Code No: R161210 **R16** SET - 1

I B. Tech II Semester Regular/Supplementary Examinations, April/May - 2019
ENGINEERING DRAWING
(Com. to AE, AME, Chem E, ME, Metal E, Min E, PCE,PE)

Time: 3 hours Max. Marks: 70

Note: 1. Question paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is Compulsory
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) Construct a Pentagon with base of side 30mm. (2M)
   b) Divide a line of 9cm into 8 equal parts. (2M)
   c) Draw the projection of a point P on the HP and 30mm behind the VP. (2M)
   d) Draw the front view of a pentagonal plane of side 30mm contained by the VP with one of its side vertical. (2M)
   e) Draw the top view of a square pyramid of 30mm side of its base and 50mm long axis when its axis perpendicular to the HP and the sides of its base equally inclined to the VP. (2M)
   f) Draw the orthographic projections of a cylinder 30mm base and 50mm height standing on its base on the VP. (2M)
   g) Draw an Isometric scale. (2M)

PART -B

2. a) The major axis of an ellipse is 150mm long and the minor axis is 100mm long. Find the foci and draw an ellipse by 'arcs of circles' method. Draw a tangent to the ellipse at a point on it 25mm above the major axis. (7M)
   b) A circle of 45mm diameter rolls along a straight line without slipping. Draw the curve traced out by a point P on the circumference for 1.5 revolution of the circle. Name the curve. Draw a tangent and normal at a point on it 35mm from the line. (7M)

3. a) The distance between Bombay and Pune is 180 km. A passenger train covers this distance in 6 hours. Construct a plain scale to measure time upto a single minute. The representation factor of the scale is 1/200000. Find the distance covered by the train in 36 minutes. (7M)
   b) A point A is 15mm above HP and 25mm in front of VP. Another point B is 40mm below HP and 50mm behind VP. Draw the projections of these points taking the distance between the end projectors as 50mm. Also find the length of the line joining their plans and elevations. (7M)

4. a) A line PQ 30 mm long is perpendicular to VP and parallel to HP. Its end P is 5mm in front of VP and the line is 10mm above HP. Draw the projections of the line. (7M)
   b) The end A of a line AB 130mm long is 55 mm in front of VP. The HT of the line is 40 mm in front of VP and VT is 50 mm above HP. The distance between VT and HT is 110mm. Draw the projections of the line AB and determine its inclinations with the reference planes. (7M)
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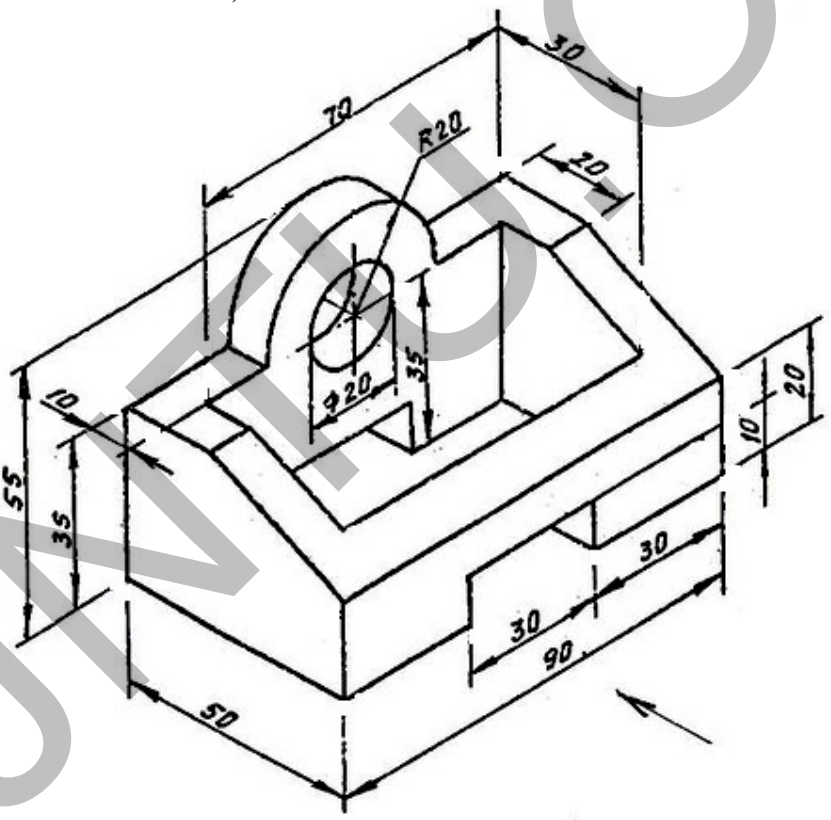
5. a) Draw the projections of a semi-circular plane of 50 mm radius, when contained by the vertical plane with its diameter vertical. (7M)

   b) A regular hexagonal lamina of side 25mm is lying in such a way that one of its corners is on HP while the corner opposite to the corner on which it rests is on VP. If the lamina makes 60^0 to HP, Draw the projections of the lamina. (7M)

