

Code No: R05010107

Set No. 1**I B.Tech Supplementary Examinations, February 2008****ENGINEERING GRAPHICS****(Common to Civil Engineering, Mechanical Engineering, Mechatronics, Metallurgy & Material Technology, Production Engineering, Aeronautical Engineering and Automobile Engineering)****Time: 3 hours****Max Marks: 80****Answer any FIVE Questions
All Questions carry equal marks**

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. Construct a hypocycloid, rolling circle 60 mm diameter and directing circle 180 mm diameter. Draw a tangent to it at a point 60 mm from the center of the directing circle. [16M]
3. A plate having shape of an isosceles triangle has base 50 mm and altitude 70 mm. It is so placed that in front view it is seen an equilateral triangle of 50 mm sides and one side inclined at 45 degrees to xy. Draw its top view. [16M]
4. (a) A pentagonal prism, side of base 30mm and axis 60mm lies with one of its rectangular faces on HP and its axis is parallel to both HP and VP. A section plane perpendicular to HP and inclined at 30° to VP bisects the axis. Draw the sectional front view and true shape of the section. 10 marks.
(b) A hexagonal prism side of base 30mm and axis 60mm long, rests with its base on HP such that one of its rectangular faces is parallel to VP. A section plane perpendicular to HP and parallel to VP cuts the prism at distance of 10mm from its axis. Draw its top and sectional front views. [16M]
5. A hexagonal prism of side of base 30 mm and axis 65 mm stands on one of its ends in HP with two of rectangular faces parallel to V.P. A circular hole of diameter 40 mm is drilled completely through the prism such that the axis of the hole is perpendicular to V.P and bisects the axis of the prism. Draw the development of the lateral surface of the prism showing the shape of the holes formed on it. [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 figure 7 in to orthogonal projection of all three views. [16]

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Set No. 1

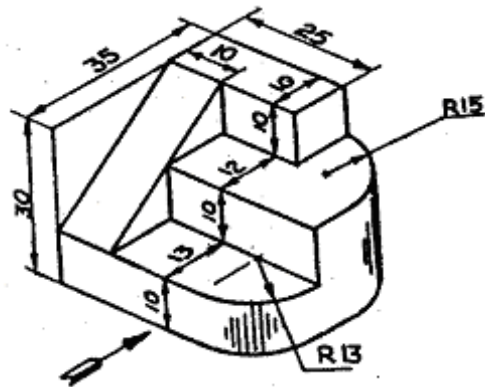


Figure 7

8. A triangular prism whose base is an isosceles triangle of sides $40 \text{ mm} \times 30 \text{ mm} \times 30 \text{ mm}$ and axis 50 mm long rests with its base on the ground plane such that one of its vertical edge is 10 mm in front of the PP. One of the rectangular faces containing that edge is inclined at 45° to PP and in front of it. The station point is 80 mm in front of PP, 60 mm above the ground plane and lies in a central plane, which is at 10 mm to the left of the center of the prism. Draw the perspective view.

[16]

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1. (a) Draw a Plain scale of 1cm= 5 metres and show on it 3.6 metres.
(b) 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. [8+8]
2. The foci of an ellipse are 100 mm apart and the minor axis is 70 mm long. Determine the length of the minor axis and draw half the ellipse by concentric circles method and the other half by Oblong method. Draw a curve parallel to the ellipse and 25 mm away from it. [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 cone of base 55mm diameter and axis 65mm long, rests with its base on HP. A section plane perpendicular to both HP and VP cuts the cone at a distance of 8mm from its axis. Draw its top view, front view and sectional side view. [16M]
5. A hexagonal prism of side of base 30 mm and axis 65 mm stands on one of its ends in HP with two of rectangular faces parallel to V.P. A circular hole of diameter 40 mm is drilled completely through the prism such that the axis of the hole is perpendicular to V.P and bisects the axis of the prism. Draw the development of the lateral surface of the prism showing the shape of the holes formed on it. [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. Draw the elevation, plan and side view of the picture shown in the figure 7. [16]

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Set No. 2

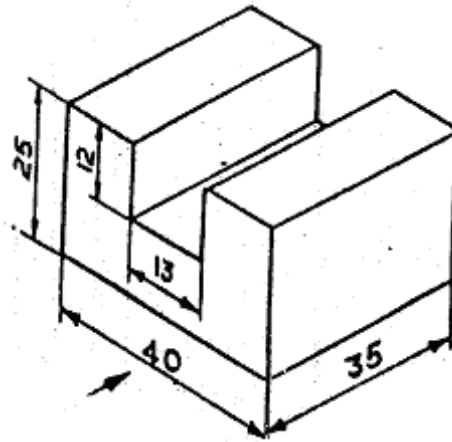


Figure 7

8. A cylinder of 50 mm diameter and height 60 mm rests with its base on the ground plane such that the axis is 30 mm behind the PP. A cone of base 50 mm diameter and axis is 25 mm long is placed centrally on the top of the cylinder. The station point is 25 mm in front of the PP, 100 mm above the GP and lies in a central plane, which is 65 mm to the right of the axes of the solids. Draw the perspective view of the arrangement. [16]

