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

I B.Tech Supplimentary Examinations, Aug/Sep 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. A rectangular plot of land area 0.45 hectare is represented on a map by a similar rectangle of 5 sq.cm. calculate the R.F of the scale of the map. Also draw a diagonal scale to read up to maximum of single Km from the map. The scale should be long enough to measure up to 500 meters. Show on it 459 m. [16M]

2. A ball is thrown up in air reaches a maximum height of 50 meters and travels a horizontal distance of 80 meters. Trace the path of the ball assuming it to be parabolic. And also determine angle of projection. [16M]

3. A pentagonal plane of 30 mm side has one of its sides in the V.P. and inclined at 60 degrees to the H.P. while the surface of the plane makes an angle of 40 degrees to V.P. Draw the projections. [16M]

4. A sphere of 50 mm diameter is cut by a section plane perpendicular to the V.P., inclined at 45 degrees to the H.P. and at a distance of 10 mm from its centre. Draw the sectional top view and true shape of the section . [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 view of a cone 40 mm diameter and axis 55 mm long when its axis is horizontal. Draw isometric scale. [16]

7. Draw the isometric view for the given orthogonal views as shown in the figure7 below . [16M]

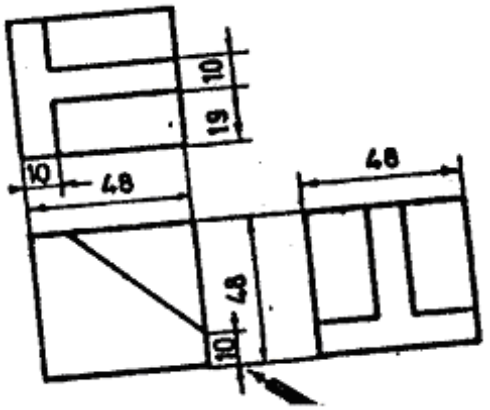


Figure 7

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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Code No: R05010107 **Set No. 2**

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

Answer any FIVE Questions
All Questions carry equal marks

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1. An area of 144 sq.cm on a map represents an area of 36 sq.km on the field. Find the R.F of the scale for this map and draw a Diagonal scale to show kilometers, hectameters and decameters and to measure up to 10 kilometers. Indicate on the scale a distance of 7 kilometers, 5 hectometers and 6 decameters. [16M]

2. Draw an ellipse by Oblong method. The major and minor axes given as 150 mm and 90mm respectively. Draw normal and tangent at any point on the ellipse at a distance of 55mm from the geometrical center of the ellipse. [16M]

3. A line AB , 90 mm long , is inclined at 30 degrees to the H.P. and 20 mm in front of the V.P. Its front view measures 65 mm . Draw the top view of AB and determine its inclination with the V.P. [16M]

4. A hexagonal pyramid, base 25 mm side and axis 55 mm long, has one of its slant edges on the ground . A plane containing that edge and the axis is perpendicular to the H.P. and inclined at 45 degrees to the V.P. Draw its projections when the apex is nearer the V.P. than the base. [16M]

5. A cone of base diameter 60 mm and altitude 70 mm rests vertically on its base on the ground. A slot of shape of an equilateral triangle of side 30 mm is cut through the cone so that its axis is perpendicular to the V.P and intersects the axis of the cone at right angles. The base of the slot is at a distance of 10 mm above the base of the cone. Draw the development of the lateral surface of the cone with the slot. [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 figure7 below in to orthogonal projection of all three views. [16M]

