

**I B.Tech Supplementary Examinations, Nov/Dec 2005**

**ENGINEERING GRAPHICS**

**( Common to Civil Engineering, Mechanical Engineering, Mechatronics,  
Metallurgy & Material Technology and Production Engineering)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions**

**All Questions carry equal marks**

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1. Draw a Plain scale of 1cm= 5 metres and show on it 3.6 metres. [16M]
2. Draw a rectangle having its sides 150 mm and 75 mm long. Inscribe two parabolas in it with their axis bisecting each other. [16M]
3. The top view of a 75mm long line AB measures 65mm, while length of its front view is 50mm. Its one end A is in the H.P. and 12mm in front of the V.P. Draw the projections of AB and determine its inclinations with the H.P. and the V.P. [16M]
4. A square prism, side of base 30mm and axis 50mm long, has its axis inclined at  $60^0$  to HP. It has an edge of its base in the HP and inclined at  $45^0$  to VP. Draw its projections. [16M]
5. A vertical cylinder of 50 mm diameter is penetrated by a horizontal cylinder of same size with their axes intersecting. Draw the curves of intersections if the axis of the horizontal cylinder is inclined at  $45^0$  to VP [16]
6. The outside dimensions of a box made of 5 mm thick wooden planks are 80 x 60 x 50 mm. The depth of the lid on outside is 10 mm. Draw the isometric view of the box with the lid open. [16]
7. Draw the elevation, plan and side view of the picture shown in the figure1 below . [16M]

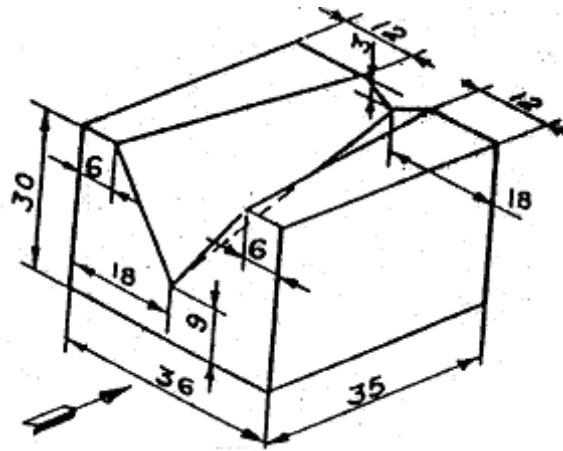


Figure 1:

8. Draw the perspective view of a cube of 25 mm edge resting on ground plane on one of its faces. It has one of its vertical edges in the PP and all vertical faces are equally inclined to the picture plane. The station point is 55 mm in front of the picture plane, 40 mm above the ground plane and is contained by a central plane 9 mm to the left of the center of the cube. [16M]

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1. Construct a scale of 1:4 to show centimeters and long enough to measure up to 6 decimeters and show on it a length of 4.5 decimeters. [16M]
2. A circle of 60 mm diameter rolls on a horizontal line for half a revolution clock - wise and then on a line inclined at 60 degrees to the horizontal for another half, clock - wise. Draw the curve traced by a point P on the circumference the circle, taking the top most point on the rolling circle as generating point in the initial position. [16M]
3. A regular hexagon of 40 mm side has a corner in the H.P. Its surface is inclined at 45 degrees to the H.P. and the diagonal through the corner which is in the H.P. makes an angle of 30 degrees with the V.P. Draw its projections. [16M]
4. A square prism, base 40 mm side and height 65 mm, has its axis inclined at 45 degrees to the H.P. and has an edge of its base, on the H.P. and inclined at 30 degrees to the V.P. Draw its projections. [16M]
5. A solid is in the form of a square prism of side of base 30 mm up to a height of 50 mm and thereafter tapers into frustum of a square pyramid whose top surface is a square of 15 mm side. The total height of the solid is 70 mm. Draw the development of the lateral surface of the solid. [16]
6. Draw the isometric projection of a Frustum of hexagonal pyramid, side of base 30 mm the side of top face 15mm of height 50 mm. [16]
7. Convert the isometric view of the picture shown in the figure1 below in to orthogonal projection of all three views. [16M]

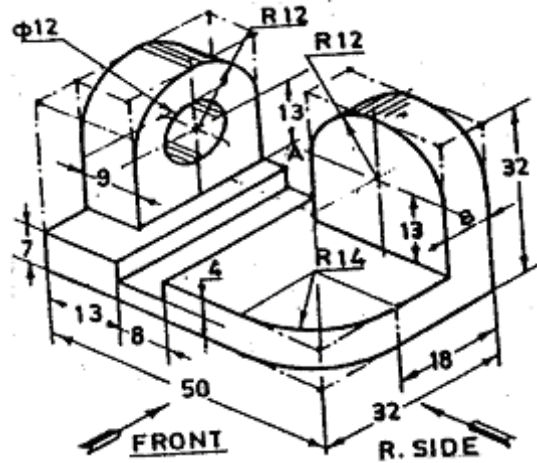


Figure 1:

