

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations June 2025Subject Name: **Basic Electrical & Electronics Engineering**

Branch: ECE

Time: 3 Hours**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 Low's law.	1M	CO1	L1
	b	Define the terms form factor?	1M	CO2	L1
	c	Define a Generator?	1M	CO2	L1
	d	What is the use of earthing?	1M	CO3	L1
	e	1 unit electrical energy is _____	1M	CO3	L1

Answer all three units, 03 X 10 = 30 Marks**UNIT-I**

2	a	State and Verify superposition theorem with suitable example?	10M	CO1	L3
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OR

3	a	Derive the Average value for a sine waveform.	5M	CO5	L3
	b	A series circuit having a resistance of 10ohm and an inductance 25mH connected to a supply of 250V, 50hzs, determine Impedance, current, real power and power factor of the circuit?	5M	CO2	L3

UNIT-II

4	a	Explain the principle of operation of DC transformer with neat diagram	10M	CO2	L2
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OR

5	a	Explain construction and operating principle of PMMC type instruments.	10M	CO3	L2
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UNIT-III

6	a	Draw a neat schematic diagram of a hydel Power plant and explain the function of various components.	10M	CO5	L4
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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 n - p junction.	1M	CO1	L1
	b	Write the terminals of UJT.	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). 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

B.Tech I Year I Semester Supplementary Examinations June 2025

Subject Name: Engineering Physics

Branch: ECE

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	What is diffraction grating?	2M	CO1	L1
	b	What do you mean by Fraunhofer Diffraction?	2M	CO1	L1
	c	State Bragg's law.	2M	CO2	L1
	d	State Bragg's law and extract its expression.	2M	CO2	L1
	e	Define Dielectric Materials	2M	CO3	L2
	f	Write any two postulates of classical free electron theory.	2M	CO3	L1
	g	State the Heisenberg uncertainty principle.	2M	CO4	L1
	h	State permittivity and dielectric susceptibility.	2M	CO4	L1
	i	Define Fermi level for Semiconductor	2M	CO5	L1
	j	Define the terms: (i) drift (ii) diffusion.	2M	CO5	L1
PART-B					
UNIT-I					
2	a	Explain how Newton's rings are formed in the reflected light. Derive the expressions for the diameters of dark and bright rings.	10	CO1	L3
OR					
3	a	Formulate Fraunhofer's diffraction at double slit.	6M	CO1	L4
	b	Derive polarized lights from quarter and half wave plates	4M	CO1	L4
UNIT-II					
4	a	Explain how the determination of Crystal Structure is done by Lave's method.	7M	CO2	L2
	b	Calculate the ratio $d(100) : d(110) : d(111)$ for a simple cubic structure.	3M	CO2	L3
OR					
5	a	Describe with suitable diagram, the powder method for determination of crystal structure.	10M	CO2	L3
UNIT-III					
6	a	Explain the phenomenon of electronic polarization and derive an expression for the electronic polarizability.	10M	CO3	L2
OR					
7	a	Categorize magnetic materials.	5M	CO3	L2
	b	Explain hysteresis of ferromagnetism and breakdown hard and soft magnetic materials.	5M	CO3	L2
UNIT-IV					
8	a	Explain De Broglie's Hypothesis and its significance in the context of matter waves.	6M	CO4	L2
	b	State quantum free electron theory assumptions. Obtain conductivity equation.	4M	CO4	L2
OR					
9	a	State de Broglie's theory and significance of wave function.	7M	CO4	L5
	b	Calculate the velocity and kinetic energy of an electron of wavelength $1.66 \times 10^{-10} \text{m}$.	3M	CO4	L4
UNIT-V					
10	a	Derive an expression for Hall Coefficient and Hall Mobility.	5M	CO5	L3
	b	Derive conductivity of a semiconductor from drift and diffusion current densities.	5M	CO5	L5
OR					
11		Derive an expression for density of holes in valance band of an intrinsic semiconductors.	10M	CO5	L3

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

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN
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B. Tech I Year I Semester Supplementary Examinations JUNE 2025

Subject Name: **Engineering Graphics**

Time: 3 Hours

Branch: **ECE**

Max. Marks: 70

Instructions:

