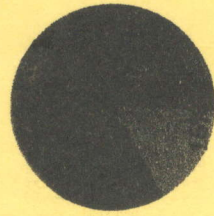


CO1	Remembering proficiency and perceptive of the basic concepts of different types of wave equations
CO2	Understanding the principles of optics to solve various complex engineering problems.
CO3	Apply fundamental laws and relations to evaluate problems in electricity and electromagnetism
CO4	Analyzing the kinds of experimental results which are incompatible with classical Physics leading to the development of a quantum theory of matter and light
CO5	Evaluate principle, concept, working and application of new technology and comparison of results with theoretical calculations.
CO6	Create and design a wide range of semiconductor devices through the basic concepts

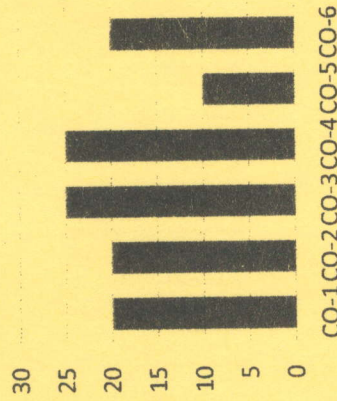
GRAPHICAL REPRESENTATION

Bloom's Level Wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome Wise Marks Distribution



ARKA JAIN University
Jharkhand

NAAC GRADE A
ACCREDITED UNIVERSITY

[26-06-2025]
END SEM EXAMINATION
School of Engineering & IT

Branch	CSE & AIML	Program	B. Tech
Subject Name	Engineering Physics	Session	Even 2024-25
Semester	II	Year	June, 2025
- Start writing from 2nd page onwards; don't Write on the 1st Page Backside - Answer all Questions of Section A (Compulsory) - Answer Any Four out of Six of Section B - Answer Any Three out of Five of Section C - Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under Unfair Means and will Result in the Cancellation of the Paper(s).			
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating
	K2 : Understanding	K4 : Analysing	K6 : Creating
Time: 3 Hour Max. Marks : 70			

Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)

Q.N	QUESTIONS	Marks	COs	KL
1				
i	Mention any two properties of matter waves?	2	CO4	K2
ii	How does the Fermi level play a significant role in semiconductors?	2	CO4	K3
iii	Illustrate quality factor and relaxation time?	2	CO1	K3
iv	Summarize conditions for critical Damping and light damping?	2	CO1	K2
v	Give the merits and demerits of optical fibres in communication system?	2	CO2	K1
vi	Lists Component of laser?	2	CO2	K3
vii	How E and B Fields are perpendicular to each other?	2	CO3	K3
viii	Why the Hall coefficient is negative for intrinsic semiconductor?	2	CO5	K2
ix	Draw the symbol of n-p-n and p-n-p transistors and specify the leads?	2	CO6	K6
x	Write working Avalanche Photo Diode?	2	CO6	K2

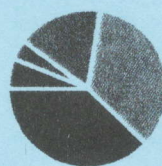
12	Derive an expression for the concentration of electrons in conduction band in intrinsic Semiconductor?	10	CO6	K4
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Section B (Answer any FOUR out of SIX) - 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Explain How Energy Band Form in a solid?	05	CO4	K2
3	A sodium Surface with work function 2.28eV is illuminated by light of wavelength 400nm. Find the maximum Kinetic Energy and Speed of the photoelectrons emitted.	05	CO4	K5
4	Deduce expression for the acceptance angle for an optical fibre. Show how it is related to Numerical aperture?	05	CO2, CO5	K4
5	Draw a neat diagram for total energy of the harmonic oscillator with discussion of displacement y of the particle executing SHM?	05	CO1	K6
6	Discuss Displacement current?	05	CO3	K3
7	Explain operation of Zener diode?	05	CO6	K1
Section C (Answer any THREE out of FIVE) - 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Discuss energy Eigen function and energy Eigen value for a particle confined in a one dimensional box with neat diagram?	10	CO4	K6
9	The amplitude of an oscillator of frequency 300 per second falls to 1/20 of its initial value after 1500 cycles. Calculate (i) Relaxation time, (ii) Quality factor and (iii) Damping constant.	10	CO1	K5
10	Describe the formation of Newton's ring with necessary theory with relevant diagrams OR Discuss the description of Ruby laser and explain the construction and working of it?	10	CO2	K3
11	Prove that Velocity of Electromagnetic wave in Free Space is equal to velocity of light?	10	CO3	K2

