CODE: A10201	R23	H.T.No:									

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

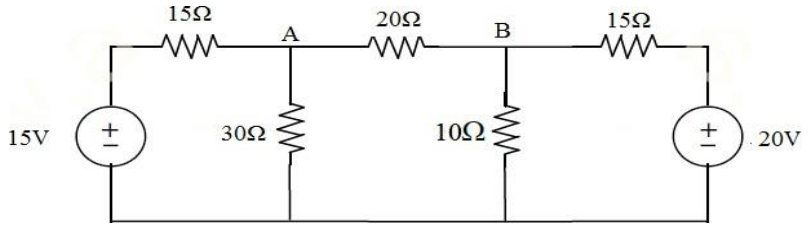
B.Tech I Year II Semester Regular Examinations MAY 2025

Subject Name: **Basic Electrical & Electronics Engineering**

Branch: CSE

Time: 3 Hours **SET-1** **Max. Marks: 70**

Note: Part A must be answered from page no 3-18 and Part B must be answered from 19-36 pages

PART-A (Electrical Engineering Part) Answer all questions, each question carries one marks					
1	a	Define Faraday's Second law.	1M	CO1	L1
	b	Define the terms form factor and peak factor of alternating quantity.	1M	CO2	L1
	c	List types of Alternators .	1M	CO2	L1
	d	What do you mean by earthing?	1M	CO3	L1
	e	Define electrical energy.	1M	CO3	L1
Answer all three units, 03 X 10 = 30 Marks					
UNIT-I					
2	a	State and explain superposition theorem.	5M	CO1	L2
	b	Determine the current in branch A-B by using KVL 	5M	CO1	L5
OR					
3	a	Derive voltage and current relationship with Phasor Diagram in resistive and Inductive circuit.	5M	CO5	L3
	b	Derive the RMS value for a sine waveform.	5M	CO2	L3
UNIT-II					
4	a	Explain the principle of operation of DC Generator with neat diagram	10M	CO2	L2
OR					
5	a	Explain construction and operating principle of Moving iron type instruments.	10M	CO3	L2
UNIT-III					
6	a	Draw a neat schematic diagram of a Thermal Power plant and explain the function of various components.	10M	CO5	L4
OR					
7	a	Explain the working principle of miniature circuit breaker (MCB) with neat diagram.	5M	CO5	L2
	b	Define two part tariff and explain how you calculate electricity bill for domestic consumers.	5M	CO4	L2

PART-B (Electronics Engineering Part) Answer all questions, each question carries one marks					
8	a	Explain the significance of threshold voltage in forward characteristics of a p – n junction.	1M	CO1	L1
	b	Write the terminals of BJT.	1M	CO1	L1
	c	Draw the block diagram of dc power supply.	1M	CO1	L1
	d	Draw the logic gates with truth tables. (i).AND (ii). OR (iii). NOT (iv). NAND (v). NOR.	1M	CO2	L1
	e	Explain the registers.	1M	CO3	L1
Answer all three units, 03 X 10 = 30 Marks					
UNIT-I					
9	a	Draw the half wave rectifier and explain the operation with filter using neat diagrams	5M	CO4	L2
	b	Draw the full wave rectifier and explain operation.	5M	CO4	L2
OR					
10	a	Draw and explain in detail about the input and output characteristics of n-p-n transistor in CE configuration.	10M	CO4	L2
UNIT-II					
11	a	Explain the working of a full wave bridge rectifier with circuit diagram and input output waveforms	5M	CO4	L2
	b	Draw the block diagram of a public address system and explain its working.	5M	CO4	L2
OR					
12	a	Draw the circuit diagram of common emitter amplifier and explain the operation in detail.	5M	CO5	L2
	b	Define the term amplifier and explain the operation of public addressing system with neat block diagram.	5M	CO5	L2
UNIT-III					
13	a	Draw the circuit diagram of Serial Input Parallel Output and explain the operation.	5M	CO5	L2
	b	b) Explain BCD codes and Excess-3 codes with truth tables.	5M	CO6	L3
OR					
14	a	Explain along with truth tables of Half Adder and Full adder.	10M	CO6	L2

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CODE: A10009	R23	H.T.No:									

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech I Year II Semester Regular & Supplementary Exams May – 2025

Subject Name: **Differential Equations & Vector Calculus**

Branch: **Common for CSE and ECE**

SET-1

Time: 3 Hours **Max. Marks: 70**

Instructions:

