

Code: 9A03101b

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B.Tech I Year (R09) Regular & Supplementary Examinations, June 2013

ENGINEERING DRAWING

(Common to CE, CSE & CSSE)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

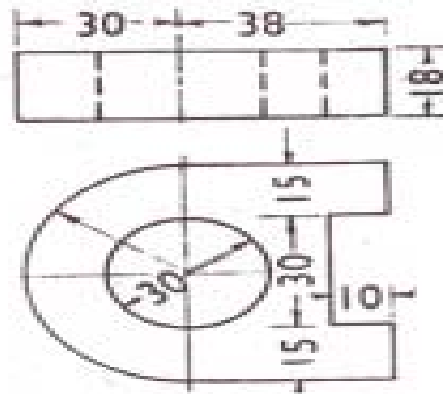
- 1 (a) Construct a parabola with the length of base as 60 mm and axis 30 mm long. Also draw a tangent to the curve at a point 25 mm from the base.
(b) The major and minor axis of an ellipse is 120 and 80 mm. Draw an ellipse by arcs of circles method.
- 2 A line AB 120 mm long is inclined at 45° to HP and 30° 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) Draw the projections of a regular hexagon of 25 mm side, having one of its sides in the H.P. and inclined at 60° to the V.P and its surface making an angle of 45° with the H.P.
(b) Draw the projections of a circular disc of 120 mm diameter resting on HP on a point on the circumference with its surface inclined at 50° to HP and perpendicular to VP.
- 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° 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 right circular cone of 50 mm base diameter and of altitude 60 mm is lying on one of the generator on HP, such that the axis of the cone is parallel to VP it is cut by a section plane to HP and perpendicular to VP and 30 mm above HP. Show the sectional plan and elevation of the solid.
(b) A sphere of 60 mm diameter is cut by a section plane perpendicular to the VP, inclined at 45° to the HP and at a distance of 15 mm from its centre. Draw the sectional plan and true shape of section.

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- 6 Two views of a casting are shown below. Draw the isometric view of the casting (dimensions are in mm)



- 7 (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.
- 8 A composite plane is made up of a rectangle with 60 mm and 40 mm sides and a semicircle on its longer side. Draw its perspective view when it is lying in the GP. The longer side is perpendicular to PP and the shorter side is 10 mm behind it. The station point is 50 mm in front of the PP, 60 mm above the GP and lies in the CP which is 50 mm to the right of the centre of the semicircle.

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- 1 (a) A circle of 75 mm diameter rolls on another circle of 115 mm diameter with internal contact. Draw the locus of a point on the circumference of the rolling circle for its one complete revolution.
(b) Draw the involute of an equilateral triangular of side 20 mm.
- 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° to HP and 40° VP. Draw its projections.
- 3 (a) A circular lamina of 42 mm diameter has its surface parallel to HP and perpendicular to VP. Its center is above 15 mm HP and 30 mm in front of VP. Draw its projections.
(b) An equilateral triangular lamina of side 50 mm is perpendicular to both planes. 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° 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 cone of base diameter 50 mm and axis length 60 mm is resting on HP on its base. It is cut by a plane inclined at 40° to VP and perpendicular to HP that cuts the cone at distance 10 mm from the axis and in front of it. Draw its top view, sectional front view and true shape of section.
(b) A square pyramid of base side 30 mm and axis length 60 mm is resting on HP on its base with a side is inclined at 30° to VP. It is cut by a plane perpendicular to both HP and VP and is 10 mm away from the axis. Draw its top view, front view and sectional side view.