CO1	Understand the basic knowledge of electrical quantities such as current, voltage, power, energy and frequency
CO2	Solve the Problems of DC Circuits using different Laws (KVL, KCL, Mesh Analysis and Nodal Analysis)
CO3	Analyze the Electrical Circuits by applying Theorems.
CO4	Analysis of single-phase and three phase ac circuits
CO5	Identify the type of electrical machine used for that particular application.
CO6	Design Three Phase induction motor

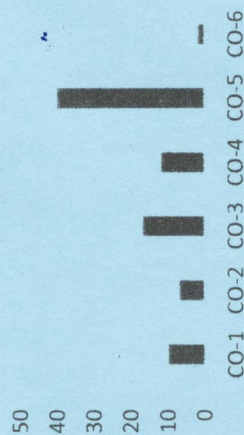
GRAFICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution



ARKA JAIN
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Jharkhand

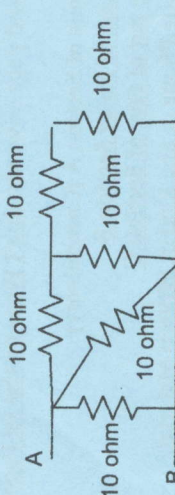
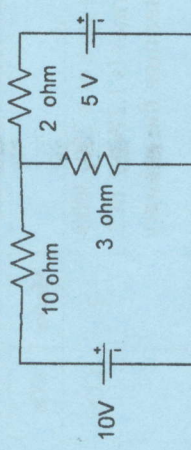
NAAC
GRADE A
ACCREDITED UNIVERSITY

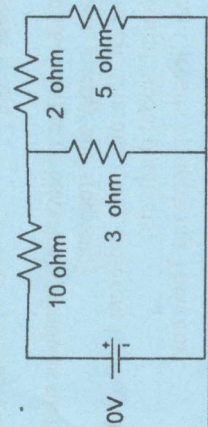
[30-06-2025]
END SEM EXAMINATION
School of Engineering & IT

Branch	CSE & AIML	Program	B. Tech
Subject Name	Basic Electrical Engineering	Session	Even 2024-2025
Semester	II	Year	June 2025
• Start writing from 2nd page onwards; don't Write on the 1st Page Backside • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Paper(s)</u>.			
Time: 3 Hour Max. Marks : 70			
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)

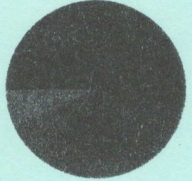
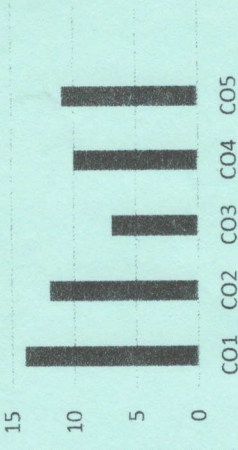
Q.N	QUESTIONS	Marks	COs	KL
i	The maximum flux density in the core of a 250/3000-volts, 50-Hz single-phase transformer is 1.2Wb / m ² . If the e.m.f. per turn is 8 volt, determine the primary and secondary turns.	2	CO5	K1
ii	Write down two Difference between Ideal and practical transformer?	2	CO5	K1
iii	What are the function of brush and commutator in DC machine?	2	CO3	K2
iv	A three phase 4 pole 50 Hz Induction motor runs at 1000rpm. Find synchronous speed	2	CO6	K1
v	Define apparent power, active power and reactive power	2	CO3	K2
vi	What are the limitation of superposition theorem?	2	CO2	K1
vii	What is back emf and what are its significance?	2	CO5	K5
viii	Why Carbon brushes are generally used?	2	CO5	K4
ix	Write down two application DC shunt Motor	2	CO5	K4

