

BAHWAN MAHAVIR POLYTECHNIC (608)
AUTOMOBILE DEPARTMENT (02)
1ST SEM (2016-17)
BASIC ENGINEERING DRAWING (3300007)
DRAWING SHEETS

SHEET – I USE OF DRAWING INSTRUMENT

PROBLEM1 Combination of set squares [150*100].

[Drawing Horizontal, Vertical, 30⁰,45⁰,60⁰,75⁰ lines using tee and setsquares/Drafter]

PROBLEM2 Types of lines.

PROBLEM3 Types of dimension method

a. Align method [100*70]

b. Unidirectional method [100*70]

PROBLEM4 Alphabets and Numerical

- Uppercase vertical lettering [90⁰][12*10][A to Z]
- Lowercase vertical lettering[90⁰][10*8][A to Z]
- Uppercase inclined lettering[75⁰][12*10][A to Z]
- Inclined numerical[60⁰][12*10][0 to 9]

PROBLEM5 Twelve Equal part of circle [Dia: 50mm]

PROBLEM6 Seven Equal parts of lines [90mm length]

PROBLEM7 Title Block [185*65].

SHEET – II GEOMETRIC CONSTRUCTION

PROBLEM1 To Construct Bisection.

a. To Draw Bisector a given straight line of 50mm[Perpendicular Bisector]

b. To Draw Bisection of an angle of 60 using compass only

PROBLEM2 To Draw Trisection a right angle using compass only.

DRAWING POLYGONS

PROBLEM3 To construct a regular polygon using Universal Circle Method having side 50mm.

PROBLEM4 To construct a Regular Pentagon using special method of “Three Circle Method” having length 40mm.

PROBLEM5 To construct a regular Heptagon using special method having diameter 100mm.

Drawing circles and arcs with different Geometric conditions and with line constraints.

PROBLEM6 To find out the centre of circle through three non linear points.

[Draw both problems]

TO CONSTRUCT TANGENT

PROBLEM7 To construct a Tangent to a given circle of 70mmdia at a given point.

PROBLEM8 I To construct a Tangent to a given circle of 70mmdia from a outside point.

II To construct a Tangent to a circle of Inaccessible centre at a given point.

SHEET –III ENGINEERING CURVE-I

CONSTRUCTION OF ELLIPSE

PROBLEM1 Draw an "Ellipse" having major and minor axis of 120mm and 80mm lengths respectively. Use **Rectangle or Oblong method**.

PROBLEM2 Draw an "Ellipse" by **Concentric circle method** having major and minor axis of 120mm and 80mm respectively.

CONSTRUCTION OF PARABOLA

PROBLEM3 Drawn Parabola by **Rectangle method** having base and axis of parabola are 100mm and 80mm respectively

CONSTRUCTION OF HYPERBOLA

PROBLEM4 A Point is 40mm and 50mm away respectively from two straight lines which are at a right angle to each other. Draw a Hyperbola through point P.

CONSTRUCTION OF SPIRAL

PROBLEM5 Draw Archimedean spiral for 420° , the smallest and largest radii are 10mm and 80mm respectively.

SHEET –IV ENGINEERING CURVE-II

CONSTRUCTION OF CYCLOID

PROBLEM1 A circle of 40mm diameter rolls along a straight path, without slipping. Draw the curve trace by a point P on the circumference for one revolution of circle, Name the curve.

CONSTRUCTION OF HYPOCLOID AND EPICYCLOID

PROBLEM2 Draw and name the curve traced by point on the perimeter of 60mm diameter circle if it rolls by one revolution outside the circle with 160mm diameter.

PROBLEM3 Draw a hypocycloid rolling circle 60mm diameter and directing circle 160mm diameter, draw a tangent and normal to it at a point 40mm from the center of the directing circle.

CONSTRUCTION OF INVOLUTE

PROBLEM4 An inelastic string 150mm long has its one end attached to the circumference of a circular disc of 40mm diameter. Draw the curve traced out by the other end of the string when it completely wound around the disc keeping the disc always tight.

PROBLEM5 An elastic string has its one end attached to the corner of a 30 mm side pentagonal disc, draw the curve traced out by the free end of the string when it is completely wound around once keeping the string always tight. Name the curve.

