SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY

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QUESTION BANK

Subject Code :(20ME0301) Engineering Graphics

Course & Branch : B.Tech – ALL

Year & Sem : I – B.Tech & I –Sem   **Regulation :** R20

UNIT – I

1		Construct an ellipse, with distance of the focus from the directrix as 50 mm and eccentricity as 2/3. Also draw normal and tangent to the curve at a point 40 mm from the directrix	L3	CO1	12M
2		The vertex of a hyperbola is 60 mm from its focus. Draw the curve, if the eccentricity is 3/2. Draw a normal and a tangent at a point on the curve, 75 mm from the directrix.	L3	CO1	12M
3		Construct an ellipse when the distance between the focus and directrix is 35 mm and eccentricity is 3/4. Also draw the tangent and normal to any point on the curve	L3	CO1	12M
4	a	Construct an ellipse having major axis is equal to 100 mm and the minor axis is equal to 70 mm. Use the concentric circle method	L3	CO1	6M
	b	Draw a parabola having a distance of 50 mm between the focus and directrix and identify normal and tangent to the parabola at a point 35 mm from the focus	L3	CO1	6M
5	a	Inscribe an ellipse in a parallelogram having sides 150 mm and 100 mm long and an included angle of 120^0.	L3	CO1	6M
	b	construct an ellipse in a parallelogram having sides 120 mm and 80 mm long by using Rectangle method	L3	CO1	6M
6		Draw an ellipse(half ellipse by concentric circle method and half by rectangle method) having major axis is equal to 100 mm and the minor axis is equal to 70 mm.	L3	CO1	12M
7	a	Construct a parabola with base 120 and length of the axis 60 by using Rectangle method.	L3	CO1	6M
	b	Construct a parabola in a parallelogram of sides 100 x 60 with an included angle of 75^0	L3	CO1	6M
8		A point P is 30 mm and 50 mm respectively from two straight lines which are inclined at 75^0 to each other. Draw the rectangular hyperbola from p within 10 mm distance from each line.	L3	CO1	12M
9		Draw an Epi-cycloid of rolling circle of diameter 40 mm which rolls outside another circle (base circle) of 150 mm diameter for one revolution and construct a tangent and normal at any point on the curve.	L3	CO1	12M
10		Construct a hypo cycloid of a circle of 50 mm diameter, which rolls inside another circle of 180 mm diameter for one revolution counter clockwise	L3	CO1	12M

11	a	Develop the involute of a regular hexagon of side 20 mm. Draw a tangent and normal to the curve at a distance of 100 mm from the centre of the hexagon.	L3	CO1	6M
	b	a)Draw the involute of a square of side 25 mm b)Draw the involute of an equilateral triangular of side 20 mm.	L3	CO1	6M
12	a.	Draw the involute of a regular pentagon of side 20 mm	L3	CO1	5M
	b.	Develop the involute of a circle of side diameter 50 mm. Draw a tangent and normal to the curve at a distance of 100 mm from the centre of the circle	L3	CO1	7M

UNIT – II

1.	a.	Draw the projections of the following points, keeping the distance between the projectors as 25mm on the same reference lines. A – 20mm above HP and 30mm in front of VP B – 20mm above HP and 30mm behind VP C – 20mm below HP and 30mm behind VP D – 20mm below HP and 30mm in front of VP E – On HP and 30mm in front of VP F – On VP and 20mm above HP G – Lying on both HP and VP	L3	CO2	12M
2	a.	State the quadrants in which the following points are located A – Front view blow xy and top view above xy B – Front and top views are above xy C – Front view above xy and top view below xy D – Front and top views are below xy	L3	CO2	6M
	b	Identify the relative positions of the projections of the following points with respect to xy A – In the second quadrant B – In the third quadrant C – In the first quadrant p D – In the fourth quadrant	L3	CO2	6M
3.		A point A is 20mm above the HP and 50mm in front of the VP. Another point B is 40mm below the HP and 15mm behind the VP. The distance between the projectors of the points, measured parallel to xy, is 75mm. Draw the projections of the points. Draw lines joining their FVs and TVs	L3	CO2	12M
4		A point E is 20 mm below HP and 30mm behind VP. Another point F is infront of VP and above the HP. The distance between the projectors of the points is 60mm .Determine the point F and Point E if the length of line joining their top views and front views are 80 & 90.	L2 L3	CO2	12M

