

Model Questions

Subject : Engg. Drawing (BE-105)

Unit 1

1. Construct a plain scale of 1/5000 to measure upto 10 hectometers. Measure a distance of 6 hm and 5 decameters on the scale.
2. The distance b/n two stations is 180 km. The passenger train covers this distance in 6 hrs. Construct a plain scale to measure time upto a single min. Indicate the distance covered by the train in 34 min. RF=1/200000
3. A rectangular plot of 16 square km in area is represented on a certain map by a similar rectangle of area of 1 square cm. Draw a PS to show units of ten kms and single km. and long enough to read upto 60 km. Find RF of the scale and show the distance of 53 km on it .
4. A room of 1000 m³ volume is represented by a block of 125 cm³ volumes. Find RF and construct a PS to measure up to 30 m. Measure a distance of 16 m on the scale.
5. Construct a DS of RF = 1:3200000 to show km and long enough to measure upto 400 km. Show the distance of 257 km and 333 km on the scale.
6. Two points A and B are 100 mm apart. Third point C is 75 mm from A and 50 mm from point B. Draw an ellipse through A, B, and C and dimension the focal distance.
7. Two fixed points are 100 mm apart. A point P moves in such a way that the some of the distance from the two points is always constant and equal to 150 mm. trace the path of the point and name the curve
8. A point P moves in such a way that its distance from a fixed straight line is always 1.5 times the distance from the fixed point 50 mm away from the fixed line . Draw the locus of the point P choosing at least 10 points and write the name of the curve, the fixed point and the fixed straight line. Draw a T / N to the curve at a point on it 25 mm above the major axis.
9. A stone is thrown from a building 6 m high. It just crosses the top of the palm tree 12 m high. Trace the path of the projectile if the horizontal distance b/n the building and palm

- tree is 3.5 m. Also find the distance of the point from the building where the stone falls on the ground.
10. A shot is discharged from the ground level at an angle of 60° to the horizontal. The shot returns to the ground assumed to be horizontal at a point 80 m away from the point of discharge. Draw the path traced by the shot. Use a scale 1:100.
 11. A circle of 50 mm diameter rolls on a horizontal line without slipping. Trace the locus of a point P on the circumference of a circle for one and half revolution. Name the curve and draw T / N to the curve at a point 33 mm above the centre line and the ascending side of the curve.
 12. A circle of 40 mm diameter rolls on a horizontal line without slipping for half revolution and for the remaining half revolution it rolls on a vertically **downward**. Draw the path traced by a point P on its circumference for one revolution. Initially the **point position to be on the horizontal line**.
 13. Draw an epicycloids given the radius of rolling and directing circles as $r = 30$ mm and $R = 120$ mm respectively. Also draw a normal and tangent at any point on the curve.
 14. Draw an hypocycloid given the radius of rolling and directing circles as $r = 20$ mm and $R = 80$ mm respectively. Also draw normal and a tangent at any given point on the curve.
 15. An elastic string 145 mm long has its one end attached to the circumference of a circular disc of 40 mm dia. Draw the curve traced out by other end of the string, when it is completely wound around the disc, keeping the string always tight.
 16. A link 70 mm long swing on a pivot O from its vertical position of the rest to the left through an angle of 60° and returns to its initial position at uniform speed along the centre line of the link from O reaches the end of the link. Draw the locus of point P.

Unit 2

1. Draw the projections of the following points on a common XY line. Keep the distances between two consecutive projectors as 20 mm.
 - a) 30 mm above the HP and 40 mm in front of VP.
 - b) 80 mm above the HP and 40 mm behind the VP.
 - c) 30 mm below the HP and 40 mm behind the VP.
 - d) 30 mm below the HP and 40 mm in front of VP.
 - e) In the HP and 40 mm behind the VP.
 - f) In the VP and 30 mm below the HP.
 - g) Both in the HP and VP.

2. A straight line 100 mm long has one end both in HP and VP. The line is inclined at 30° to the HP and 50° to the VP. Draw the projections

3. A line 60 mm long has its end A 15 mm behind VP and 10 mm below HP. It is inclined at 45° to the HP and 30° to the VP. Draw its projections when (a) the line is in third quadrant (b) the end B lies in first quadrant.

4. Plan and elevation of a line AB, 60 mm long, measures 54 mm and 45 mm respectively. End A is 15 mm above HP and 10 mm in front of VP. Draw the projections. Find also HT and VT.

5. A line 60 mm long has its end A in the HP and B is in the VP. It is inclined at 45° to the HP and 30° to the VP. Draw the projections. Find also HT and VT.

6. A 80 mm long line PQ has one end is 15 mm above HP and 50 mm in front of VP while the another end is in the VP. Draw the projections of the line when the sum of the inclinations with the HP and VP is 90° . Determine the inclinations with the reference planes and its traces.

7. The end projectors of a line are 50 mm apart while those drawn from its HT and VT are 80 mm apart. The HT of the line is 40 mm in front of the VP while the VT is 80 mm above the HP. Draw the projections if its end is 10 mm above HP. Also determine the true length and inclinations with the reference planes

8. A line 100 mm long is inclined at 30° to the HP and 45° to the VP. A point R is 40 mm from one of its end and in both the planes. Draw the projections and determine the traces.

9. The end A of a line AB is in the HP and 25 mm behind the VP. The end B in the VP and 50 mm above the HP. The distance between the end projectors is 75 mm. Draw the projections of AB and determine its true length, traces and inclinations with the two planes.

