Code : 9A03101D

1

B.TECH. I Year(R09) Regular Examinations, May/June 2010
ENGINEERING DRAWING
(Information Technology, Biotechnology, Computer Science & Systems Engineering)

Time: 3 hours **Max Marks: 70**

Answer any FIVE questions
All questions carry equal marks

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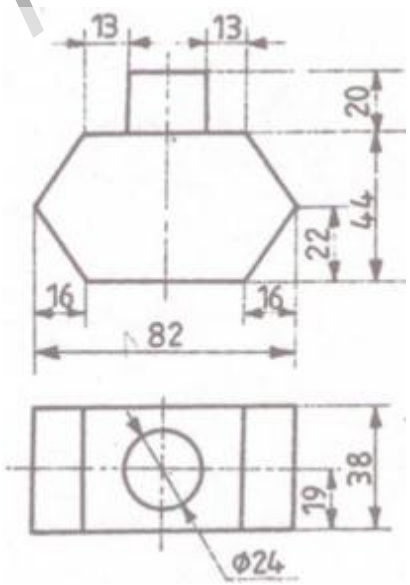
1. (a) Divede a given line 125 mm in 9 equal parts.
   (b) Inscribe a pentagon in a circle of 50 mm diameter.
   (c) Construct an ellipse, with distance of the focus from the directrix as 50 and eccentricity as 2/3. Also draw normal and tangent to the curve at a point 40 from the directrix.
2. The mid-point of line is 80 mm long is 25 mm above HP and 30 mm in front of VP. The line inclined at an angle of 30^0 to HP and 40^0 VP. Draw its projections.
3. (a) A regular hexagonal lamina of 30 mm side rests on H.P with its plane surface vertical and inclined at 45^0 to V.P. Draw its projections of the plane.
   (b) A square plate of side 30 mm is perpendicular to V.P and inclined at 30^0 to H.P Draw it projections.
4. (a) A hexagonal pyramid base 25 mm side axis 50 mm long, has edge of its base on the ground. Its axis is inclined at 30^0 to ground,and parallel to V.P. Draw projections.
   (b) Draw the projections of a cone base 75 mm diameter and axis 100 mm long, lying on the H.P. on one of its generators with the axis parallel to the V.P.
5. (a) A cylinder of base diameter 50 mm and axis length 70 mm has a co-axial square hole of the side 20 mm. It is resting on HP on its base with the faces of the hole equally inclined to VP. The cutting plane is inclined at 45^0 to HP and perpendicular to VP and is bisecting the axis of the solid. Draw its front view, sectional top view and true shape of section.
   (b) A cone base 60 mm diameter and axis 70 mm long is lying on the HP on one of its generators with the axis parallel to the VP. A vertical section plane parallel to the generator which is tangent to the ellipse (for the base) in the plan, cuts and bisects the axis and removing the portion containing the apex. Draw its sectional elevation and true shape of section.
6. A cylindrical boiler is 2m in diameter and has a cylindrical dome 0.8m diameter and 0.6m high. The axis of the dome intersects the axis of the boiler. Draw three views of the arrangement. Also develop the surface of the dome. Take a scale of 1 cm = 0.2 m.
7. Two views of a casting are shown below. Draw the isometric view of the casting (dimensions are in mm).



8. A model of steps has three steps of 15 mm tread and 10 mm rise. The steps measure 60 mm width wise. Draw the perspective projection of he model when placed with its first step 25 mm within the picture plane and the longer edge being parallel to it. The station point is 95 mm from the picture plane and 60 mm above the ground and lies on the central line.

