Code : 9A03101C

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

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

Answer any FIVE questions
All questions carry equal marks

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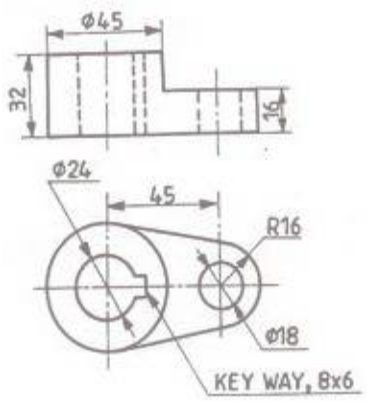
1. (a) Construct a rectangular hyperbola when a point P on it is at a distance of 18 mm and 34 mm from two asymptotes. Also draw a tangent to the curve at a point 20 mm from an asymptote.
   (b) The vertex of a hyperbola is 60 from its focus. Draw the curve, if the eccentricity is 3/2. Draw a normal and a tangent at a point on the curve, 75 from the directrix.
2. (a) A line CD measures 80mm is inclined at an angle of 30^0 to HP and 45^0 to VP. The point C is 20mm above HP and 30mm in front of VP. Draw the projections of the line.
   (b) Draw the projections of a line JK 70 mm long and touching both HP and VP. It is inclined at 40^0 to HP and 35^0 to VP.
3. (a) A circular plate is parallel to H.P Its radius is 30 mm and center is 50 mm above and 20 mm in front of V.P. Draw its projections of planes.
   (b) A regular pentagon of 25 mm side has one of its edge on V.P. Its plane is inclined at 45^0 to V.P. Draw its projections.
4. (a) Draw the projections of a hexagonal prism side of base 25 mm and height 60 mm resting with its base on H.P. such that one of its rectangular faces is parallel to V.P.
   (b) A pentagonal pyramid of base 25 mm side and axis 60 mm long is resting on H.P on a base corner with edge of base containing that corner making 30^0 angle with H.P. projection of pyramid when its axis perpendicular to V.P and base is 15 mm from V.P.
5. (a) A pentagonal prism of base side 30 mm and axis length 60 mm is resting on HP on one of its rectangular faces with its axis perpendicular to VP. It is cut by a plane inclined at 50^0 to HP and perpendicular to VP and is 15 mm away from axis. Draw it's front view, sectional top view and true shape of section.
   (b) A square pyramid of base side 25 mm and height 60 mm rests on HP on its base with a base edge perpendicular to VP. It is cut by a plane perpendicular to VP and inclined at 30^0 to HP. The cutting plane meets the axis at 25 mm from the vertex. Draw the elevation, sectional plan and true shape of the section.
6. A hexagonal prism of side of base 30 mm is resting on one of its bases on HP with a face parallel to VP. The prism contains a square hole of 20 mm side. The axis of the hole is parallel to VP and inclined at an angle of 30^0 to the HP intersecting the axis of the prism. The faces of the hole are equally inclined to VP. Draw the lines of intersection.
7. Two views of a casting are shown below. Draw the isometric projection of the casting (dimensions are in mm)



8. A 25 mm thick octagonal slab rests with its base on ground and supports a square pyramid of 50 mm height and edge of base 40 mm on it such that each corner of the base of the pyramid rests on a top corner of the slab. Draw the perspective projection of the arrangement with the axis of the pyramid 75 mm behind the PP and 60 mm to the left of the eye. One of the rectangular faces of the octagonal slab is parallel to the PP. The eye is 125 mm in front of the PP and 100 mm above the ground.

