Code: 9A03101c

1

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

ENGINEERING DRAWING

(Common to AE, EEE & ECM)

Time: 3 hours Max. Marks: 70

Answer any FIVE questions
All questions carry equal marks
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1 (a) A parallelogram has sides 100 and 80 mm at an included angle of 70^0. Inscribe an ellipse in the parallelogram. Find the major and minor axis of the curve.
(b) Draw an ellipse by concentric circles method and find the length of the minor axis with the help of the following data:
(i) Major axis = 100 mm. (ii) Distance between foci 80 mm.

2 (a) A line CD measures 80 mm is inclined at an angle of 30^0 to HP and 45^0 to VP. The point C is 20 mm above HP and 30 mm 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) An equilateral triangular lamina of side 30 mm is perpendicular to H.P and parallel to V.P One of its edges 15 mm above H.P and 25 mm in front of V.P. Draw its projections.
(b) A rectangular plate of negligible thickness and having 40 X 60 mm dimensions is perpendicular to both planes. It is longer side is perpendicular to V.P and in H.P and 20 mm in front of V.P. Draw its projections.

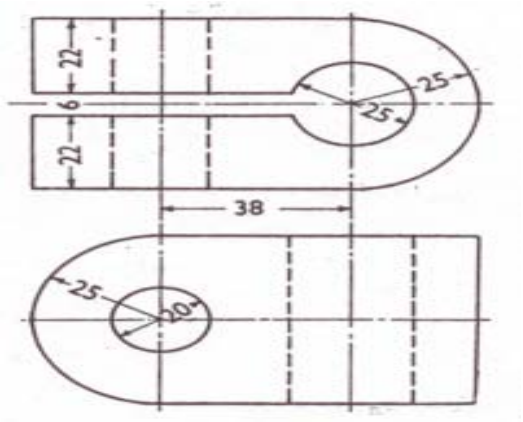
4 (a) Draw the projections of a hexagonal prism side of base 25 mm and height 60 mm resting with its base on H.P such that one of its rectangular faces is parallel to V.P.
(b) A pentagonal pyramid of base 25 mm side and axis 60 mm long is resting on H.P on a base corner with edge of base containing that corner making 30^0 angle with H.P. Draw the projection of pyramid when its axis perpendicular to V.P and base is 15 mm from V.P.

5 (a) A square pyramid of base side 35 mm and axis length 60 mm is resulting on HP on one of its triangular faces with its axis parallel to VP. It is cut by a plane inclined at 45^0 to VP and perpendicular to HP and is bisecting the top view of the axis. Draw its top view, sectional front view and true shape of section.
(b) A hexagonal prism of base side 25 mm and axis length 60 mm is resting on HP on one of its base sides, with its axis inclined at 50^0 to HP and parallel to VP. It is cut by a plane inclined 65^0 to HP and perpendicular to VP and is passing through the top most edges e prism. Draw the front view, sectional top view and true shape of section.

Contd. in Page 2

Code: 9A03101c

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



7 A cylindrical pipe of 36 mm diameter has a similar branch of the same size. The axis of the branch intersects the axis of the main pipe at an angle of 60^0. Draw the projections, when the two axes lie in a plane parallel to the VP and the axis of the main pipe is vertical. Also, develop the surfaces of the two pipes assuming suitable lengths.

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 the 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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2

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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 mm 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 mm from the directrix.

2 (a) Draw the projections of a line LM 40 mm long, parallel to HP and inclined at 35^0 to VP. The end L is 20 mm above HP and 15 mm in front of VP. Find its traces.
(b) One end R of a straight line RS is 35 mm above HP and 25 mm in front of VP. The other end S is 20 mm below HP and 55 mm behind VP. The distance between the projectors is 50 mm. Determine the true length, inclinations of the line RS and its traces.
(c) A line AB 40 mm long is parallel to VP and inclined at 35^0 to HP. The end A is 15 mm above HP and 20 mm in front of VP. Draw the projections of the line and find its traces.

3 (a) Draw the projections of a pentagonal plane figure of side 28 mm resting with one of its edges on HP. Such that the plane figure is inclined at 30^0 to VP perpendicular to HP.
(b) A thin square plate ABCD of side 40 mm is perpendicular to both HP and VP. Draw its projections.

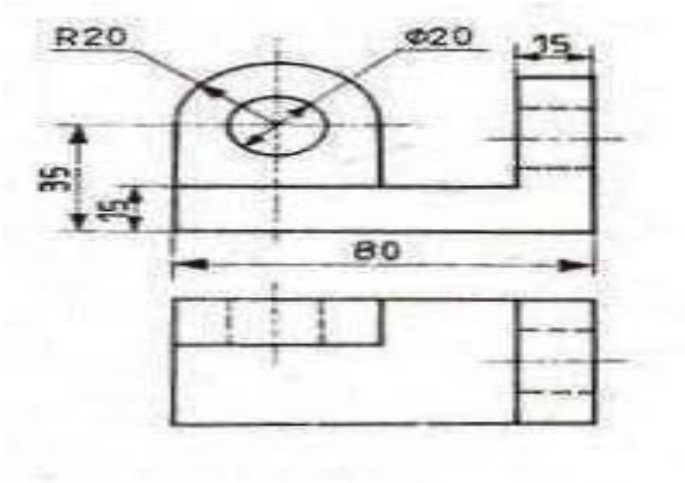
4 (a) Draw the projection of cylinder of base diameter 50 mm and axis 65 mm long axis perpendicular to the V.P and 40 mm above H.P, one end is 20 mm in front of V.P.
(b) A pentagonal pyramid of base 25 mm side and axis 65 mm long is resting on an edge of base. Draw the projections of pyramid when axis is perpendicular to V.P base is at 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, 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.

