

INSTITUTE OF AERONAUTICAL ENGINEERING

Dundigal, Hyderabad - 500 043

MECHANICAL ENGINEERING

TUTORIAL QUESTION BANK

Course Name	:	ENGINEERING DRAWING
Course Code	:	A10301
Class	:	I - B. Tech
Branch	:	Common for all Branches
Year	:	2014 - 2015
Course Faculty	:	Dr D. Govardhan, Professor; Dr K. Somaiah, Professor; Mr A. Nikhil Kumar, Assistant Professor

OBJECTIVES

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

1. Group - A (Short Answer Questions)

S No.	Question	Blooms	Program
	C C	Taxonomy	Outcome
		Level	
	UNII-I		1
1	Construct an ellipse. When the distance of the focus from the directrix is		a,i,k
	equal to 60 mm and eccentricity 2/3. Also draw a normal and a tangent to	Analyse	
	the curve at a point 35 mm from the focus		
2	Old road map of Bombay city was drawn with 10cm, on the map		a,k
	representing 25 miles. Construct a plain scale to read miles on this map	Analyse	,
	and long enough to measure distance between gateway of India and	j ~ -	
	borivalli which is 40 miles. Construct a comparitive scale attached to the		
	above scale to read kilometre unto 70 km (1 mile = 1.600 km)		
2	above searc to read knomedic upto 70km. (1 mme $= 1.000$ km).		;]2
3	Draw a hyperbola having its two asymptotes included at 70 to each other	A 1	1,K
	and passing through a point P at a distance of 30mm from one asymptote	Analyse	
	and 36mm from the other. Draw a normal and tangent at any convenient		
	point.		
4	Draw a cycloid for one complete revolution of a cycle having a 30 mm		a,i
	radius. Taking the top most point on the rolling circle as the initial	Analyse	
	position of the generating point. Draw a tangent and a normal to the	2	
	curve at a point distant 40mm above the base line.		

S No.	Question	Blooms	Program
		Taxonomy	Outcome
		Level	
5	The distance between two towns is 225 km. a train covers this distance in		a,i,k
	5 hours. Construct a scale to measure off the distance covered by the train	Analyse	
	in a single minute and up to 1 hour. The scale is drawn to $1/(300000)$.		
	Show on it the distance covered in 47 minutes.		
6	A Stone is thrown from a 4m high building and at its highest flight, the	A 1	a,i
	stone just crosses the top of a 10 m high tree from the ground. Irace the	Analyse	
	the tree is 5m. Find the distance of the point from the building where the		
	stone falls on the ground		
7	Construct a scale of 1:14 to read feet and inches and long enough to	Analyse	aik
,	measure 7 feet. Show a distance of 5 feet 10 inches on it	7 maryse	<i>a</i> ,1,K
8	Draw a straight line AB of any length Make a point F 80 mm from AB	Analyse	ak
Ũ	Trace the paths of a point P moving in such a way that the ratio of its	1 11111 9 5 0	
	distance from the point F, to its distance from AB is		
	(a) 3:2		
	(b) 1		
	Plot at least 10 points. Name each curve. Draw a normal and a tangent to		
	each curve at a point on it 45mm from F.		
9	Inscribe an ellipse in a parallelogram having sides 150 mm and 100 mm		i,k
	long and included angle 120°. Draw tangent and normal at 60 mm from	Analyse	
10	focus. Also draw a parallel ellipse at 20mm outside the original ellipse.		
10	A circle of 40 diameter rolls on the concave side of another circle of 40	A	a,1
	radius. Draw the path traced by a point on the generating circle for one complete revolution	Analyse	
	UNIT.II		
1	The front view and ton view of a straight line PO measures 50mm and 65	100	ai
1	mm respectively. The point P is in the HP and 20 mm infront of the VP	Analyse	<i>a</i> ,1
	and the front view of the line is inclined at 45° to the reference line.	- CO	
	Determine the true length of PQ, true angles of inclination with the		
	reference planes and the trace.	de la	
2	A line AB of 70mm long has its end A at 10mm above HP and 15mm	Analyse	a,i,k
	infront of VP. Its front view and top view measures 50 & 60 respectively.	100	
	Draw the projections of the line and determine its inclinations with HP		
	and VP.		
3	A line PQ inclined at an angle 30° to the HP has end P at 15 mm above	A 1	a,k
	the HP and 50 mm in front of VP., while the end Q lies in the VP. Draw	Analyse	
	the projections of the line when the sum of its inclinations with the HP and VD is 00^0 . Determine the true inclination with the reference planes		
	and VF is 90 Determine the true inclination with the reference planes		
4	A line AB 65 mm long has its end A 25 mm above HP and 20 mm in	Analyse	ik
	front of VP. The end B is 40 mm above HP and 50 mm in front of VP	1 maryse	1,1
	Draw its projections and find its inclinations with HP and VP. Determine		
	traces.		
5	A hexagonal plane of side 30 mm has a corner on the ground. Its surface		a,i
	is inclined at 450to the HP and the top view of the diagonal through the	Analyse	
	corner which is in the HP. Makes an angle of 600 with the VP. Draw its	-	
	projections		
6	PQRS is a rhombus having diagonal PR=60 mm and QS= 40 mm and	Analyse	a,i,k