1. Answer all 10 questions from Part-A. Each question carries two marks
2. Answer one full question from each unit in Part-B. Each full question carries 10 marks

PART-A					
1	a	Define Linear differential Equation?	2M	CO1	BTL1
	b	State Newton's Law of cooling and Law of Growth.	2M	CO1	BTL1
	c	Solve $(D^2-4D+4)\ y=0$	2M	CO2	BTL2
	d	Solve particular of $(D^2+4)y = sin\ 2\ x$	2M	CO2	BTL2
	e	Form PDE by eliminating arbitrary constants a and b from $z = (x^2 + a)(y^2 + b)$	2M	CO3	BTL2
	f	Solve p+q=1	2M	CO3	BTL2
	g	Define Irrotational vector?	2M	CO4	BTL1
	h	Find div $\vec{f}$ for $\vec{f} = z\vec{i} + x\vec{j} + yk\vec{}$.	2M	CO4	BTL1
	i	State Green's theorem in a plane.	2M	CO5	BTL1
	j	State the Gauss divergence theorem.	2M	CO5	BTL1
PART-B					
UNIT-I					
2	a	Solve $\left(1+e^{\frac{x}{y}}\right)dx + e^{\frac{x}{y}}\left(1-\frac{x}{y}\right)dy = 0$	5M	CO1	BTL3
	b	Solve $2xydy - (x^2+y^2+1)dx = 0$	5M	CO1	BTL3
OR					
3		If the temperature of air is 25℃ and the temperature of the body drops from 75℃ to 65℃ in 10 minutes. Determine when the temperature will be 55℃ and also find the temperature after 20 minutes	10M	CO1	BTL4
UNIT-II					
4	a	Solve $(D^3+2D^2+D)y = e^{2x}$	5M	CO2	BTL3
	b	Solve $(D^2+1)y = x^3$	5M	CO2	BTL3
OR					
5		Solve by the method of variation of parameters, $(D^2+a^2)y$ = Cosec ax	10 M	CO2	BTL3
UNIT-III					
6	a	Form the PDE by eliminating the arbitrary functions form $z = f(x^2+y^2+z^2)$	5M	CO3	BTL3

	b	Solve $x^2(y-z)p + y^2(z-x)q = z^2(x-y)$	5M	CO3	BTL3
		OR			
7		Solve $(D^3 - 3D^2D' + 4D'^3)z = e^{x+2y}$	10M	CO3	BTL3
		UNIT-IV			
8	a	Determine the directional derivative of the function $f = xy + yz + zx$ in the direction of a vector $i + 2j + 2k$ at the point (1, 2 , 0)	5M	CO4	BTL3
	b	Determine curl $\bar{f}$, where $\bar{f} = \text{grad}(x^3 + y^3 + z^3 - 3xyz)$.	5M	CO4	BTL3
		OR			
9		Show that the vector $(x^2 - yz)\,i + (y^2 - zx)\,j + (z^2 - xy)\,k$ is irrotational and find its scalar potential.	10M	CO4	BTL3
		UNIT-V			
10	a	Evaluate the work done in moving a particle in the force field $\bar{F} = 3x^2\bar{i} + (2xz - y)\bar{j} + z\bar{k}$ along the straight line from (0,0,0) to (2,1,3).	5M	CO5	BTL5
	b	Evaluate $\int_C y^2dx - 2x^2dy$ along the parabola $y = x^2$ from (0,0) to (2,4).	5M	CO5	BTL5
		OR			
11		Verify stokes theorem for $f = (x^2 + y^2)i - 2xyj$ taken round the rectangle bounded by the lines $x = \pm a, y = 0, y = b$.	10M	CO5	BTL4

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CODE: A10504	**R23**	**H.T.No:**									

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech I Year II Semester Regular Examinations June – 2025

Subject Name: **DATA STRUCTURES**

Time: 3 Hours Branch: CSE **Max. Marks: 70**

Instructions:

1. Answer all 10 questions from Part-A. Each question carries two marks
2. Answer one full question from each unit in Part-B. Each full question carries 10 marks

