

I B.Tech Regular Examinations, May/June 2008

ENGINEERING GRAPHICS

(Common to Civil Engineering, Mechanical Engineering, Chemical 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. 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 45 mm and 60 mm sides lies on the axis of parabola. Draw a tangent and normal at a point on the curve 20 mm from the axis. [16]
2. The front view of a line AB, 80 mm long, measures 55 mm while its top view measures 70 mm. End A is in both HP and VP. Draw the projections of the line and find its inclinations with the reference planes. Also locate the traces. [16]
3. A hollow cylinder of 40 mm outside diameter and 30 mm inside diameter is resting on a point on the rim in VP with axis inclined at 30° to VP and parallel to HP. The axis length of the cylinder is 60 mm. It is cut by a vertical section plane inclined at 60° to VP and bisecting the axis. Draw the sectional front view, top view and true shape of the section. [16]
4. Two pipes of 40 mm diameter are joined in elbow shape. Their mean axis heights are 100 mm each. Draw the development of surfaces of the pipes. [16]
5. A horizontal steam boiler of 3m diameter is surmounted by a dome of the shape of a vertical cylinder of 1.4m diameter. Draw the projections showing the curves of intersection, when their axes intersect each other at right angles. [16]
6. Draw the isometric view of the object whose orthographic projections are given in figure 6. All dimensions are in mm. [16]

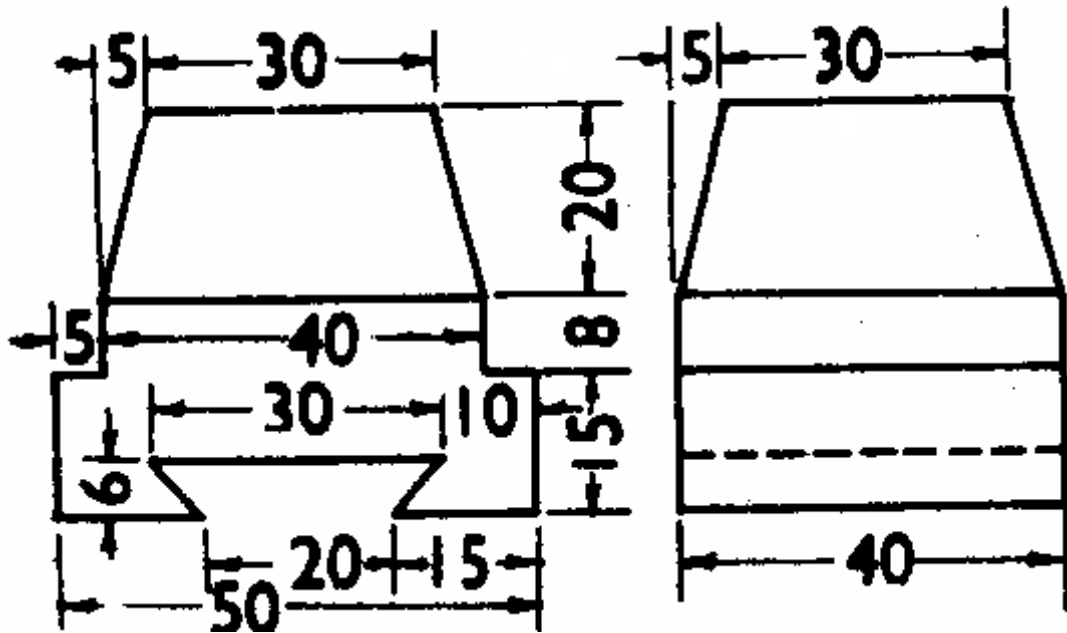


Figure 6

7. Draw the following views of the object given in figure 7. All dimensions are in mm.

- (a) Front View
- (b) Top View and
- (c) Both Side Views.

[16]

