R16

Code No: 131AF

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech I Year I Semester Examinations, December - 2016
ENGINEERING GRAPHICS
(Common to ME, MCT, MMT, MSNT)

Time: 3 hours **Max Marks: 75**

Answer any five questions
All questions carry equal marks

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1.a) A room of 1728 m^3 volume is shown by a cube of 4 cm side. Find the R.F. and construct a scale to measure up to 50 m. Also indicate a distance of 37.6 m on the scale.

b) Construct two branches of a hyperbola when its transverse axis is 50 mm long and foci are 70 mm apart. Locate its directrix and determine the eccentricity. [7+8]

OR

2. Draw the curve traced out by an end of the thin wire unwound from a regular hexagon of side 15mm. The wire being kept tight. Draw a tangent and a normal at a point 80 mm from the center of the hexagon. [15]

3. The distance between the end projectors of a line PQ is 65 mm, whereas the parallel distance between its traces is 95 mm. The H.T. of the line is 40 mm in front of the V.P. and the V.T is 60 mm above the H.P. Draw the projections of the line and determine its true length and inclinations with the reference plane if the end point P lies 10 mm above the H.P. [15]

OR

4. A rectangular plane with 50 mm and 30 mm sides is perpendicular to both H.P. and V.P. The longer edges are parallel to the H.P. and the nearest one is 20 mm above it. The shortest edge nearer to the V.P. is 15 mm from it. Draw its projections. [15]

5. A cylinder, 40 mm in diameter and 70 mm in length is resting on a point on the rim of its base with the generator passing through that point, inclined at 30^0 to the V.P. and 45^0 to the H.P. Draw its projections. [15]

OR

6. A pentagonal pyramid, base 25 mm side and axis 50 mm long has one of its triangular faces in the VP and the edge of the base contained by that face makes an angle of 30^0 with the HP. Draw its projections. [15]

7. A cube with 40 mm long edges is resting on one of its faces in the H.P., such that a vertical face makes an angle of 30^0 with the V.P. It is cut by an A.I.P. inclined at 30^0 to the H.P. and passing through a point on the axis 30 mm above the H.P. Draw its sectional front view, sectional top view, true shape of section and auxiliary top view on a plane parallel to the section plane. [15]

OR

8. A Hexagonal prism edge of base 20 mm and axis 50 mm long rest with its base on HP such that one of its rectangular faces is parallel to VP. It is cut by a plane perpendicular to VP inclined at 45^0 to HP and passing through the right corner of the top face of the prism. Draw the sectional top view and develop the lateral surface of the truncated prism. [15]

9. Draw the following orthographic views of the object shown in figure 1 (All dimensions are in mm).
a) Front view b) top view c) Right side view. [15]

