

Code: 9A03101a

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

ENGINEERING DRAWING

(Common to ECE, E.Con.E & BT)

Time: 3 hours

Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks

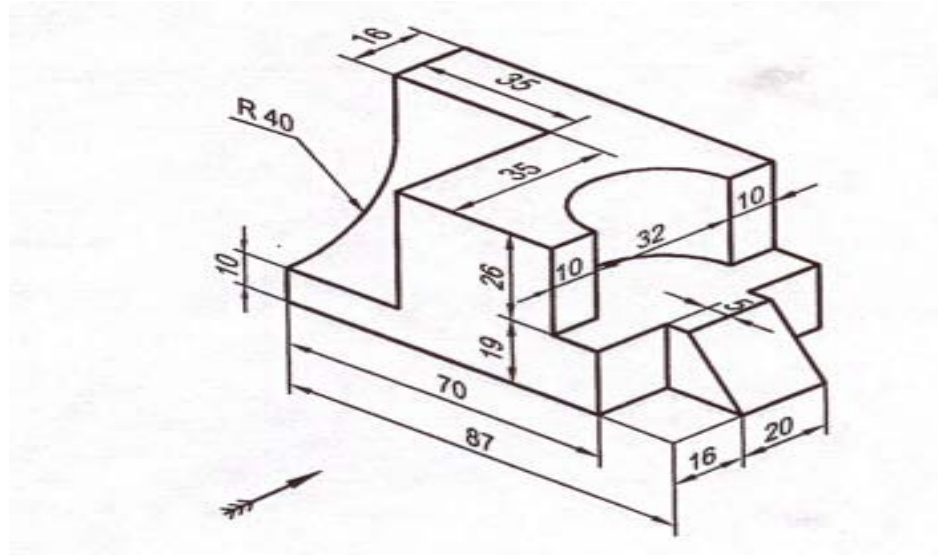
- 1 (a) Inscribe an ellipse in a parallelogram having sides 150 mm and 100 mm long and an included angle of 120° .
(b) A point P is 30 mm and 50 mm respectively from two straight lines which are at right angles to each other. Draw the rectangular hyperbola from p within 10 mm distance from each line.
- 2 (a) The line EF 60 mm long is in VP and inclined HP. The top view measures 45 mm. The end E is 15 mm above HP. Draw the projections of the line. Find its inclination with HP.
(b) A line AB 60 mm long is parallel to HP. The point P is 20 mm above HP and 35 mm in front of VP. The length of the front view is 50 mm. Determine its true inclination with VP.
- 3 (a) A regular hexagonal lamina of 30 mm side rests on H.P with its plane surface vertical and inclined at 45° to VP. Draw its projections of the plane.
(b) A square plate of side 30 mm is perpendicular to V.P and inclined at 30° to H.P Draw its projections.
- 4 (a) A triangular prism, side of base 35 mm and height 50 mm rests with its base on H.P. such that one of its rectangular faces is perpendicular to V.P. Draw its projections. The nearest edge parallel to V.P. is 10 mm in front of it.
(b) A cube of 50 mm long edges is resting on the H.P with its faces equally inclined to the V.P. Draw its projections.
- 5 Draw the development of the lateral surface of the truncated cylinder of diameter 44 mm and height 70 mm, place on HP. A section plane, passing through the geometrical center of the top face of the cylinder, perpendicular to VP and inclined at 45° to HP, cuts off the top portion of the cylinder. A similar sectional plane making 30° to HP in opposite direction cuts the axis at a height of 14 mm from the base.

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- 6 Draw the front view, top view and right side view of the object shown below (dimensions in mm).



- 7 A hexagonal prism, having base with a 40 mm side and a 100 mm long axis, is resting on its base on the H.P. with a side of the base parallel to the V.P. It is penetrated by a square prism having base with a 35 mm side and a 100 mm long axis such that the axes of both the prism intersect each other at right angles. The faces of the square prism is equally inclined to the H.P. Draw the projections of the combination and show the lines of intersection.
- 8 Draw a perspective view of a pyramid having base with a 40 mm side and a 60 mm long axis, resting on its base in the GP with its axis at a distance of 40 mm behind the PP and all the edges of the base equally inclined to it. The station point is 50 mm in front of PP, 75 mm above GP and lies in a CP which is 50 mm towards right of the axis.