6. a) Draw the projection of a cone with 40mm diameter of its base and 50mm long axis when a base on HP. (5M)

   b) A hexagonal prism, with 30mm side and 70mm height is resting on the HP on one of the edges of its hexagonal base in such a way that the axis is at 60^0 to HP and parallel to the VP. Draw the projections. (9M)

7. Draw the orthographic projections of a pictorial view of an object shown in figure. (14M)
(All dimensions are in mm)



Code No: R161210 **R16** SET - 2

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ENGINEERING DRAWING
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2. Answering the question in **Part-A** is Compulsory
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) Inscribe a regular Heptagon in a circle of diameter 50mm. (2M)
   b) Divide a circle into 12equal part using a geometrical operation trisecting a right angle. (2M)
   c) Draw the projection of a point P on the HP and 30mm behind the VP. (2M)
   d) Draw the top view of a hexagonal plane of side 30mm contained by the HP with one of its diagonal perpendicular to the VP. (2M)
   e) Draw the front view of a cylinder of 40mm base and 50mm long axis with its axis parallel to both the projection planes. (2M)
   f) Draw the orthographic projections of a cone 30mm base and 50mm height standing on its base on the HP. (2M)
   g) Draw the isometric view of circle of diameter 50mm in size. (2M)

PART -B

2. a) A vertex of a hyperbola is 65mm from its focus. Draw the curve if the eccentricity is 5/2. Draw a tangent and a normal to the curve at any point on the curve. (7M)
   b) Trace the paths of the ends of a straight line AP 100mm long when it rolls, without slipping, on a semi-circle having its diameter AB 75 mm long. Assume the line AP to be tangent to the semi-circle in the starting position. (7M)

3. a) The actual length of 500m is represented by a line of 15 cm on a drawing. Construct a vernier scale to read upto 600 m. Mark on the scale a length of 549m. (7M)
   b) A point 30mm above XY line is the plan view of two points P and Q the elevation of P is 45mm above the HP while that of the point Q is 35mm below the HP. Draw the projections of the points and state their position with reference to the principal planes and the quadrant in which they lie. (7M)

4. a) A line RS 40mm long is parallel to VP and inclined at an angle of 30^0 to HP. The end R is 15mm above HP and 20mm in front of VP. Draw the projections of the line. (7M)
   b) The plan of a straight line, AB is 45 mm long and is inclined at 30^0 with the reference line. The end, A is in the VP and 30 mm above HP. The end, B is 35 mm above HP. Draw the projections of AB, and locate its traces. (7M)
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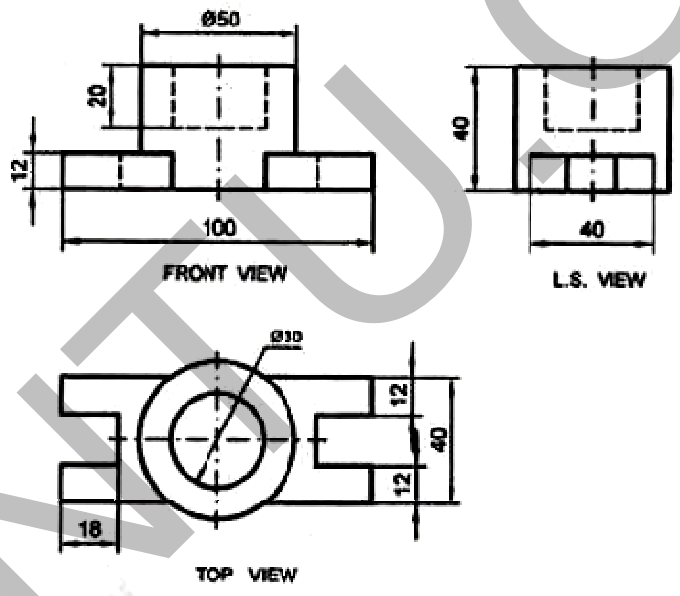
5. a) Draw the projections of a circular plane of 60 mm diameter, when contained by the horizontal plane. (7M)

   b) A rectangular plane 60mm × 40mm size is resting on HP on one of its shorter edges with its surface inclined at 60^0 to HP and perpendicular to VP. Shortest edge is making an angle of 30^0 with VP. Draw its projections. (7M)

