Code No: R05010107 **Set No. 1**

I B.Tech Regular Examinations, Apr/May 2007
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

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1. The distance between Vadodara and Surat is 130 Km. A train covers this distance in 2.5 hours. Construct a plain scale to measure time up to a single minute. The R.F of the scale is 1: 2,60,000. Show the distance covered by the train in 45 secs. [16M]

2. The major axis of an ellipse is 160 mm long and the minor axis 90 mm long. Find the foci and draw the ellipse by 'Arcs of circles method'. Draw a tangent to the ellipse at a point on it 25 mm above the major axis. [16M]

3. The front view of a line AB measures 65 mm and makes an angle of 45 degrees with xy . A is in the H.P. and the V.T. of the line is 15 mm below the H.P. The line is inclined at 30 degrees to the V.P. Draw the projections of AB and find its true length and inclination with the H.P. Also locate its H.T. [16M]

4. A cone, diameter of base 50 mm and axis 65 mm long, is lying on the H.P. on one of its generators with the axis parallel to the V.P. It is cut by a horizontal section plane 12 mm above the ground. Draw its front view and sectional top view . [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. A sphere of diameter 40 mm rests centrally on the top of a square frustum, base 60 mm top 40 mm and height 75 mm. Draw the isometric view of the combination of solids. [16]

7. Convert the isometric view of the picture shown in the figure7 below in to orthogonal projection of all three views. [16M]

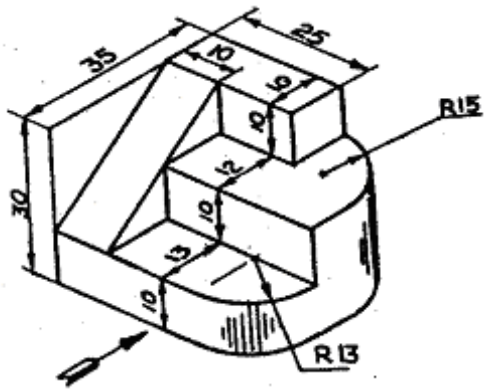

Figure 7

8. A circular lamina of 45 mm diameter lies on the ground plane and touches the picture plane. The center plane passes through the center of the circle. The station point is 70 mm in front of picture plane and 60 mm above the ground plane. Draw the perspective view. [16M]

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Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Draw a vernier of R.F = 1:2.4 to show decimeters, centimeters and millimeters and long enough to read up to 6 decimeters. Mark a distance of 3.69 decimeters on the scale. [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. Two lines AB and AC make an angle 120 degrees between them in their front view and top view . AB is parallel to both the H.P. and V.P. Determine the real angle between AB and AC. [16M]

4. A cube of 65 mm long edges has its vertical faces equally inclined to the V.P. It is cut by a section plane, perpendicular to the V.P., so that the true shape of the section is a regular hexagon . Determine the inclination of the cutting plane with the H.P. and draw the sectional top view and true shape of the section. [16M]

5. A cylinder of diameter of base 60 mm altitude 80 mm stands on its base. It is cut into two halves by a plane perpendicular to the VP and inclined at 30^o to HP. Draw the development of the lower half. [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. Convert the isometric view of the picture shown in the figure7 below in to orthogonal projection of all three views. [16M]

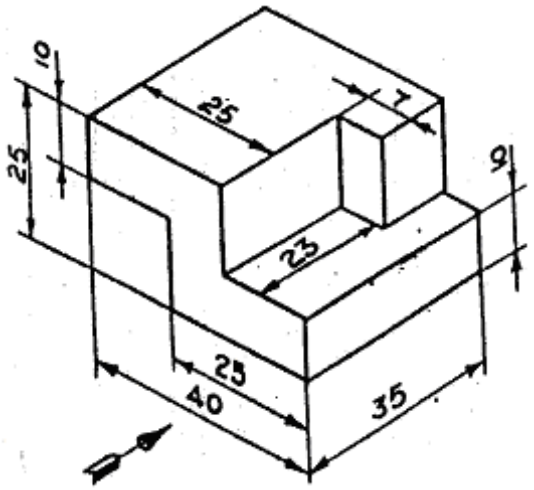

Figure 7

8. A cube of edge 30 mm rests with one of its faces on the ground plane such that a vertical edge touches the picture plane. The vertical faces of the cube are equally inclined to PP and behind it. A station point is 40 mm in front of the PP, 50 mm above the ground plane and lies in a central plane 15 mm to the right of the axis of the cube. Draw the perspective view. [16M]

