216U06C105 – Engineering Drawing

Module – I: Projection of planes

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Projection of Points

I^{st} Quadrant ⇒ A point is ABOVE H.P. and INFRONT OF V.P.

II^{nd} Quadrant ⇒ A point is ABOVE H.P. and BEHIND V.P.

III^{rd} Quadrant ⇒ A point is BELOW H.P. and BEHIND V.P.

IV^{th} Quadrant ⇒ A point is BELOW H.P. and INFRONT OF V.P.

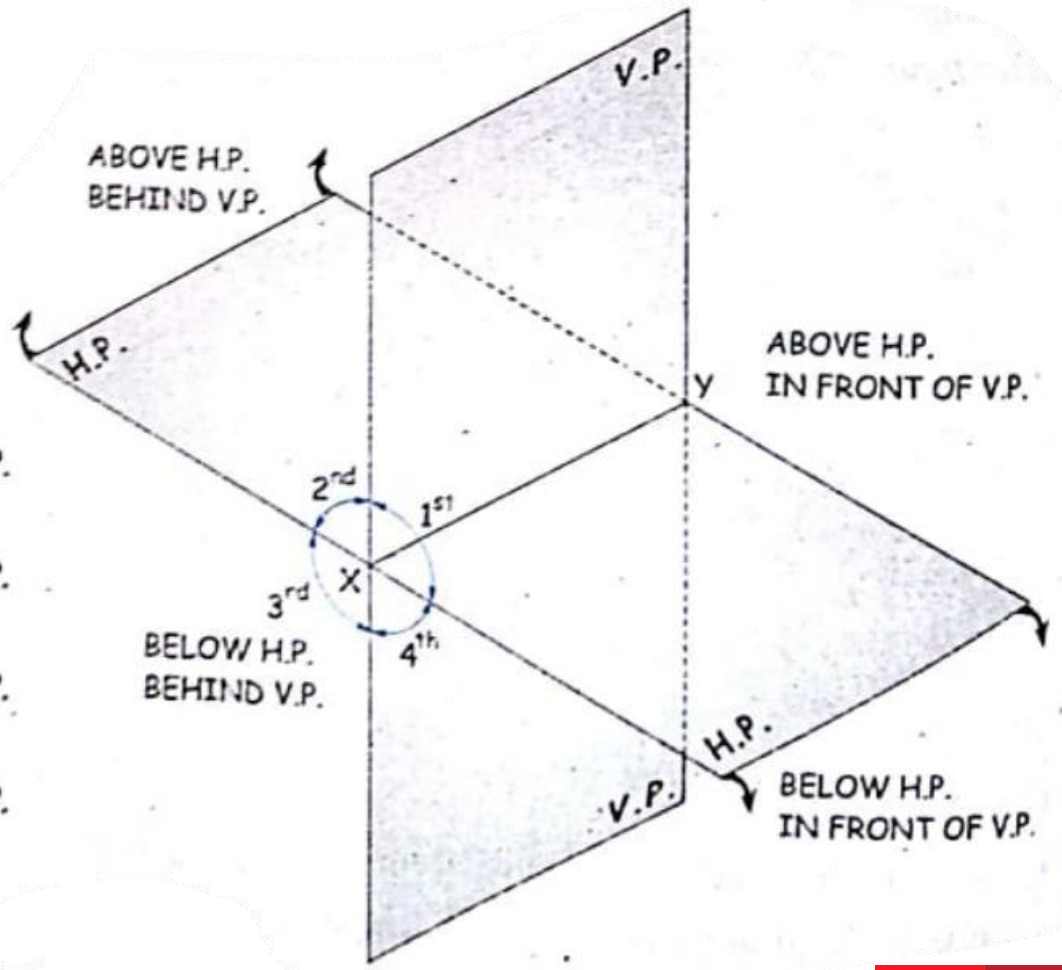

Fig. 1 Projection of points w.r.t. Principal Planes [1]

Projection of Plane Syllabus

Projection of Planes:

Triangular, Square, Rectangular, Pentagonal, Hexagonal and Circular planes inclined to one reference plane only and perpendicular to other.