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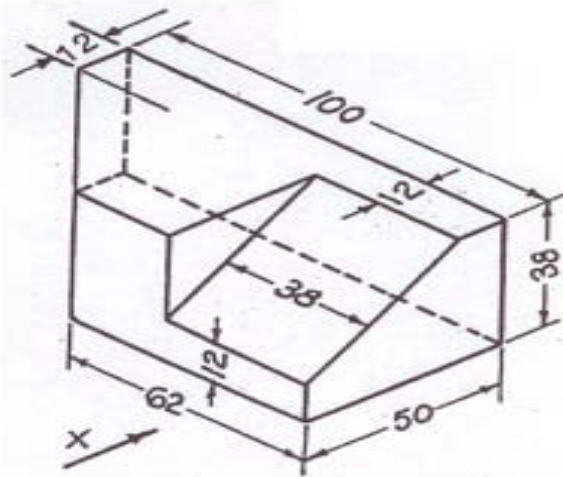
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- 1 (a) Construct a regular pentagon of its sides 35 mm by inscribe circle method.
(b) A flowerbed in a botanical garden is elliptical in shape. Major and minor axes are 9 m and 5.5 m respectively. Draw the profile of the flowerbed to a scale of 1:100.
- 2 (a) The length of the top view of a line MN parallel to VP and inclined at 45° to the HP is 50 mm. Point M is 12 mm above HP and 25 mm in front of VP. Draw the projection of the line. Find the true length.
(b) A line GH 45 mm long is in HP and inclined to VP. The end G is 15 mm in front of VP. The length of the front view is 35 mm. Draw the projections of the line. Determine its inclination with VP.
- 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° to H.P. Draw its projections.
- 4 (a) A square pyramid side of base 30 mm and height 65 mm rests with one of the edges of its base on H.P such that its base makes 30° to H.P. Draw its projections.
(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 pentagonal pyramid side of base 36 mm and height 64 mm rests on its base on HP with one of its base sides parallel to VP. A section plane perpendicular to VP and inclined at 30° to HP cuts the pyramid, bisecting its axis. Draw the development of the truncated pyramid.

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- 6 Draw the elevation, plan and right side views of the part shown in the picture below (dimensions in mm).



- 7 A cylinder with a 70 mm base diameter is resting on its base on the H.P. It is penetrated by another cylinder with a 50 mm base diameter, the axis of which is parallel to both the principal planes. The two axes are 10 mm apart. Draw the projections of the combination and show the curves of intersection.
- 8 A pentagonal prism having base with a 40 mm and a 60 mm long axis lies on its base in the GP with a face parallel to and 15 mm behind the PP. The station point lies in a CP which is 50 mm towards right of the axis, 65 mm in front of PP and 80 mm above GP. Draw its perspective view.

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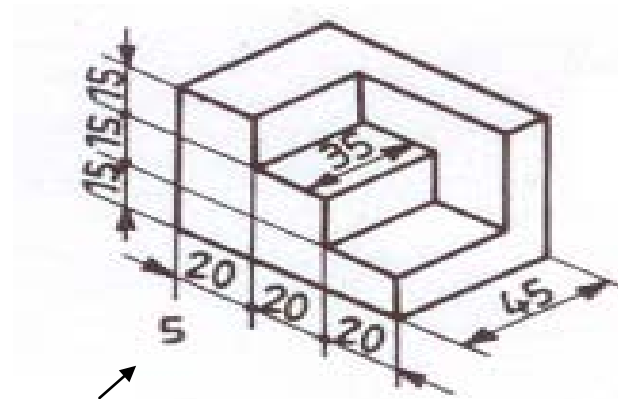
- 1 (a) To inscribe a regular octagon in a given square of 50 mm side.
(b) Construct a parabola with base 60 and length of the axis 40. Draw a tangent to the curve at point 20 from the base. Also locate the focus and directrix to the parabola.
- 2 (a) A line CD is parallel to VP and inclined at 40° to HP. C is in HP and 25 mm in front of VP. The length of the top view is 50 mm. Determine its true length.
(b) A line measuring 80 mm long has one of its ends 60 mm above HP and 20 mm 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 rectangular lamina of sides 40×60 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° . 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° to V.P and its surface making an angle of 60° to H.P.
- 4 (a) Draw the projections of a cone, base 75 mm diameter and axis 100 mm long, lying on one of its generators with parallel to the V.P.
(b) A tetrahedron of 5 cm long edges is resting on the H.P. on one of its faces, with an edge of that face parallel to the V.P. Draw its projections and measure the distance of its apex from the ground.
- 5 The distance between the opposite parallel faces of a 50 mm thick hexagonal block is 75 mm. The block has one of its rectangular faces parallel to the H.P and its axis makes an angle of 30° with the V.P. It is cut by a section plane making an angle of 30° with the H.P. normal to the V.P. and bisecting the axis. Draw its sectional top view and another top view on a plane parallel to the section.