x	Write down the voltage and current relationship in star and delta connection	2	CO4	K3
Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Find the equivalent resistance between A and B? 	05	CO2	K4
3	Derive the expression of current through a pure inductive circuit	05	CO4	K3
4	The no-load voltage ratio in a 1-phase, 50-Hz, core-type transformer is 1,200/440. Find the number of turns in each winding if the maximum flux is to be 0.075 Wb.	05	CO5	K5
5	As shown in the figure, determine the values of current through 3 ohm branches using superposition theorem. 	05	CO3	K5
6	Derive the expression of emf equation of a single phase transformer	05	CO5	K5
7	Derive the Relationship between line and phase values of voltage and current for balanced star connections.	05	CO4	K4
Section C (Answer any THREE out of FIVE) – 30 Marks- (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	A long-shunt compound generator delivers a load current of 50 A at 500 V and has armature, series field and shunt field resistances of 0.05Ω , 0.03Ω and 250Ω respectively. Calculate the generated voltage and the armature current. Allow 1 V per brush for contact drop.	10	CO5	K4
9	Derive the expression of growth of current in RL circuit.	10	CO1	K3
10	Find the values of current through 5 ohm using Norton's theorem	10	CO3	K5

				
11	Distinguish between core and shell type transformer.	10	CO5	K5
12	A resistor and a capacitor in series are connected to a 120 V, 60 Hz supply. The impedance of the circuit is 86 ohms and the power consumed is also 86 W. Determine the value of R and C	10	CO4	K4

	ARKA JAIN University Jharkhand			[02-07-2025] END SEM EXAMINATION School of Engineering & IT	
Program	CSE /AIMIL			Branch	B.Tech
Subject Name	Computer Aided Engineering Graphics			Session	Even, 2024-2025
Semester	II			Year	June, 2025
Time: 1.5 Hour Max. Marks : 35	• Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> • Answer all Questions of Section A (Compulsory) • Answer Any Five out of Six of Section B • Answer Any Two out of Four of Section C • Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation of the Papers</u>.				
Knowledge Level (KL)	K1 : Remembering		K3 : Applying		K5 : Evaluating
	K2 : Understanding		K4 : Analysing		K6 : Creating

Section A (Each question Carry 01 Marks from Q1-i to v) – 05 Marks					
Q. N	QUESTIONS	Marks	COs	KL	
1					
i	What are the eccentricity values for conic sections such as the ellipse, parabola and hyperbola?	01	CO1	KL1	
ii	What do you mean by Representative Fraction (R.F.)?	01	CO1	KL1	
iii	What conic section results when a cone is intersected by a plane parallel to its base?	01	CO2	KL1, KL2, KL3	
iv	Name the essential instruments commonly used in technical drawing.	01	CO3	KL1	
v	Which conic section is formed when a cutting plane intersects both the end generators of a cone at an angle?	01	CO3, CO5	KL1, KL2, KL3,	
Section B (Answer any FIVE out of SIX) – 10 Marks (Each question Carry 02 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	
2	Write about Plain and Diagonal Scale.	02	CO1	KL1	
3	Why is the second angle projection method not commonly used in engineering drawing? Explain.	02	CO5	KL2	

CO1	Read and interpret Engineering drawings
CO2	Appreciate the need of Sectional Views of solids and development of surfaces of solids
CO3	Apply computer aided drafting tools to create 2D and 3D objects
CO4	Sketch conics and different types of solids
CO5	Conversion on orthographic projection into isometric view and vice versa manually and by using computer aided drawing.
GRAPHICAL REPRESENTATION	
Bloom's Level Wise Marks Distribution  ■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6	
Course Outcome Wise Marks Distribution  CO1 CO2 CO3 CO4 CO5	

