

26/11

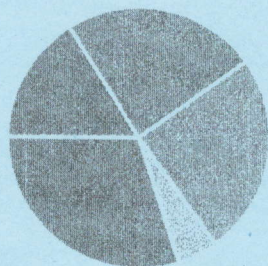
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 ARKA JAIN University Jharkhand		 NAAC A ACCREDITED UNIVERSITY		END SEM EXAMINATION School of Engineering & IT	
Branch	Computer Science Engineering	Program	B.Tech		
Subject Name	Database Management System	Semester	V		
		Year	Nov/Dec 2024		
Time: 3 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 <u>Four</u> out of Six of Section B • Answer Any <u>Three</u> out of Five of Section C • Possession of <u>Mobile Phone</u> or any kind of <u>Written Material, Arguments with the Invigilator</u> or <u>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	K3 : Applying	K5 : Evaluating		
	K2 : Understanding	K4 : Analysing	K6 : Creating		

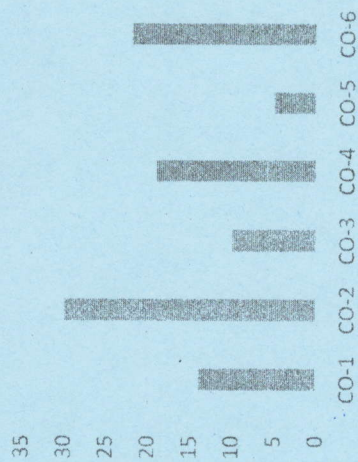
Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)					
Q. N	QUESTIONS	Marks	COs	KL	
i	Define DDL and DML.	2	CO1	CO1	K1
ii	Difference between alter and drop?	2	CO2	CO2	K2
iii	What is the benefit of foreign key?	2	CO2	CO2	K1
iv	Define join in database.	2	CO2	CO2	K1
v	What is an ER diagram?	2	CO1	CO1	K1
vi	Differentiate between B and B+ trees.	2	CO2	CO2	K1
vii	What is serializability with respect to transaction	2	CO4	CO4	K1
viii	What is database recovery?	2	CO4	CO4	K1
ix	What is indexing?	2	CO2	CO2	K1
x	List the differences between authentication and authorization.	2	CO6	CO6	K2

CO1	Describe the fundamental elements of relational database management systems.
CO2	Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL.
CO3	Design ER-models to represent simple database application scenarios
CO4	Convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.
CO5	Improve the database design by normalization.
CO6	Familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing.

Bloom's level wise Marks Distribution



Course Outcome wise Marks Distribution



GRAPHICAL REPRESENTATION

Section B (Answer any FOUR out of SIX) – 20 Marks

(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	What is the need of DBMS and discuss in detail the different DBMS Models.	5	CO2	K2
3	Define Normalization. Explain 1 NF, 2NF, 3NF and BCNF with the help of a suitable example.	5	CO5	K6
4	Explain the concept of ACID properties with the help of suitable example.	5	CO4	K6
5	Explain the concept of database recovery.	5	CO6	K3
6	Discuss various concurrency control techniques.	5	CO2	K2
7	Describe DAC and MAC models.	5	CO6	K4

Section C (Answer any THREE out of FIVE) – 30 Marks

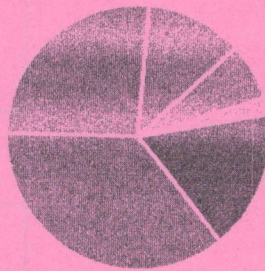
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	Describe various algorithms for query optimization.	10	CO3	K3
9	Explain different types of Joins used in RDBMS with the help of examples.	10	CO4	K6
10	Describe hashed indices.	10	CO6	K3
11	Elaborative note: a) DML commands b) Object Oriented Databases	10	CO1	K2
12	Explain conflict and view serializability with examples.	10	CO2	K6

CO1	Write a formal notation for strings, languages and machines.
CO2	Design finite automata to accept a set of strings of a language.
CO3	For a given language determine whether the given language is regular or not.
CO4	Design context free grammars to generate strings of context free language.
CO5	Determine equivalence of languages accepted by Push Down Automata and languages generated by context free grammars.
CO6	Write the hierarchy of formal languages, grammars and machines. Distinguish between computability and non-computability and Decidability and undecidability.

