

Code No: R161210

R16**SET - 1****I B. Tech II Semester Regular/Supplementary Examinations, April/May - 2018****ENGINEERING DRAWING**

(Com. to ME, CHEM, AE, AME, Min E, PE, PCE, MET)

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 Compulsory3. Answer any **FOUR** Questions from **Part-B**

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**PART -A**

1. a) Divide a line of 85mm into 9 equal parts using dividing line by any angle method. (2M)
- b) Draw the projection of a point A on the VP and 25mm below the HP. (2M)
- c) A straight line AB 70mm long is parallel to both the principal planes. Draw its projections. (2M)
- d) An equilateral triangular plane of a side of its base 45mm is perpendicular to the VP and on the HP. Draw its projections. (4M)
- e) Draw the projection of a right regular square prism base 40mm long and length of the axis 70mm, when one of its rectangular faces is on the VP. (4M)

**PART -B**

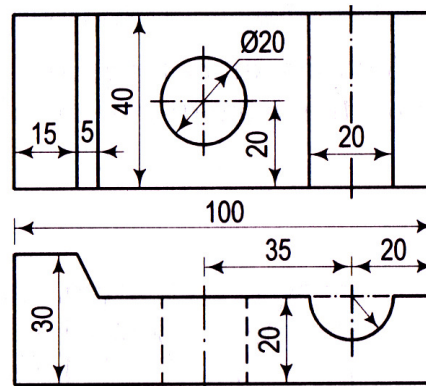
2. a) The major axis of an ellipse is 150mm long and the minor axis is 100mm long. Find the foci and draw an ellipse by 'arcs of circles method'. Draw a tangent to the ellipse at a point on it 25mm above the major axis. (6M)
- b) Draw a hypocycloid of a circle of 45mm diameter which rolls inside another circle of 200 mm diameter for one revolution. Draw a tangent and normal at any point on it. (8M)
3. a) Construct a diagonal scale of R.F =1/4000 to show metres and long enough to measure up to 500mt. Mark on it a distance of 374mt. (6M)
- b) A point A is 20mm above HP and in the first quadrant. Its shortest distance from the reference line XY is 40mm. Draw the projections of the point and determine its distance from VP. (8M)
4. The projectors of the ends of a line AB are 50mm apart. The end A is 20mm above the HP and 30mm in front of the VP. The end B is 10mm below the HP and 40mm behind the VP. Determine the true length and traces of AB, and its inclinations with the two planes. (14M)
5. a) Draw the projections of a regular pentagon of 40mm side, having its surface inclined at  $30^{\circ}$  to the VP and the side on which it rests on the VP, makes an angle of  $60^{\circ}$  with the HP. (8M)
- b) A rectangle ABCD of size 60×40 has a corner on the HP and 20mm away from the VP All the sides of the rectangle are equally inclined to the HP and parallel to the VP Draw its projections. (6M)

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6. a) A square pyramid base 40mm side and axis 90mm long has a triangular face on the ground and the vertical plane containing the axis makes an angle of  $45^\circ$  with the VP. Draw its projections. (7M)
- b) A regular pentagonal pyramid, base 30mm side and height 80mm rests on one edge of its base on the ground so that the highest point in the base is 30 mm above the ground. Draw its projection when the axis is parallel to the VP. (7M)
7. Draw an isometric view of orthographic projections shown below. (14M)



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PART -A

1. a) Construct a regular pentagon and regular hexagon having side 40mm. (4M)
- b) Two points C and D being in different quadrants has its views overlaps above XY. (2M)
Draw the 2D quadrant system locate the position of the points. Name the overlapping views of the points.
- c) A Line AB 75 mm long is in the HP and inclined 30^0 to the VP. Its end P is 25mm (2M)
in front of the VP. Draw its projections.
- d) Draw the front view of a triangular pyramid of base 40mm and height 60mm with (4M)
its base on the HP and a side of the base parallel to the VP.
- e) The top view of an object is appears like a rectangle 60×40 transform the view (2M)
into an isometric view.