Contd. in Page 2

Code: 9A03101c

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



7 A vertical square prism, base 50 mm side, has a face inclined at 30^0 to the VP. It has a hole of 65 mm diameter drilled through it. The center line of the hole is parallel to both the HP and the VP and is 5 mm away from the axis of the prism. Draw the projections of the prism and show the curves of intersection.

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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3

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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 PQ, 9 cm long is in the H.P and makes an angle of 30 degrees with the V.P. Its end P is 2.5 cm in front of the V.P. Draw its Projections.
(b) A 100 mm long line is parallel to and 40 mm above the H.P. Its two ends are 25 mm and 50 mm in front of the V.P respectively. Draw the projections of the line and determine its inclination with the V.P.

3 (a) A square lamina of 40 mm side is perpendicular to H.P. One of its sides is 20 mm above H.P and 15 mm in front of V.P. Draw its projections.
(b) A square lamina of 40 mm is perpendicular to both planes. Draw projections with lamina is 25 mm above H.P and 40 mm in front of V.P.
(c) An equilateral triangle lamina of side 60 mm is perpendicular to H.P and inclined to V.P at an angle of 30^0. Draw its projections.

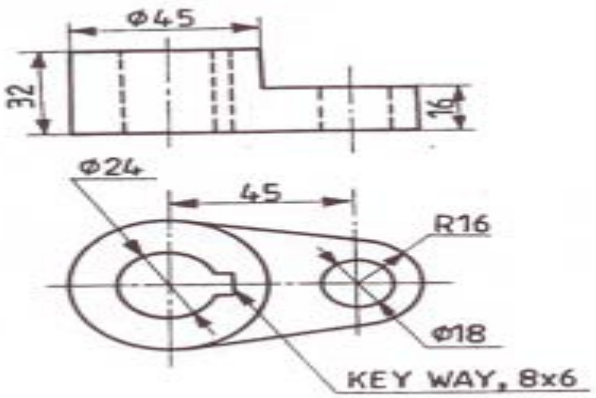
4 (a) Draw the projections of hexagonal pyramid with side of base 30 mm and axis 70 mm long resting with slant face on H.P such that axis parallel to V.P.
(b) Draw the projections of a right circular cone of base 40 mm diameter and height 60 mm when resting with its base on H.P.

5 (a) 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.

Contd. in Page 2

Code: 9A03101c

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



7 A vertical cylinder of 60 mm diameter is penetrated by a square prism of 35 mm side. The axis of the prism is inclined at an angle of 30^0 to the ground, but parallel to the VP. The faces of the prism are equally inclined to the VP and the axis of the prism is 10 mm in front of the axis of the cylinder. Draw the projections of the solids showing the curves of interpenetration.

8 A hexagonal prism having 30 mm base side and 70 mm long axis is resting on its face in the GP with the axis inclined at 30^0 to the PP. The station point is 90 mm in front of PP, 100 mm above the GP and lies in the CP which is 70 mm rightwards to the corner nearer to the PP. Draw a perspective view when the corner nearer the observer touches the PP.

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4

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1 (a) A circle of diameter 40 mm rolls inside another circle of radius 60 mm. Draw the hypo cycloid traced by a point on the rolling circle initially in contact with the directing circle for one revolution.
(b) A circle of 50 mm diameter rolls along a line for one revolution clock-wise. Draw the locus of the point on the circle, which is in contact with the line.

2 (a) A line AB 75 mm long is inclined at 45^0 to the H.P and 30^0 to the V.P. Its end B is in the H.P and 40 mm in front of the V.P. Draw the projections.
(b) A line AB is 30 mm long and inclined at 30^0 to VP and parallel to HP. The end A of the line is 15 mm above HP and 20 mm in front of VP. Draw the projections.

3 (a) An isosceles triangle ABC of base 60 mm and altitude 75 mm has its base AC in HP and inclined at 30^0 to VP. The corners A and B are in VP. Draw its projections.
(b) Draw the projections of a regular pentagon of 25 sides, with its surface making an angle of 45^0 with H.P. One of the sides of the pentagon is parallel to H.P and 15 away from it.

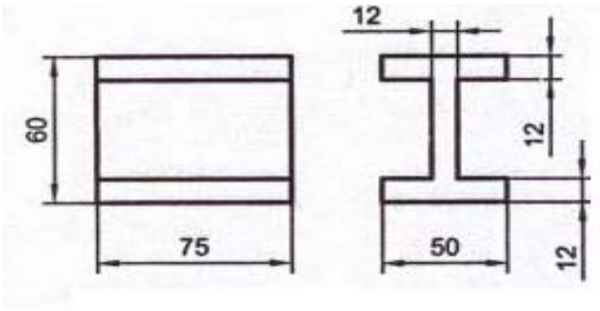
4 (a) A hexagonal prism base 30 mm side and axis 75 mm long, has an edge of the base parallel to the H.P. and inclined at 45^0 to the V.P. Its axis makes an angle of 60^0 with the H.P. Draw its projections.
(b) A triangular prism side of base 35 mm and height 60 mm lies with one of its longer edges on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

5 (a) A 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.

Contd. in Page 2

Code: 9A03101c

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



7 A pentagonal prism, having base with a 45 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 bisect each other at right angles. The faces of the square prim are equally inclined to the H.P. Draw the projections of the combination and show the lines of intersection.

8 A cylinder with a 40 mm base diameter and 50 mm long axis rests on the GP with its axis parallel to and 30 mm behind the PP. The station point is 80 mm above the ground and at a distance of 50 mm in front of the PP and lies in the CP which passes through the axis of the cylinder. Draw its perspective projection.

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