JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
I B.TECH –REGULAR EXAMINATIONS MAY - 2010
ENGINEERING DRAWING
(ELECTRONICS & COMMUNICATIONS ENGINEERING)

Time: 3hours   Max.Marks: 75

Answer any FIVE questions
All questions carry equal marks
- - -

1.a)   A circle of 45mm diameter rolls along a straight line without slipping. Draw a curve traced out by a point P on the circumference for one complete revolution of the circle. Name the curve and draw a tangent to the curve at a distance of 35 mm from the straight line.

b)   Construct a plain scale to show metres and decimeters, when 3 centimeters are equal to 2 metres and long enough to measure up to 5 metres.   [8+7]

2.   Two pillars A and B 8m and 6m high are separated by a distance of 80m as seen in the view from the front as measured parallel to XY. In the view from the left they appear to be separated by a distance of 5m as measured perpendicular to XY. A wire is tightly tied to the top ends of the poles A and B. Find the true length of the wire.
[15]

3.   A regular hexagonal lamina of sides 40 mm is standa corner on the ground with the diagonal connecting this corner to the opposite corner being perpendicular to the ground. A centrally punched rectangular hole 20 mm × 40 mm with the shorter side parallel to the diagonal perpendicular to the ground appears to be a square in the view from the front. Draw the projections of the lamina.   [15]

4.   A hexagonal prism of 25 mm base edge and height 60 mm is standing on its base on the ground and two adjacent edges of the base make equal inclinations to the VP. A hole in the object appears to be an ellipse in the view from the front with the major axis situated along the view of the axis from the front. The mid point of the axis as appears in the view from the front coincides with the mid point of the major axis. The major axis is 50 mm and the minor axis 30 mm. Draw the development of the surface of the object.   [15]

5.   A right circular cylinder of base diameter 60 mm and 80 mm high is resting on its base on the ground. A horizontal cylinder of base diameter 40 mm penetrates the first cylinder. The axes of the objects are 10 mm from each other. Draw the curves of intersection.   [15]

6.   A hexagonal prism of base edge 30 mm and height 70mm long is resting on its rectangular face on the ground with its axis parallel to the VP. A square prism of 20 mm base edge and height 40 mm rests on its base on the top rectangular face of the hexagonal prism. The axis of the square   prism intersects and bisects the axis of the hexagonal prism when produced. One of the base edges of the square prism is parallel to the VP. Draw an isometric projection of the set up.   [15]

7. Draw the front, top and both side views of the isometric projection given in figure. All dimensions are in mm. [15]
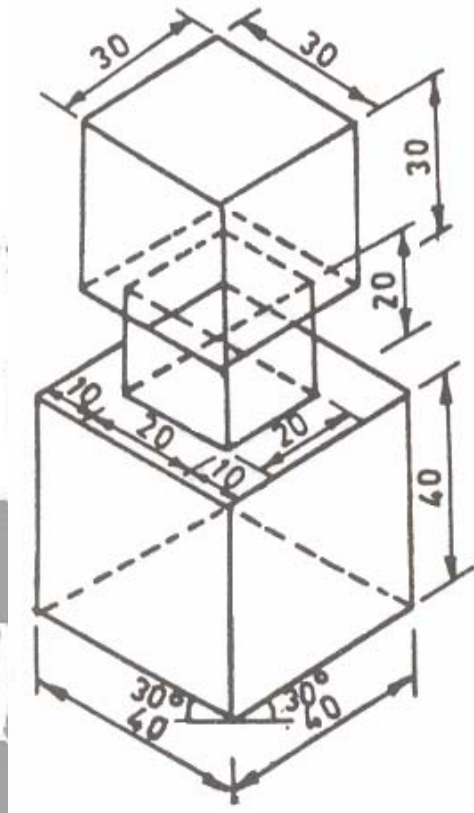
8. ABCD is one of the rectangular faces of a hexagonal prism. One of the base edges AB is 30 mm long and the height of the prism is 70mm. The prism is restits base on the ground with the face ABCD being perpendicular to the PP and the longer edge (BC) touching the PP. The station point is 50mm to the right of the axis of the prism. The station point is 70mm away from the PP and 80mm above the ground. Draw the perspective view of the object. [15]