 they are perpendicular to each other. The plane of the rhombus is incline to H.P. such that its top view appears to be square. The top view of Pl makes 300 with the V.P. Draw its projections and determine inclination of the plane with the V.P. A regular hexagonal lamina with its edge 50 mm has its plane inclined and the statement of the plane inclined and the statement of the plane inclined and the statement of the sta	Level d d f f ut Analyse s n e	a,k
 they are perpendicular to each other. The plane of the rhombus is incline to H.P. such that its top view appears to be square. The top view of Pl makes 300 with the V.P. Draw its projections and determine inclination of the plane with the V.P. A regular hexagonal lamina with its edge 50 mm has its plane inclined and the statement of the plane inclined and the statement of the plane inclined and the statement of the sta	d R f f xt Analyse s n e	a,k
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The plane with the V.P.	at Analyse s n e	a,k
1 / 1 A regular hexagonal laming with its edge 50 mm has its plane inclined s	an analyse s	a,ĸ
450 to II D and bing with any of its adapted in II D. The alang of any of its	n e	
450 to H.P and Tying with one of its edges in H.P. The plane of one of it diagonals is inclined at 450 to XV. The corner percent to VD is 15mm i	e	
front of it. Draw its projections	e	
8 A hexagonal plane of side 30 mm has a corner on the ground. Its surfac		ik
is inclined at 45 [°] to the HP and the top view of the diagonal through th	e Analyse	1,1
corner which is in the HP Makes an angle of 60° with the VP Draw it	s rinaryse	
projections.		
9 A square ABCD of 50 mm side has it's a corner A in the HP, its diagona	l l	a,i
AC inclined at 30° to the HP. And diagonal BD inclined at 45° to the VF	P. Analyse	
And parallel to the HP. Draw its projections.	-	
10 A regular pentagon of 30 mm sides is resting on H.P on one of it's side	S	a,i,k
while it's opposite vertex (corner) is 30 mm above HP. Draw th	e Analyse	
projections when side in H.P is 30 ⁰ inclined to VP.		
UNIT-III		
1 A square prism, with the side of its base 40 mm and axis 70 mm long i	s Analyse	a,i,k
lying on one of its base edges on the H.P. in such a way that this bas	e	
edge makes an angle of 45° with the V.P. and the axis is inclined at 30° t	0	
the H.P. Draw its projections.		1
2 A pentagonal prism of side of base 30mm, axis 70mm is resting on one of	f Analyse	a,k
its base edges in H.P. with its axis inclined at 45 to H.P. The top view of the axis is inclined at 20° to V.P. Drew the projections		
A cone of base diameter 50 mm and axis 60 mm has one of its generator	a Analyse	ik
in the VP And inclined at 300 to the HP Draw its projections when the	e Analyse	1,K
apex is 15 mm above the HP (7 5 MARKS)	C	
4 A square prism base 40 mm side and height 65 mm has its axis incline	d Analyse	a.i
at 45° to the HP. And has an edge of its base on the HP. and inclined a	it i	,-
300 to the VP. Draw its projections	100	
5 A right circular cone, 40 mm base diameter and 60 mm long axis i	s Analyse	a,i,k
resting on H.P on one point of base circle such that its axis makes 45	0	
inclination with H.P and 40° inclination with V.P. Draw the projection	S	
of a cone.		
6 A cylinder, with a 60 mm base diameter and a 70 mm axis, is resting o	n Analyse	a,i
its base in the H.P. It is cut by two auxiliary inclined planes which mak	e	
angles of 60° and 45° with the H.P. and pass through the top end of th	e	
axis. Draw its sectional top view and true shape of the section.		. 1
/ A square pyramid base 40 mm side and axis 65 mm long has its base of the UP And all the address of the base aqually inclined to the VP it Level	n Analyse	a,1,K
ule Πr . And an ule edges of the base equally inclined to the VP. If I scubby a section plane perpendicular to the VD inclined at 45^0 to the UD An	ս 1	
bisecting the axis 35 mm from its base. Draw its sectional ton view	u	
sectional side view and true shape of the section	· ,	
8 A square pyramid of hase side 40 mm and axis 60 mm is resting on it	s Analyse	ak
base in the HP with a side of the base parallel to the VP Draw it	s rinaryse	u,n
sectional view and true shape of the section, if it is cut by a section plan	e	