PART-A					
1	a	Define Time Complexity and Space complexity of an algorithm.	2M	CO1	BTL1
	b	Differentiate between linear search and binary search.	2M	CO1	BTL2
	c	Give one advantage and one disadvantage of using a doubly linked list.	2M	CO2	BTL1
	d	What is a circular linked list? Give one use-case.	2M	CO2	BTL2
	e	Define the term "stack overflow". When does it occur?	2M	CO3	BTL1
	f	Why are stacks used in expression evaluation?	2M	CO3	BTL2
	g	Mention two real-world applications of queues.	2M	CO4	BTL1
	h	What is a double ended queue and how is it different from a normal queue?	2M	CO4	BTL2
	i	Differentiate between a binary tree and a binary search tree.	2M	CO5	BTL2
	j	Name two techniques used in open addressing.	2M	CO6	BTL1
PART-B					
UNIT-I					
2	a	What is the difference between a linear and a non-linear data structure? Give examples.	5M	CO1	BTL4
	b	Explain the concept of Abstract Data Types (ADTs) with examples. How are ADTs implemented?	5M	CO1	BTL2
OR					
3	a	Explain the working of Bubble Sort with an example.	5M	CO1	BTL3
	b	Write an algorithm for Binary search.	5M	CO1	BTL2
UNIT-II					
4	a	List and explain any four basic operations on singly linked lists.	5M	CO2	BTL2
	b	Write a function to insert a node at the specific position of a singly linked list.	5M	CO2	BTL3
OR					
5	a	Write a function to search an element in a circular linked list.	5M	CO2	BTL3
	b	Explain how insertion and deletion are more efficient in linked lists than in arrays.	5M	CO2	BTL2
UNIT-III					
6	a	Write an algorithm to implement a stack using an array with push, pop, and peek.	5M	CO3	BTL2
	b	Explain the application of stacks in backtracking algorithms with an example.	5M	CO3	BTL3
OR					
7	a	Write an algorithm to evaluate a postfix expression using a stack.	5M	CO3	BTL2

	b	Write and explain the basic operations performed on stacks.	5M	CO3	BTL2
UNIT-IV					
8	a	Describe the operations enqueue and dequeue in a queue. Provide algorithmic steps for each.	5M	CO4	BTL4
	b	Explain how a queue can be implemented using a singly linked list.	5M	CO4	BTL2
OR					
9	a	Discuss the difference between input-restricted and output-restricted deques with examples.	5M	CO4	BTL4
	b	Describe how queues can be applied in CPU scheduling.	5M	CO4	BTL3
UNIT-V					
10	a	Construct the binary tree for the given post order and in order traversal. In order: D H B E A F C I G J Post order: H D E B F I J G C A	5M	CO5	BTL6
	b	Describe how a hash table is implemented. List the basic operations.	5M	CO6	BTL2
OR					
11	a	Illustrate the process of inserting nodes into a binary search tree with an example.	5M	CO5	BTL2
	b	Describe chaining as a collision resolution technique. Provide a diagram to illustrate how it works.	5M	CO6	BTL2

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CODE: A10003 | **R23** | **H.T.No:**

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)

SET-1

B.Tech I Year II Semester Regular Examinations May 2025

Subject Name: **Engineering Physics**

Branch: CSE

Time: 3 Hours **Max. Marks: 70**

Instructions:

1. Answer all 10 questions from Part-A. Each question carries two marks
2. Answer one full question from each unit in Part-B. Each full question carries 10 marks

PART - A (Compulsory Question)					
1.	Answer the following: (10 x 02 = 20 Marks)		**Marks**	**CO**	**BL**
	a.	Why the centre spot is dark in the Newton's rings formed by them reflected light?	2M	CO2	L1
	b.	What is the difference between resolving power and dispersive power of a grating?	2M	CO2	L1
	c.	Distinguish between crystalline solid and amorphous solid.	2M	CO3	L2
	d.	Define Miller Indices.	2M	CO3	L1
	e.	Define dielectric flux density and dielectric constant.	2M	CO4	L1
	f.	How are magnetic susceptibility and permeability related to the magnetic properties of materials?	2M	CO4	L2
	g.	What is the dual nature of matter?	2M	CO5	L1
	h.	An electron is bound in a one-dimensional box having size of $4x10^{-10}$ m. What will be its minimum energy?	2M	CO5	L2
	i.	Compare Intrinsic and Extrinsic semiconductors.	2M	CO6	L2
	j.	What is the energy gap between valence band and conduction band in insulator?	2M	CO6	L1
PART - B (Answer all the questions: 05 x 10 = 50 Marks)					
2.		What is the theme of Newton's Rings, and how does it relate to determining the wavelength of light?	10M	CO1	L4
OR					
3.	a)	Discuss the phenomenon of Fraunhofer diffraction due to single slit?	7M	CO1	L2
	b)	A monochromatic light of wavelength $6.56x10^{-7}$ m incidents normally on a grating of 2 cm wide. The first odder spectrum is produced at an angle of $18^{o}\ 14^{1}$ from normal. Calculate the total number of lines in grating.	3M	CO1	L4
4.		Show the FCC is the most closely packed of the three cubic structures by working out the packing factors?	10M	CO3	L2
OR					
5.		How would you summarize the powder method for the determination of crystal structure? Describe the process with a suitable diagram to illustrate the method.	10M	CO3	L2