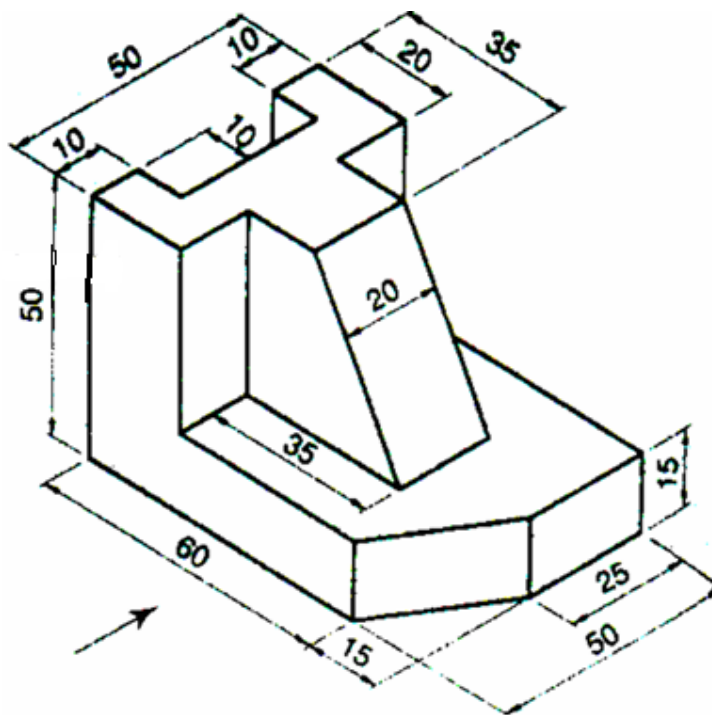
PART -B

2. a) The major axis of an ellipse is 150mm long with P as its mid point. The foci of (6M)
ellipse are 50mm away from midpoint. Draw an ellipse.
- b) A circus man rides a motor bike inside a globe of 12meters diameter. The motor (8M)
bike has the wheel of 1 meter diameter. Draw the locus of the point on the
circumference of the motor bike wheel for one complete revolution.
3. a) On a Map, the distance between two points 14cm. The real distance between them (7M)
is 20km. Draw a diagonal scale of this map to read kilometers and hectametres and
to measure up to 25km. Show a distance of 17.6km on this scale.
- b) A point 30mm above xy line is the plan view of two points P and Q. The elevation (7M)
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.
4. A line DG, 100mm long, is inclined at 30^0 to the HP and at 45^0 to the VP. Its mid (14M)
point is in the VP and 20mm above the HP. Draw its projections, if its end D is in
the third quadrant and G in the first quadrant.
5. a) A regular pentagonal plane of side 30mm, has one of its corner on the VP and its (8M)
surface is inclined at 60^0 to the VP and the edge opposite to the corner on the VP
makes an angle of 45^0 with the HP. Draw the projections of the Plane.

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R16**SET - 2**

- b) A circular plate of negligible thickness and 50mm diameter appears as an ellipse in the front view, having its major axis 50mm long and minor axis 30mm long. Draw its top view when the major axis of the ellipse is horizontal. (6M)
6. Draw the projections of a pentagonal prism, base 30mm side and axis 60mm long, resting on one of its rectangular faces on the HP with the axis inclined at 45° to the VP. (14M)
7. Draw the following orthographic views of an object shown in the pictorial projection. (14M)
- (i) Front view
 - (ii) Top view and
 - (iii) Side view



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R16**SET - 3**

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3. Answer any **FOUR** Questions from **Part-B**
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PART -A

1. a) Draw the involute of an equilateral triangle of side 20mm. (4M)
- b) Two points R and S being in different quadrants has its views overlaps below XY. (2M)
Draw the 2D quadrant system locate the position of the points. Name the overlapping views of the points.
- c) Line AB 55 mm long has its one end touching and perpendicular to the VP is 20mm above the HP. Draw its projections. (2M)
- d) Draw the front view of a rectangular pyramid of base 50X40 and height 70mm with its base on the HP and the longest side of the base parallel to the VP. (4M)
- e) The side view of an object is appears like an equilateral with the side of its base 50mm transform the view into an isometric view. (2M)