S No.	Question	Blooms Taxonomy Level	Program Outcome
	perpendicular to the VP bisecting the axis and is inclined at 450 to the HP.		
9	A square prism with a base having 40 mm sides and height 60 mm is kept on its base on the H.P. such that one of its rectangular faces makes an angle of 300 with V.P. It is cut by a section plane parallel to V.P. such that the true shape of the section is a rectangle with 30 mm and 60 mm sides. Draw its sectional front view and top view.	Analyse	i,k
10	A cube of 35 mm long edges is resting on the H.P. on one of its faces with a vertical face inclined at 30° to the V.P. is cut by a section plane, perpendicular to the V.P, inclined at 45° to the H.P. and passing through the top end of the axis. Draw its front view, sectional top view and true shape of the section.	Analyse	a,i
	UNIT-IV		
1	A pentagonal prism, 30 mm base side & 50 mm axis is standing on Hp on its base whose one side is perpendicular to VP. It is cut by a section plane 45^0 inclined to Hp, through midpoint of axis. Draw the development of surface of remaining solid.	Analyse	a,i
2	A cone, 50 mm base diameter and 70 mm axis is standing on its base on HP. It cut by a section plane 45 [°] inclined to HP through base end of end generator. Draw projections, sectional views, and true shape of section and development of surfaces of remaining solid.	Analyse	a,i,k
3	A cone 40 mm diameter and 50 mm axis is resting on one of its generator on HP which is parallel to VP. Draw it's projections. It is cut by a horizontal section plane through its base center. Draw sectional TV, development of the surface of the remaining part of cone.	Analyse	a,k
4	Figure 1.0 Shows front view of a cut cylinder with base diameter 60 mm with its axis parallel to V.P. and perpendicular to H. P. Draw the development of the lateral surface of the part P of the cylinder. figure 1.0 $figure 1.0$ $figure$	Analyse	i,k
5	A right regular square prism of 30mm base edge and 60 mm height rests on its base on HP such that its vertical faces are equally inclined to VP. It has a horizontal circular hole of 30 mm diameter drilled centrally through it such that the axis of the hole cuts both the diagonally opposite vertical edges. Develop the lateral surface of the prism showing all construction lines.	Analyse	a,i
6	A square hole with a 25 mm side is cut in a cylindrical drum with a 60 mm diameter and 70 mm height. The faces of the hole are inclined at 45° to the H.P. and axis intersects with that of the drum at right angles. Draw the development of its lateral surface.	Analyse	a,i,k
7	A cylinder 50mm diameter and 70mm axis is completely penetrated by	Analyse	a,k