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Time: 3hours   Max.Marks:75

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1.a)   A circle of 50mm diameter, rolls along a straight line without slipping. Draw a curve traced out by a point on the circumference for 1 ½ revolutions of the circle. Name the curve.

b)   Construct a plain scale to show kilometers and hectometers when 25 centimetres are equal to 1 kilometre and long enough to measure up to 6 kilometres. Find R.F. and indicate, a distance of 5 kilometres and 6 hectometre of the scale.   [8+7]

2.   Two pillars P and Q 10 m and 5 m high are separated by a distance of 80 m as seen in the view from the front as measured parallel to XY. In the view from the left they appear to be separated by a distance of 5 m as measured perpendicular to XY. A wire is tightly tied to the top ends of the poles P and Q. Find the TL of the wire. [15]

3.   A regular hexagonal lamina of 30 mm sides is standa co   rner on the ground. The diagonal connecting this corner to the opposite corner is parallel to the VP, 50 mm from it and 30° to the ground. The plane of lamina makes 30° to the VP. Draw the projections on the three principal planes.   [15]

4.   A rectangular prism 30 mm × 60 mm and height 100 mm is standing on the base on the ground   with the longer edges of the base parallel to the VP. It is cut by an AIP plane to give the view from   above of the section as a square of 30 mm sides. Draw an aux. View with the true shape of the section and find the inclination of the auxiliary inclined plane with the ground.   [15]

5.   A vertical cylinder of 60 mm diameter of the base is penetrated by an object whose true section is an ellipse of major axis 60 mm and minor axis 40 mm. The axis of this object is parallel to both the HP and the VP and intersects the axis of the vertical cylinder at right angles. The major axis is parallel to the VP and the minor axis is parallel to the HP. Draw the curves of intersection.   [15]

6.   A triangular prism of 50mm base edge and height 80mm is resting on its base on the ground with one of its rectangular faces parallel and nearer to the VP. A square prism of base edge 25mm and 80mm long interpenetrates the triangular prism. The axes of the two objects intersect at right angles to each other. Both the axes are parallel to the VP. Two adjacent longer faces of the square prism are equally inclined to the V.P. Draw the isometric view of the objects.   [15]

7. Draw the front, top and both side views of the isometric projection given in figure. All dimensions are in mm.   [15]
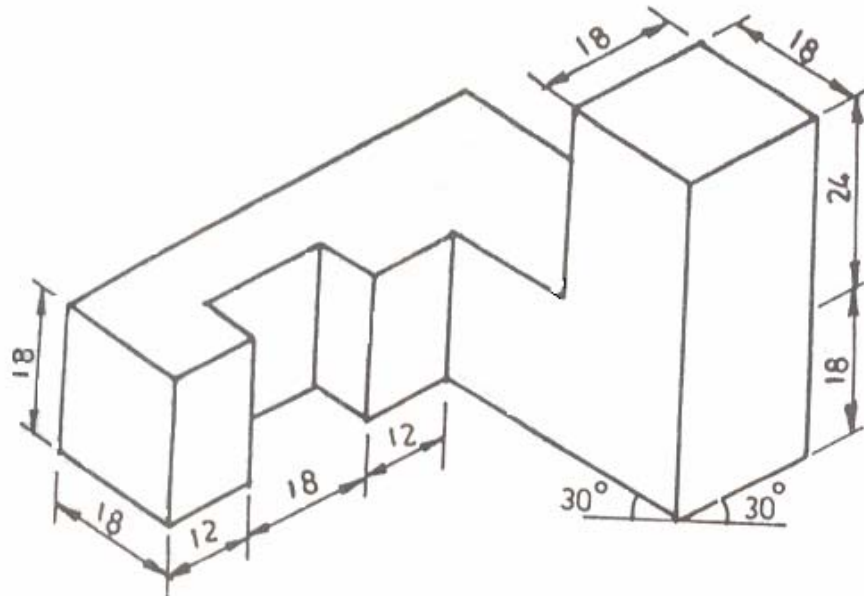
8. A pentagonal prism of base edge 30mm and height 60mm is restone of its rectangular faces on the ground. The base edges on the ground perpendicular to the PP. One of the longer edges of the prism is touching the PP. The station point is 30mm to the right of the top face of the prism. The station point is 70mm from the PP and 60 mm above the ground. Draw the perspective projection of the object.   [15]

