and inclined at 45° to the VP.
3. A pentagonal pyramid base 30mm and axis 65mm long, is resting on its base on the HP with two edges parallel to the VP. It is cut by a section plane, perpendicular to the VP inclined at 45° to the HP and intersecting the axis at a point 25mm above the base. Draw the front view, sectional top view, sectional side view and true shape of the section.

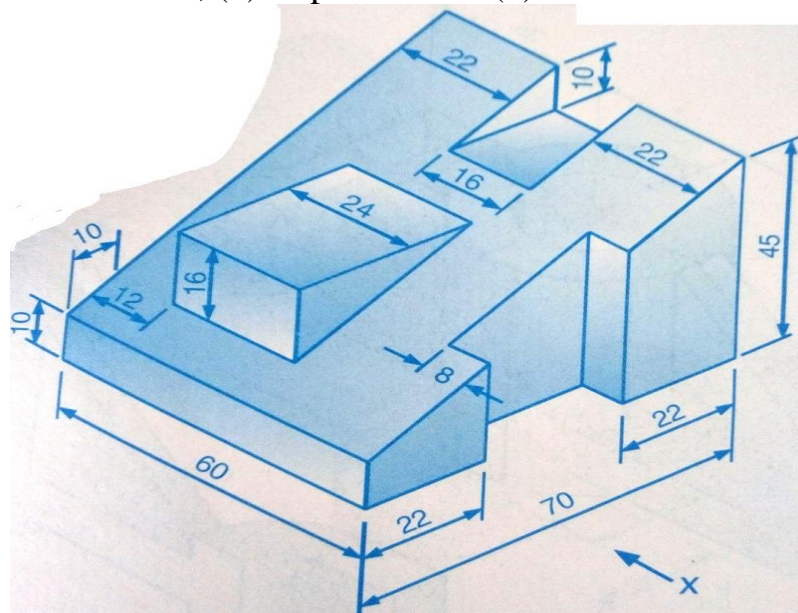
SHEET NO. : 07

NAME OF SHEET: - ORTHOGRAPHIC PROJECTIONS

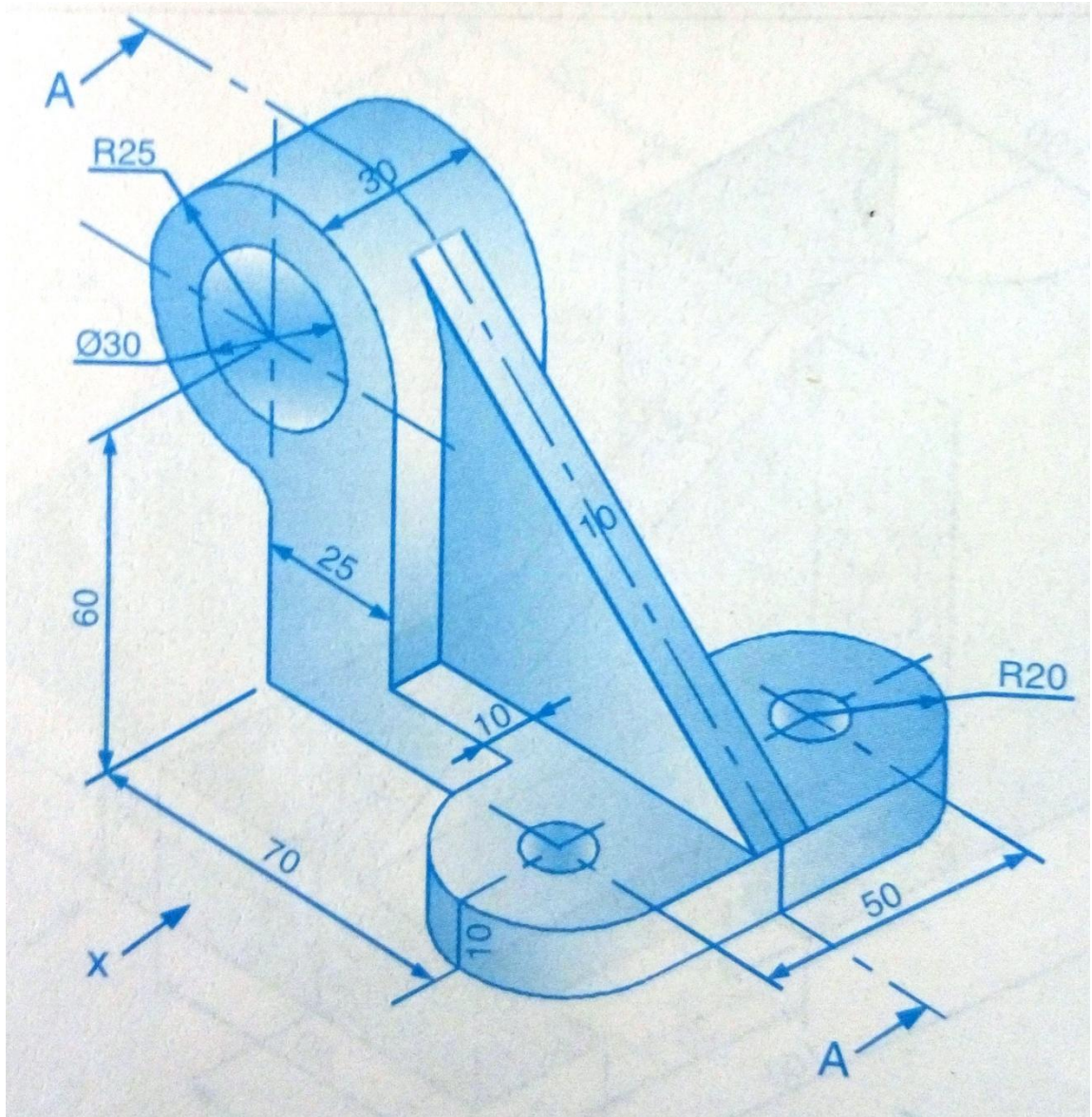
1. Draw the following view of the given figure by using first angle projection method. (1) Front View, (2) Top View and (3) Right Hand Side View