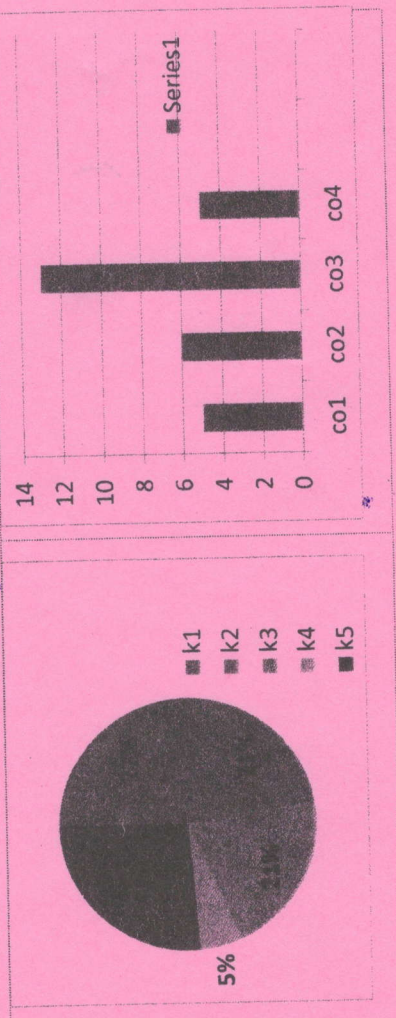
4	Name the projection methods used in engineering drawing and illustrate each with appropriate sketches.	02	CO4, CO5	KL1
5	Describe the four quadrants of projection: first, second, third and fourth angle projections.	02	CO2, CO4	KL1
6	If a line is inclined at different angles to both the horizontal plane (HP) and the vertical plane (VP), how does its length appear in the front view and top view? Explain.	02	CO3	KL1, KL2, KL3
7	Explain why the fourth angle projection method is rarely used in engineering drawings.	02	CO1, CO2	KL1
Section C (Answer any TWO out of FOUR) – 20 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Differentiate between concentric and eccentric circular components in engineering drawings. Support your explanation with real-world applications where eccentricity plays a vital role (e.g., cams, shafts).	10	CO3, CO4	KL3, KL4
9	Explain the concepts of true length and foreshortened length of a line in orthographic projection. Derive the conditions under which a line appears in its true length, appears foreshortened, or is represented as a point in various views.	10	CO5	KL1, KL2
10	Explain 1 st angle and 3 rd angle Projection with its notation and also draw the Projection of different views.	10	CO2, CO5	KL1, KL2
11	Enlist and describe the standard drawing sheet sizes as per ISI (BIS) specifications. Highlight the significance of proper sheet layout, including title blocks and margins, in technical drawings.	10	CO3	KL3, KL4

 ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED UNIVERSITY	[04-07-2025] END SEM EXAMINATION School of Engineering & IT
Program	CSE & AIML	Branch	B. Tech
Subject Name	Sports and Yoga Or NSS/NCC	Session	Even, 2024-2025
Semester	II	Year	June, 2025
Time: 1.5 Hour Max. Marks : 35			
• Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> • Answer all Questions of Section A (Compulsory) • Answer Any Five out of Six of Section B • Answer Any Two out of Four of Section C • Possession of Mobile Phones or any kind of Written Material, Arguments with the Invigilator or Discussing with Co-Student will comes under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Papers.</u>			
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating

Section A (Each question Carry 01 Marks from Q1-i to v) – 05 Marks					
Q. N	QUESTIONS	Marks	COs	KL	
1					
i	What is the purpose and mission of the National Cadet Corps (NCC) in India?	01	CO1	K3	
ii	How does the National Cadet Corps (NCC) contribute to youth development in India?	01	CO4	K2	
iii	How many players are there in a cricket team?	01	CO2	K4	
iv	How many players are allowed on the field for a cricket team during a match?	01	CO1	K2	
v	How many players are there on the playing court for a handball team?	01	CO3	K1	
Section B (Answer any FIVE out of SIX) – 10 Marks (Each question Carry 02 Marks)					
Q. No.	QUESTIONS	Marks	COs	KL	
2	What is the full form of FIFA in Sports?	02	CO4	K1	
3	How does the work of NCC students help in strengthening the values of patriotism and discipline within the youth?	02	CO3	K3	
4	What are the key benefits of participating in sports for physical and mental health?	02	CO2	K1	

CO1	Train volunteer youth to become confident, committed and competent leaders in all walks of life.
CO2	Enhance awareness levels of cadets to become empowered and responsible citizens of the country.
CO3	Undertake adventure activities to hone leadership qualities and risk taking abilities.
CO4	Provide a platform to launch 'Good Will Ambassadors' to project the image of the country overseas.
CO5	Provide opportunities and encourage cadets to enrich their knowledge, develop communication skills and build character.

GRAPHICAL REPRESENTATION



Q. No.	QUESTIONS	Marks	COs	KL
5	What are the duties of a goalkeeper in a football match, and how do the rules set them apart from other players?	02	CO3	K5
6	What are the key strategies for long-distance running?	02	CO2	K1
7	How is a winner determined in a marathon?	02	CO4	K2
Section C (Answer any TWO out of FOUR) – 20Marks (Each question Carry 10 Marks)				
8	What is the significance of the National Cadet Corps (NCC) in shaping the character and discipline of youth in India?	10	CO1	K3
9	What roles do NSS students play in contributing to their communities, and how do these activities promote values like discipline and patriotism?	10	CO4	K2
10	How do the duties of NSS students align with the organization's mission to instill a sense of discipline and national pride?	10	CO1	K3
11	In what ways do NCC Cadets uphold the principles of service, and how do these responsibilities contribute to fostering patriotism and self-discipline?	10	CO4	K1

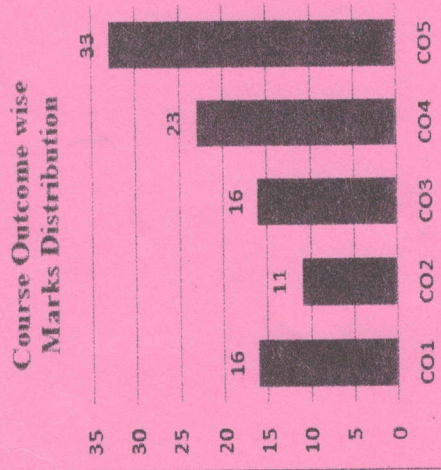
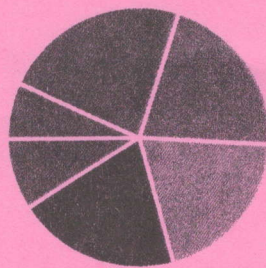
		ARKA JAIN University Jharkhand				[24-06-2025] END SEM EXAMINATION School of Engineering & IT	
Program	CSE & AIML			Branch	B. Tech		
Subject Name	Programming for Problem Solving			Session	Even, 2024-2025		
Semester	II			Year	June, 2025		
Time: 3 Hour Max. Marks : 70	• Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> • Answer all Questions of Section A (Compulsory) • Answer Any Four out of Six of Section B • Answer Any Three out of Five of Section C • Possession of <u>Mobile Phone</u> or any kind of <u>Written Material</u>, <u>Arguments with the Invigilator or Discussion with Co-Student</u> will come under <u>Unfair Means</u> and will <u>Result in the Cancellation of the Paper(s)</u>.						
	Knowledge Level (KL)	K1 : Remembering K2 : Understanding		K3 : Applying K4 : Analysing		K5 : Evaluating K6 : Creating	