6.		What is the Lorentz (or local) field, and how is it derived?	10M	CO4	L2
OR					
7.	a)	Can you explain the Clausius-Mossotti equation and its significance?	5M	CO4	L2
	b)	Explain the Hysteresis of ferromagnetic materials.	5M	CO4	L2
8.		What is the concept of a particle in a one-dimensional infinite potential well, and how does it behave within this potential?	10M	CO5	L2
OR					
9.	a)	How does the quantum free electron theory explain electrical conductivity, and what is the derivation of its associated equation?	7M	CO5	L2
	b)	Find the relaxation time of conduction electrons in a metal of resistivity 1.54×10^{-8} Ωm, if the metal has 5.8×10^{28} conduction electrons per m^3. Given m = 9.1×10^{-34} kg, e = 1.6×10^{-19} C.	3M	CO5	L4
10.		How do drift and diffusion currents individually and collectively contribute to the total current in a semiconductor?	10M	CO6	L2
OR					
11.	a)	Explain the density of charge carriers in Intrinsic semiconductors.	5M	CO6	L2
	b)	Explain the electrical conductivity in Intrinsic semiconductors.	5M	CO6	L2

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CODE: A10301	**R23**	**H.T.No:**									

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech I Year II Semester Regular Examinations JUNE 2025

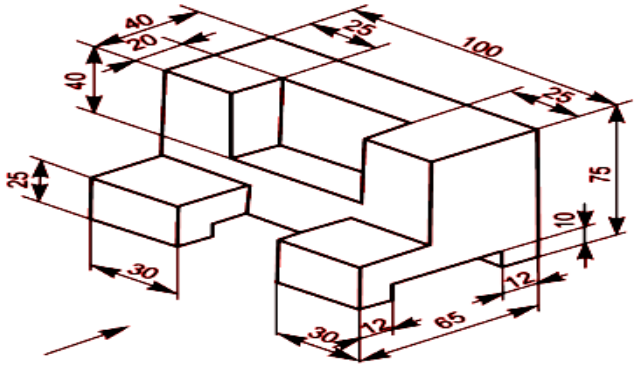
Subject Name: **Engineering Graphics (04-06-2025 Morning)**

Time: 3 Hours Branch: CSE **Max. Marks: 70**

Instructions:

1. Answer one full question from each unit. Each full question carries 14 marks

UNIT-I					
1		Construct a hyperbola, with distance of the focus from the directrix as 50mm and eccentricity as 3/2. Also draw normal and tangent to the curve at any point on the curve.	10M	CO1	BTL2
OR					
2		Draw an epi – cycloid of a circle with radius 30mm, which rolls on another circle of 90mm radius for one revolution clock – wise. Draw a tangent and a normal to it at a point 100mm from the center of the directing circle	10M	CO1	BTL2
UNIT-II					
3		Draw the projections of a straight-line AB of 55mm long, in the following positions: a) parallel to both HP and VP and 25mm from each. b) Parallel to and 30mm above the HP and on VP. c) Parallel to and 25mm in front of VP and on HP.	10M	CO2	BTL2
OR					
4		A thin 30^0 - 60^0 set – square has its longest edge of 55mm on V.P. Its surface makes an angle of 50^0 to V.P. and inclined at 30^0 H.P. Draw the projections, choosing suitable size for the set – square.	10M	CO2	BTL2
UNIT-III					
5		Draw the projections of a pentagonal prism of base 25mm side and axis 50mm long, when it is resting on one of its rectangular faces on H.P. The axis of the solid is inclined at 45° to V.P.	10M	CO3	BTL2
OR					
6		A square pyramid of 30mm side and 60mm height is resting on one of its triangular faces in H.P, such that the edge containing that face makes an angle of 30^0 with V.P. Draw the projections of the pyramid.	10M	CO3	BTL2
UNIT-IV					
7		A cylinder of 40mm in diameter and 60mm height and having its axis vertical is cut by a section plane perpendicular to VP, inclined at 45^0 to HP and intersecting the axis 32mm above the base. Draw its front view, sectional top view and true shape of the section.	10M	CO4	BTL2
OR					