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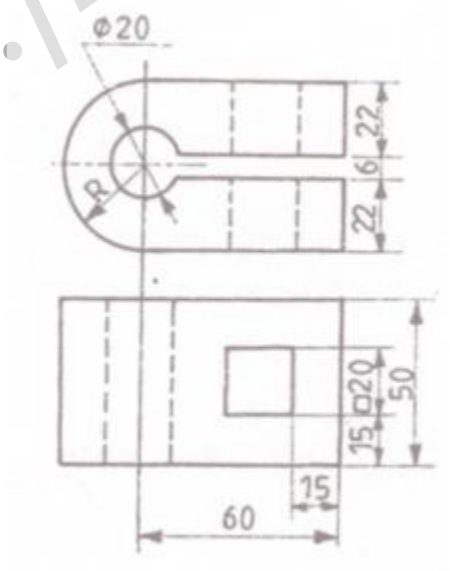
1. (a) The major axis of an ellipse is 100 mm long and the distance between its foci is 70 mm. Draw the ellipse.
   (b) Draw a hyperbola having the double ordinate of 100 mm, the abscissa of 60 mm and the transverse axis of 100 mm.
2. (a) A line CD is parallel to VP and inclined at 40^0 to HP. C is in HP and 25 mm in front of VP. The length of the top view is 50mm. Determine its true length.
   (b) A line measuring 80 mm long has one of its ends 60mm above HP and 20mm in front of VP. The other end is 15 mm above HP and in front of VP. The front view of the line is 60 mm long. Draw the top view.
3. (a) A pentagonal plate of 35 mm side is perpendicular to V.P and parallel to H.P One of its edges is perpendicular to V.P. Draw its projections.
   (b) A square lamina of side 40 mm is perpendicular to VP and parallel to HP. Draw its projections.
4. (a) Projection of cylinder of base diameter 50 mm and axis 65 mm long axis perpendicular to the V.P and 40 mm above H.P. One end is 20mm in front of V.P.
   (b) A pentagonal pyramid of base 25 mm side and axis 65 mm long is resting on an edge of base projections of pyramid when axis is perpendicular to V.P. Base is at 15mm from V.P.
5. (a) A cylinder of base diameter 40 mm and axis length 60 mm is resting on HP on one of its generators with its axis parallel to VP. It is cut by a plane inclined at 40^0 to VP and perpendicular to HP and is bisecting the axis of the cylinder. Draw its top view, sectional front view and true shape of section.
   (b) A hexagonal prism of side 50 mm is resting on HP on one of its base with two vertical faces being parallel to VP. It is cut by a vertical plane inclined at 45^0 to VP and is 8 mm away from the axis. Draw its top view, sectional front view and true shape of section.
6. A square pipe of 60 mm side is connected to another square pipe of side 45 mm. The axis of bigger pipe is vertical and the axis of the smaller pipe intersects the axis of the bigger pipe at an angle of 45^0. All the faces of both the pipes are equally inclined to VP. Draw the projections showing the lines of intersection.
7. Two views of a casting are shown below. Draw the isometric projection of the casting (dimensions are in mm)



8. A solid is in the form of a square prism of side of base 20 mm upto a height of 35 mm and thereafter tapers into the frustum of a square pyramid, whose top surface is a square of side 10 mm. Total height of solid is 50 mm. Draw the solid in perspective, given that a side of its base rests on GP parallel to PP. The end of the side nearest to the edge is 20 mm to the right of the eye and 15 mm behind PP. The eye is 70 mm from PP and 60 mm above GP.

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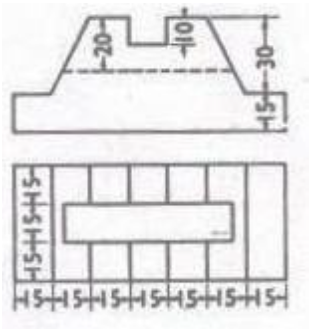
1. (a) Construct a pentagon length of a side is 30 mm.
   (b) Draw an arc passing through three points not in straight line.
   (c) Construct a parabola, with the distance of the focus from the directrix as 50 mm, also draw normal and tangent to the curve at a point 40 from the directrix.
2. (a) A line AB, 65 mm long has its end A in the H.P. and 15 mm in front of the V.P. The end B is in the third quadrant. The line is inclined at 30^0 to the H.P. and at 60^0 to the V.P. Draw its projections.
   (b) A line PQ 75 mm long has its end P in both HP and VP. It is inclined at an angle of 30^0 to HP and 45^0 to VP. Draw projections of the line.
3. (a) A square lamina of 50 mm side is inclined at 45^0 to V.P and parallel to H.P Draw it projections.
   (b) An equilateral triangle lamina of side 30 mm parallel to H.P. and to V.P. One of its side is 20 mm in front of V.P. and 30 mm above H.P. Draw its projections.
4. (a) A hexagonal prism has one of its rectangular faces parallel to the H.P. Its axis is perpendicular to the V.P.and 3.5 cm above the ground.
   (b) Draw the projection of cylinder 60 mm diameter and 90 mm long. Axis inclined at 45^0 to H.P. and parallel to V.P.
5. (a) A sphere of 60 mm diameter is cut by a cutting plane inclined at 55^0 to VP and perpendicular to HP and it is 12 mm away from the center of the sphere. Draw its top view, sectional front view and true shape of section.
   (b) A cone, diameter of base 45 mm and axis 60 mm is resting on its base on the HP. It is cut by a section plane perpendicular to the VP and inclined at 80^0 to the HP. The section plane passes through the apex. Draw the sectional top view and also obtain the true shape of the cut section.
6. Two cylinders each of 30 mm diameter and altitude 80 mm intersect each other at right angles. Their axes bisect each other and are parallel to VP. Determine the line of intersection of the two cylinders.
   Also, develop the lower portion of the vertical cylinder, neglecting the thickness of the metal.
7. Two views of a casting are shown below. Draw the isometric view of the casting (dimensions are in mm)



