

**I B. Tech I Semester Regular Examinations, January - 2020**  
**ENGINEERING DRAWING**  
 (Com. to CE, EEE, ME, ECE, Chem E, EIE, Pet E)

Time: 3 hours

Max. Marks: 75

**Answer any five Questions one Question from Each Unit**  
**All Questions Carry Equal Marks**

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1. a) Draw a parabola using 'eccentric method' whose vertex is at a distance of 30mm from the focus. Draw a pair of tangents from a point P, outside the curve, 20mm from the vertex and 40 mm from the focus. (8M)

b) The distance between two stations by rail is 50 km and it is represented on a certain map by a 1cm long line. Find the R.F. and construct a diagonal scale showing single kilometer and long enough to measure upto 700 km. Indicate a distance of 538 km on this scale. (7M)

Or

2. a) A point P is 30mm and 50mm respectively from two straight lines which are at right angles to each other. Draw a rectangular hyperbola from P within 10 mm distance from each line. (8M)

b) Draw two branches of rectangular hyperbola having its vertices 50mm apart and determine its directrices and foci graphically. (7M)

3. a) Two points A and B are in the HP. The point A is 30 mm in front of the VP, while B is behind the VP. The distance between their projectors is 75 mm and the line joining their top views makes an angle of  $45^\circ$  with xy. Find the distance of the point B from the VP. (8M)

b) Two pegs fixed on a wall are 4.5 meters apart. The distance between the pegs measured parallel to the floor is 3.6metres. If one peg is 1.5metres above the floor, find the height of the second peg and the inclination of the line joining the two pegs, with the floor. (7M)

Or

4. A line AB, 75 mm long is in the second quadrant with the end A in the HP. and the end B in the VP. The line is inclined at  $30^\circ$  to the HP. and at  $45^\circ$  to the VP. Draw the projections of AB and determine its traces. (15M)

5. Draw the projections of a cylinder, base 30 mm diameter and axis 40 mm long, resting with a point of its base circle on HP such that the axis is making an angle of  $30^\circ$  with HP and its top view perpendicular to VP. (15M)

Or

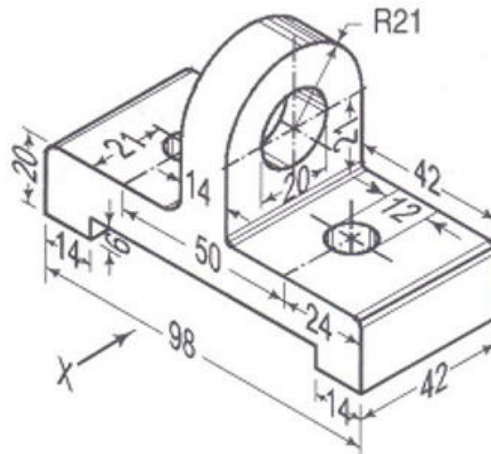
6. a) A rectangular plate of size 60mm x 30mm has one of its shorter edges in VP and inclined at  $40^\circ$  to HP. Draw its top view if its front view is a square of side 30mm. (8M)

b) A circular plate of negligible thickness and 50mm diameter is vertical and inclined at  $45^\circ$  to VP. Draw its projections when the centre of the circular lamina is 40mm above HP and 60mm in front of VP. (7M)

7. A cone of base diameter 80 mm and axis 100 mm is resting on its base on the HP. (15M)  
It is completely penetrated by a cylinder of base diameter 40 mm. The axes of the solids intersect each other at right angles, 30 mm above the base of the cone. Draw the projections of the combination and show curves of intersection.

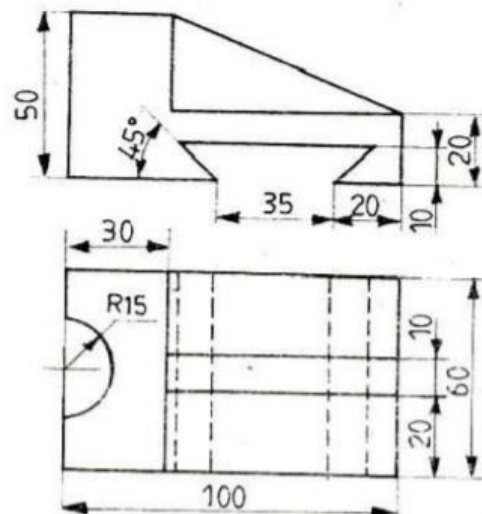
Or

8. Draw the projections of a pentagonal prism, situated with a rectangular face parallel to and 10mm above the HP, axis perpendicular to the VP and one base in the VP. Take side of the base 40mm and the axis 65mm long. (15M)
9. Draw the (i) Front view. (ii) Side view (iii) Top view for the following Figure 4. (15M)  
All dimensions are in mm.