8. Draw perspective view of a straight line CD, 36 mm long, lying on the ground plane, with end C in the picture plane, and inclined at  $30^\circ$  to the PP. The station point is 48 mm in front of the picture plane, 36 mm above the ground plane, and lies in a plane 12mm to the right of the end C. [16M]

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1. Construct a diagonal scale of R.F = 1:2000 to show meters, decimeters and centimeters and long enough to measure 300 m. Mark a distance of 257.75 metres.  
[16M]
2. Draw an inferior epitrochoid of base circle 150 mm diameter and rolling circle 50 mm diameter. The tracing point P is 20 mm from the center of the rolling circle.  
[16M]
3. Draw the projections of a regular hexagon of 25 mm side, having one of its sides in the H.P. and inclined at 60 degrees to the V.P. and its surface making an angle of 45 degrees with the H.P.  
[16M]
4. A square prism, side of base 30mm and axis 50mm long, has its axis inclined at  $60^0$  to HP. It has an edge of its base in the HP and inclined at  $45^0$  to VP. Draw its projections.  
[16M]
5. A vertical cylinder of 50 mm diameter and 75 mm long is penetrated by a horizontal cylinder of 40 mm diameter and 75 mm long such that their axes bisect each other at right angles. Draw the intersection curve.  
[16]
6. Draw the isometric projection of a square prism side of base 60 mm height 50 mm surmounted by a square pyramid whose base coincides with the top of the prism and whose height is 60 mm.  
[16]
7. For the given orthographic projections, Draw the isometric view. shown in the figure1 below  
[16M]

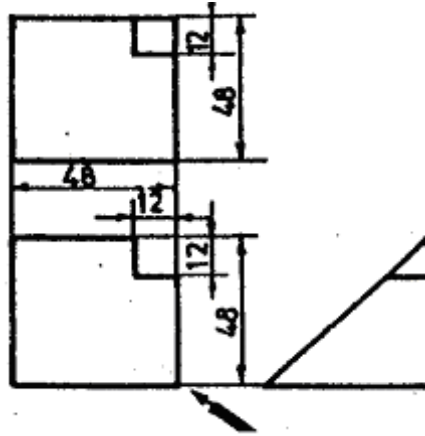


Figure 1:

8. A rectangular lamina of sides  $50 \text{ mm} \times 25 \text{ mm}$  stands vertically with one of its longer edges on the ground and inclined at  $45^\circ$  to PP. The vertical edge nearest to PP is 20 mm behind it. The station point is 30 mm in front of the PP, 45 mm above the ground and lies in a central plane, which passes through the center of the lamina. Draw the perspective view. [16M]

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1. Construct a diagonal scale to read kilometers, hectameters and decameters and long enough to measure up to 6 kilometers, When a line of length 1cm on the map represents a distance of 0.5 kilometers. Calculate the R.F and indicate a distance of 2.45 kilometers on the scale. [16M]
2. A circle of 45 mm diameter rolls inside another circle of 180mm diameter for one revolution. Draw the locus of a point, which is at a distance of 20 mm from the center of the rolling circle . [16M]
3. Draw the projections of a circle of 50 mm diameter resting in the H.P. on a point A on the circumference, its plane inclined at 45 degrees to the H.P. and the diameter AB making 30 degrees angle with the V.P. [16M]
4. A square prism, side of base 30mm and axis 50mm long, has its axis inclined at  $60^0$  to HP. It has an edge of its base in the HP and inclined at  $45^0$  to VP. Draw its projections. [16M]
5. A solid is in the form of a square prism of side of base 30 mm up to a height of 50 mm and thereafter tapers into frustum of a square pyramid whose top surface is a square of 15 mm side. The total height of the solid is 70 mm. Draw the development of the lateral surface of the solid. [16]
6. Draw the isometric view of a cone 40 mm diameter and axis 55 mm long when its axis is horizontal. Draw isometric scale. [16]
7. Convert the isometric view of the picture shown in the figure1 below in to orthogonal projection of all three views. [16M]

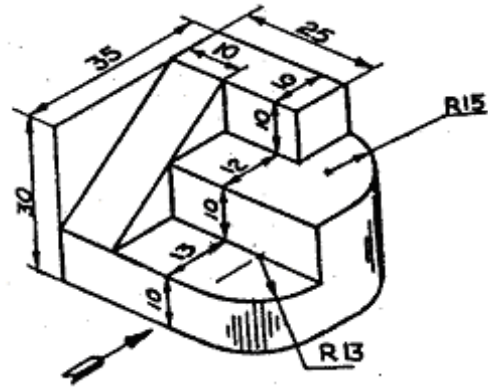


Figure 1:

8. A straight line CD, 45 mm long is parallel to and 12 mm above the ground. It is inclined at  $30^\circ$  to the picture plane and its end C 25 mm behind the picture plane. The station point is 60 mm in front of the picture plane, 48 mm above the ground plane, and is contained by a central plane passing through the mid point of the given line CD. Draw its perspective view. [16M]

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