6. a) Draw the projection of a square prism with 30mm side of its base and 50mm long axis when base is on HP and the sides of its base is equiangular to the VP. (7M)

   b) Draw the projections of a right circular cone of diameter of base 50mm and altitude 60mm when it lies on one of its generators on the HP with the vertical plane containing its axis is parallel to the VP. (7M)

7. Draw the isometric view of the object whose orthographic projections are shown in figure. (All dimensions are in mm) (14M)



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2. Answering the question in **Part-A** is Compulsory
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) Construct a Pentagon with base of side 30mm. (2M)

   b) Construct angles of 60^0 and 145^0 by means of the scale of chords. (2M)

   c) Draw the projection of a point Z, 20mm above the HP and 30mm behind the VP. (2M)

   d) Draw the front view of a triangular plane of side 40mm contained by the VP with one of its side inclined at 30^0 to the HP. (2M)

   e) Draw the top view of a pentagonal prism of 30mm side of its base and 50mm long axis when its base on the HP and an edge of its base 45^0 to the VP. (2M)

   f) Draw the orthographic projections of a cube with its 30mm base edges equally inclined to the VP. (2M)

   g) Draw an isometric front view a circle of diameter 40mm scale. (2M)

PART -B

2. a) A fixed point is 75mm from a fixed straight line. Draw the locus of a point P moving such a way that its distance from the fixed straight line is equal to its distance from the fixed point. Name the curve. Draw a normal and tangent on the curve. (7M)

   b) A circus man rides on a motor cycle, inside a globe of 4 m diameter. The motor cycle wheel is 1 m in diameter. Draw the locus of a point on the circumference of the wheel of motor cycle for its one complete turn on the maximum circular path and name the curve. (7M)

3. a) A train is running at a speed of 40 km/hr. Construct a plane scale to read up to a km and a minute. The scale should measure up to 50 km. The RF of the scale is 1:25000. On the scale show the distance covered by the train in 39 minutes. (7M)

   b) (i) Point A is 20mm above HP and 30mm in front of VP. Draw its front view and top view. (7M)
   (ii) A point M is 35mm above HP and 45 mm in front of V.P. Draw its projections.
   (iii) Draw the projections of a point A lying on HP and 30mm in front of VP.
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4. a) A line EF 85 long has its ends 25mm above HP and 20mm in front of VP. The top and front views of the line have lengths of 55mm and 70mm respectively. Draw the projections of the line and find its true inclinations with the VP and HP. (7M)

   b) A line AB, 90mm long, is inclined at 45^0 to the HP and its top view makes an angle of 60^0 with the VP. The end A is in the HP and 12mm in front of the VP. Draw its front view and find its true inclination with the VP. (7M)

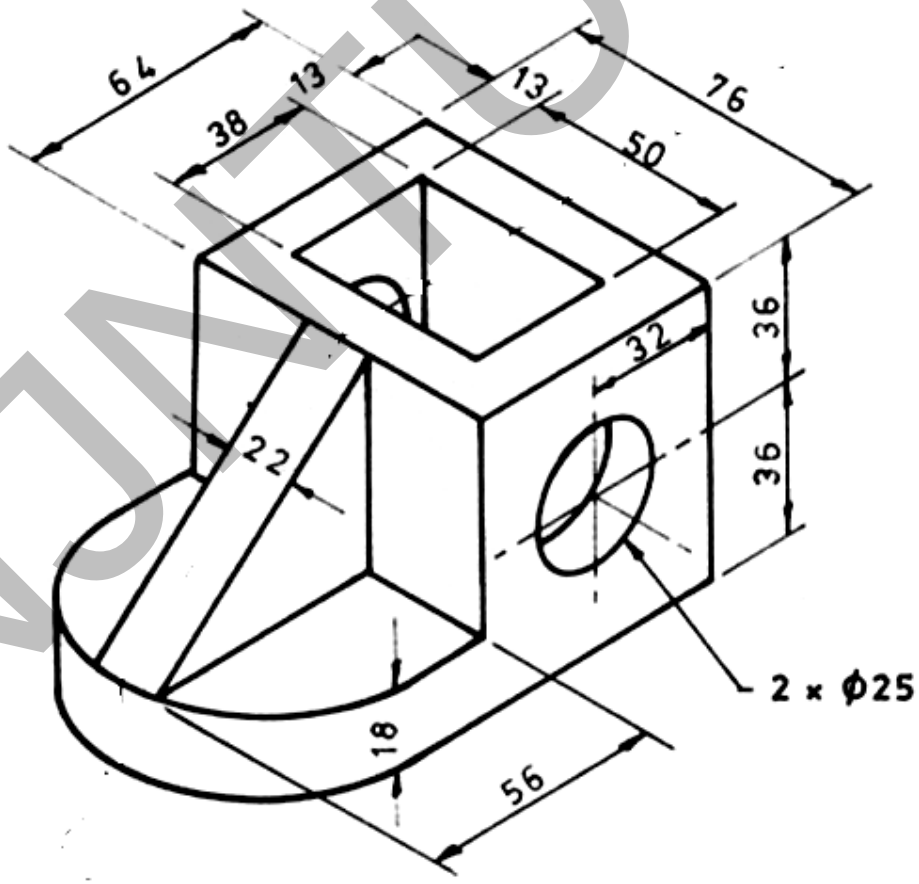
5. a) A regular pentagon of 30mm side has one side on the ground and its plane is inclined at 45^0 to HP and perpendicular to VP. Draw the projections. (7M)

