MOHAMED SATHAK A J COLLEGE OF ENGINEERING

Department of Mechanical Engineering

Question Bank

Engineering Graphics

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UNIT - I

1. Draw an ellipse when the eccentricity is 2/3 and the distance of the focus from the directrix is equal to 50 mm. Also draw a normal and tangent to a point on the ellipse which is at a distance of 70 mm from the directrix.
2. A fixed point is 50 mm from a fixed line. Draw the locus of a point moving in such a way that its distance from the fixed straight line is equal to its distance from the fixed point. Name the curve and draw a tangent and normal at a point horizontal distance of 40 mm from the directrix.
3. A circle of diameter 50 mm rolls along the inside of another circle of diameter 200 mm without slipping. Draw the path traced by a point on the smaller circle. Draw the tangent and normal at a point on the curve.
4. Draw locus of a point on the periphery of a circle having diameter of 50 mm, which rolls on straight line path. Name the curve and draw a tangent and normal to the curve at any point Q on it.
5. Draw the involute of a circle of diameter 40 mm. Also draw the tangent and normal to the curve at any point.

UNIT – II

6. The top view of a 80 mm long line AB measures 65 mm, while the length of its front view is 55 mm. Its one end A in the HP. And 12 mm in front of the VP. Draw the projections of AB and determine its inclinations with the HP and VP.
7. A straight-line ST has its end S, 10 mm in front of the VP and nearer to it. The midpoint m of the line is 50 mm in front of the VP and 40 mm above the HP. The front and top views measures 100 mm and 120 mm respectively. Draw the projections of the line. Also find its true length and true inclinations with the reference planes.
8. A hexagonal plate of side 20 mm rests on the HP on one of its sides inclined at 45° to the VP. The surface of the plate makes an angle of 30° with the HP. Draw the front and top views of the plate.
9. A rectangular lamina of sides 75 mm × 40 mm is resting on the VP on one of its longer sides. The surface of the lamina is inclined 45° to the HP. Draw the projections of the lamina.
10. A pentagon of 35 mm side is resting on one of its corners on the VP. The edge opposite to that corner makes an angle of 30° to the HP. The surface of the pentagon is inclined at 40° to the VP. Draw the projections.

UNIT – III

11. Draw the projections of a hexagonal prism of base side 20 mm and axis length 50 mm when it rests on the ground on one of its base edges and the axis inclined at 35° to the ground and parallel to the VP.
12. A pentagonal pyramid with 30 mm base side and 70 mm long axis is lying on a slant edge on the ground such that the axis is parallel to the VP. Draw its projections.
13. Draw the projections of a cone base 40 mm diameter and 70 mm long resting on a point of its base circle in HP with base making an angle of 40° with HP and axis parallel to the VP.
14. Draw free hand sketches of the front, top and right-side views of the block shown in fig 1. All dimensions are in mm.
15. Draw free hand sketches of the front, top and right-side views of the block shown in fig 2. All dimensions are in mm.
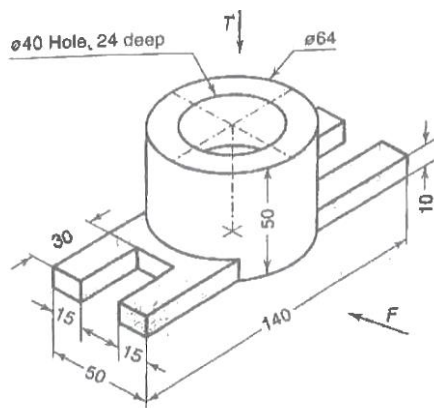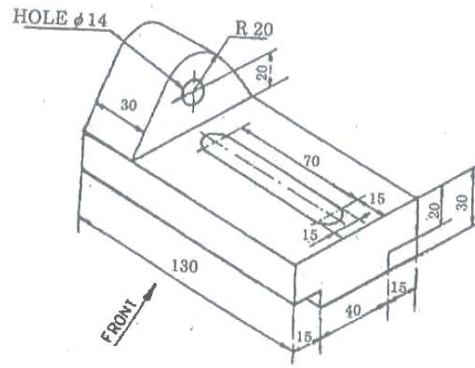
Fig 1

Fig 2

UNIT – IV

16. A pentagonal pyramid of base side 30 mm and axis 60 mm is resting on its base on the HP with an edge of the base parallel to the VP. It is cut by a plane perpendicular to the VP. inclined at 60° to the HP and bisecting the axis. Draw its front view and sectional top view and true shape of the section.

17. A cylinder of base diameter 50 mm and height 60 mm is resting on the HP on its base. It is cut by a plane perpendicular to the VP and inclined to the HP, such that the true shape of the cut section is ellipse with major axis 60 mm. The cutting plane also bisects the axis of the cylinder. Draw the sectional top view, sectional front view and true shape of the section. Find the inclination of the cutting plane with respect to the HP.

18. A hexagonal pyramid of base of side 25 mm and altitude 50 mm is resting vertically on its base on the ground with the two of the sides of the base perpendicular to the VP. It is cut by a plane perpendicular to the VP and inclined at 40° to the HP. The plane bisects the axis of the pyramid. Draw the development of the lateral surfaces of the pyramid.

19. A right circular cone of base diameter 60 mm and height 75 mm is resting on its base on the HP. It is cut by a plane perpendicular to the VP and inclined at 30° to the HP bisecting the axis of the cone. Draw the development of the lateral surface of the cone.

20. A pentagonal prism of base side 25 mm and height 70 mm stands on one of its ends on HP with rectangular face parallel to the VP. It is cut a by section plane perpendicular to the VP and inclined at 30° to the HP and passes 30 mm from top base. Draw the development of the remaining portion of the pyramid.

UNIT – V

21. Draw the isometric projection of a frustum of a hexagonal pyramid with side of base 40 mm and side of top 30 mm. The height of the frustum is 50 mm.

22. Draw the isometric view of a frustum of a cone of height 30 mm, base diameter 34 mm, top diameter 20 mm when it is centrally placed over a square slab of side 50 mm and thickness 10 mm.

23. A square prism of base 25 × 25 mm and height 40 mm rests on the GP on one of its ends with a rectangular face receding away from the PP towards right making 60° with PP. The corner nearest to the PP is 40 mm to the left of the station point and 20 mm behind the PP. The station point is 60 mm above the GP and 50 mm in front of the PP. Draw the perspective view of the prism by visual ray method.

24. Draw the perspective view of a square pyramid with base side 30 mm and axis height 45 mm. The nearest edge of the base is parallel to and 20 mm behind the picture plane. The station point is situated at a distance of 70 mm in front of the picture plane and 40 mm to the left of the axis of the pyramid and 60 mm above the ground.

25. A rectangular prism, 50×30×55 mm, rests with its base on the ground plane. A vertical edge is in the picture plane and one of the longer edges of its base is inclined at 45° to PP and behind it. The station point is 50 mm in front of PP, 75 mm above the ground plane and lies in a central plane which passes through the centre of the prism. Draw the perspective view.