5		Draw the projections of a straight line AB of 70 mm long, in the following positions: a) parallel to both HP and VP and 20 mm from each. b) Parallel to and 20 mm above the HP and on VP c) Parallel to and 30 mm in front of VP and on HP d)Perpendicular to HP, 30 mm in front of VP & one end 25 mm above HP e) Perpendicular to HP, 30 mm in front of VP & one end on HP	L3	CO2	12M
6		Draw the projections of a straight line AB of 70 mm long, in the following positions: a)Inclined at 30^0 to VP, in HP and one end on VP b) Inclined at 45^0 to HP, one end 20 mm above HP and parallel to and 30 mm in front of VP c) Inclined at 60^0 to VP, one end 20 mm in front of VP and parallel to and 25 mm above HP	L3	CO2	12M
7		A line AB of 100mm length is inclined at an angle of 30^0 to HP and 45^0 to VP. The point A is 15mm above HP and 20mm in front of VP. Draw the projections of the line	L3	CO2	12M
8		A line NS 80mm long has its end N 10mm above HP and 15mm In front of VP. The other end S is 65mm above HP and 50mm in front of VP. Draw the projections of the line and Find its true inclinations with HP & VP.	L3	CO2	12M
9		A line AB 50mm long, has its end A away from the HP and VP than end B. The line is inclined to the HP at 30^0 and to the VP at 45^0. Draw the projections if end A is 35mm above the HP and 50mm in front of the VP.	L3	CO2	12M
10.		End A of a line AB is 15mm above HP & 20mm infront of VP. While is end B is 50mm above HP & 60mm infront of VP. The distances between End projectors of the line is 50mm.Draw the projections of line. Find its True length and True inclinations with VP and HP.	L3	CO2	12M
11		A Line EF 85mm long has its end E is 25mm above HP and 20mm infront 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 VP & HP.	L3	CO2	12M
12		End P of a line PQ 70mm long is 15mm above HP and 20mm infront of VP . Q is 40mm above HP. The top view of the line is inclined at 45^0 to VP. Draw the projections of the line and find its true inclinations with VP and HP.	L3	CO2	12M

UNIT - III

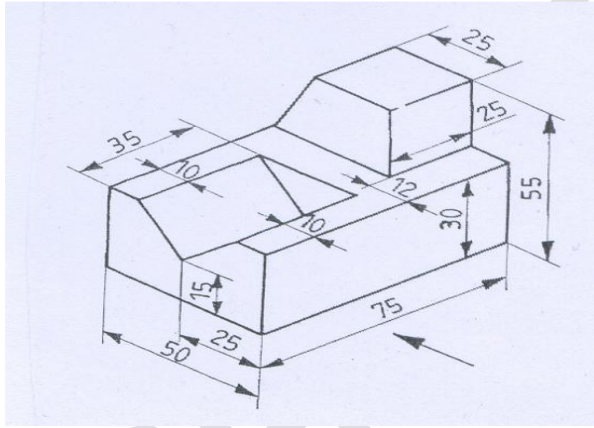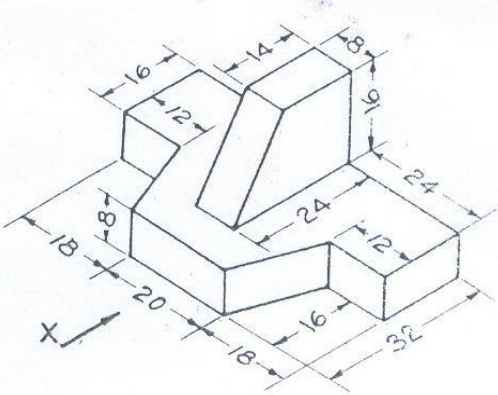| 1.		A square plane ABCD of side 30mm is parallel to HP and 20mm away from it. Draw the projections of the plane, when (i) two of its sides are parallel to VP and (ii) and one of its side is inclined at 30^0 to VP.	L3	CO3	12M
2.		An equilateral triangular plane ABC of side 40mm has its plane parallel to VP and 20mm away from it. Draw the projections of the plane when one of its sides is (i) perpendicular to HP (ii) parallel to HP and (iii) inclined to HP at an angle of 45^0.	L3	CO3	12M
3.		A regular hexagonal plane of 45 mm side has a corner on HP, and its surface is inclined at 45^0 to HP. Draw the projections, when the diagonal through the corner, which is on HP makes 30^0 with VP	L3	CO3	12M
4.		A thin 30° – 60° set-square has its longest edge (diagonal) on HP and inclined at 30° to VP. Its surface makes an angle of 45° with HP. Draw the projections, choosing suitable size for the set-square.	L3	CO3	12M
5.		A semi circular plane of diameter 70mm has its straight edge on the VP and inclined at 30 degree to the HP .Draw the projection of the plane when its surface is inclined at 45^0 to VP	L3	CO3	12M
6.		A cone of diameter 50 mm and axis 60 mm has its generator in the VP and the axis is parallel to the HP.Draw its projections.	L3	CO3	12M
7.		A pentagonal prism of base side 30mm and axis 60mm has one of its rectangular faces on the HP and the axis inclined at 60 ^{o} to the VP. Draw its projections.	L3	CO3	12M
8.		A cylinder of base diameter 5omm and axis 70 mm has a generator in the VP and inclined at 45° to the HP. Draw its projections	L3	CO3	12M
9.		A pentagonal prism of base side 30 mm and axis 60mm is resting on one of its rectangular faces on HP, with the axis parallel to VP.Draw its projections.	L3	CO3	12M
10.		A pentagonal prism of base edge 30mm and axis 60mm rests on an edge of its base in the HP. Its axis is parallel to VP and inclined at 45° to the HP. Draw its projections	L3	CO3	12M