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Time: 3hours   Max.Marks:75

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1.a)   Construct a hypocycloid when the diameters of the rolling circle and directing circle are 50 mm and 200 mm respectively. Draw also a normal and tangent at a point 120 mm from the centre of the directing circle.

b)   Construct a plain scale to compute time in minutes and distance covered by a train in km., when   the train passes between two stations 240 km apart in four hours. The scale should have R.F. 1/400000. Show the distance covered in 45 minutes on the scale.   [8+7]

2.   Three pegs are arranged on a flat ground on the circumference of a circle of diameter 3000 mm. The pegs when joined by straight lines form an equilateral triangle. A post 6000 mm high is fixed vertically on the ground at the centre of the circle. The pegs are connected to the top of the post by tight ropes. Find the TL and inclination of all the ropes with the ground.   [15]

3.   The true shape of the section of a cylinder restthe rim on the ground, the axis inclined to the ground and parallel to the VP is a rectangle 15 mm by 60 mm. The longer edge is inclined at 30° to the ground line. The lowest corner of this rectangle is 12 mm above the ground. Draw the sectional view from the front and find the inclinations of the section plane with respect to the reference planes.   [15]

4.   A cylinder of base 40 mm diameter and height 60 mm is standing on one of the points on the base circle and the base makes 30^0 to the ground and the axis is parallel to the V.P. The axis leans towards the right. The object is cut by a section plane such that the view from the right shows the true shape of the section. The top most portion of the section is 50 mm above the ground. Draw the true shape of the section and also find the inclination of the section plane with the V.P and H.P.   [15]

5.   A hexagonal prism of base edge 25 mm is inclined at 60° to the ground. Two adjacent base edges are equally inclined to the ground. This prism penetrates vertical cylinder of 80 mm base diameter.   The axes of the objects intersect each other and both are parallel to the VP. Draw the curves of intersection.   [15]

6.   A hollow square prism of 70 mm height is resting on its base on the ground with one of the base edges parallel to the VP. Outside dimensions of the base are 50mm×30mm. It is cut by a section plane inclined at 30° to the VP and 60° to the ground. The section plane is perpendicular to the profile plane. The lowest portion on the prism which the section plane passes through is 20mm above the base. Draw an isometric view of the larger piece of the prism remaining over after it is being cut. The cut portion should be visible to the observer.   [15]

7. Draw the front, top and both side views of the isometric projection given in figure. All dimensions are in mm.   [15]
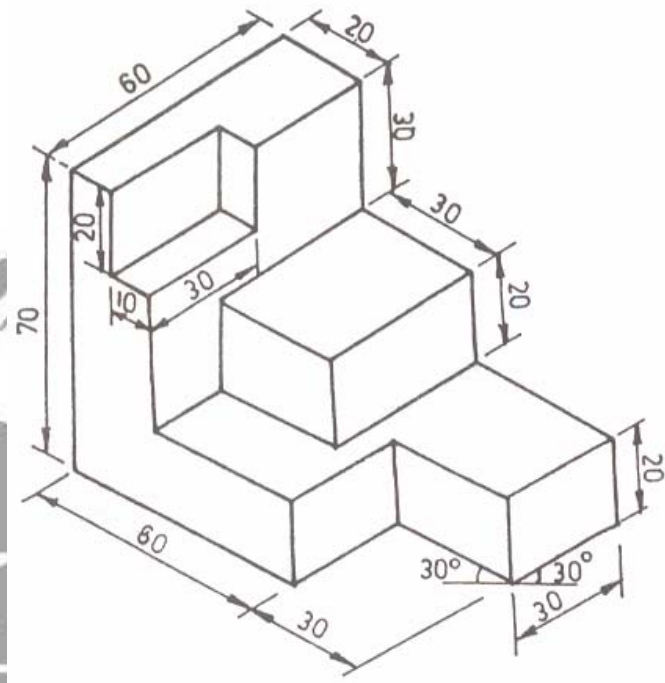
8. A triangular pyramid of base edges 40mm long and axis 70mm is restone of the base edges on the ground with the base being parallel to the PP. The apex is nearer to the PP and 20mm behind it. The station point is 50mm to the right of the axis and 60mm from the PP. The horizon is 70mm from the ground. Draw the perspective view of the object.   [8+7]