SHEET –V PROJECTION OF POINT AND LINE

PROBLEM1 Draw Projections if Points on A line XY

- a. Point A is in V.P and 30mm below H.P
- b. Point B is in H.P and 20mm in front of V.P.
- c. Point C is 20mm above H.P and 20mm behind V.P.
- d. Point D is 25mm below H.P and 40mm behind V.P.
- e. Point E is in H.P and V.P both.
- f. Point F is 40mm above H.P and 10mm in front of V.P.
- g. Point G is in V.P and 35mm above H.P.

PROBLEM2 A line MN 90mm long is inclined at 30° to the H.P, The plan of line MN makes an angle 45° with XY line. Draw the projections of the line and find out its inclination with V.P The end M of the line is 15mm above H.P and 10mm in front of V.P.

PROBLEM3 The plan and elevation of a line PQ 100mm long, measures 80mm and 70mm respectively. The end p is 10mm above H.P and 15mm in front of V.P. Draw the projections of a line PQ and determines its inclination with H.P. and V.P.

PROBLEM4 Line MN, 75mm long is inclined at 45° to the H.P. and 30° to the V.P. Its end M is 10mm above H.P and 20mm in front of V.P. Draw its projections.

PROBLEM5 A distance between the end projections of a line AB is 65mm. The end A is 15mm above H.P. and 25mm in front of V.P. The another end B is 40mm above H.P. and 50mm in front of V.P. Draw the projections of the line AB and find its true length.

SHEET –VI PROJECTION OF PLANE

PROBLEM1 A rectangular plate of 40*60mm sides has shortest side on the H.P and inclined at 60° to the V.P Draw the projection of the plate if it is inclines at 45° to H.P.

PROBLEM2 A hexagonal plane of 30mm side has its plane inclined at 30° to the V.P. and side of hexagon in the V.P is inclined at 45° to the H.P. Draw the projections.

PROBLEM3 A triangular plate having sides 60,40and 60mm long is resting on short side which makes an angle of 60° with V.P. The plate is in the H.P. Draw the projection if the plate makes 45° with H.P.

PROBLEM4 A circular thin plate of 50mm diameter is resting on H.P. with one of the points of circumference 'A' in such a way that its one diameter AC is inclined at 60° to the H.P. and other diameter BD which is perpendicular to AC at 45° to the V.P. Draw its projections.

SHEET –VII ORTHOGRAPHIC PROJECTIONS

PROBLEM1 A pictorial view of an object is shown in fig.1 Draw to full size its following views using “**First Angle Projection Method**”

- (i) Elevation looking from direction “X”
- (ii) Top view
- (iii) Right Hand side view

Give dimension using “**Unidirectional System**”.

PROBLEM2 A pictorial view of an object is shown in fig.2 Draw to full size it’s following views using “**Third Angle Projection Method**”

- (i) Elevation looking from direction “X”
- (ii) Top view
- (iii) Left Hand side view

Give dimension using “**Aligned System**”.