Projection of Planes

- Projection of plane with reference to Principal Planes

❑ Surface of plane parallel to one principal planes and Perpendicular to other two

➢ Surface of plane parallel to H.P. and Perpendicular V.P. to Profile plane (P.P.)

Q. 1 A rectangular plane ABCD having length 60 mm and breadth 40 mm is parallel to the H.P. and perpendicular to the V.P. and the P.P. If the plane is 10 above the H.P. and one of the longest side (say AD) is 20 mm in front of the V.P. Draw the projections of the plane.

Projection of Planes

- Projection of plane with reference to Principal Planes

❑ Surface of plane parallel to one principal planes and Perpendicular to other two

➢ Surface of plane parallel to V.P. and Perpendicular H.P. to Profile plane (P.P.)

Q. 2 A rectangular plane ABCD having length 60 mm and breadth 40 mm is parallel to the V.P. and perpendicular to the H.P. and the P.P. If the plane is 20 mm in front of the V.P. and one of the longer edge side (say BC) is 10 above the H.P. Draw the projections of the plane.

Projection of Planes

- Projection of Plane perpendicular to one Principal Plane and inclined to the other

❑ Surface of plane inclined to the H.P. and perpendicular to V.P.

Q. 3 A rectangular plane ABCD having length 70 mm and breadth 40 mm has its surface inclined to the H.P. at an angle 45^0 and perpendicular to the V.P such that its shorter side AB of a rectangular plane is 10 mm above the H.P. and longer side AD of a rectangular plane is 20 mm in front of the V.P. Draw the projections of the plane.

Projection of Planes

- Projection of Plane perpendicular to one Principal Plane and inclined to the other

❑ Surface of plane inclined to the H.P. and perpendicular to V.P.

Q. 4 **A square** ABCD with sides 40 mm has its surface inclined at an angle 45^0 (θs) with H.P. and perpendicular to the V.P. such that one of a side of a square plane is in the H.P. Draw its projections.

Projection of Planes

- Projection of Plane perpendicular to one Principal Plane and inclined to the other

❑ Surface of plane inclined to the H.P. and perpendicular to V.P.

Q. 5 A **square lamina** ABCD of 50 mm side rest on the corner A is in the H.P. such that the plane is seen as a rhombus in the top view with diagonal contained by corner A measuring 25 mm. Draw its projections and determine surface inclination of the plane with the H.P.

Projection of Planes

- Projection of Plane perpendicular to one Principal Plane and inclined to the other

❑ Surface of plane inclined to the V.P. and perpendicular to H.P.

Q. 6 A **hexagonal lamina** of side 25 mm is resting in the V.P. on one of its corner. Draw the three view, if the diagonal passing through that corner makes an angle 30^0 to the V.P. Draw using 1^{st} angle method of projection.

Projection of Planes

- Projection of Plane perpendicular to one Principal Plane and inclined to the other

❑ Surface of plane inclined to the H.P. and perpendicular to V.P.

Q. 7 An **isosceles triangular** plate of 50 mm and 75 altitude appears as and equilateral triangle of 50 mm in top view. Draw the projection of a plate if its 50 mm long edge is on the H.P. What is the inclination of a plate with the H.P.?

Projection of Planes

- Projection of Plane perpendicular to one Principal Plane and inclined to the other

❑ Surface of plane inclined to the V.P. and perpendicular to H.P.

Q. 8 A **pentagonal plate** of 30 mm side has one of its side in the V.P. The corner opposite to the this side contained by the H.P. is 20 mm in front of the V.P. Draw the projections and find the inclination of a surface with the V.P.

Projection of Planes

- Projection of Plane perpendicular to one Principal Plane and inclined to the other

❑ Surface of plane inclined to the H.P. and perpendicular to V.P.