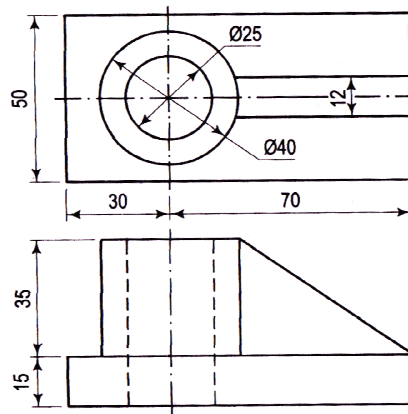
PART -B

2. a) A ball hit by a bat travels a distance of 100meters with a height of 50meters. Trace the path of the ball. (7M)
- b) The major axis of an ellipse is 200mm long and the minor axis is 150mm long. Draw the ellipse by concentric circles method. (7M)
3. a) Construct a scale of 1:8 to show decimeter and centimeter and to read up to 1m. Show a length of 7.6 dm on it. (7M)
- b) Draw the projections of the following points in third quadrant when the (7M)
(i) Point A lies in the HP and 20mm away from the VP.
(ii) Point B lies in the VP and 30mm away from the HP.
(iii) Point C lies 30mm from the HP and 20mm from the VP.
4. The top and front views of a line are inclined at 30° and 60° to the XY line respectively. One end of the line is touching both HP and VP. The other end is 50mm above HP. Draw the projections and determine its true length and true inclinations with HP and VP. (14M)
5. A pentagonal plane of edges 25mm is resting on HP with one of its corners touching it such that the plane surface makes an angle of 60° with HP. Two of the edges containing the corner on which it rests make equal inclinations with HP. When the edge opposite to this corner makes an angle of 45° with VP and nearer to the observer, draw the top and front views of the plane in this position. (14M)

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R16**SET - 3**

6. a) Draw the top, front and left views of a pentagonal prism of sides of base 25 mm and height 60 mm resting on an edge of base on the HP such that the axis is inclined at 30° to the HP and parallel to the VP. (7M)
- b) Draw the projections of a hexagonal pyramid, base 30 mm side and axis 60 mm long, having its base on the HP and one of the edges of the base inclined at 45° to the VP. (7M)
7. Draw an isometric view of orthographic projections shown below. (14M)



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

PART -A

1. a) Draw the isometric view of a cone, base 50mm diameter and axis 60mm long (6M)
when axis is vertical.
- b) A thin circular disk of 50mm diameter is allowed to roll without slipping from (8M)
upper edge of sloping plank which is inclined at 25° with the horizontal plane.
Draw the curve traced by the point on the circumference of the disk.

PART -B

2. a) Construct a hypocycloid with rolling circle of 50mm diameter and directing circle (8M)
of 175mm diameter. Draw a tangent to it at a point 50mm from the centre of
directing circle.
- b) A fountain discharges water from ground level at an inclination of 45° to the (6M)
ground. The jet travels a horizontal distance of 7.5 meter from the point of
discharge and falls on the ground. Trace the path of the jet. Name the curve.
3. a) A room of 1728m^3 volume is shown by a cube of 4 cm side. Find the RF and (7M)
construct a scale to measure up to 50m. Also indicate a distance of 37:6 m on the
scale.
- b) Two pegs fixed on a wall are 5m apart. The distance between the pegs measured (7M)
parallel to the floor is 4.2m. If one peg is 2m above the floor, find the height of the
second peg and the inclination of the line joining two pegs with the floor.
4. An 80mm long line AB is inclined at 45° to the VP. Its end A lies on the HP and (14M)
15 mm in front of the VP. The top view of line measures 60mm. Draw its
projection and determine its inclination with the HP. Also locate the traces.
5. A 60° set square of 145mm longest side is so kept that the longest side is in the HP (14M)
making an angle of 30° with the VP and the set square itself inclined at 45° to the
HP. Draw the projections of the set square.

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R16**SET - 4**

6. a) A hexagonal pyramid of 30 mm side of base and 45 mm length of axis is resting on one of its triangular faces on the HP. Draw the projections of the pyramid when its edge inclined at 60° to the VP. (8M)
- b) Draw the projections of a triangular prism, base 40mm side and axis 50mm long, resting on one of its bases on the HP with a vertical face perpendicular to the VP. (6M)
7. Draw the following orthographic views of an object shown in the pictorial projection. (All dimensions are in mm) (14M)
- (i) Front view
 - (ii) Top view and
 - (iii) Side view