FIG:1

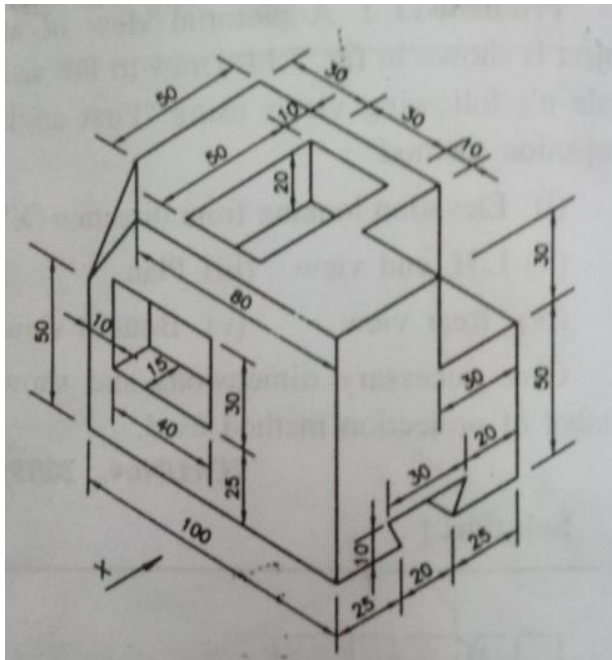
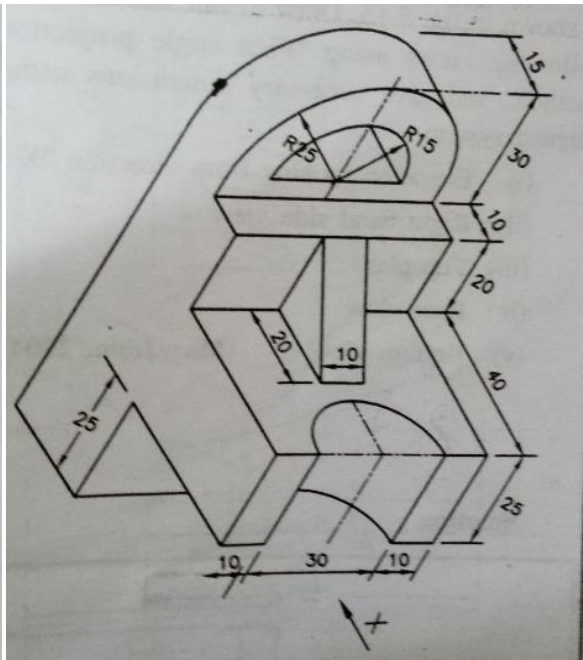