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1. Construct a vernier scale to read distances correct to a decimeter on a map in which the actual distances are reduced in the ratio of 1:40000. The scale should be long enough to measure 6 kilometers. Mark on the scale the lengths of 3.34 km and 0.57 km. [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 plate having shape of an isosceles triangle has base 50 mm and altitude 70 mm. It is so placed that in front view it is seen an equilateral triangle of 50 mm sides and one side inclined at 45 degrees to xy. Draw its top view. [16M]
4. A hexagonal prism, has a face on the H.P. and the axis parallel to the V.P. It is cut by a vertical section plane, the H.T. of which makes an angle of 45 degrees with xy and cuts the axis at a point 20 mm from one of its ends. Draw its sectional front view and true shape of the section. Side of the base 25 mm long ; height 65mm long. [16M]
5. A hexagonal prism of side of base 30 mm and axis 65 mm stands on one of its ends in HP with two of rectangular faces parallel to V.P. A circular hole of diameter 40 mm is drilled completely through the prism such that the axis of the hole is perpendicular to V.P and bisects the axis of the prism. Draw the development of the lateral surface of the prism showing the shape of the holes formed on it. [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. Draw the elevation, plan and side view of the picture shown in the figure ???. [16]

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Set No. 3

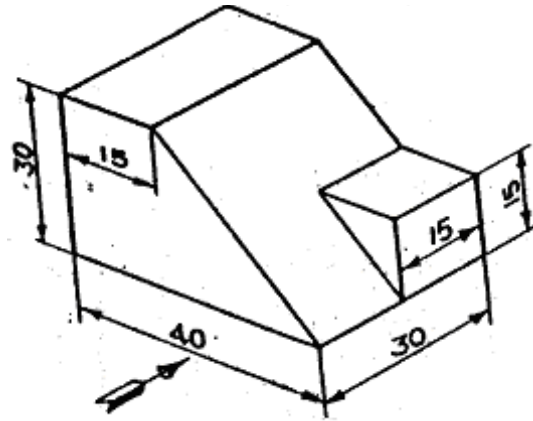


Figure 7

8. A rectangular pyramid of base 70 mm X 50 mm and altitude of 70 mm rests with its base on the ground. One corner of the base is 20 mm to the left of the eye and in PP. The 70 mm long side of the base recedes to the right at 40° . The eye is 190 mm from PP and 130 mm above the ground plane. Draw the perspective view of the pyramid. [16]

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1. Construct a Diagonal scale of R.F = 1:32,00,000 to show kilometers and long enough to measure up to 400 Km. Show distances of 257 Km and 333 Km on your scale. [16M]
2. Show by means of a drawing when the diameter of the rolling circle is twice that of the generating circle, the hypocycloid is a straight line. Take the diameter of the generating circle equal to 60 mm. [16M]
3. A line AB , 80 mm long , makes an angle of 30 degrees with V.P. and lies in a plane perpendicular to both H.P. and V.P. Draw its projections . [16M]
4. A pentagonal pyramid, base 25 mm side and axis 50 mm long has one of triangular faces in the V.P. and the edge of the base contained by that face makes an angle of 30 degrees with the H.P. 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° to VP [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. Draw the elevation, plan and side view of the picture shown in the figure 7. [16]

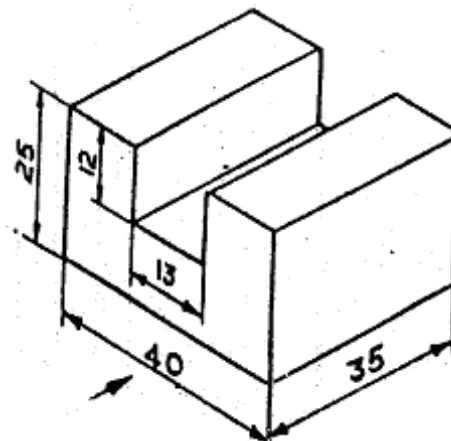


Figure 7

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Set No. 4

8. A rectangular block, 32 mm X 22 mm X 16 mm is lying on ground on one of its largest faces. One of its vertical edges is in the picture plane and the longer face containing that edge is inclined at angle of 30° to the picture plane. The station point is 52 mm in front of the picture plane, 35 mm above the ground plane passing through the center of the block. Draw the perspective view of block. [16]