Q. 9 A **circular plate** of 60 mm diameter is resting on point A of its rim with its surface inclined at 30^0 to the H.P. Draw the projections of the plate.

Projection of Lines

- Projection of Plane perpendicular to one Principal Plane and inclined to the other

❑ Surface of plane inclined to the V.P. and perpendicular to H.P.

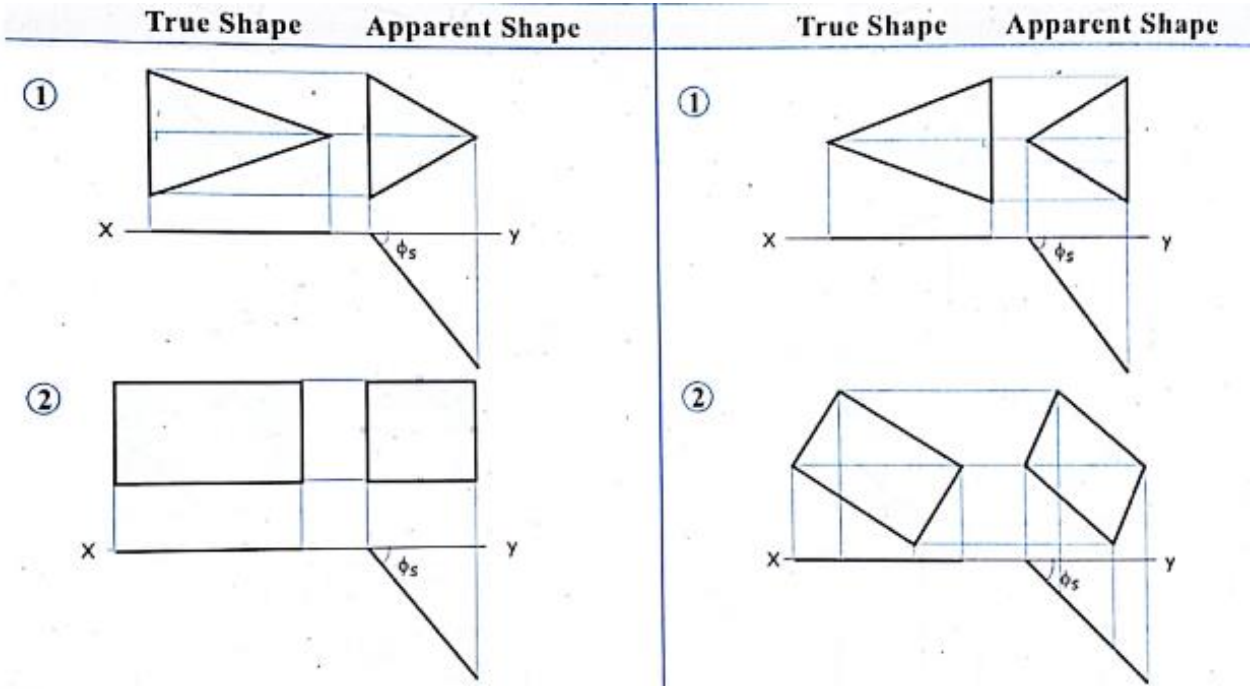

Fig. 2 projections of Triangle, Rectangle [1]

Projection of Lines

- Projection of Plane perpendicular to one Principal Plane and inclined to the other

❑ Surface of plane inclined to the V.P. and perpendicular to H.P.