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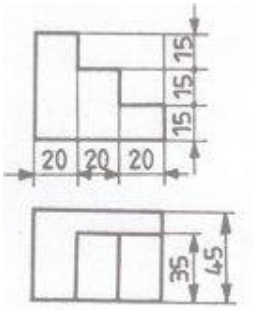
1. (a) Construct a parabola with the length of base as 60 and axis 30 long. Also draw a tangent to the curve at a point 25 from the base.
   (b) The major and minor axis of an ellipse are 120&80 mm. Draw an ellipse by arcs of circles method.
2. The mid-point of straight line AB is 60 mm above HP and in front of VP. The line measures 80 mm long and inclined at an angle of 30^0 to HP and 45^0 VP. Draw its projections.
3. (a) A hexagonal plane of side 30 mm is perpendicular to V.P and parallel to H.P. One of its side is perpendicular to V.P. Draw its projections.
   (b) A circular lamina of 30 mm radius is perpendicular to V.P and its diameter AB is inclined at 45^0 to H.P Draw its projections.
4. (a) Draw the projections of hexagonal pyramid with side of base 30 mm and axis 70 mm long resting with slant face on H.P. such that axis parallel to V.P.
   (b) Draw the projections of a right circular cone of base 40 mm diameter and height 60 mm when resting with its base on H.P.
5. (a) Draw the projection of a cylinder of 40 mm diameter and axis 60 mm long, when it is lying on HP, with its axis inclined at 45^0 to HP and parallel to VP.
   (b) Draw the projections of a cone of diameter of base 40 mm and axis 60 mm long, when it is lying on a point of the base on HP, with its axis inclined at 45^0 to HP and perpendicular to VP. Follow the auxiliary method.
6. A cylinder of 60 mm diameter and 100 mm height, stands on its base on the ground. It is penetrated centrally by a cylinder of 40 mm diameter and 100 mm long, whose axis is parallel to HP, but inclined at an angle of 30^0 to VP. Draw the projections showing the curves of intersection. Also draw the development of the penetrating cylinders.
7. Two views of a model are shown below. Draw the isometric projection of the model (dimensions are in mm)



8. A man stands at a distance of 5 m from a flight of four stone steps having a width of 2m, treat 0.3m and rise 0.2m. The flight makes an angle of 30^0 with the picture plane and touches the same at a distance of 2 m to the right of the center of vision. Take horizon level to be 1.5m above the ground level. Draw the perspective projection of the flight.

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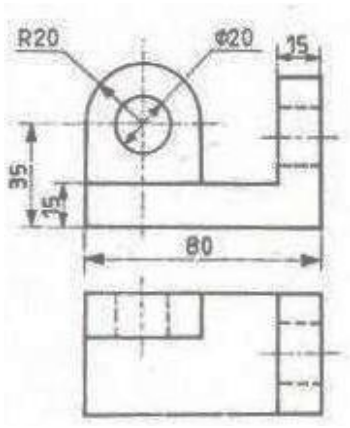
1. (a) The asymptotes of a hyperbola are inclined at 70^0 to each other. Construct the curve when a point P on it is at a distance of 20 and 30 from the two asymptotes.
   (b) The major axis of an ellipse is 120 long and the foci are at a distance of 20 from its ends. Complete the ellipse and draw a tangent at a distance of 35 from focus.
2. The distance between the projectors of two end of straight line is 60 mm. One end is 15 mm above HP and 50 mm in front of VP. The other end is 60 mm above HP and 10 mm in front of VP. Draw the projections and find true length of the line.
3. (a) An equilateral triangular lamina of 30 mm side with the surface inclined at 60^0 to H.P. lines with one of its sides on H.P. The edge on which it rests is inclined to V.P. at 60^0 to V.P. and its surface making an angle of 45^0 with H.P.
   (b) A rectangular plane of 60mmX40mm is resting on shorter edge on the ground and inclined at 45^0 to V.P. The plane surface is inclined at 30^0 to H.P. Draw its projections.
4. (a) A square prism, side of base 35 mm and height of 50 mm rests with its base on H.P. such that one of its rectangular faces is inclined at an angle of 30^0 to V.P. Draw its projections.
   (b) Draw the projections of a square pyramid having one of its triangular faces in the V.P. and the axis parallel to and 40 mm above the H.P. Base 30 mm side axis 75 mm long.
5. (a) A hexagonal prism of side of side of base 25 mm axis 60 long is freely suspended from a corner of the base. Draw the projections.
   (b) A square pyramid of base 35 mm side and axis 50 mm long, is resting on one of its triangular faces on HP, with the edges of the base containing that faces inclined at 45^0 to VP. Draw the projections of the pyramid. Follow the auxiliary plane method.
6. A square prism of base 50 mm side and height 125 mm stands on the ground with its side of base inclined at an angle of 30^0 to VP. It is penetrated by a cylinder of diameter 50 mm and axis 125 mm long. The axis of the cylinder is parallel to both HP and VP and bisects the axis of the prism.
   Draw the projection showing fully the curves of intersection.
7. Two views of a bracket are given below. Draw the isometric view of the bracket (dimensions are in mm).