8		A square pyramid, with side of base 30mm and axis 50mm long, is resting on its base on H.P. with an edge of the base parallel to V.P. It is cut by a section plane, perpendicular to V.P. and inclined at 45^0 to H.P. The section plane is passing through the mid-point of the axis. Draw the development of the surface of the cut pyramid.	10M	CO4	BTL2
UNIT-V					
9	a	A hexagonal prism with a 30 mm base and 45 mm axis. Draw its isometric view.	5M	CO5	BTL2
	b	Draw the isometric view of a triangular pyramid of side 30 mm and axis height 60 mm.	5M	CO5	BTL2
OR					
10		Draw the front view, top view and the right-side view of the drawing given in figure below. All the dimensions in mm. 	10M	CO5	BTL2

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CODE: A10301	**R23**	**H.T.No:**									

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech I Year II Semester Regular Examinations JUNE 2025

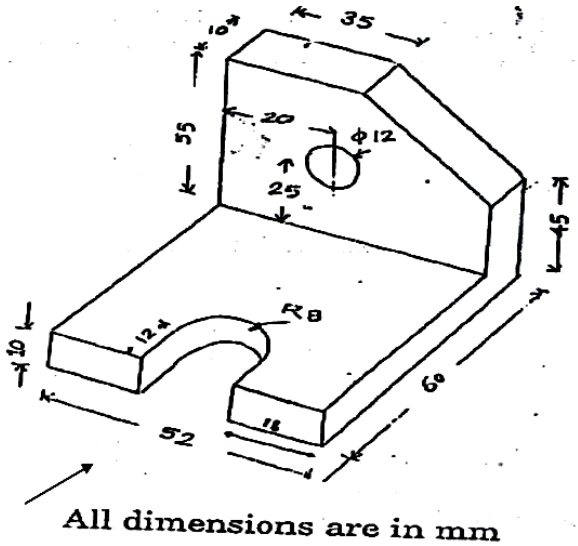
Subject Name: **Engineering Graphics (04-06-2025 Afternoon)**

Time: 3 Hours Branch: CSE **Max. Marks: 70**

Instructions:

1. Answer one full question from each unit. Each full question carries 14 marks

UNIT-I					
1		Construct a hyperbola, with the distance between the focus and the directrix as 50 mm and eccentricity as 32.	10M	CO1	BTL2
OR					
2		A roller of 40 mm diameter rolls over a horizontal table without slipping. A point on the circumference of the roller is in contact with the table surface in the beginning till one end of revolution. Draw the path traced by the point.	10M	CO1	BTL2
UNIT-II					
3		Draw the projections of the following points on the same ground line, keeping the Projectors 20mm apart. (a) Point A, 20mm above the H.P. and 30mm in front of the V.P. (b) Point B, on the H.P. and 40mm in front of the V.P. (c) Point C, 15mm above the H.P. and in the V.P. (d) Point D,15mm above the H.P. and 50mm behind the V.P.	10M	CO2	BTL2
OR					
4		A line PQ has its end P 15 mm above HP and 10 mm in front of VP. The end Q is 55 mm above HP and the line is inclined at 35^0 to HP. The distance between the ends projectors of the line when measured parallel to the line of intersection of HP and VP is 50 mm. Draw the projections of the line and find its true length and true inclination with VP.	10M	CO2	BTL2
UNIT-III					
5		A pentagonal prism is resting on corner of its base on the ground with a longer edge containing that corner inclined at 45^0 to the H.P. and the vertical plane containing that edge and the axis inclined at 30^0 to the V.P. Draw its projections. Base 40 mm side; height 65 mm.	10M	CO3	BTL2
OR					
6		A cone of base diameter 50 mm and axis 70 mm long rests with one of the points on the circumference of its base on H.P. Its axis is inclined at 35^0 to H.P. and 45^0 to V.P. Draw its projections.	10M	CO3	BTL2
UNIT-IV					