   b) A regular hexagon of 40mm has a corner in the HP. Its surface is inclined at 45^0 to the HP and the top view of the diagonal through the corner which is in the HP makes an angle of 60^0 with the VP. Draw its projections. (7M)

6. a) Draw the projection of a cone, base 55 mm diameter and axis 70 mm long with axis parallel to the both reference planes. (7M)

   b) A square prism, side of base 30mm and axis 50 mm long, has its axis inclined at 60° to HP and is standing an edge of its base on the HP. Draw its projections. (7M)

7. a) Draw the orthographic projections of a pictorial view of an object shown in figure. (All dimensions are in mm) (14M)



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2. Answering the question in **Part-A** is Compulsory
3. Answer any **FOUR** Questions from **Part-B**

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PART –A

1. a) Describe a regular Hexagon in a circle of diameter 60mm. (2M)
b) Show a geometrical operation trisecting a right angle. (2M)
c) Draw the projection of a point G, 40mm below the HP and 30mm behind the VP. (2M)
d) Draw the side view of a square plane of side 50mm when its sides are equally inclined to both the reference planes. (2M)
e) Draw the front view of a triangular pyramid of 40mm base and 50mm long axis when its axis perpendicular to the VP and a side of its base parallel to the VP. (2M)
f) Draw the orthographic projections of a sphere 40mm diameter. (2M)
g) Draw the isometric view of an orthographic side view appears to be a semi-circle of diameter 60mm in size. (2M)

PART -B

2. a) Inscribe an ellipse in parallelogram having sides 150 mm and 100 mm long and an included angle of 120^0. (7M)
b) A wheel of diameter 60mm rolls on a straight horizontal road. Draw the locus of a point P on the periphery of the wheel for one revolution of the wheel, if P is initially on the road. Name the curve. (7M)

3. a) Construct a diagonal scale of R.F = 1/4000 to show 374 meters and long enough to measure up to 500 meters. (7M)
b) Two points A and B are in the HP the point A is 45 mm in front of the VP. While B is behind the VP. The distance between their projections is 90 mm and line joining their top views makes an angle of 45^0 with XY. Find the distance of the point B from the VP. (7M)

4. a) The top view of a 75mm long line measures 55mm. The line is in the VP, its one end being 25mm above the HP, Draw its projections. (7M)
b) A line AB is having its end A 10 mm above the HP and 30 mm in front of the VP. It is inclined at 45^0 to HP and 30^0 to VP. The end B is below the HP and behind the VP. The plan length of line is 80 mm. Draw projections of the line AB. Find True length and elevation length. (7M)
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Code No: R161210 **R16** SET - 4

5. a) A thin 45^0 set-square, ABC is placed in the VP with its longest edge, AB (50mm) inclined at 30^0 to HP. Its surface is rotated about AB till it makes 45^0 with the VP. Draw the plan and elevation of the set-square in its final position. (7M)

   b) A composite plate of negligible thickness is made up of a rectangle 60mm×40mm, and a semi circle on its longer side. Draw its projections when the longer side is parallel to the HP and inclined at 45^0 to the VP, the surface of the plate making 30^0 angle with the HP. (7M)

6. a) A hexagonal pyramid, base 25mm side and axis 50mm long, has an edge of its base on the ground. Its axis is inclined at 30^0 to the ground and parallel to the VP. Draw its projections. (7M)

   b) A rectangular prism, base 40mm X 25mm and axis 50mm long, has a longest edge of its base on the wall. Its axis is inclined at 45^0 to the wall and parallel to the HP. Draw its projections. (7M)

7. Draw the isometric view of the object whose orthographic projections are shown in figure. (All dimensions are in mm) (14M)