Or

10. Draw the isometric view for the figure 1 shown below front and top views. All dimensions are in mm. (15M)



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1. a) Two points A and B are 100 mm apart. A point C is 75 mm from A and 60 mm from B. Draw an ellipse passing through A, B and C. (8M)
- b) Draw a diagonal scale of 1:2.5, showing centimeters and millimeters and long enough to measure upto 20 centimetres. (7M)

Or

2. a) Draw a parabola using 'eccentric method' whose vertex is at a distance of 30 mm from the focus. Draw a pair of tangents from a point P, outside the curve, 20 mm from the vertex and 40 mm from the focus. (8M)
- b) The distance between two stations by rail is 50 km and it is represented on a certain map by a 1cm long line. Find the R.F. and construct a diagonal scale showing single kilometer and long enough to measure upto 700 km. Indicate a distance of 538 km on this scale. (7M)

3. The front and top views of a straight line PQ measures 50 mm and 65 mm, respectively. The point P is on the HP and 20 mm in front of the VP. The front view of the line is inclined at  $45^{\circ}$  to the reference line. Determine the true length of PQ and its true inclinations with the reference planes. Also, locate the traces. (15M)

Or

4. The front and top views of a straight line PQ measures 50 mm and 65 mm, respectively. The point P is on the HP and 20 mm in front of the VP. The front view of the line is inclined at  $45^{\circ}$  to the reference line. Determine the true length of PQ and its true inclinations with the reference planes. Also, locate the traces (15M)

5. a) A point P is 45mm above HP and 25mm in front of VP. Another point Q is 25mm above HP and 55mm in front of VP. The top view of the line PQ is inclined at  $40^{\circ}$  to XY line. Draw the projections of the line. Identify and find the true length and true inclinations of the line with HP and VP. (8M)
- b) A line AB 75mm long has its end A is in HP and other end B is in VP. The line is inclined  $45^{\circ}$  to HP and  $30^{\circ}$  to VP. Draw the projections. (7M)

Or

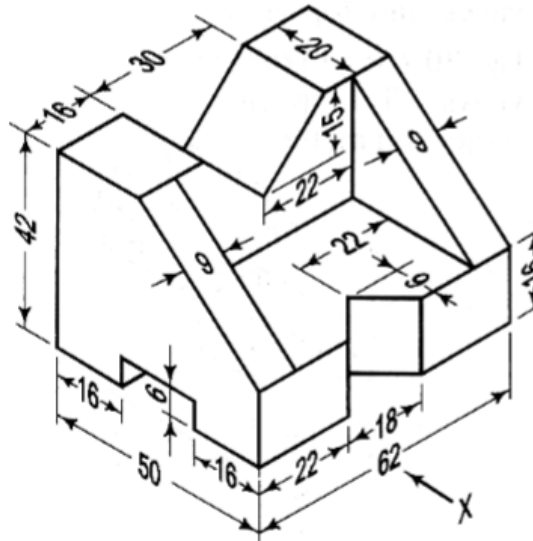
6. a) A semi-circular plane of diameter 70 mm has its straight edge on the HP and inclined at  $45^{\circ}$  to the VP. Draw the projection of the plane when its surface is inclined at  $30^{\circ}$  to the HP. (8M)
- b) A regular hexagon of side 40mm is resting on one of its corners on HP and the surface inclined  $45^{\circ}$  to HP. Draw the projections when the diagonal through the corner resting on HP makes an angle of  $60^{\circ}$  with VP. (7M)

7. A hexagonal pyramid of base side 30 mm and axis 60 mm rests on an edge of the base on the HP with the triangular face containing that edge perpendicular to the HP and parallel to the VP. Draw its projections so that the base is visible. (15M)

Or

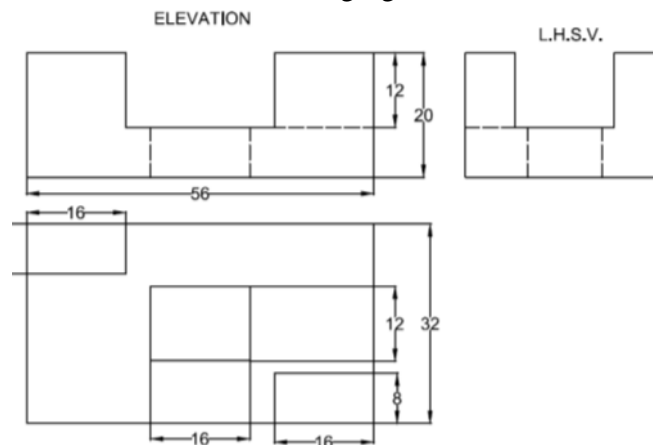
8. A cone of base diameter 80 mm and axis 100 mm is resting on its base on the HP. It is completely penetrated by a cylinder of base diameter 40 mm. The axes of the solids intersect each other at right angles, 30 mm above the base of the cone. Draw the projections of the combination and show curves of intersection. (15M)