7		A cylinder of base diameter 50 mm and height 60 mm rests on its base on HP. It is cut by a plane perpendicular to VP and inclined at 45^0 to HP. The cutting plane meets the axis at a distance 15 mm from the top to the base. Draw the sectional plan and true shape of section.	10M	CO4	BTL2
		OR			
8		A cone of base 50 mm diameter and 60 mm long axes is resting on its base on H.P. It is cut by a section plane perpendicular to V.P and parallel to an extreme generator and passing through a point on the axis at a distance of 20 mm from the axis. Draw the development of the retained solid.	10M	CO4	BTL2
		UNIT-V			
9		Draw an isometric view of a cylinder, with a 50 mm base diameter and a 70 mm long axes. When axes is (i) vertical. (ii) Horizontal.	10M	CO5	BTL2
		OR			
10		Draw the three views of the part shown in the figure below.  **All dimensions are in mm**	10M	CO5	BTL2

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CODE: A10301	**R23**	**H.T.No:**									

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B. Tech I Year II Semester Regular Examinations JUNE 2025

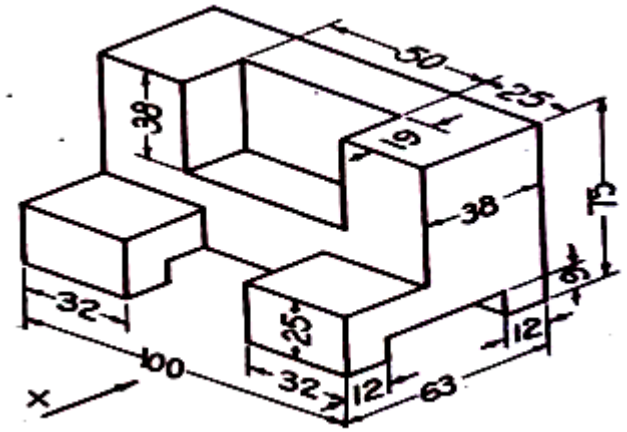
Subject Name: **Engineering Graphics (05-06-2025)**

Time: 3 Hours Branch: CSE **Max. Marks: 70**

Instructions:

1. Answer one full question from each unit. Each full question carries 14 marks

		UNIT-I			
1		Construct an ellipse when the distance of the focus from the directrix is equal to 50 mm and eccentricity is 2/3.	10M	CO1	BTL2
		OR			
2		Construct a rectangular hyperbola when a point p on it is at a distance of 18 mm and 34 mm from two asymptotes. Also draw a tangent to the curve at a point 20 mm from an asymptote.	10M	CO1	BTL2
		UNIT-II			
3		The front view of a line, inclined at 30^0 to the V.P. is 65mm long. Draw the projection of the line, when it is parallel to and 40 mm above the VP, its one end being 30 mm in front of the V.P	10M	CO2	BTL2
		OR			
4		A rectangular plane of 60 mm X 40 mm is resting on shorter edge on the ground and inclined at 45^0 to V.P. The plane surface is inclined at 30^0 to H.P. Draw its projections.	10M	CO2	BTL2
		UNIT-III			
5		A square prism base 40 mm side and height 65 mm, has its axis inclined 45^0 to ground and has an edge of its base on the ground and inclined at 30^0 to the V.P. Draw its projections.	10M	CO3	BTL2
		OR			
6		Hexagonal pyramid side of base 25 mm and axis 50 mm long rests with one of the corners of its base on H.P. Its axis is inclined at 30^0 to H.P. and 45^0 to V.P. Draw its projections.	10M	CO3	BTL2
		UNIT-IV			
7		A triangular pyramid resting on HP with one of its base edge perpendicular to VP with a side of 42mm and axis length of 65mm. A section plane passing through the mid-point of the axis and parallel to HP. Draw the sectional Top View and Front View of the pyramid.	10M	CO4	BTL2
		OR			
8		A pentagonal pyramid of base side 30mm and axis 60mm long is resting on its base on HP with an edge of the base perpendicular to VP. Draw the development of the pyramid.	10M	CO4	BTL2

		UNIT-V			
9		Draw an isometric view of a Pentagon, with a 40 mm base diameter and a 60 mm long axes. When axes is (i) vertical. (ii) Horizontal.	10M	CO5	BTL2
		OR			
10		Draw the front view, top view and right-side view of the object shown below (dimensions in mm).  	10M	CO5	BTL2

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