CODE: A10201	R23	H.T.No:										

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)

B.Tech I Year I Semester Regular Examinations February 2024

Subject Name: Basic Electrical & Electronics Engineering

Branch: ECE

SET-1

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 ohms law.	1M	CO1	L1
	b	Define the terms form factor and peak factor of alternating quantity.	1M	CO2	L1
	c	List types of Electrical Machines.	1M	CO2	L1
	d	What do you mean by grounding or earthing?	1M	CO3	L1
	e	Define unit used for consumption of 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	Explain the V-I relationship in R, L and C elements.	5M	CO1	L2
OR					
3	a	Explain the following: i) Real power ii) Reactive power iii) Apparent power.	5M	CO5	L2
	b	Derive the RMS value for a sine waveform.	5M	CO2	L3
UNIT-II					
4	a	Explain the working principle of a single phase transformer.	5M	CO2	L2
	b	Explain the principle and operation of alternator.	5M	CO2	L2
OR					
5	a	Explain the construction and working of moving iron (MI) instrument With neat diagram?	10M	CO3	L2
UNIT-III					
6	a	Draw a neat schematic diagram of a Hydro–electric 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	Write any two characteristics of P-N junction Diode.	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	Define Amplifier.	1M	CO2	L1
	e	Write brief note on Gray code.	1M	CO3	L1
Answer all three units, 03 X 10 = 30 Marks					
UNIT-I					
9	a	Briefly describe the operation of Zener Diode and explain its Characteristics.	10M	CO1	L2
OR					
10	a	Draw and explain in detail about the input and output characteristics of n-p-n transistor in CE configuration.	10M	CO1	L2
UNIT-II					
11	a	Explain the working of a full wave bridge rectifier with circuit diagram and input output waveforms	5M	CO2	L2
	b	Draw the block diagram of a public address system and explain its working.	5M	CO2	L2
OR					
12	a	Explain the working of an electronic instrumentation system with a block diagram.	5M	CO2	L2
	b	Explain the working of a half wave rectifier with circuit diagram and input output waveforms	5M	CO2	L2
UNIT-III					
13	a	What is a counter. Explain the working of a counter with suitable block diagram and truth table.	5M	CO3	L2
	b	How to convert a Gray code to binary code. Generate a 4 bit gray code.	5M	CO3	L3
OR					
14	a	What are the various logic gates? Give the representation along with truth table.	5M	CO3	L2
	b	Realize a full adder with half adders and explain its working with truth table.	5M	CO3	L3

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CODE: A10301	R23	H.T.No:

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN (AUTONOMOUS)

B.Tech I Year I Semester Regular Examinations JANUARY 2024

Subject Name: **Engineering Graphics**

Branch: **ECE**

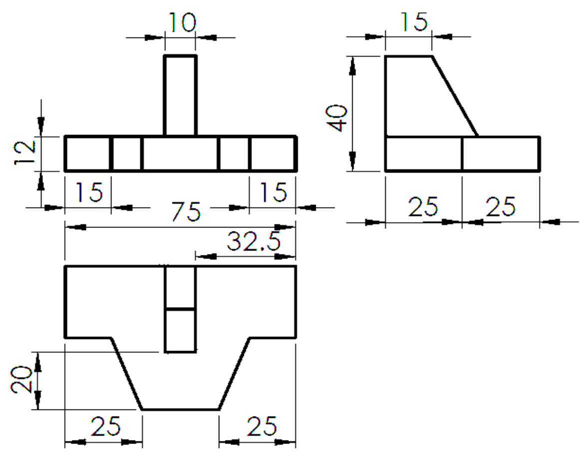
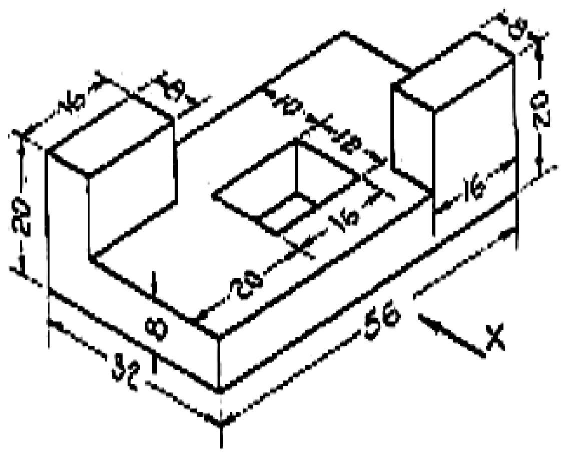
SET-2

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

Instructions:

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

UNIT-I					
1		Construct a regular (i) Hexagon. (ii) Heptagon. by **General Method**, given the length of its side is 50mm	10M	CO1	BTL3
OR					
2		Construct a hyperbola, when the distance of the focus from the directrix is 65mm and eccentricity is 3/2. Also draw tangent and normal to the curve as a point 45mm from directrix.	10M	CO1	BTL3
UNIT-II					
3		A line AB, 90mm long, is inclined at 45^o to the H.P and its top view makes an angle of 60^o with XY. The end A is in the H.P and 15mm in front of the V.P. Draw its projections and find its true inclination with the V.P.	10M	CO2	BTL4
OR					
4		A pentagon of 40mm side has a side in the V.P., inclined at 30^o to the H.P., but the surface of the pentagon is making an angle of 45^o with the V.P. Draw its projections.	10M	CO2	BTL4
UNIT-III					
5		A square pyramid, base 40mm side and axis 60mm long has a triangular face in the V.P. The front view of the axis making an angle of 60^o with XY (the apex downwards). Draw its projections.	10M	CO3	BTL4
OR					
6		A triangular prism of base 30mm side and axis 50mm long is resting on HP on one of its base edge such that the edge is perpendicular to VP. Draw the projections of the solid when its axis in 45^0 inclined to HP.	10M	CO3	BTL4
UNIT-IV					
7		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 Front view, sectional top view & sectional side view.	10M	CO4	BTL4

OR					
8		A cube of 45mm edge is resting on a face on HP such that a vertical face is inclined at 30^0 to VP. It is cut by a section plane perpendicular to VP and inclined to HP at 30^0 and passing through a point at 12mm from the top end of the axis. Develop the development of lateral surface of the cube.	10M	CO4	BTL3
UNIT-V					
9		Draw the isometric view of the following Figure 1.  Figure 1.	10M	CO5	BTL4
OR					
10		Draw the Orthographic views of the following Figure 2.  Figure 2.	10M	CO5	BTL4

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CODE: A 10003	R23	H.T.No:

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN

(AUTONOMOUS)

I B.Tech I Semester Regular Examinations February 2024

Subject Name: **ENGINEERING PHYSICS**

Branch: ECE

SET-2

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

Instructions:

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

PART-A					
1	a	Write four conditions for sustained interference.	2M	CO1	BTL I
	b	Define diffraction grating.	2M	CO1	BTL I
	c	What are Miller indices?	2M	CO2	BTL I
	d	Sketch (100) and (111) planes in a simple cubic structure	2M	CO2	BTL II
	e	Define dielectrics and mention their properties	2M	CO3	BTL I
	f	Deduce the relationship between the polarization, electric field, and dielectric constant	2M	CO3	BTL II
	g	Define the eigenvalue and eigen functions	2M	CO4	BTL I
	h	What are the merits of Quantum free electron theory?	2M	CO4	BTL II
	i	What are intrinsic semiconductors?	2M	CO5	BTL I
	j	Interpret the position of Fermi level in intrinsic and extrinsic semiconductors	2M	CO5	BTL II
PART-B					
UNIT-I					
2	a	Discover polarized lights from quarter and half wave plates	6M	CO1	BTL II
	b	Explain the formation of Newton's rings with a neat sketch diagram	4M	CO1	BTL I
OR					
3	a	Explain the construction and working principle of Nicol's prism	8M	CO1	BTL I
	b	Explain how Nicol's prism can be used as a polarizer and analyzer	2M	CO1	BTL I
UNIT-II					
4	a	Appraise Miller indices and their rules. Estimate separation between (hkl) planes in a cubic crystal.	6M	CO2	BTL II
	b	Explain the powder diffraction method for the determination of crystal structure	4M	CO2	BTL I
OR					
5	a	Explain seven crystal systems with a neat sketch diagram	7M	CO2	BTL I
	b	Obtain Bragg' law in crystals.	3M	CO2	BTL II

UNIT-III					
6	a	Categorize magnetic materials.	5M	CO3	BTL I
	b	Explain the domain concept in Ferromagnetism	5M	CO3	BTL I
OR					
7	a	Derive Clausius-Mosotti equation	8M	CO3	BTL I
	b	Explain the physical significance of the Clausius-Mosotti equation.	2M	CO3	BTL I
UNIT-IV					
8	a	Deduce time-independent Schrodinger wave equation for a free particle	7M	CO4	BTL II
	b	An electron is confined to an infinite potential well of width 10 nm. Calculate the minimum uncertainty in velocity	3M	CO4	BTL V
OR					
9	a	Explain the Heisenberg uncertainty principle	5M	CO4	BTL I
	b	Explain the merits and demerits of classical free electron theory briefly	5M	CO4	BTL I
UNIT-V					
10	a	Describe the Hall effect in a semiconductor along with its applications.	6M	CO5	BTL I
	b	Explain drift and diffusion current	4M	CO5	BTL I
OR					
11	a	Define extrinsic semiconductors and intrinsic semiconductors and give two examples	5M	CO5	BTL I
	b	Explain the temperature-dependent energy band diagram for *n*-type and *p*-type semiconductors with a neat sketch diagram	5M	CO5	BTL I