9. Draw Front view, Top view and Side view of the given isometric view given in figure below according to first angle projection method. All dimensions are in mm. (15M)



Or

10. Draw the isometric view of the following figure. All dimensions are in mm. (15M)



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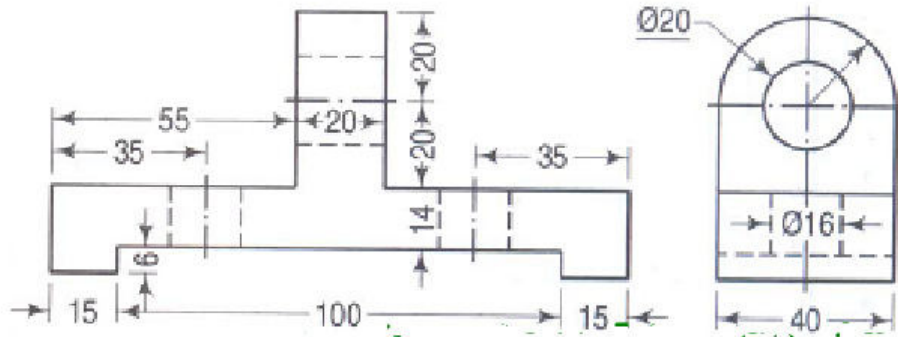
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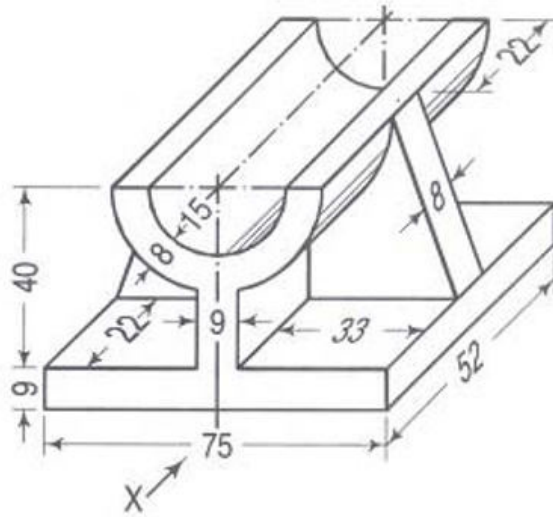
- ~~~~~
1. a) Draw an parabola having conjugate axes of 50 mm and 30 mm long and inclined at  $75^{\circ}$  to each other. (8M)
  - b) Construct a Diagonal scale of RF = 3:200 showing meters, decimeters and centimeters. The scale should measure up to 6 meters. Show a distance of 4.56 meters (7M)
- Or
2. a) Draw an ellipse having the major axis of 60 mm and the minor axis of 40 mm. (8M)
  - b) Draw a Vernier scale of R.F. = 1/25 to read up to 4 meters on it show lengths 2.39 m and 0.91 m. (7M)
3. The top view of a line is 65mm long and inclined to XY at  $30^{\circ}$ . One end is 20mm above HP and 10mm in front of VP. The other end is 60mm above HP and is in front of VP. Identify and find the true length of the line, its inclination with HP and VP. Also mark the traces. (15M)
- Or
4. One end P of line PQ, 80mm long is 10mm above HP and 15mm in front of VP. The line is inclined at  $40^{\circ}$  to HP and the top view of the line is making  $50^{\circ}$  with VP. Draw the projections of the line and find its true inclination with the VP. (15M)
5. A pentagonal pyramid has height 60 mm and the side of a base 30 mm. The pyramid rests on one of its slant edges on the H.P. and makes an angle of 45 degrees with the V.P. Draw its projections. (15M)
- Or
6. A cone of diameter of base 60 mm and axis length equal to 120 mm rests on a point of its periphery of the base on H.P such that its axis is inclined at an angle of  $35^{\circ}$  with the H.P. and  $60^{\circ}$  with the V.P. and the apex is near to the observer. Draw its projection. (15M)
7. A hexagonal prism is resting on HP on its base with two edges of base parallel to VP. It is cut by an A.I.P. which is perpendicular to VP and inclined to HP by 45 degrees and passing through a point 40 mm above the base and on axis. Draw elevation, sectional plan, sectional side view and true shape of section. Take side of base 30mm and height 60mm. (15M)
- Or
8. A triangular pyramid of side of base 50mm and height of axis 100mm resting on its base on the HP such that one of the edges of the base parallel to VP and near to VP. The pyramid is cut by a cutting plane parallel to VP and perpendicular to HP by passing through the distance 20mm form the axis of the pyramid. Draw sectional front view and top view of the triangular pyramid. (15M)

9. Draw the isometric view of the following Figure. All dimensions are in mm. (15M)



Or

10. Draw the (i) Front view (ii) Side view (iii) Top view for the following Figure. All dimensions are in mm. (15M)



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- ~~~~~