8. Draw a perspective view of a square plane with a 60 mm side resting on the GP with one of its corners touching PP and a side right to the corner inclined at 30^0 to it. The station point is 50 mm in front of PP, 60 mm above GP and lies in a CP which is 40 mm towards right of the corner touching the PP.

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1. (a) A circle of 40 diameter rolls along a line for one revolution clockwise. Draw a locus of a point on the circle, which is in contact with the line.
   (b) Two concentric discs of 40 mm and 50 mm diameters roll on the horizontal line AB 150 mm long. Both discs start at the same point and roll in the same direction. Plot the curves for the movement of the points lying on their circumferences.

2. Draw the projections of a 75 mm long straight line, in the following positions:
   i) Parallel to the both the H.P. and the V.P. and 25 mm from each.
   ii) Parallel to 30 mm above H.P. and in the V.P.
   iii) Parallel to 40 mm in front of V.P. and in theH.P

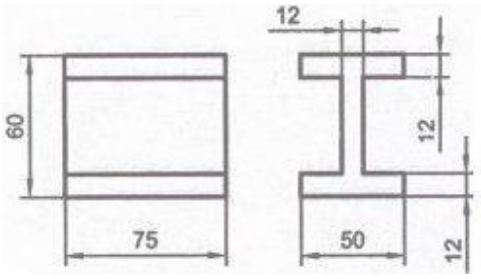
3. (a) A rectangular lamina of sides 40X60 rests on H.P on one of its longer sides. The lamina is tilted about an edge on which it rests till the plane is inclined to H.P. at 45^0. The edge on which it rests is perpendicular to V.P. Draw its projections.
   (b) Draw the projections of regular hexagon of 25 mm side having one of its edge in H.P and inclined at 60^0 to V.P and its surface making an angle of 60^0 to H.P.

4. (a) A hexagonal prism base 30 mm side and axis 75 mm long, as an edge of the base parallel to the H.P. and inclined at 45^0 to the V.P. Its axis makes an angle of 60^0 with the H.P.
   (b) A triangular prism side of base 35 mm and height 60 mm lies with one of its longer edges on H.P. such that its axis is parallel to both H.P. and V.P. Draw its projections.

5. (a) A pentagonal prism of side of base 25 mm and axis 40 mm long, is resting on HP on a corner of its base. Draw the projections of the prism, when the base is inclined at 60^0 to HP and the axis appears to be inclined at 30^0 to VP.
   (b) A hexagonal prism of base 25 mm side and axis 45 mm long, is positioned with one of its base edges on HP such that, the axis is inclined at 30^0 to HP and 45^0 to VP. Draw its projections.

6. A cylinder of 60 mm diameter stands vertically on its base. It is pierced by a horizontal square prism of 35 mm side of base such that the axes of the two solids intersect each other at right angles. A face of the prism is inclined at an angle of 60^0 to HP and 30^0 to VP.
   Draw the projections of the solids, showing the lines of intersection.

7. Two views of a piece are given below. Draw the isometric view of the piece (dimensions are in mm).



8. A square plane with a 60 mm side lies on the GP with the edge nearer to the observer lying in the PP. The station point is 50 mm in front of pp, 60 mm above GP and lies in a CP which is 50 mm towards right of the centre of the object. Draw its perspective view.

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