UNIT 3

1. A hexagonal plate of 30 mm sides is placed with one side on HP and inclined at 30° to the VP. The surface is inclined with 45° with HP. Draw the projections.
2. A rectangular plate of size 70 mm \times 40 mm rests on its shorter side in the VP and the surface is inclined such that its front view appears as a square. The longer side of the plane is inclined at 30° to the HP. Draw the projections and find the inclination with VP.
3. A semicircular plate with an 80 mm diameter has its straight edge in the VP and inclined at 45° to the HP. Draw the projections of the plate when its surface is inclined at 30° to the VP.
4. A square lamina, rests on a corner on ground has a top view as a rhombus of diagonals 75 and 45 mm, with the smaller diagonal horizontal. The longer diagonal is inclined 30° to the VP. Draw the projections.
5. A pentagonal plate of 30 mm sides is placed with one of its corner on VP and the surface is inclined with 30° to the VP. The edge of the plane opposite to the corner is parallel to the V.P. and inclined at 45° to the H.P. Draw the projections.
6. Draw the projections of a rhombus having diagonals 125 mm and 50 mm long, the smaller diagonal of which is parallel to both the planes (H.P. and V.P.) while the other is inclined at 30° to H.P.
7. A pentagonal pyramid has an edge of the base in the V.P. and inclined at 30° H.P. while the triangular face containing that edge makes an angle of 45° to the V.P. Draw the three views of the pyramid. Length of the side of base is 30 mm, while that of the axis is 80mm long.

8. Draw the projection of a cone base 60 mm diameter and axis 75 mm long lying on the H.P. on one of its generators with the axis parallel to V.P. The top view then makes an angle of 30° with the V.P.
9. A right regular pentagonal prism, edge of base 25 mm and height 55 mm rests on an edge of its base in H.P. such that its axis is parallel to V.P. and inclined to the H.P. at 45° . Draw the projections of the solid.
10. Draw the projection of a cube of 25 mm long edges resting on the H.P. on one of its corners with the solid diagonal perpendicular to the V.P.

UNIT 4

1. A square pyramid, base 40 mm side and axis 65 mm long has its base on the H.P. and all the edges of then base equally inclined to the V.P. It is cut by a section plane perpendicular to the V.P. and inclined at 45° to H.P. and bisecting the axis. Draw the sectional top view and true shape of the section.
2. A cube of 35 mm long edge is resting on H.P. on one of its faces with a vertical face inclined at 30° to the V.P. It is cut by a section plane parallel to the V.P. and 9 mm away from the axis. Draw its sectional front view and top view.
3. A cone base 75 mm diameter and axis 80 mm long is resting on its base on the H.P. It is cut by a section plane perpendicular to the V.P. and inclined at 45° to the H.P. and cutting axis at a point 35 m from the apex. Draw its front view, sectional top view and true shape of the section.
4. A right circular cone base 50 mm diameter and height 75 mm long is resting in the H.P. on its circular rim. It is cut by a section plane such that the true shape off the section is a parabola of 40 mm base. Draw the true shape and its apparent section of the cone
5. A right circular cone is cut by a plane such that the true shape of the section is a parabola of 40 mm base. Draw the projections of the cone; locate the position of cutting plane and draw the true shape of the section: cone 65 mm diameter and 75 m long.

6. A hexagonal pyramid base 30 mm side and axis 65 mm long is resting on its base on the H.P. with two edges parallel to the V.P. Its is cut by a section plane perpendicular to the V.P. and inclined at 45° to the H.P. and intersecting the axis at a point 25 mm above the base. Draw the front view, sectional top view and true shape of the section.
7. A frustum of a square pyramid has its base 60 mm side top 25 mm side and height 70 mm. draw the development of its lateral surface. Also draw the projections of the frustum (when its axis is vertical and a side parallel to the V.P.) showing the line joining the mid point of a top edge of one face with the mid point of the bottom edge of the opposite face by shortest distance.
8. The frustum of a square pyramid has its base 60 mm side and top 25 mm side and height 70 mm is resting in H.P. with one of its edges of the base parallel to V.P. Draw lateral surface development.
9. A right circular cone diameter of base 40 mm and height 50 mm rests on its base on H.P. A section plane perpendicular to V.P. and inclined to H.P. at 45° cuts the cone bisecting its axis. Draw the projections of the truncated cone and develop its lateral surfaces.

UNIT 5

1. Draw the isometric projection of a sphere ($R = 25$ mm) resting centrally on top of a square prism (Base = 60 mm, height = 20 mm).
2. Give two limitations of manual drawing and enlist the advantages and disadvantages of computed aided drawing and drafting.
3. Name and explain any five edit commands and five drawing command used in Auto CAD.
4. Draw a isometric projection of the frustum of a hexagonal pyramid having base side 40 mm, top side 25 mm long and height 60 mm long.
5. Draw the isometric projection of the frustum of a cone of base diameter 50 mm, top diameter 25 mm and height 60 mm.
6. A sphere of 60 mm diameter is placed centrally on the top of a frustum of square pyramid. The base of the frustum is 60 mm square and top 40 mm square and its height 50 mm draw the isometric projection of the arrangement.,
7. Define m-line,p-line?
8. Define chamfer and fillet.
9. What is the process of drawing a circle and a line.

10.

Enlist the names of different softwares used for drafting?