UNIT – IV

1.		A cube of side 40 mm is resting on HP on one of its faces, with a vertical face inclined at 30^0 to VP. It is cut by a section plane inclined at 45^0 to HP and passing through the axis at 8 mm from the top surface. Draw the projections of the solid and also show the true shape of the section.	L3	CO4	12M
2.		A pentagonal pyramid with edge of base 25 mm and axis 65 mm long, its base is resting on HP. It is cut by a section plane, inclined at 60^0 to HP and perpendicular to VP at bisect the axis. Draw the projections and obtain the true shape of the section.	L3	CO4	12M

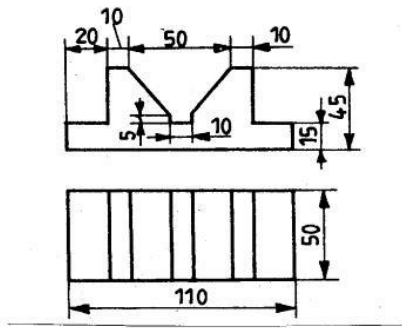| 3.		A hexagonal prism of side of base 30 mm and length of axis 75 mm is resting on its base on HP. It is cut by a section plane inclined at 45^0 to HP and passing through top corner. Draw the front and sectional top views of the solid and true shape of the section.	L3	CO4	12M
4.		A square pyramid of base 40 mm and axis 60 mm long, Its base lies on VP with its axis parallel to HP. A cut sectional plane, 60^0 to VP and it pass 10mm away from the axis. Draw the projections sectional front view.	L3	CO4	12M
5.		A cone of 50 mm diameter and axis 70 mm long. Its base is on HP.It is cut by a sectional plane perpendicular to VP and inclined to HP at 45^0 from apex 32mm .Draw the projections of FV,S.TV, True shape.	L3	CO4	12M
6.		A square prism of side of base 40 mm and axis 80 mm long, is resting on its base on HP such that, a rectangular face of it is parallel to VP. Draw the development of the prism.	L3	CO4	12M
7.		A cylinder of diameter of base 40 mm and axis 55 mm long, is resting on its base on HP. It is cut by a section plane, perpendicular to VP and inclined at 45^0 to HP. The section plane is passing through the top end of an extreme generator of the cylinder. Draw the development of the lateral surface of the cut cylinder.	L3	CO6	12M
8.		A cone of base 50 mm diameter and height 65 mm rests with its base on HP. A section plane perpendicular to VP and inclined at 30^0 to HP bisects the axis of the cone. Draw the development of the lateral surface of the truncated cone.	L3	CO6	12M
9.		A pentagonal pyramid, side of base 30 mm and height 52 mm, stands with its base on HP and an edge of the base is parallel to VP. It is cut by a plane perpendicular to VP, inclined at 40^0 to HP and passing through a point on the axis, 32 mm above the base. Draw the development of the lateral surface of the truncated pyramid	L3	CO4	12M
10.		A square pyramid, with side of base 30 mm and axis 50 mm long, is resting on its base on HP with an edge of the base parallel to VP. It is cut by a section plane, perpendicular to VP and inclined at 45^0 to HP. The section plane is passing through the mid-point of the axis. Draw the development of the surface of the cut pyramid.	L3	CO6	12M