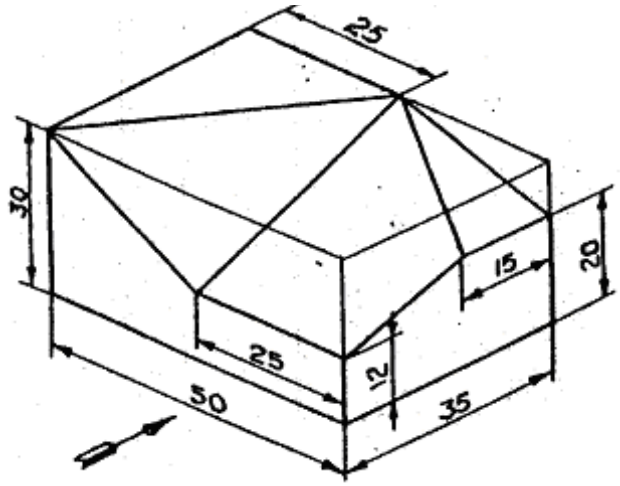


Figure 7

8. A steel rack of size 1 m × 0.4 m × 1.5 m has 3 shelves equally spaced. If stands on the ground plane such that one of its vertical edges touches the PP and a longer horizontal edge is incline at 30^0 to the PP. The station point is 1.25 m in front of PP, 2 m above the ground plane and lies in a central plane, which is at 0.25 m to the right of the edge, touching the picture plane. Draw the perspective view of the rack which its front portion is open. [16M]

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

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

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) A Study of map reading showed that a distance of 1 cm on it represents an actual distance of 5 Km on the field. Construct a plain scale to read to single kilometre. Mark on it a distance of 69 Kilometers. What is the representative fraction?
   (b) Construct a diagonal scale of R.F = 1: 4000 to show meters and long enough to measure 500 meters. Indicate a length of 379 meters. [8+8]

2. An inelastic string 145 mm long , has its one end attached to the circumference of a circular disc of 40 mm diameter. Draw the curve traced out by the other end of the string , when it is completely wound around the disc, keeping the string always tight and name the curve. [16M]

3. Three lines OA, OB and OC are respectively 25 mm, 45 mm 65 mm long, each making 120 degrees angles with the other two and the shortest line being vertical. The figure is the top view of the three rods OA, OB and OC whose ends A, B and C are on the ground, while O is 100 mm above it. Draw the front view and determine the length of each rod and its inclination with the ground. [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 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^o 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 isometric view for the given orthogonal views as shown in the figure7 below . [16M]

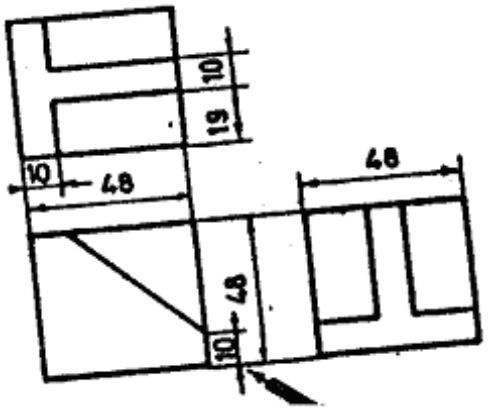


Figure 7

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. [16M]

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

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

Answer any FIVE Questions
All Questions carry equal marks

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1. On a map, the distance between two points is 14 cm. The real distance between them is 20 Km. Draw a Diagonal scale of this map to read kilometers and hecta meters, and to measure up to 25 Km. Show a distance of 17.6 Km on this scale. [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. Draw a rhombus of diagonals 100 mm and 60 mm long , with the longer diagonal horizontal. The figure is the top view of a square of 100 mm long diagonals, with a corner on the ground. Draw its front view and determine the angle which its surface makes with the ground. [16M]

4. One of the body diagonals of a cube of 45 mm edge is parallel to the H.P. and inclined at 45 degrees to the V.P. Draw the front view and top view of the cube. [16M]

5. A cone of base diameter 80 mm and height 125 mm stands with its base on the HP. It is penetrated by a horizontal cylinder of diameter 35 mm. If the axes of the two solids intersect at a point on the cone's axis 40 mm above the base, draw the projections of the curves of intersection. [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. Draw the elevation, plan and side view of the picture shown in the figure7 below . [16M]

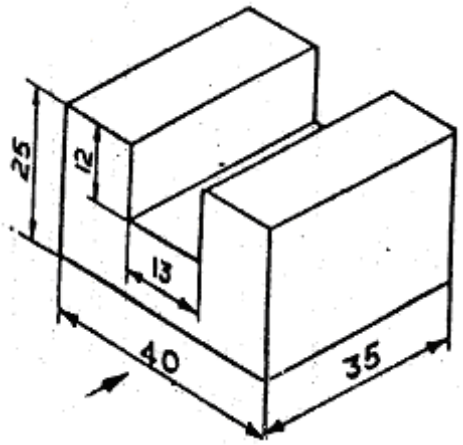


Figure 7

8. Draw the perspective view of a 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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