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)					
Q.N	QUESTIONS	Marks	COs	KL	
1					
i	What is the importance of a primary memory?	2	CO1	CO1	K2
ii	Write down the syntax of do while.	2	CO1	CO1	K1
iii	Write down the range of int data type in C.	2	CO2	CO2	K1
iv	What is the importance of data type in C?	2	CO1	CO1	K4
v	Compare algorithm and flowchart.	2	CO2	CO2	K1
vi	What is the significance of the term void main()?	2	CO1	CO1	K1
vii	Show the syntax of Ternary operator in C.	2	CO3	CO3	K4
viii	Write down the syntax of struct data type.	2	CO4	CO4	K1
ix	Explain the use of strlen() and strcat().	2	CO4	CO4	K2
x	Show the use of any two in-built string functions in C.	2	CO2	CO2	K1

CO1	Formulate simple algorithms for arithmetic and logical problems.
CO2	Test and execute the programs and correct syntax and logical errors.
CO3	Implement conditional branching, iteration and recursion.
CO4	Decompose a problem into functions and synthesize a complete program using divide and conquer approach.
CO5	To use arrays, pointers and structures to formulate algorithms and programs

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Create a flowchart depicting the process of reversing a number and checking if it is palindrome or not	5	CO1	K2
3	Write a program to find largest and 2 nd largest element in an array.	5	CO5	K3
4	Compare while and do-while loop. Also write the syntax of for loop.	5	CO3	K1
5	What is conditional compilation? Explain how can the size of a structure be defined?	5	CO4	K2
6	Write a program to swap two numbers using pointer.	5	CO4	K2
7	Define function? Write down the structure of a user defined function. Show with an example.	5	CO2	K2

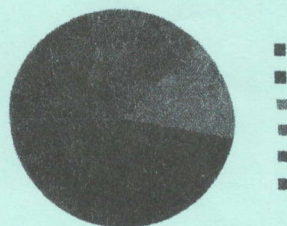
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	What is an Array? Give its advantage and disadvantage. Write a program to perform Binary search.	10	CO5	K2
9	Explain the dynamic memory management functions with examples.	10	CO4	K3
10	Write a program to show the use of any 3 string functions. Compare compiler and interpreter.	10	CO3	K3
11	What is a pointer? Write a program to perform matrix addition on two 3x3 matrices.	10	CO5	K5
12	Write a program to copy the contents of one file to another file using command line arguments.	10	CO5	K5

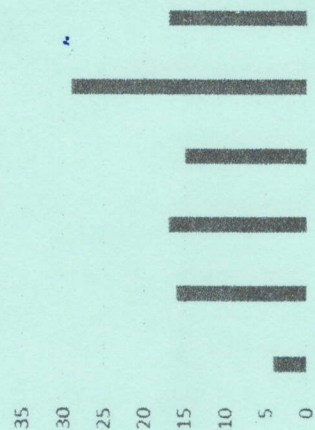
CO1	Understand basics of Ordinary Differential equation
CO2	Identify whether the given differential equation of first order is exact or not Problems.
CO3	Solve higher differential equation and apply the concept of differential equation to real world
CO4	Use the Laplace transforms techniques for solving ODE's
CO5	Evaluate the line, surface and volume integrals and converting them from one to another.
CO6	basic properties of vector valued functions and their applications to line, surface and volume integrals