FIG:2



SHEET –VIII ISOMETRIC PROJECTIONS

PROBLEM1 Draw an isometric view for the views shown in fig.1

PROBLEM2 Draw an isometric view for the views shown in fig.2

PROBLEM3 Draw an isometric view for the views shown in fig.3

PROBLEM4 Draw an isometric view for the views shown in fig.4

FIG:1

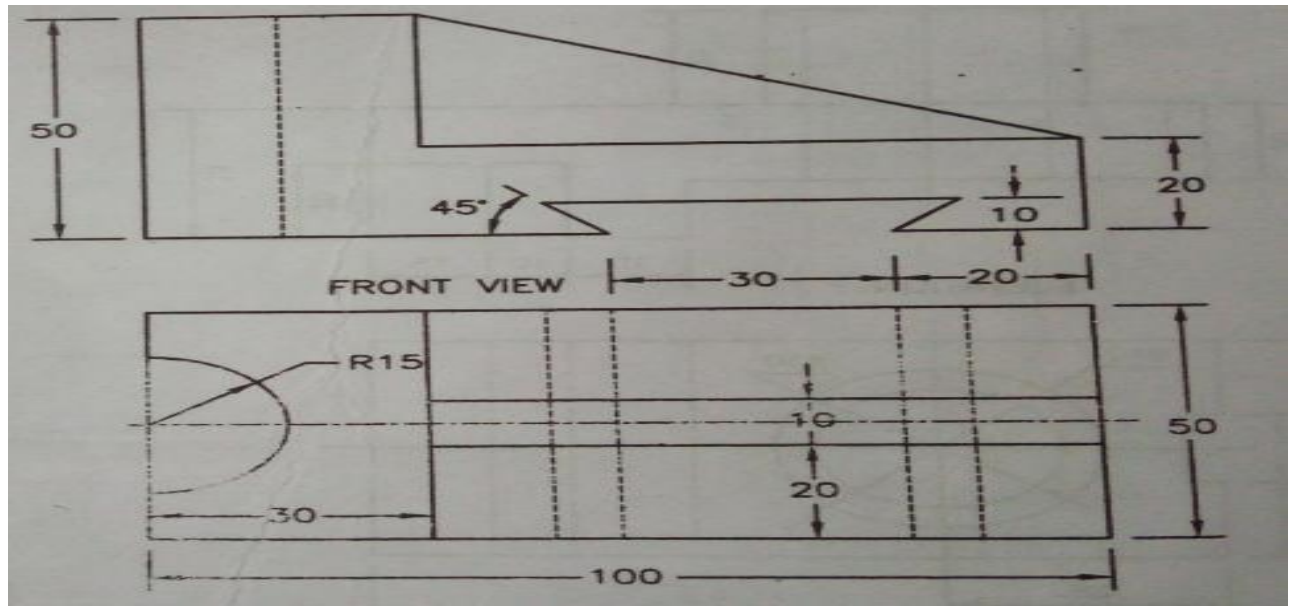


FIG:2

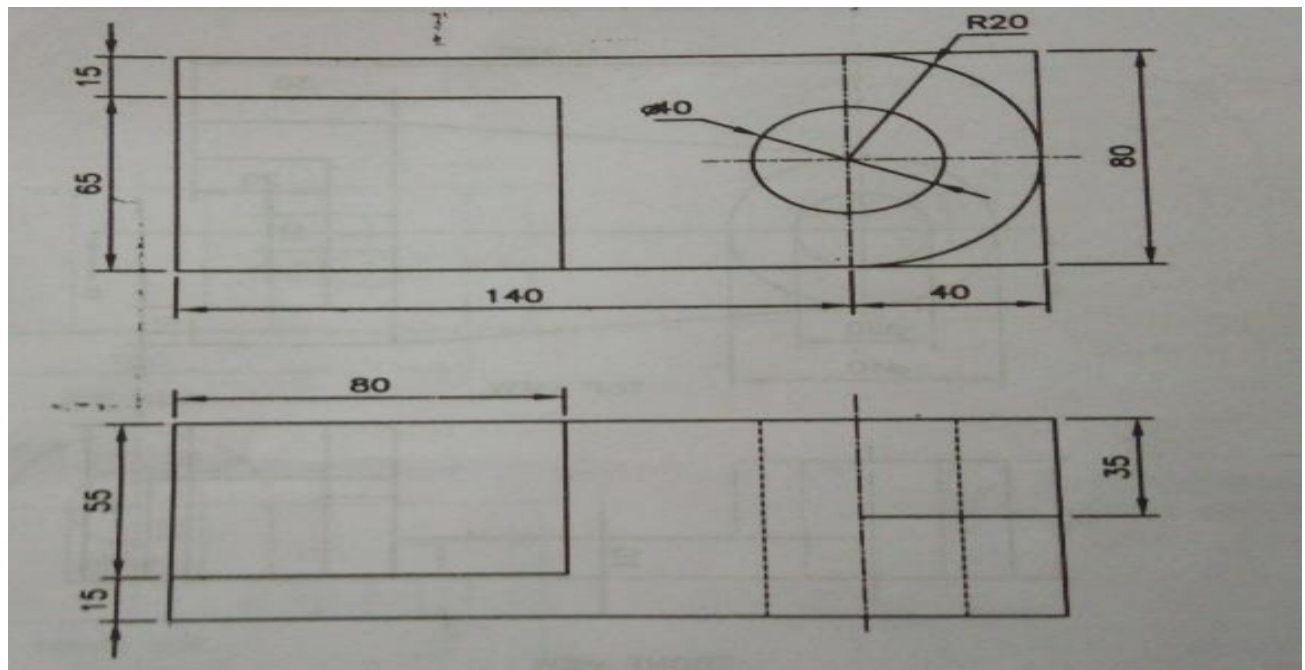


FIG:3

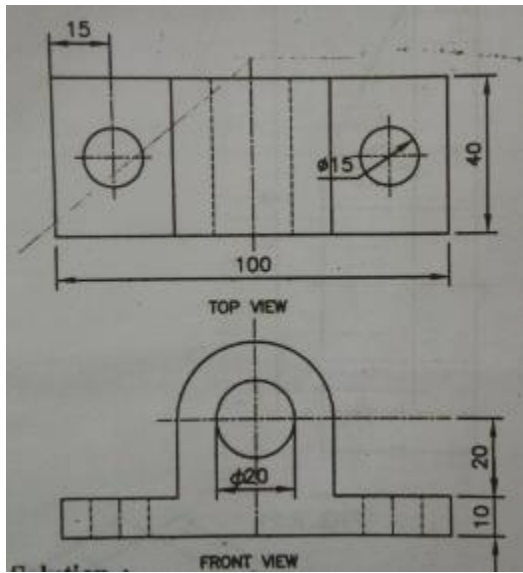


FIG:4