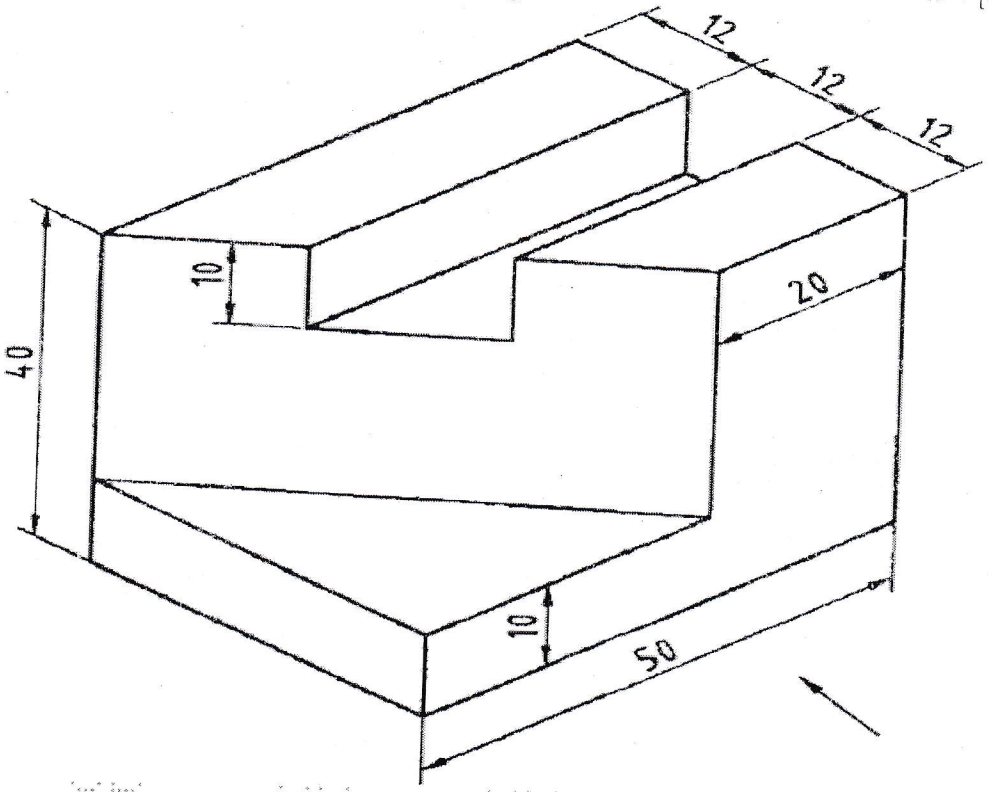

Figure: 1

OR

10. Draw the isometric view from the given orthographic views shown in figure 2 (all dimensions are in mm). [15]

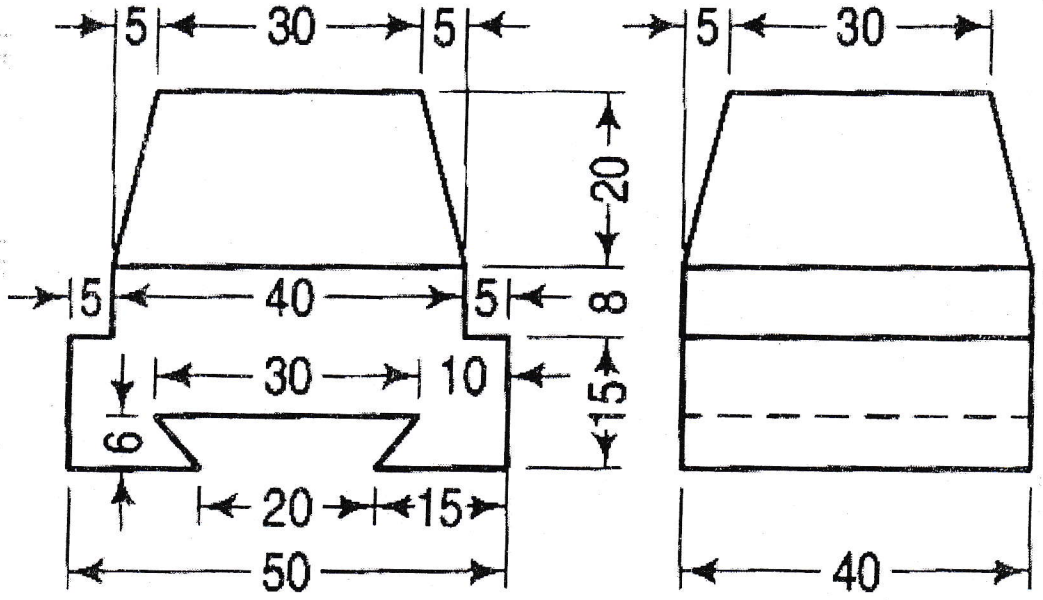

Figure: 2

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1.a) Draw a parabola passing through three vertices of a triangle of sides 30 mm, 45 mm, and 60 mm. The corner of the triangle common to the 45 mm and 60 mm sides lies on the axis of the parabola.

b) Construct a diagonal scale of 1 cm = 2.5 km, and mark on it a length of 26.7 km. [7+8]

OR

2.a) Construct a cycloid having a rolling circle diameter of 50 mm for one revolution. Draw a normal and tangent to the curve at a point 35 mm above the directing line.

b) Draw the involute of a square of 30 mm sides. Draw a normal and tangent to it from any point on the curve. [7+8]

3. The front view of a line AB is inclined at 30^0 to the X – Y line, and measures 60 mm. The line is inclined at 45^0 to VP. The end B is in HP and VT of the line is 20 mm below HP. Draw the projections of the line, and find its true length and inclinations with HP and VP. [15]

OR

4. Draw the projections of a circle of 50 mm diameter when its plane is equally inclined to the HP and VP. One end of a diameter of the circle touches the HP while the other end touches the VP. [15]

5. A pentagonal prism is resting on one of its corners of its base on the HP. The longer edge containing that corner is inclined at 30^0 to HP, and the vertical plane containing that edge is inclined at 45^0 to VP. Draw the projections of the solid. [15]

OR

6. Draw the projections of a cone of 40 mm base diameter and height 60 mm when the base is perpendicular to the HP and the axis is inclined at 30^0 to VP. Use the auxiliary projection method. [15]

7. A square pyramid of 50 mm side of base and axis 75 mm long is resting on the ground with its axis vertical and the sides of base equally inclined to the VP. It is cut by a section plane perpendicular to VP and inclined at 45^0 to HP, and bisecting the axis. Draw its sectional top view and the true shape of the section. [15]