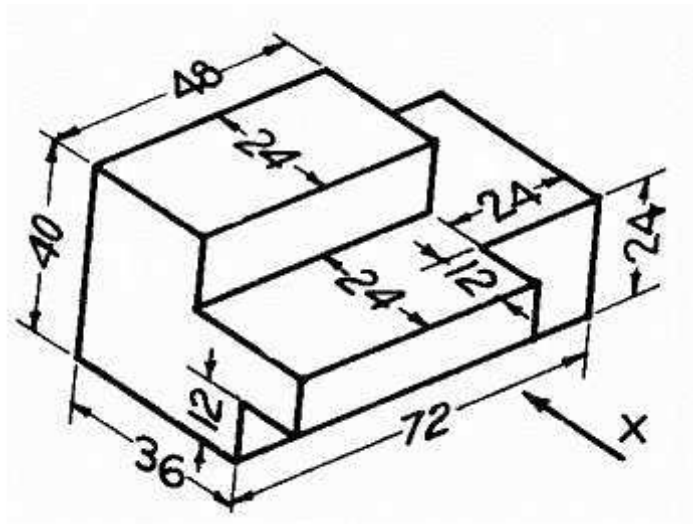


Figure 7

8. A model of steps has three steps of 10 mm tread and 10mm rise. The length of the steps is 60 mm. The model is placed with the vertical edge of the first step touching the PP and its longer edge inclined at 30° to PP. The station point is 70 mm in front of PP, 55 mm above the ground plane and lies in a central plane which is at 30 mm to the right of the vertical edge touching the PP. Draw the perspective view.

[16]

Code No: 07A10191

Set No. 1

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- Construct a cycloid having a rolling circle diameter as 50 mm for one revolution. Draw a normal and tangent to the curve at a point 35 mm above the directing line. [16]
- A 100 mm line AB, measures 70 mm in top view and 80 mm in profile view. The end A 80 mm from profile plane, 90 mm above HP and 30 mm in front of VP. Draw the front view and top view of the line and find its inclinations with HP and VP. [16]
- A regular hexagonal lamina with its edge 50 mm has its plane inclined at 45° to HP and lying with one of its edges in HP. The plan of one of its diagonals is inclined at 45° to XY. The corner nearest to VP is 15 mm in front of it. Draw its projections. [16]
- Two pipes of 40 mm diameter are joined in elbow shape. Their mean axis heights are 100 mm each. Draw the development of surfaces of the pipes. [16]
- A cylinder of 75 mm diameter, standing on its base on H.P, is completely penetrated by another cylinder of 55 mm diameter, with their axes intersecting at right angle. Draw the projections, showing the lines of intersection, assuming that the axis of the smaller cylinder is parallel to V.P. [16]
- Draw the isometric view of the object whose orthographic projections are given in figure 6. All dimensions are in mm. [16]

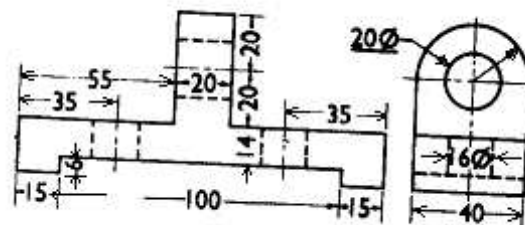


Figure 6

- Draw the following views of the dove tail bracket given in figure 7. All dimensions are in mm.

(a) Front View

- (b) Top View and
- (c) Side View.

[16]