1. a) Construct an ellipse when the distance between the focus and directrix is 35 mm and eccentricity is  $\frac{3}{4}$ . Also draw the tangent and normal to any point on the curve. (8M)
  - b) Construct a vernier scale of R.F = 1: 2.5 to show decimeters, centimeters and millimeters. The scale should be capable of reading up to 4 decimeters. Mark on your scale the following distances: (i) 3.23 dm and (ii) 3.65 dm. (7M)

Or

2. a) The actual length of 500 m is represented by a line of 15 cm on a drawing. Construct a vernier scale to read up to 600m. Mark on it a length of 568m. (8M)
- b) The distance between directrix of an ellipse is 170 mm and the distance between its foci is 70mm. Determine its major and minor axes and construct the ellipse using 'arc of circles' method. (7M)
3. a) Draw the projections of the following points, keeping the distance between the projectors as 25 mm on the same reference line: (8M)
  - (i) Point 'A' on HP and 20 mm behind VP.
  - (ii) Point 'B' 20 mm below HP and 30 mm behind VP.
- b) Draw the projections of a 60 mm long straight line, in the following positions. (7M)
  - (i) Perpendicular to the HP, in the VP and its one end in the HP.
  - (ii) Inclined at  $45^\circ$  to the VP, in the HP and its one end in the VP.

Or

4. a) A line AB measures 100 mm. The projectors through its VT and the end A are 40 mm apart. The point A is 30 mm below the HP and 20 mm behind the VP. The VT is 10mm above the HP. Draw the projections of the line and determine its HT, inclinations with the HP and VP. (8M)
- b) The midpoint of a straight line AB 90mm long is 60mm above HP and 50mm in front of VP. It is inclined  $45^\circ$  to VP and  $30^\circ$  to HP. Draw the projections (7M)
5. A cone, base 65 mm diameter and axis 75 mm long, is lying on the H.P. on one of its generators with the axis parallel to the V.P. A section plane which is parallel to the V.P. cuts the cone 6 mm away from the axis. Draw the sectional front view and development of the surface of the remaining portion of the cone. (15M)

Or

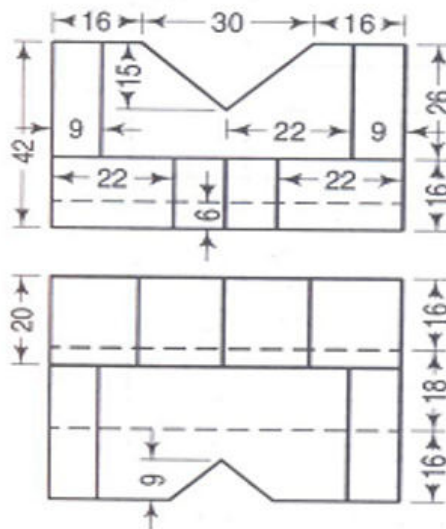
6. Draw the projections of a circle of 75 mm diameter having the end A of the diameter AB in the H.P., the end B in the V.P., and the surface inclined at  $30^\circ$  to the H.P. and at  $60^\circ$  to the V.P. (15M)

7. A square pyramid, base 40 mm side and axis 90 mm long, has a triangular face on the ground and the vertical plane containing the axis makes an angle of  $45^\circ$  with the V.P. Draw its projections. (15M)

Or

8. A pentagonal prism is resting on one of the corners of its base on the HP. The longer edge containing that corner is inclined at  $45^\circ$  to the HP. The axis of the prism makes an angle of  $30^\circ$  to the VP. Draw the projections of the solid using auxiliary plane method. (15M)

9. Draw the isometric view of the following Figure. All dimensions are in mm. (15M)



Or

10. Draw the orthographic view of the following figure. All dimensions are in mm. (15M)