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Answer any FIVE questions
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- - -

1.a) Draw an involute of a circle of 35 mm diameter. Draw also a normal and tangent to it at a point 75 mm away from the centre of the circle.

b) Construct a diagonal scale to read meters, decimeters and centimeter and long enough to measure upto 5 metres when one metre is represented by 3 centimeter. Find R.F. and indicate on the scale, a distance of 4 metres, 7 decimeters and 6 centimeters.

[8+7]

2. Four pegs are fixed one at each corner of a regular pentagon of 1500 mm side drawn on a flat ground. A post 5000 mm high is fixed erect on the blank corner of the pentagon. The tip of the post is connected to each peg by a tight rope. Find the TL and inclinations of each rope. [15]

3. AB and CD are the two mutually perpendicular diameters of a circular lamina of diameter 50 mm. The lamina is standing on the point B on the ground with the surface making 30° to the ground. The diameter CD makes 60° to the VP. Draw the projections of the lamina. [15]

4. A cone of base 40 mm diameter and height 60 mm is stand one of the points on the base circle and the base makes 30° to the ground and the axis is parallel to the VP. The axis leans towards the left. The object is cut by a section plane such that the view from the left shows the true shape of the section. The topmost portion of the section is 40 mm above the ground. Draw the true shape of the section and also find the inclination of the section plane with the VP and the HP. [15]

5. A pentagonal prism of edges of base 20 mm has one of its longer edges is on HP and face opposite to this edge is parallel to the HP. This penetrates a vertical cylinder of base diameter 60 mm such that the axes of both the objects intersect each other and parallel to the VP. Draw the curves of intersection. [15]

6. Draw the isometric projections of a frustum of a pentagonal pyramid which is resting on one of its base corners on the ground with the axis inclined at 45° to the ground and parallel to the VP. The two adjacent base edges connected with the corner on the ground make equal inclinations with the ground. The base edge measures 30mm, the top edge measures 20mm. The height of the frustum of the pyramid is 40mm.

[15]

7. Draw the front, top and both side views of the isometric projection given in figure. All dimensions are in mm. [15]
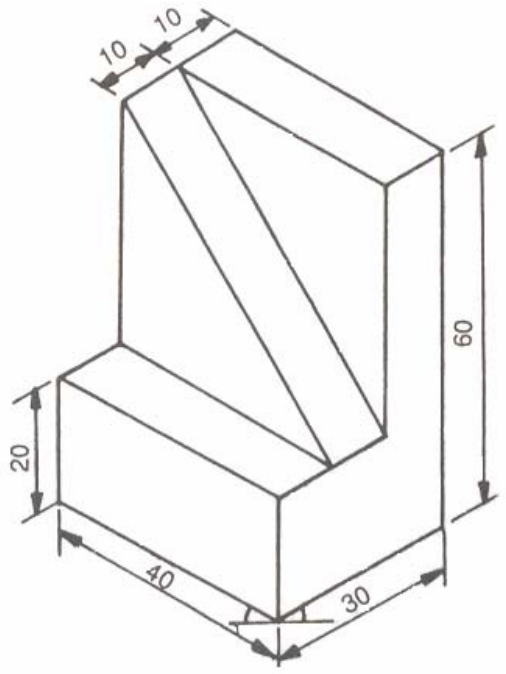
8. A cylinder of base diameter 50mm and height 80mm is restthe ground on its base. The object is placed in front of the PP with one of its generators touching the PP. When the base is enclosed in a square, one of the edges of this square makes 40° with the PP. The station point is directly in front of the generator which is touching the PP and 70mm in front of it. The horizon plane is 40mm above the ground. Draw the perspective projection of the object. [15]

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