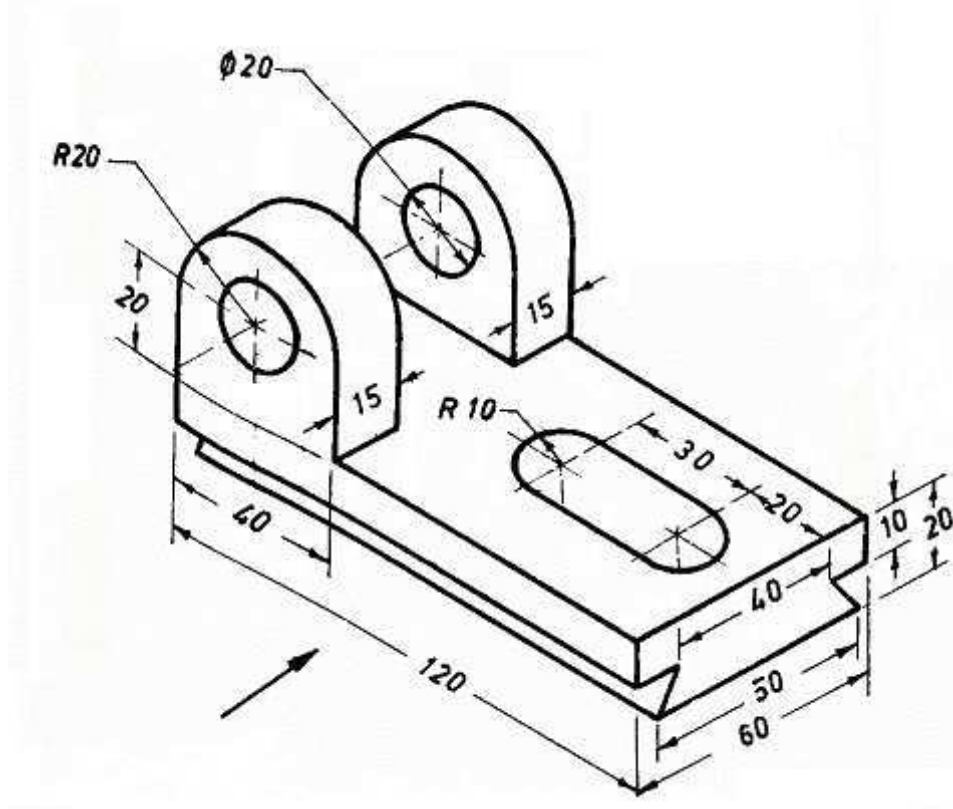


Figure 7

8. A square plane of 35 mm sides stands vertically with one of its edges on the ground and inclined at 45° to picture plane. The vertical edge nearest to picture plane is 20 mm behind it. The station point is 30 mm in front of picture plane, 40 mm above the ground and lies in a central plane which passes through the centre of the plane. Draw the perspective view of the plane. [16]

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1. An ant moves uniformly around the cylindrical post and reaches the top at the end of 20 turns. Assume the axial movement also as uniform. The dia of the post is 60 mm and height 8m. Trace the path of the ant for 2 turns. [16]
2. The distance between the end projectors of a line AB is 50 mm. Point A is 15 mm above HP and 10 mm in front of VP. Point B is 40 mm above HP and 40 mm in front of VP. Find the true length of the line AB, the inclinations of the line AB with HP and VP. Locate HT and VT of the line by trapezoidal method. [16]
3. Draw the projections of a circle of 50 mm diameter, when its plane is equally inclined to HP and VP. One end of a diameter of the circle touches the HP while the other end touches the VP. [16]
4. A cone of base diameter 50 mm and axis 75 mm long has its base in VP. It is sectioned by a vertical section plane 10 mm to the right of the axis. Draw its projections and develop the surface of the truncated cone. [16]
5. A cone of base 60 mm diameter and axis 70 mm long stands vertically with its base on H.P. It is penetrated by a horizontal cylinder of 26 mm diameter. The axis of the cylinder is parallel to V.P., 20 mm above the base and 5 mm in front of the axis of the cone. Draw the projections of solids showing the curves of intersection. [16]
6. Draw the isometric view of the object whose orthographic projections are given in figure 6. All dimensions are in mm. [16]

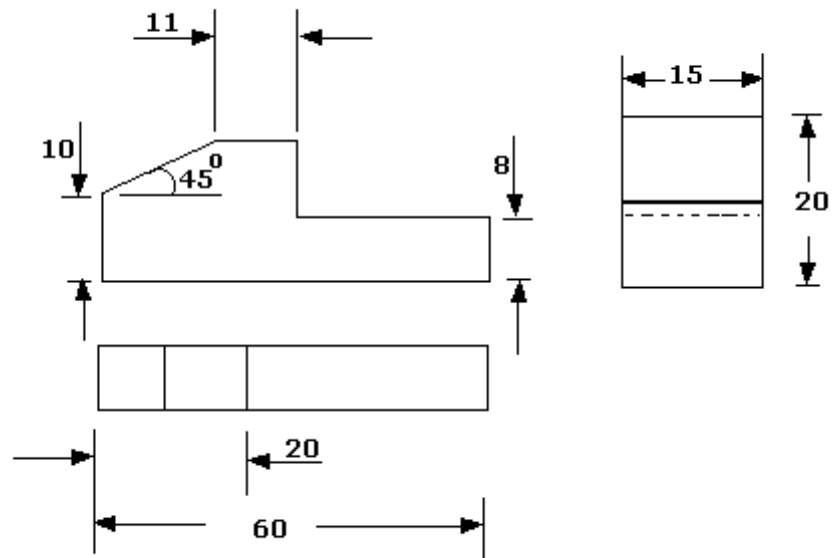


Figure 6

7. Draw the following views of the flange given in figure 7. All dimensions are in mm.

- (a) Front View
- (b) Top View and
- (c) Side View.