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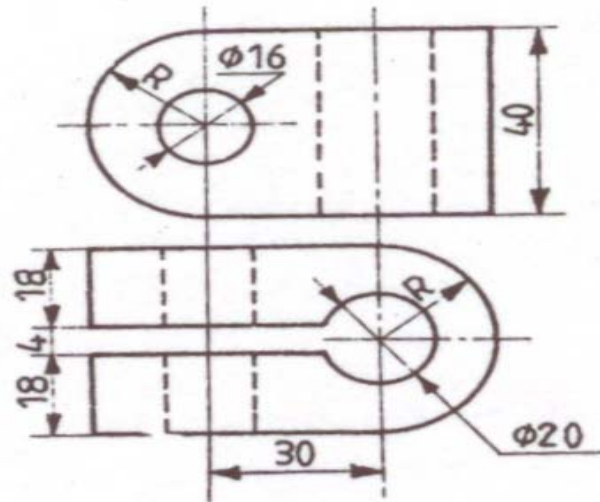
- 1 (a) Draw a hypo-cycloid of a circle of 40 diameters, which rolls inside another circle of 160 diameters, for one revolution counter clockwise.
(b) Draw the involute of a regular hexagon of side 20 mm. Draw a tangent and normal to the curve at a distance of 100 mm from the center of the hexagon.
- 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° to HP and 45° VP. Draw its projections.
- 3 (a) A rectangular lamina of sides 30 mm $\times$ 40 mm is perpendicular to HP and inclined at 30° to VP. Draw its projections.
(b) A square lamina ABCD of side 40 mm is perpendicular to HP and parallel to VP. Draw its projections.
- 4 (a) A cube of 40 mm side rests with one of its square faces on H.P such that one of its vertical faces is perpendicular to V.P. Draw its projections.
(b) A rectangular prism side of base 40 mm $\times$ 25 mm and height 60 mm rests with its base on H.P such that one of its larger rectangular faces is parallel to V.P. Draw its projections.
- 5 (a) A cone of base diameter 50 mm and axis length 75 mm in resting on HP on its base is cut by a plane inclined at 45° to HP and perpendicular to VP and is bisecting the axis. Draw the front view and sectional top view and true shape of this section.
(b) 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 is perpendicular to VP. It is cut by a plane inclined at 40° to VP and perpendicular to HP and passing through a point 25 mm from rear base of the prism. Draw its top view, sectional front view and true shape of section.

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- 6 Two views of a casting are shown below. Draw the isometric view of the casting (dimensions are in mm)



- 7 (a) A horizontal tube of 30 mm diameter is joined with an another vertical tube of 60 mm diameter. Their axis is 15 mm apart. Draw the intersection curves, when the axis of the horizontal tube is parallel to VP.
- (b) A vertical square prism of side of base 50 mm has a face inclined at an angle of 30° to VP. It has circular hole of 65 mm diameter drilled through. The axis of the hole is parallel to both HP and VP and is 5 mm away from the axis of the prism. Draw the projections, showing the lines of intersection.
- 8 A solid is in the form of a square prism of side of base 20 mm up to 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 solids 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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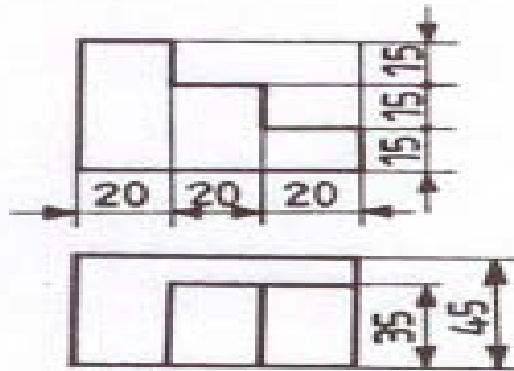
- 1 (a) Draw the involute of an equilateral triangular of side 20 mm.
(b) A tread of length 165 mm is wound round a circle of 40 mm diameter. Trace the path of end point of the tread.
- 2 A line MN is 70 mm long. It's mid -point is 30 mm above HP and 25 mm in front of VP. The line inclined at an angle of 45° to HP and 35° VP. Draw its projections.
- 3 (a) Draw the projections of regular pentagon of 40 mm side, having its surface inclined at 30° to VP and the side on which it rests on VP, makes an angle of 60° with HP.
(b) Draw the orthographic views of a regular hexagonal lamina of 25 mm side, resting on HP on one of its sides with its plane perpendicular to HP and inclined at 45° to VP. Take the nearest corner point 25 mm away from VP.
- 4 (a) A cone of base 60 mm diameter and height 80 mm is resting on a point on the circumference of base on HP with its apex 55 mm above the HP. Draw its projections when its axis is inclined to the VP at 45° .
(b) A pentagonal pyramid, side of base 25 mm and axis 55 mm long, lies with one of its slant edges on H.P such that its axis is parallel to V.P. Draw its projections.
- 5 (a) A hexagonal pyramid side of the base 30 mm and altitude 70 mm rests with its base on HP and with a side of the parallel to VP. It is cut by a cutting plane inclined at 35° to HP and perpendicular to VP and is bisecting the axis. Draw the sectional plan of the pyramid and the true shape of the section.
(b) A cylinder of base diameter 45 mm and height 65 mm rests on its base on HP. It is cut by a plane perpendicular to VP and inclined at 30° to HP and meets the axis at a distance 30 mm from base. Draw the front view, sectional top view, and the true shape of section.

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- 6 Two views of a model are shown below. Draw the isometric projection of the model (dimensions are in mm)



- 7 A right circular cone of base 50 mm and altitude 80 mm standing on HP with its axis vertical is penetrated by a cylinder of diameter 20 mm such that the axes intersect at an angle of 60° at a height of 35 mm from the base and the plane containing the axes is parallel to VP. Draw the curves of intersection.
- 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.