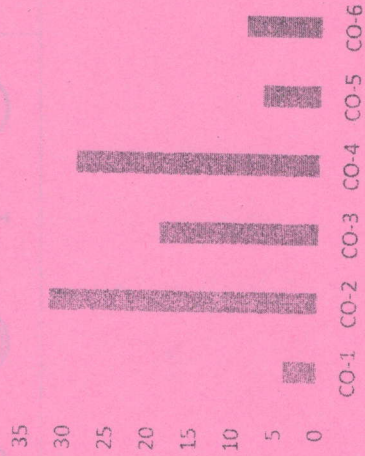
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution



ARKA JAIN University
Jharkhand

NAAC
GRADE A

END SEM EXAMINATION
School of Engineering & IT

Branch

Computer Science Engineering

Program

B.Tech

Subject Name

Formal Language & Automata Theory

Semester

V

Year

Nov/Dec 2024

- 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 come under Unfair Means and will Result in the Cancellation of the Paper(s).

Time: 3
Hour Max.
Marks : 70

Knowledge Level (KL)

K1 : Remembering

K3 : Applying

K5 : Evaluating

K2 : Understanding

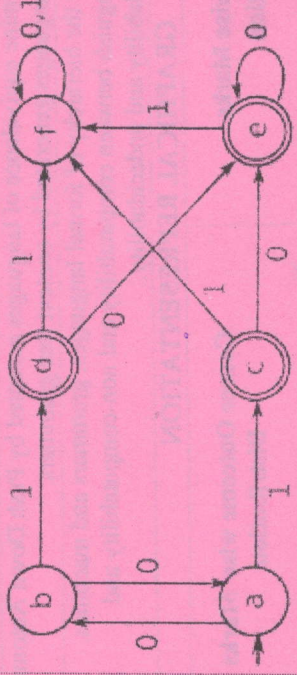
K4 : Analysing

K6 : Creating

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

Q.N	QUESTIONS	Marks	COs	KL
1				
i	Define Grammar? What are the tuples?	2	CO1	K1
ii	Show that $(0^*1^*)^* = (0+1)^*$.	2	CO3	K3
iii	Define CFG and What are its advantages	2	CO4	K1
iv	Give the formal definition of TM? What are the different types of TMs?	2	CO6	K4
v	Define Chomsky Normal form	2	CO1	K1
vi	Find the DFA that recognizes the set of all string on $\Sigma=\{a,b\}$ starting with the prefix "ab"	2	CO2	K6
vii	Explain about Arden's theorem, for constructing the RE from a FA.	2	CO3	K2
viii	Write the process for Convert the grammar into CNF?	2	CO4	K6
ix	Describe linear bounded automaton.	2	CO6	K6
x	A PDA is more powerful than a finite automaton. Justify this statement.	2	CO5	K5

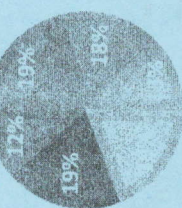
Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)																						
Q. No.	QUESTIONS	Marks	COs	KL																		
2	Define NFA and DFA. Construct DFA for the given NFA <table><tr><td></td><td colspan="2">Next state</td></tr><tr><td></td><td>0</td><td>1</td></tr><tr><td>$\rightarrow q_0$</td><td>q_0, q_1</td><td>q_0</td></tr><tr><td>q_1</td><td>q_2</td><td>q_1</td></tr><tr><td>q_2</td><td>q_3</td><td>q_3</td></tr><tr><td>q_3</td><td></td><td>q_2</td></tr></table>		Next state			0	1	$\rightarrow q_0$	q_0, q_1	q_0	q_1	q_2	q_1	q_2	q_3	q_3	q_3		q_2	5	CO2	K6
	Next state																					
	0	1																				
$\rightarrow q_0$	q_0, q_1	q_0																				
q_1	q_2	q_1																				
q_2	q_3	q_3																				
q_3		q_2																				
3	Prove that the language $L = \{a^n b^n c^n \mid n \geq 1\}$ is not regular using pumping lemma.	5	CO3	K5																		
4	Construct an equivalent FA for the given regular expression $(0+1)^*(00+11)(0+1)^*$	5	CO2	K6																		
5	Construct a PDA which recognizes all strings that contain equal number of 0's and 1's.	5	CO5	K6																		
6	Construct a Turing machine for Language $L = a^n b^n$ where $n > 0$	5	CO6	K6																		
7	Convert the following grammar into CNF. $S \rightarrow bA/aB \quad A \rightarrow bAA/aS/a \quad B \rightarrow aBB/bS/a$.	5	CO4	K3																		
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)																						
Q. No.	QUESTIONS	Marks	COs	KL																		
8	Write short notes on the following: (i) Top-Down Parsing and Bottom-Up Parsing. (ii) Universal Turing Machine.	10	CO4	K1																		
9	Construct PDA from the following Grammar. $S \rightarrow aB$ $B \rightarrow bA/b$ $A \rightarrow aB$	10	CO3	K6																		
10	Write the procedure and eliminate left recursion from the following Grammar $E \rightarrow E+T/T$ $T \rightarrow T^*F/F$ $F \rightarrow (E)/id$	10	CO4	K1																		