[16]

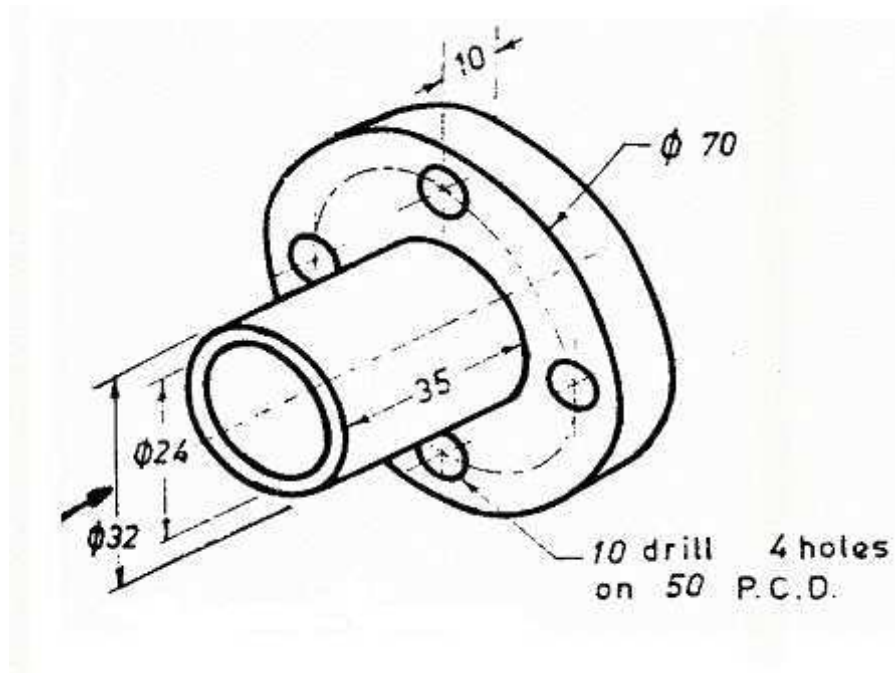


Figure 7

8. A model of steps has three steps of 10 mm tread and 10mm rise. The length of the steps is 60 mm. The model is placed with the vertical edge of the first step touching the PP and its longer edge inclined at 30° to PP. The station point is 70

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mm in front of PP, 55 mm above the ground plane and lies in a central plane which is at 30 mm to the right of the vertical edge touching the PP. Draw the perspective view. [16]

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1. Draw two complete coils of a conical spring made up to 20 mm round stock. The outside diameters are large 110 mm, small 60 mm, pitch 50 mm. [16]
2. Front view of a line PQ is inclined at 30° to xy-line and measures 60 mm. The line is inclined at 45° to VP. The end P 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 the reference planes. Also locate HT. [16]
3. A regular pentagon of side 40 mm has its surface inclined to HP at 45° . It is resting with its base on HP and the line joining the vertex to mid-point of the base making an angle of 60° with VP. Draw its projections. [16]
4. Draw the development of the lateral surface of the part P of the hexagonal pyramid, two sides of the base parallel to the V.P. As shown in figure 4. All dimensions are in cm. [16]

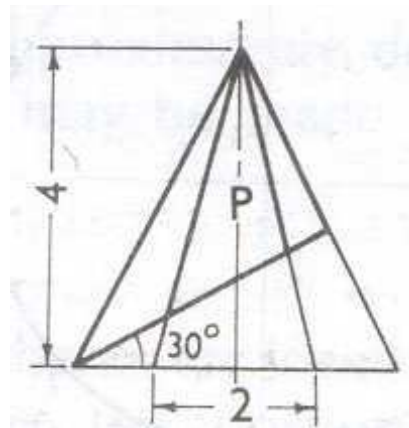


Figure 4

5. A horizontal cylindrical pipe 40mm diameter is joined with a vertical cylindrical pipe of same diameter. The axes of the pipes are parallel to VP. Neglecting the pipe thickness draw the projections showing the curves of intersection, when their axes intersect each other at right angles. [16]
6. Draw the isometric view of the object whose orthographic projections are given in figure 6. All dimensions are in mm. [16]