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Code No: R05010107 **Set No. 3**

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Answer any FIVE Questions
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1. Draw a vernier of R.F = 1:2.4 to show decimeters, centimeters and millimeters and long enough to read up to 6 decimeters. Mark a distance of 3.69 decimeters on the scale. [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 hexagonal plane of 30 mm side has a corner in the V.P. and the surface of the plane makes an angle 40 degrees with the V.P. Draw its projections when the front view of the diagonal through The corner which is in V.P. makes an angle of 50 degrees to H.P. [16M]

4. A hexagonal prism, side of the base 30 mm long and the axis 60 mm long has one of its sides on the H.P. and the axis is inclined at 45 degrees to the H.P. Draw its projections. Project another front view on an auxiliary vertical plane which is inclined at 40 degrees to the V.P. [16M]

5. A vertical cone of 40 mm diameter of base and height 50 mm is cut by a cutting plane perpendicular to V.P and inclined at 30º to the H.P so as to bisect the axis of the cone. Draw the development of the lateral surface of the truncated portion of the cone. [16]

6. A hemisphere of 40 mm diameter is nailed on the top surface of a frustum of a square pyramid. The sides of the top and bottom faces of the frustum are 20 mm and 40 mm respectively and its height is 50 mm. The axes of both the solids coincide. Draw the isometric projection. [16]

7. Consider the picture shown in figure7 below and draw the front view top view and side view in first angle projection. [16M]

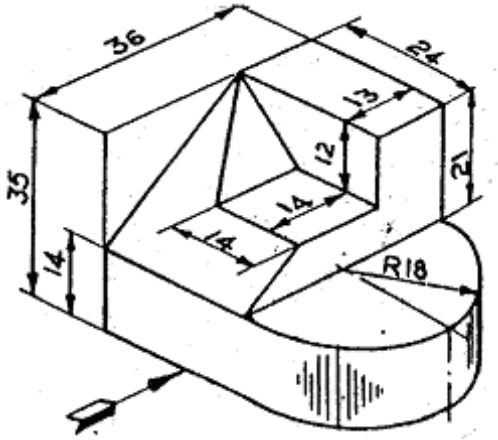

Figure 7

8. Draw the perspective view of a point P is situated 10 mm behind the PP and 15 mm above the ground plane. The station point is 25 mm in front of the PP, 20 mm above the ground plane. It lies in a central plane 12 mm to the right of the point. [16M]

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Code No: R05010107 **Set No. 4**

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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. Draw the projections of a circle of 60 mm diameter having end A of the diameter AB in the H.P., the end B in the V.P., and the surface inclined at 30 degrees to the H.P. and 60 degrees to 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 height 60 mm is resting on HP with one of its base edges parallel to VP. Right half of the solid is cut by an upward plane inclined at 60^o to the ground and starting from the axis and 30 mm below the top end. The left half of the solid is cut by a plane inclined at 30^o to the HP downwards from the axis. The two section planes are continues. Draw the development of the lower portion. [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 figure7 below . [16M]

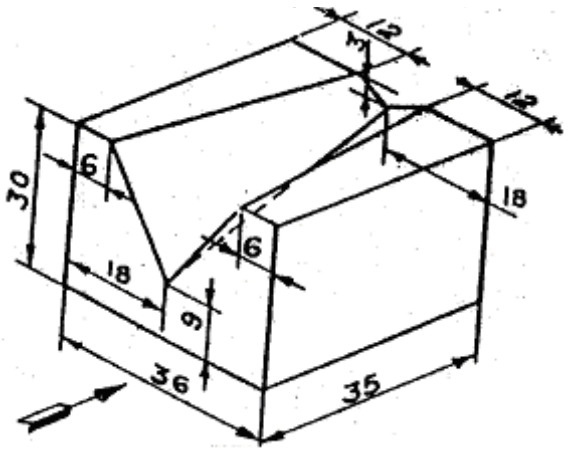

Figure 7

8. Draw the perspective view of a point P is situated 10 mm behind the PP and 15 mm above the ground plane. The station point is 25 mm in front of the PP, 20 mm above the ground plane. It lies in a central plane 12 mm to the right of the point. [16M]

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