OR

8. Draw the development of the lateral surface of the part **P** of the hexagonal pyramid, side of base 2 cm and height 4 cm, shown in figure 1. It is resting on its base in HP with two sides of the base parallel to the VP. [15]

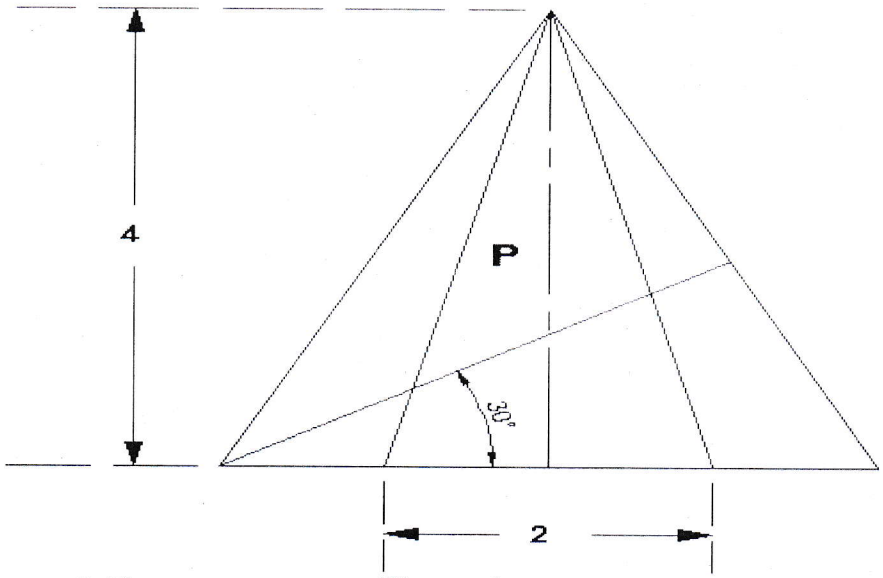

Figure: 1

9. A sphere of radius 50 mm is kept centrally over a frustum of a square pyramid of side 120 mm at the bottom, 80 mm at the top, and having a height of 100 mm. Draw the isometric projection of the combined solid. [15]

OR

10. Draw the following views of the block shown in figure 2. All dimensions are in mm. a) Front view b) Top view c) Side view (looking from right side of viewing direction **X**). [15]

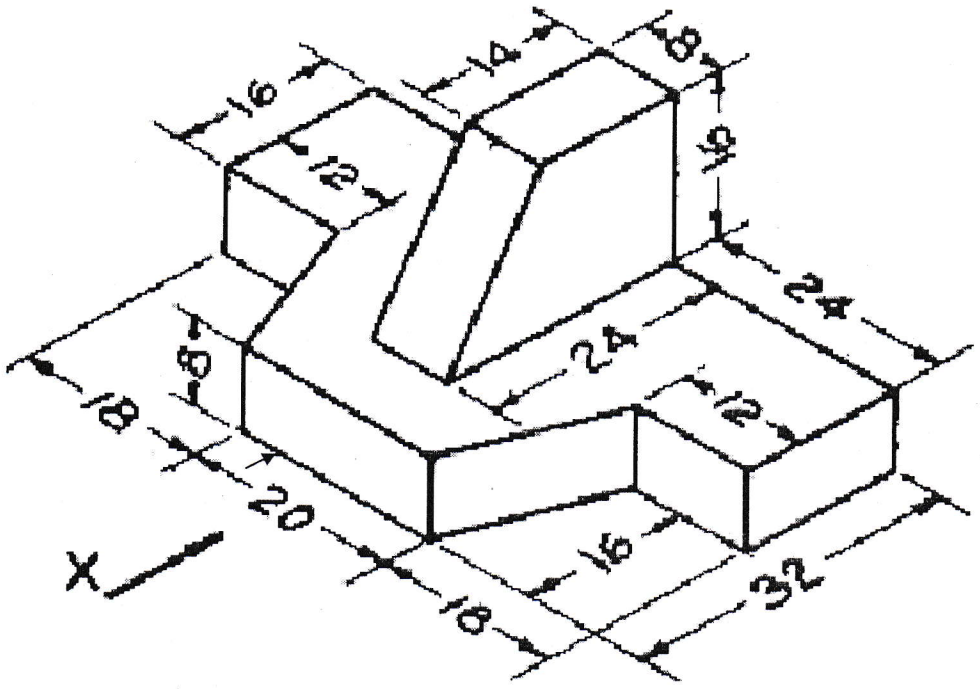

Figure: 2

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