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14/2/24

14/2/24

CODE: A10501	R23	H.T.No:

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)

B. Tech I Year I Semester Regular Examinations February 2024
Subject Name: **INTRODUCTION TO PROGRAMMING**
Branch: CSE and ECE

SET-2

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 a local variable and a global variable in C?	2M	CO.1	Remember
	b	Name any 2 basic data types and 2 user defined data types.	2M	CO.1	Remember
	c	How do you use the "printf()" function to print formatted output in C?	2M	CO.2	Remember
	d	Describe the syntax for declaring a multi-dimensional array in C	2M	CO.2	Understand
	e	Write a C program to find the largest number among three numbers entered by the user.	2M	CO.3	Apply
	f	What is the purpose of the "break" statement in a loop in C?	2M	CO.3	Remember
	g	How do you declare and define a structure in C?	2M	CO.4	Apply
	h	Explain the role of the "const" keyword in C variable declarations.	2M	CO.4	Understand
	i	What is the purpose of the "malloc()" function in C dynamic memory allocation?	2M	CO.5	Remember
	j	Write a C program to calculate the n^{th} Fibonacci number using a recursive function.	2M	CO.5	Apply
		PART-B			
		UNIT-I			
2	a	Define the basic organization of a computer as consisting of the central processing unit (CPU), memory, input/output devices, and storage components, all interconnected to execute instructions and store data.	5M	CO.1	Apply
	b	What are relational operators? Explain different relational operators in C	5 M	CO.1	Remember
		OR			
3	a	Describe the purpose and syntax of the scanf() function in C programming, providing an example of its usage.	5M	CO.1	Analysis
	b	Write an algorithm and flow chart to find a number is even or not	5 M	CO.1	Apply
		UNIT-II			
4	a	Explain the concept of loops in C programming and provide an example program demonstrating the usage of a for loop.	5M	CO.2	Understand
	b	Write a C program using switch cases to implement a simple calculator capable of performing Multiplication and division operations on two numbers.	5 M	CO.2	Apply

OR					
5	a	Describe the purpose of conditional statements in C programming and provide an example program utilizing if-else statements to determine whether a given year is a leap year or not.	5M	CO.2	Apply
	b	Write a C program that utilizes a loop to calculate the factorial of a given number.	5M	CO.4	Apply
UNIT-III					
6	a	Write a C program that implements a function to search for a specific element in a 1-dimensional array, demonstrating efficient traversal techniques	5M	CO. 2	Apply
	b	Define and compare string manipulation functions in C, such as strcpy(), strlen(), and strcmp(), by discussing their respective functionalities, input parameters, and return values	5M	CO. 3	Evaluate
OR					
7	a	Write a C program for multiplication of two matrices	5M	CO.2	Apply
	b	Compare and contrast the implementation of one-dimensional arrays and two-dimensional arrays in C programming	5 M	CO.3	Understan d
UNIT-IV					
8	a	Explain the concept of typedef in C programming, outlining its role in defining user-defined data types and providing examples to demonstrate its usage for creating aliases for existing data types or complex structures.	5M	CO.4	Apply
	b	Compare and contrast the concept of encapsulation in structures with arrays in C programming	5 M	CO.4	Understan d
OR					
9	a	Discuss the concept of pointer indirection in C programming, explaining how dereferencing a pointer allows access to the value stored at the memory address it points to, and provide examples to illustrate its usage.	5M	CO.4	Evaluate
	b	Write a C program that dynamically allocates memory for an array of integers using pointer notation, and demonstrate how to access and manipulate the elements of the array.	5 M	CO.4	Apply
UNIT-V					
10	a	Write a Simple C function that checks whether the number is divisible by 3 or not?	5M	CO.5	Apply
	b	Explain the concept of function pointers in C programming, discussing how they enable dynamic function invocation and provide examples to demonstrate their usage in scenarios such as callback functions and function swapping.	5 M	CO.5	Evaluate
OR					
11	a	Discuss about the various types of file streams in C programming with examples.	5M	CO.5	Creating
	b	Discuss the advantages and limitations of using pointers as function parameters in C programming.	5 M	CO.5	Analysis

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CODE: A10002	R23	H.T.No:

RAVINDRA COLLEGE OF ENGINEERING FOR WOMEN
(AUTONOMOUS)