UNIT – V

| 1.		Draw the isometric projection of a pentagonal prism of base side 35 mm and axis 60mm. The prism rests on its base on the HP with an edge of the base parallel to the VP.	L3	C05	12M
2.	a.	Draw the isometric view of a cylinder of base diameter 50mm and axis 60 mm the axis of the cylinder is perpendicular to the (a)HP (b)VP	L3	C05	6M
	b.	Draw the isometric view of a circular lamina of diameter 50mm on all the three principal planes using four centre methods.	L3	C05	6M
3.		Draw the isometric view of a cone of base diameter 50mm and	L3	C05	12M

		axis 60 mm. The cone has its base on (a)HP (b)VP			
4.	**a**	Draw the isometric projection of a hexagonal prism of base side 30 mm and axis 70mm. The prism rests on its base on the HP with an edge of the base parallel to the VP.	L3	C05	6M
	b	Draw the isometric projection of the frustum of a cone of base diameter 60 mm ,top diameter 30mm,and height 55mm.	L3	C05	6M
5.		Draw the isometric projection of the frustum of a hexagonal pyramid of base side 40 mm ,top side 25mm,and height 70mm. The frustum rests on the HP	L3	C05	12M
6		Draw three views of the blocks shown pictorially in figure according to first angle projection 	L3	C06	12M
8.		Draw three views of the blocks shown pictorially in figure according to first angle projection 	L3	C06	12M
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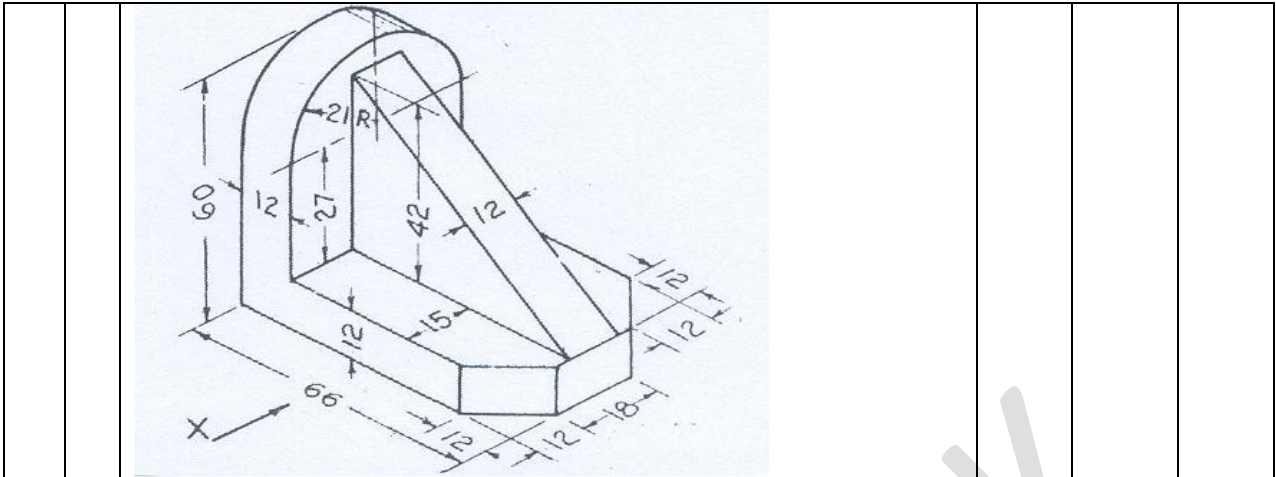
9.		Show the isometric view of the following sketch.	L1	C06	12M
10		Construct the isometric view of the following sketch.	L3	CO6	12M
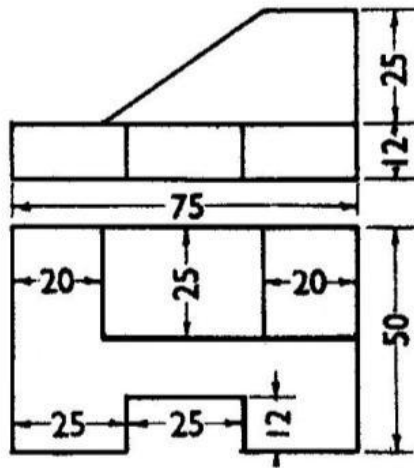
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