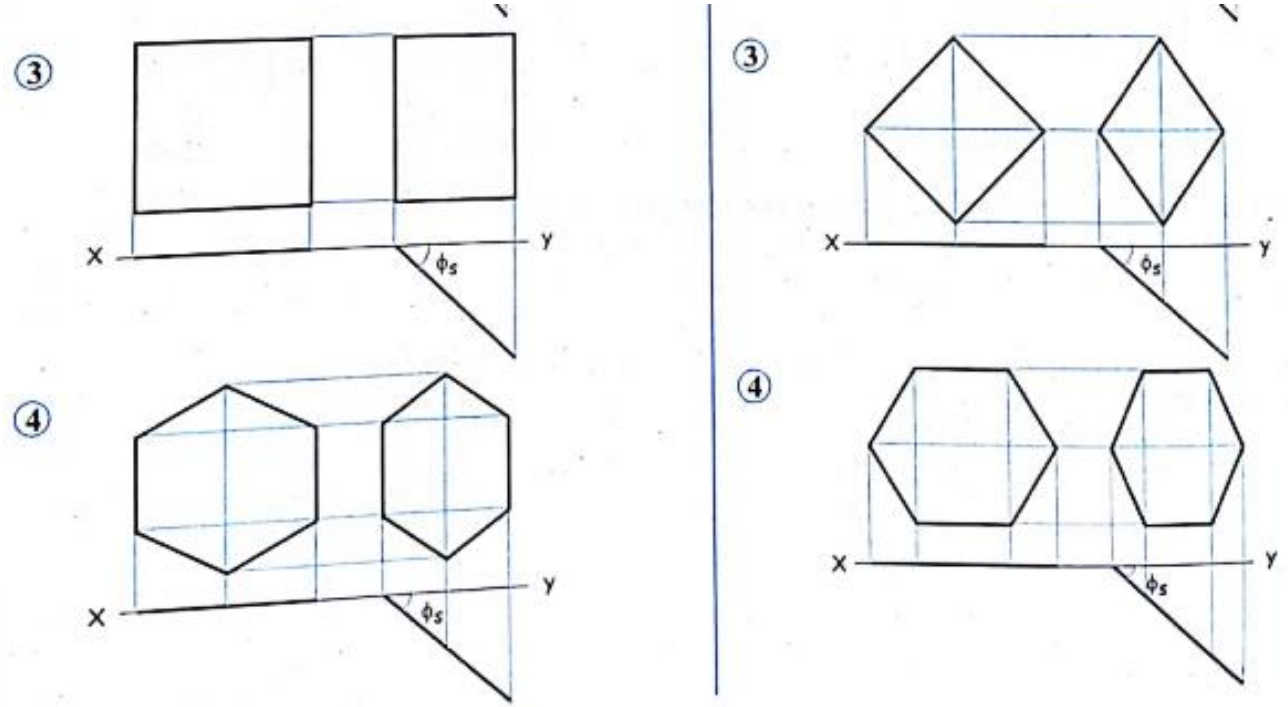

Fig. 3 projections of square, Hexagon [1]

Projection of Lines

- Projection of Plane perpendicular to one Principal Plane and inclined to the other

❑ Surface of plane inclined to the V.P. and perpendicular to H.P.