B.Tech I Year I Semester Regular Examinations JANUARY 2024

Subject Name: Linear Algebra and Calculus

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	Find the rank of the matrix $\begin{bmatrix} 2 & -1 & 1 \\ 1 & 2 & 3 \\ 1 & 3 & 2 \end{bmatrix}$	2M	CO1	LI
	b	Explain the system of equations consistent and inconsistent.	2M	CO1	
	c	If $A=\begin{bmatrix} 1 & 2 \\ 0 & 6 \end{bmatrix}$ then find the Eigen values of A^3.	2M	CO2	LI
	d	Find the quadratic form of the matrix $A=\begin{bmatrix} 1 & 2 \\ 2 & -3 \end{bmatrix}$	2M	CO2	LI
	e	Find the value of C in Rolle's theorem for the function $f(x)=x^3-3x$ in the interval $\left[0, \sqrt{3}\right]$.	2M	CO3	LI
	f	Find the coefficient of $(x-1)^2$ in the Talor's series expansion of e^{2x} about $x=1$.	2M	CO3	LI
	g	If $u=x^2+y^2$, where $x=at^2, y=2at$, then find $\frac{du}{dt}$	2M	CO4	LI
	h	If $u=e^{2x}\cos y$ and $v=e^{2x}\sin y$, then find $\frac{\partial(u,v)}{\partial(x,y)}$.	2M	CO4	LI
	i	Find the value of the integral $\int_0^2\int_0^y x^2 y\,dxdy$	2M	CO5	LI
	j	Find the value of the integral $\int_0^1\int_0^2\int_0^3 x^2 yz\,dxdydz$	2M	CO5	LI
		PART-B			
		UNIT-I			
2	a	Reduce the matrix $A=\begin{bmatrix} 1 & 1 & 3 & 1 \\ 1 & 2 & 0 & -1 \\ 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 \end{bmatrix}$ to Echelon form and hence find its rank.	5M	CO1	LI
	b	Apply Gauss Jordan method to solve the equations $x+y+z=9;\ 2x-3y+4z=13;\ 3x+4y+5z=40.$	5M	CO1	LIII
		OR			

3	a	Determine b such that the system homogeneous equations $$2x+y+2z=0;\ x+y+3z=0;\ 4x+3y+bz=0.$$ has trivial and non-trivial solutions. Find the non-trivial solution	5M	CO1	LV
	b	Solve the following equations, by Jacobi's iteration method $20x+y-2z=17;\ 3x+20y-z=-18;\ 2x-3y+20z=25$	5M	CO1	LIII
UNIT-II					
4		Diagonalize the matrix A, where A= $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 3 & -1 \\ 0 & -1 & 3 \end{bmatrix}$	10 M	CO2	LIV
OR					
5		Reduce the quadratic form $6x^2+3y^2+3z^2-4xy-2yz+zx$ to the canonical form also find rank, index, and signature of the quadratic form.	10 M	CO2	LIV
UNIT-III					
6	a	If the function $f(x)=x^4+ax^3+bx$ verify Rolle's theorem in the interval $[-1, 1]$	5M	CO3	LI
	b	Verify Cauchy's mean value theorem for $f(x)=\sqrt{x}$ and $g(x)=\dfrac{1}{\sqrt{x}}$ in $[a, b]$, where $0<a<b$.	5M	CO3	LVI
OR					
7		Verify the Taylors theorem $f(x)=(1-x)^{\frac{5}{2}}$ with Lagrange's form of remainder upto 2 terms in the interval $[0, 1]$.	10 M	CO3	LVI
UNIT-IV					
8	a	If $x=r\sin\theta\cos\phi,\ y=\sin\theta\sin\phi$ and $z=r\cos\theta,$ show that $J\left(\dfrac{x, y, z}{r, \theta, \phi}\right)=r^2\sin\theta.$	10 M	CO4	LII
OR					
9	a	Prove that the functions $u=2x-y+3z,\ v=2x-y-z$ and $w=2x-y+z$ are functionally related and find the functionally relation between them.	5M	CO4	LV
	b	Discuss the maxima and minima of $u(x, y)=\sin x\sin y\sin(x+y),$ where $0<x<\pi$ and $0<y<\pi$.	5M	CO4	LI
UNIT-V					
10	a	By changing the order of integration, evaluate the integral $\int_0^a\int_x^a\left(x^2+y^2\right)dydx$.	5M	CO5	LV
	b	Evaluate $\int_{-1}^{1}\int_{0}^{z}\int_{x-z}^{x+z}(x+y+z)\,dxdydz$	5M	CO5	LV
OR					
11		Find the volume of the sphere $x^2+y^2+z^2=a^2$ by triple integral in spherical polar coordinates.	10 M	CO5	LI

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