S No.	Question	Blooms Taxonomy	Program Outcome
		Level	outcome
	another of 40 mm diameter and 70 mm axis horizontally. Both the axes intersect and bisect each other. Draw projections showing curves of intersections.		
8	A cylinder of 80 mm diameter and 100 mm axis is completely penetrated by a cone of 80 mm diameter and 120 mm long axis horizontally. Both axes intersect & bisect each other. Draw projections showing curve of intersections.	Analyse	i,k
9	A cylinder 50mm diameter and 70mm axis is completely penetrated by a triangular prism of 45 mm sides and 70 mm axis, horizontally. One flat face of prism is parallel to VP and Contains axis of cylinder. Draw projections showing curves of intersections.	Analyse	a,i
10	A vertical cone, base diameter 75 mm and axis 100 mm long, is completely penetrated by a cylinder of 45 mm diameter. The axis of the cylinder is parallel to HP and VP and intersects axis of the cone at a point 28 mm above the base. Draw projections showing curves of intersection.	Analyse	a,i,k
	UNIT-V		•
1	Draw the Front View, Top View and Both Side Views for the following figure. (All dimensions are in mm)	Analyse	a,i,k
		~	
2	A hexagonal plane of side 30 mm stands vertically on ground plane on an		a.k
	edge and a corner 10 mm behind the picture plane. The surface of the plane makes an angle of 45^{0} with the picture plane. The station point is 60 mm infront of picture plane, 75 mm above the ground plane and lies in a central plane which is 40 mm towards right of the centre of the plane.	Analyse	
	Draw its perspective view.		
3	A pentagonal pyramid with edge of base 40 mm and axis 70 mm long, is resting on its base on H.P. One of the base edges of the pyramid is perpendicular to V.P. A section plane, perpendicular to V.P. and inclined to H.P. at 30^{0} , passes through the axis, at a height of 30 mm from the base. Draw the isometric view of the truncated pyramid.	Analyse	i,k
4	Draw a perspective view of a square plane of side 50 mm resting on the ground plane with one of its corners touching picture plane and a side right to the corner inclined at 60° to it. The station point is 70 mm infront of picture plane, 65 mm above ground plane and lies in a central plane which is 35 mm towards right of the corner touching the picture plane.	Analyse	a,i
5	A square pyramid of base edges 50 mm long and attitude 70 mm is resting on its base on the ground with one of the corners of the base touching the picture plane. Two adjacent base edges having this corner make equal inclination with V.P. The station point lies on the central line of the object 60 mm in front of the picture plane and 90 mm above the ground. Draw the perspective projection of the	Analyse	a,i,k

S No.	Question	Blooms Taxonomy Level	Program Outcome
	solid.	Level	
6	A cone, diameter of base 45mm and height 50mm is mounted centrally on the top of a square slab of thickness 10mm & side 65mm. Draw the isometric projection of the combined solid.	Analyse	a,i
7	A cone of base diameter 60 mm and height 70 mm is resting on its base on HP. It is cut by a plane perpendicular to the VP and inclined at 30° to the HP. The plane meets the axis at a distance of 25 mm from the apex. Draw the isometric view of the truncated cone.	Analyse	a,i,k
8	Figure 1.0, shows an isometric view of an object. Draw the following views. i) Front view in direction of arrow, ii) Top view, and iii) Side view from right.	Analyse	a,k
9	Figure 2.0, shows an isometric view of an object. Draw the following views. i) Front view in direction of arrow, ii) Top view, and iii) Side view from left.	Analyse	i,k
10	Figure 3.0, shows an isometric view of an object. Draw the following views. i) Front view in direction of arrow, ii) Top view, and iii) Side view from right.	Analyse	a,i

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