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



Course Outcome wise Marks Distribution



[21-06-2025]
END SEM EXAMINATION
School of Engineering & IT

Program	ME / EEE / CSE / AI -DS, AIML	Branch	B. Tech
Subject Name	Engineering Mathematics-II	Session	Even, 2024-2025
Semester	II	Year	June, 2025
Time: 3 Hour Max. Marks : 70	- Start writing from 2nd page onwards; <u>don't Write on the 1st Page Backside</u> - Answer all Questions of Section A (Compulsory) - Answer Any Four out of Six of Section B - Answer Any Three out of Five of Section C - Possession of Mobile Phone or any kind of Written Material, Arguments with the Invigilator or Discussion with Co-Student will comes under <u>Unfair Means</u> and will <u>Result</u> in the <u>Cancellation</u> of the <u>Paper(s)</u>.		
Knowledge Level (KL)	K1 : Remembering K2 : Understanding	K3 : Applying K4 : Analysing	K5 : Evaluating K6 : Creating

Section A (Each question Carry 02 Marks from Q1-i to x – 20 Marks)

Q.N	QUESTIONS	Marks	COs	KL
i	Condition for the ODE $M dx + N dy = 0$ to be exact is ?	2	CO1	KL1
ii	Find the Orthogonal Trajectories of $y = mx$	2	CO2	KL2
iii	Solve the following first-order differential equation $\frac{dy}{dx} = \frac{3x}{y}$	2	CO2	KL2
iv	State the Well-Ordering Principle	2	CO1	KL1
v	Find the order and degree of the ODE : $x^2 \frac{d^2y}{dx^2} - 3x \frac{dy}{dx} + 4y = 2x$	2	CO3	KL3
vi	Solve the differential equation $y dx - x dy = y^2 dy$	2	CO5	KL5
vii	What is the condition for a vector function to be Solenoid.	2	CO2	KL2
viii	Write the Statement of Green's theorem	2	CO6	KL6
ix	What is the Laplace Transform of the function a) $\sin 7t$ and b) $\cos 3t$	2	CO5	KL5

x	Write the CF for the ODE: $(D - 2)^2 y = 0$	2	CO3	KL3
Section B (Answer any FOUR out of SIX) - 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Solve the initial value problem: $\frac{dy}{dx} = 2x + 3, y(0) = 5.$	05	CO4	KL4
3	If S is a surface of volume enclosed by Cube of sides = 3 and $\vec{F} = ax\hat{i} + by\hat{j} + cz\hat{k}$ is a vector function then find $\int_V \vec{F} \cdot \vec{n} \, ds = ?$	05	CO6	KL6
4	Find the Particular Integral : $(D^2 - 4D + 3) y = \cos 3x$	05	CO3	KL3
5	Compute the gradient of $f(x, y, z) = x^2 + y^2 + z^2.$	05	CO5	KL5
6	Solve the linear first-order differential equation: $\frac{dy}{dx} + 2y = e^x$	05	CO4	KL4
7	If $\vec{r} = x\hat{i} + y\hat{j} + z\hat{k}$ find a) $\text{div } \vec{r}.$ b) $\text{Curl } \vec{r}.$	05	CO4	KL
Section C (Answer any THREE out of FIVE) - 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	If $f = (x^3 - y^3 + xy^2)$ then find the equation of Normal Line and Tangent plane at $(1, -1, 3).$	10	CO2	KL2
9	Solve the second order ODE using the method of variation of parameters. $(D^2 + n^2) y = \sec nx$	10	CO3	KL5
10	Find the directional derivatives of the function $f = xy + yz + zx$ in the direction of the vector $2\hat{i} + 3\hat{j} + 6\hat{k}$ at the point $(3, 1, 2)$. Also find the maximum value of the directional derivative.	10	CO5	KL5
11	Evaluate $\int_C (e^{-x} \sin y \, dx + e^{-x} \cos y \, dy)$ where C is a rectangle with vertices $(0, 0), (\pi, 0), (\pi, \frac{\pi}{2})$ and $(0, \frac{\pi}{2})$. (Using Greens Theorem).	10	CO5	KL5

12	Find the solution of the linear homogeneous differential equation $x^2 \frac{d^2 y}{dx^2} - 4x \frac{dy}{dx} + 6y = x$	10	CO6	KL6
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