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

UNIT-I					
1		Draw a hypo cycloid of a circle of 50 mm diameter, which rolls inside another circle of 180 mm diameter for one revolution counterclockwise.	10M	CO1	BTL2
OR					
2		Draw the involute of Hexagon also draw a normal and tangent to the point 120mm normal and from the centre of Hexagon.	10M	CO1	BTL2
UNIT-II					
3		The front view of a line, inclined at 30° 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		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
UNIT-III					
5		A square prism base 40 mm side and height 65 mm, has its axis inclined 45° to ground and has an edge of its base on the ground and inclined at 30° to the V.P. Draw its projections.	10M	CO3	BTL2
OR					
6		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
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					

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations June 2025Subject Name: **Introduction to Programming**

Branch: 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	What is the difference between compilation and interpretation in programming?	2M	CO1	BTL2
	b	List different format specifiers.	2M	CO1	BTL1
	c	List the various conditional control statements in C.	2M	CO1	BTL1
	d	What is the purpose of the do-while loop. How is it different from the while loop?	2M	CO2	BTL2
	e	In the memory model, how the two-dimensional arrays stored? Provide an example.	2M	CO2	BTL2
	f	If <code>str [] = "Welcome to the world of programming"</code> , then <code>SUBSTRING (str, 15, 5) = ?</code>	2M	CO3	BTL1
	g	What is the difference between the address-of operator (&) and the dereference operator (*) in C. Provide an example.	2M	CO3	BTL2
	h	Define a Structure. How can you access the members of a structure?	2M	CO4	BTL1
	i	What are formal and actual parameters in a function call? Provide an example.	2M	CO4	BTL2
	j	What is the use of <code>fseek()</code> function in files and Write its syntax.	2M	CO4	BTL1
PART-B					
UNIT-I					
2	a	Explain the basic components of a computer's architecture.	5M	CO1	BTL2
	b	What is an operator? List and explain various types of operators	5M	CO1	BTL2
OR					
3	a	Draw a flowchart to find the sum of first n natural numbers.	5M	CO1	BTL3
	b	Discuss the concept of type conversion in programming. Explain the difference between implicit and explicit type conversion, and give examples.	5M	CO1	BTL2
UNIT-II					
4	a	Write a C program to simulate a calculator using switch case.	5M	CO2	BTL2
	b	Write a C program to find the GCD of two positive numbers.	5M	CO2	BTL3
OR					
5	a	Define looping. Explain <code>for()</code> loop with syntax and an example.	5M	CO2	BTL4

	b	Illustrate the use of break and continue statements with an example.	5M	CO2	BTL4
UNIT-III					
6	a	Write a C program to find the minimum and maximum element of a 1-D integer array.	5M	CO3	BTL3
	b	Write a C program for multiplication two matrices.	5M	CO3	BTL3
OR					
7	a	Write a C program to concatenate two strings without built-in functions.	5M	CO3	BTL4
	b	Explain about any 5 string handling functions.	5M	CO3	BTL2
UNIT-IV					
8	a	Write a C program to implement realloc().	5M	CO4	BTL3
	b	Write a C program that uses pointers to reverse an array of integers.	5M	CO4	BTL3
OR					
9	a	Write a C program to find the total, average of n students using structures.	5M	CO4	BTL3
	b	Write a C program to illustrate the comparison and copying of structure variables	5M	CO4	BTL4
UNIT-V					
10	a	How are arguments passed to a function in C? Explain the difference between passing by value and passing by reference.	5M	CO5	BTL4
	b	Write a C function to transpose of a matrix.	5M	CO4	BTL2
OR					
11	a	Explain the difference between the scope and lifetime of variables in C. How do local, global, and static variables differ in terms of scope and lifetime?	5M	CO5	BTL4
	b	Write a C program to copy the content of one file to another file.	5M	CO4	BTL3