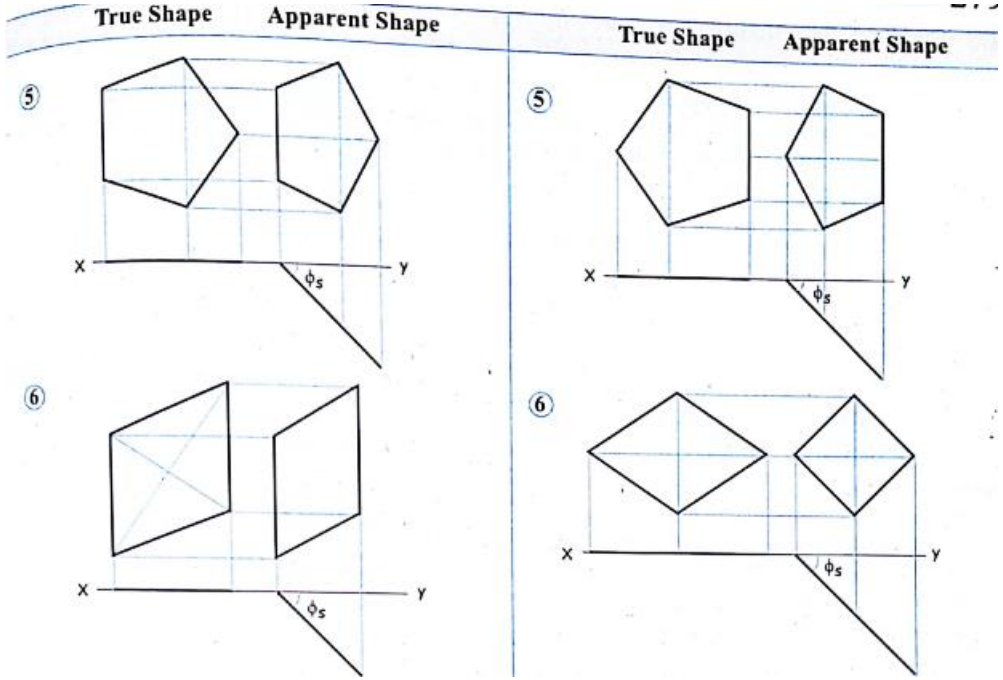

Fig. 4 projections of pentagon, Rhombus [1]

Projection of Lines

- Projection of Plane perpendicular to one Principal Plane and inclined to the other

❑ Surface of plane inclined to the V.P. and perpendicular to H.P.

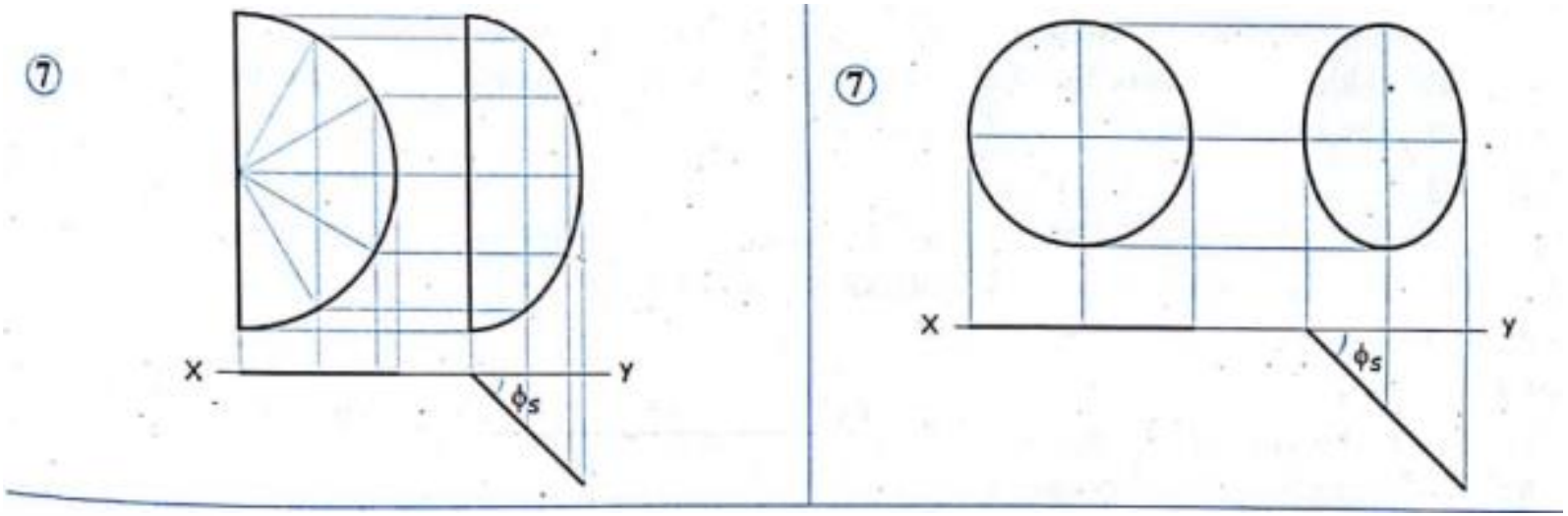

Fig. 5 projections of Semicircle, Circle [1]

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References

- [1] Engineering Drawing, N. H. Dubey

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Thank you !!

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