8. A cylinder of base 50 mm diameter and axis 75 mm long, has a coaxial square hole of 25 mm side. The cylinder is resting on the ground, with its base parallel to PP and 10 mm behind it. The faces of the hole are equally inclined to GP. The station point is 50 mm to the left of the axis of the solid, 45 mm in front of PP and 70 mm above GP. Draw the perspective projection of the solid.

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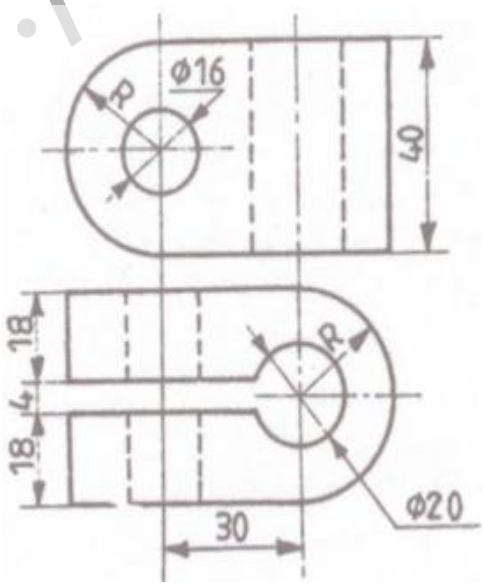
1. (a) Inscribe a regular octagon in a given square of 50 mm side.
   (b) Construct a parabola with base 60 and length of the axis 40. Draw a tangent to the curve at point 20 from the base. Also locate the focus and directrix to the parabola.
2. A line AB 120 mm long is inclined at 45^0 to HP and 30^0 to the VP. It's mid-point C is in VP and 20 mm above HP. The end A is in third quadrant and B is in first quadrant. Draw the projections of the line.
3. (a) A regular pentagon of 25 mm side has one side on the ground. Its plane is inclined to H.P at 45^0 and perpendicular to V.P Draw its projections
   (b) Draw the projections of circle diameter of 5 cm having its plane vertical and inclined at 30^0 to the V.P Its center is 3 cm above H.P and 2 cm in front of V.P.
4. (a) Pentagonal prism base 30 mm side and axis 60 mm long has an edge of its base in H.P. axis is inclined at 45^0 to ground and parallel to V.P.
   (b) Draw the projection of a cone, base 75 mm diameter and axis 100 mm long lying on H.P. with its axis parallel to V.P. and inclined at 30^0 to H.P.
5. (a) A sphere of 50 mm diameter is cut by a cutting plane inclined at 50^0 to HP and perpendicular to VP and is 10 mm away from the center of the sphere. Draw its, front view, sectional top view and true shape of section.
   (b) A cone of base diameter 50 mm and axis length 60 mm is resting on HP on its base, which is cut by a plane inclined at 50^0 to HP and perpendicular to VP and passing through a point, on the base circle of the cone. Draw its front view, sectional top view and true shape of section.
6. (a) A vertical cylinder of diameter 80 mm intersects a horizontal cylinder of diameter 40 mm. The shortest distance between their axes is 40 mm. Draw the projections showing the intersection profile.
   (b) A horizontal cylinder of 50 mm diameter penetrates a vertical cylinder of 75 mm diameter resting on HP. The two axes are coplanar. The axis of the horizontal cylinder is 50 mm above the HP. Draw the projections showing the curves of intersection.
7. Two views of a casting are shown below. Draw the isometric view of the casting (dimensions are in mm)



8. Draw the perspective projection of a shed with one corner of the longer side of the roof touching the PP at a point. The eye is 5 m in front of the point touching the pp and 2m above the GP. The roof of the shed is supported on four pillars of 50 cm x 50 cm x 6 m high. The roof comprises of two rectangular surfaces of 15 m x 5 m inclined mutually at 120^0.
   Assume that the outer surfaces of the pillars are in flush with the sides of the roof at the corners.

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