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations June 2025

Subject Name: Linear Algebra and Calculus

Time: 3 Hours

Branch: CSE & ECE

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	Find the rank of the matrix $\begin{bmatrix} 2 & 1 & -1 \\ -1 & -3 & 4 \\ 1 & -3 & 8 \end{bmatrix}$	2M	CO1 LI
	b	Write about Gauss Seidel Iteration method.	2M	CO1 L2
	c	Find the symmetric matrix corresponding to the quadratic form $x^2 + 2y^2 + 3z^2 + 4xy + 5yz + 6zx$	2M	CO2 LI
	d	Write the procedure about Diagonalization of a matrix	2M	CO2 LI
	e	Write the Maclaurin's series expansion in powers of x	2M	CO3 LI
	f	Verify Lagrange's mean value theorem for $f(x) = x^{1/3}$ in $[-1,1]$	2M	CO3 LI
	g	Define Total derivative for three variables	2M	CO4 LI
	h	Find the Stationary points of $f(x,y) = \sin x + \sin y + \sin(x+y)$	2M	CO4 LI
	i	Find the value of the integral $\int_0^2 \int_0^y x^3 y dx dy$	2M	CO5 LI
	j	Transform the integral into polar coordinates, $\int_0^a \int_0^{\sqrt{a^2-x^2}} (x^2 + y^2) dy dx$	2M	CO5 LI
PART-B				
UNIT-I				
2	a	Reduce the matrix A to normal form and hence find its rank $A = \begin{bmatrix} 2 & 1 & 3 & 4 \\ 0 & 3 & 4 & 1 \\ 2 & 3 & 7 & 5 \\ 2 & 5 & 11 & 6 \end{bmatrix}$	5M	CO1 L1
	b	b) Solve $20x+2y+6z=28$, $x+20y+9z=-23$, $2x-7y-20z=-57$ by Gauss-Seidel Iteration Method	5M	CO1 L3
OR				
3	a	Solve the system of equations $5x+3y+7z=4$, $3x+26y+2z=9$, $7x+2y+10z=5$	5M	CO1 L5
	b	a) Solve the system of equations $x+2y+3z=1$, $2x+3y+8z=2$, $x+y+z=3$	5M	CO1 L6
UNIT-II				
4		Define Diagonalization method and Hence Diagonalize $A = \begin{bmatrix} 8 & 6 & -2 \\ -6 & 7 & -4 \\ 2 & -4 & 3 \end{bmatrix}$	10M	CO2 L3
OR				
5	a	Verify Cayley-Hamilton theorem for the matrix	5M	CO2 L4

		$A = \begin{bmatrix} 1 & 2 & 1 \\ 0 & 1 & -1 \\ 3 & -1 & 1 \end{bmatrix}$ and hence find its inverse.			
	b	Reduce the Quadratic Form $x^2 + 3y^2 + 3z^2 - 2yz$ to the canonical form by Orthogonal Transformation and also find its Rank, Index Signature and Nature of Quadratic Form	5M	CO2	L5
UNIT-III					
6	a	Verify Rolle's theorem for the function $f(x) = x^2 - 2x - 3$ in the interval $[1,3]$	5M	CO 3	L4
	b	Verify Cauchy's mean value theorem for $f(x) = \sin x$ and $g(x) = \cos x$ in $[0, \pi/2]$.	5M	CO 3	L4
OR					
7		Verify Lagrange's mean value theorem for $f(x) = \cos x$ in $[0, \pi]$	5M	CO3	L5
	b	Verify the Taylors theorem $f(x) = (1-x)^{\frac{5}{2}}$ with Lagrange's form of remainder upto 2 terms in the interval $[0,1]$.	5M	CO3	L4
UNIT-IV					
8	a	If $u = x + y + z, y + z = uv, z = uvw$, Show that $J\left(\frac{x,y,z}{u,v,w}\right) = u^2 v$.	5M	CO4	L5
	b	Find the maxima and minima of the function $u(x,y) = x^3 y^2 (1-x-y)$	5M	CO4	L1
OR					
9	a	Verify $u = \frac{x^2 - y^2}{x^2 + y^2}, v = \frac{2xy}{x^2 + y^2}$ are functionally dependent or not? If dependent then find the relation between them.	10M	CO4	L5
UNIT-V					
10	a	Solve $\int_{-c}^c \int_{-b}^b \int_{-a}^a (x^2 + y^2 + z^2) dx dy dz$	5M	CO5	L5
	b	Evaluate $\int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{1-x^2-y^2}} xyz dz dy dx$	5M	CO5	L5
OR					
11	A	Evaluate $\int_0^1 \int_0^{\sqrt{1-x^2}} \int_0^{\sqrt{1-x^2-y^2}} xyz dz dy dx$	5M	CO5	L1
	b	Find the volume bounded by the xy -plane $x^2 + y^2 = 1$ and the plane $x + y + z = 3$.	5M	CO5	L1