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- 6 Draw the elevation, plan and left and right views of the bracket shown in the picture below (dimensions in mm).



- 7 A vertical square prism of side of base 60 mm is penetrated by a horizontal triangular prism of 40 mm side. The axes are 5 mm apart. One rectangular face of the vertical prism is inclined at an angle of 60° to VP, while that of the horizontal prism is parallel to VP. Draw the projections showing the lines of intersection.
- 8 A pentagonal pyramid having a base with a 40 mm side and a 60 mm height rests on the GP with an edge of the base parallel to and 10 mm behind the PP. The station point is 75 mm above the GP and 60 mm in front of the PP and lies in a CP which is 40 mm towards the right of the axis of the pyramid. Draw its perspective projection.

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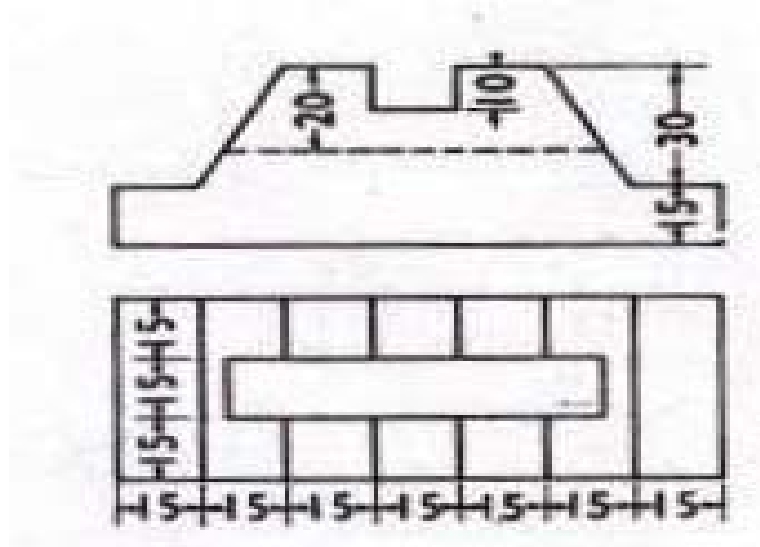
- 1 (a) Draw a hypo cycloid of a circle of 50 mm diameter, which rolls inside another circle of 180 mm diameter for one revolution counter clockwise.
(b) Draw the involute of a square of side 25 mm.
- 2 (a) A line AB 65 mm long has its end A in the H.P. and 15 mm in front of the V.P. The end B is in the third quadrant. The line is inclined at 30° to the H.P and at 60° 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° to HP and 45° to VP. Draw projections of the line.
- 3 (a) A square ABCD of 50 mm side has its corner A in the H.P, its diagonal AC inclined at 30° to the H.P and the diagonal BD inclined at 45° to the H.P. Draw its projections.
(b) Draw the projections of a circle of 5 cm diameter, having its plane vertical and inclined at 30° to V.P. Its center is 3 cm above the H.P and 2 cm in front of the V.P.
- 4 (a) Draw the projections of a cylinder 75 mm diameter and 100 mm long, lying on the ground with its axis inclined at 30° to the V.P and parallel to the ground.
(b) A triangular prism base 40 mm side and height 65 mm is resting on the H.P on one of its rectangular faces with the axis parallel to the V.P. Draw its projections.
- 5 A pentagonal pyramid, edge of base 25 mm long and height 50 mm is resting on the H.P on a corner of its base in such a way that the slant edge containing that corner makes an angle of 60° with the H.P and is parallel to the V.P it is cut by a section plane making an angle of 30° with the V.P perpendicular to the H.P and passing through a point on the axis at a distance of 6 mm from its base. Draw its sectional front view and true shape of the 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 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° . All the faces of both the pipes are equally inclined to V.P. Draw the projections showing the lines of intersection.
- 8 A square prism having base with a 40 mm side and 60 mm long axis is resting on its rectangular face on the GP with axis inclined at 45° to PP. A side of base nearer to the PP is 20 mm behind it and 20 mm to the left of the station point. The station point is 80 mm in front of PP and 70 mm above GP. Draw its perspective view.