11	Define Finite Automata. Explain its Types in Detail. DFA with $\Sigma = \{0, 1\}$ accepts all strings starting with 1. Write the regular expression for the language starting with a but not having consecutive b's.	10	CO2	K2
12	Minimize the following finite automata. 	10	CO2	K5

CO1	Understand the concepts of continuous time and discrete time systems.
CO2	Understand sampling theorem and its implications.
CO3	Analyze systems in complex frequency domain.

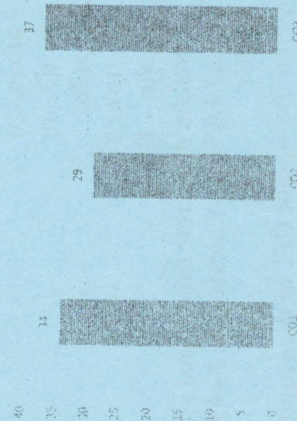
GRAPHICAL REPRESENTATION

BLOOM'S LEVEL WISE MARKS DISTRIBUTION



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome Wise Marks Distribution



	ARKA JAIN University Jharkhand		END SEM EXAMINATION School of Engineering & IT			30/11
Branch	Computer Science & Engineering Signals & Systems	Subject Name	Branch	B.Tech	Year	
			Program	V		
			Semester	Nov/Dec 2024		
Time: 3 Hour Max. Marks : 70	• 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 <u>Mobile Phones</u> or any kind of <u>Written Material, Arguments</u> with the <u>Invigilator</u> or <u>Discussing with Co-Student</u> 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 02 Marks from Q1-i to Q1-x) - 20 Marks

Q.N	QUESTIONS	Marks	COs	KL	PO
1					
i	What is the definition of a deterministic signal, and could you provide an illustrative example?	2	CO1	K1	PO1
ii	A signal is given as $x(n) = (1, 2, 3, 4, 5)$. Fold the signal and delay it by 3 units.	2	CO1	K1	PO1
iii	Represent the following signal graphically, $X(n) = 2^n$ for $-2 \leq n \leq 2$	2	CO1	K1	PO1
iv	What are the conditions that must be met for a signal to be considered periodic?	2	CO1	K3	PO1
V	What purpose does Fourier transformation serve	2	CO2	K4	PO2
vi	State whether the following system are causal or not. $y(n) = Ax(n) + B$ $y(n) = x(2n)$	2	CO1	K2	PO1
vii	Represent the sequence $x(n) = 2^n u(n)$, where n varies from 0 to ∞ .	2	CO1	K3	PO2
viii	What does LTI system stand for, and provide an explanation of its meaning?	2	CO3	K1	PO1
ix	Give the conditions that determine the stability of a signal	2	CO1	K2	PO2
x	What is the definition of the term "aliasing"?	2	CO2	K4	PO1

Section B (Answer any FOUR out of SIX) - 20 Marks

(Each question Carry 5 Marks)