2. Draw the following view of the given figure by using first angle projection method. (1) Front View, (2) Top View and (3) Left Hand Side View



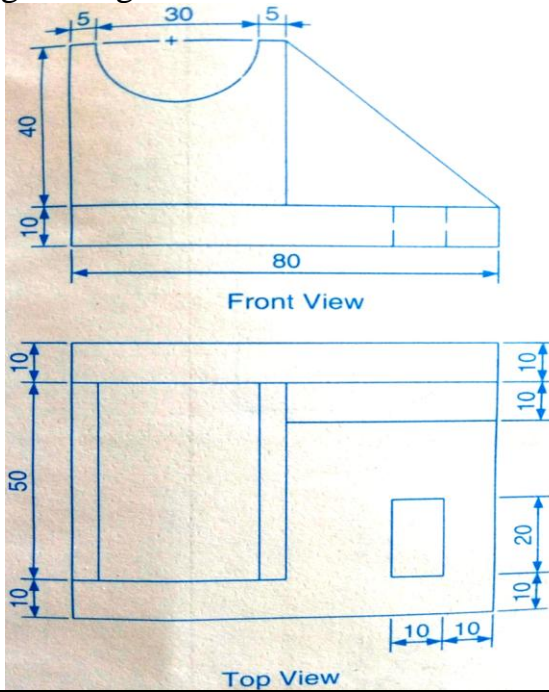
3. Draw the following view of the given figure by using first angle projection method.
(1) Front View, (2) Top View and (3) Right hand sectional Side View



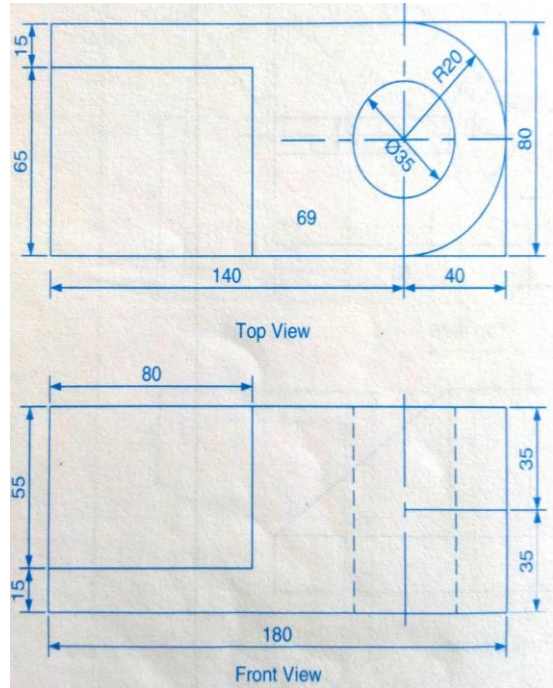
SHEET NO. : 08

NAME OF SHEET: - ISOMETRIC PROJECTIONS

1. Draw the isometric view drawing for given figure.



2. Draw isometric projection using isometric scale.



3. Draw the isometric view drawing for given figure using first angle projection method.