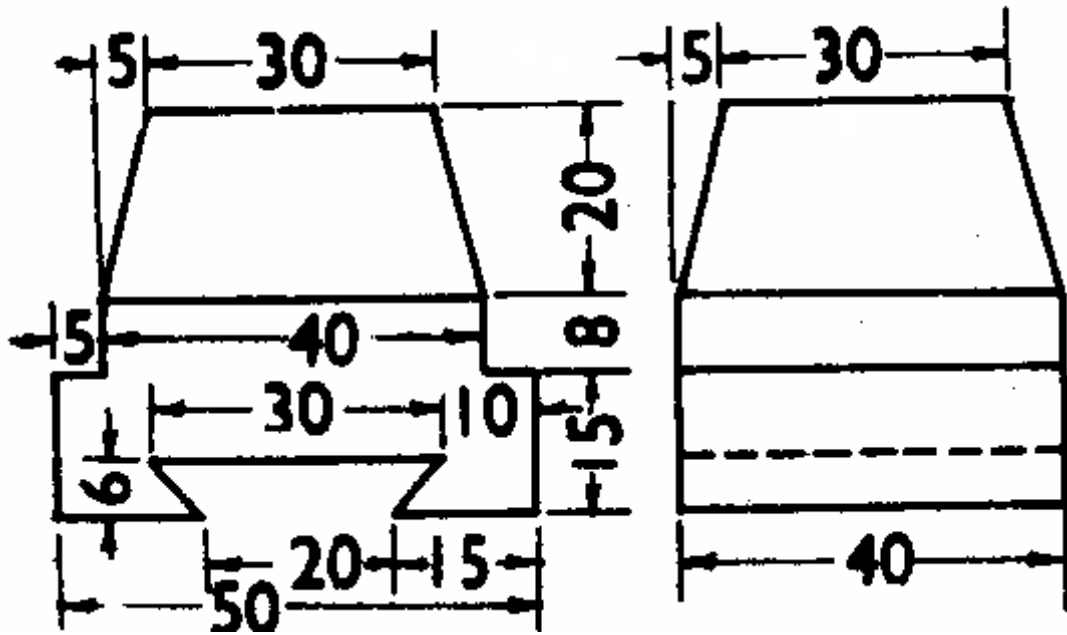


Figure 6

7. Draw the following views of the object given in figure 7. All dimensions are in mm.

- (a) Front View
- (b) Top View and
- (c) Side View.

[16]

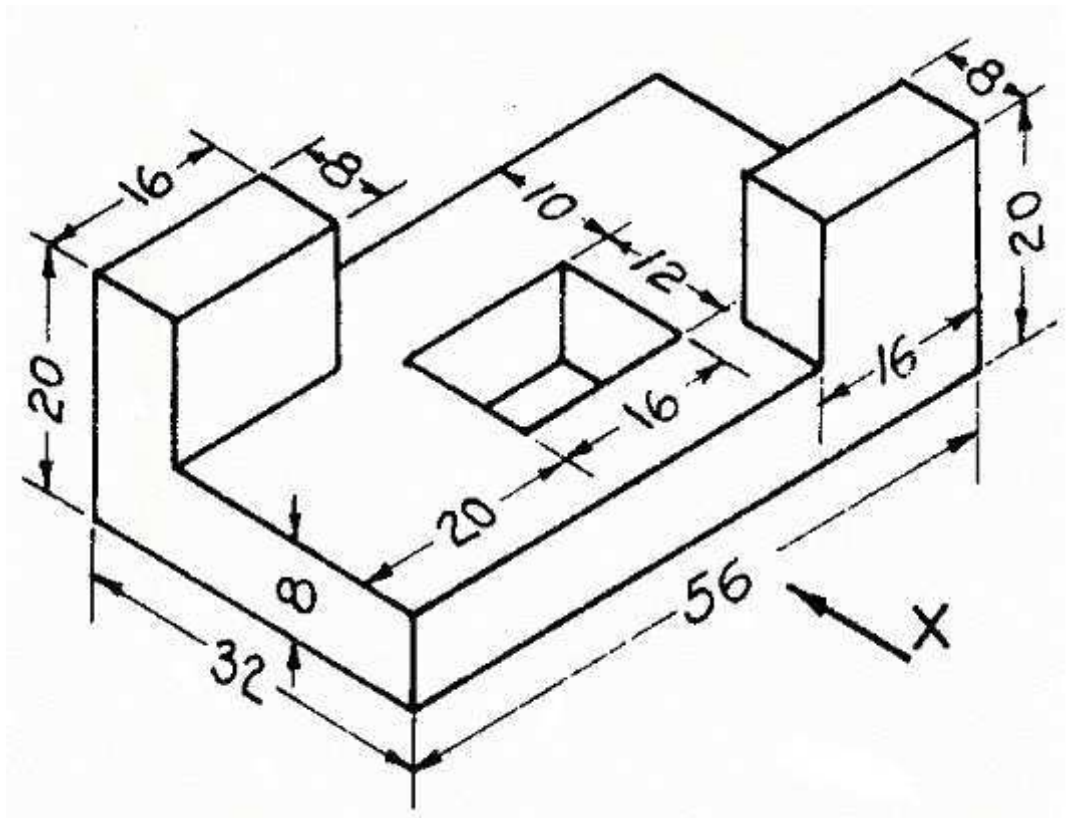


Figure 7

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Set No. 4

8. A hexagonal plane of 30 mm side lies on the ground plane. One of its corners is touching the picture plane and an edge is perpendicular to picture plane. The station point is 30 mm in front of the picture plane, 60 mm above the ground plane and lies in a central plane which passes through the centre of lamina. Draw the perspective view. [16]