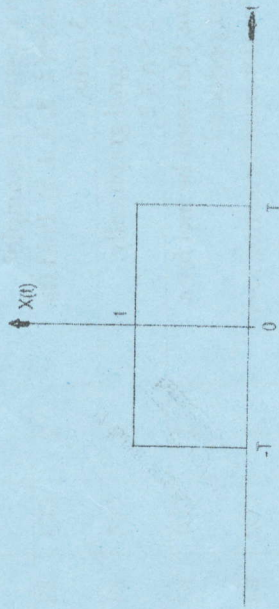
Q. No.	QUESTIONS	Marks	Cos	KL	PO
2	Find the circular convolution of the input signal $x(n) = \{1, 2, 4\}$ with impulse signal $h(n) = \{1, 2\}$	5	CO1	K3	PO1
3	If $X_1(n) = 3\delta(n-1) + \delta(n) + 2\delta(n+1)$ $X_2(n) = 2\delta(n-1) + 3\delta(n) + 2\delta(n+1)$. Determine $X(n)$ by any method, where $X(n)$ is the convolution of $X_1(n)$ and $X_2(n)$.	5	CO3	K5	PO2
4	Determine the Z-transform of the following finite duration signals. a) $x(n) = \{2, 1, 4, 5, 3, 0, 1\}$ ↑ b) $x(n) = \{1, 0, 1, 0, 5, 4, 0, 1\}$	5	CO2	K4	PO2
5	Obtain the Fourier transform of a rectangular signal varying from $-T$ to T with amplitude of 1.	5	CO3	K6	PO2
6	Define briefly: a) Causal and non-causal signal b) Periodic and non-periodic signal	5	CO1	K1	PO1
7	Solve the following integral: a) $\int_{-\infty}^{\infty} [t^3 + 2]\delta(t)dt$ b) $\int_{-1}^2 [t^2 + 1]\delta(t-1)dt$	5	CO1	K2	PO1

Section C (Answer any THREE out of FIVE) - 30 Marks

(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	Cos	KL	PO
8	Explain the following standard signals with mathematical expression and graphical representation:	10	CO1	K1	PO1

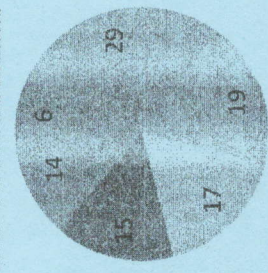
9	a) Unit impulse function b) Sinc Function c) Rectangular Function d) Sinusoidal Function A discrete time signal is given below as, $X(n) = (-0.5, 0.5, 1, 1, 1, 1, 0.5,)$ ↑ Sketch the following in reference to the above signal: a) $x(n-3)$ b) $x(3-n)$ c) $x(2n)$ d) $x(n)u(3-n)$ e) $x[(n-1)^2]$	10	CO2	K3	PO2
10	Consider a discrete time signal $x[n]$ given by $x[n] = \{1, 2, 3, 4, 4, 3, 2, 1\}$. Calculate its Fast Fourier Transform (FFT)	10	CO3	K6	PO1
11	Find the 4-point DFT of the sequence $x(n) = \sin \frac{n\pi}{4}$	10	CO3	K5	PO2
12	Explain briefly: a) Sampling Theorem b) Aliasing Effect c) Modulation	10	CO2	K2	PO1



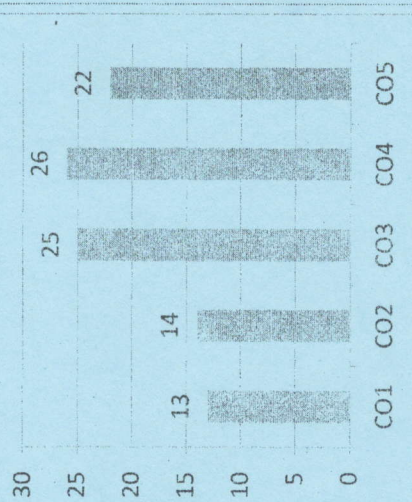
CO1	Formulate simple algorithms for arithmetic and logical problems
CO2	Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Synthesize divide-and-conquer algorithms
CO3	Describe the greedy paradigm and explain when an algorithmic design situation calls for it. For a given problem develop the greedy algorithms.
CO4	For a given model engineering problem model it using graph and write the corresponding algorithm to solve the problems
CO5	To decompose a problem into functions and synthesize a complete program using divide and conquer approach

GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

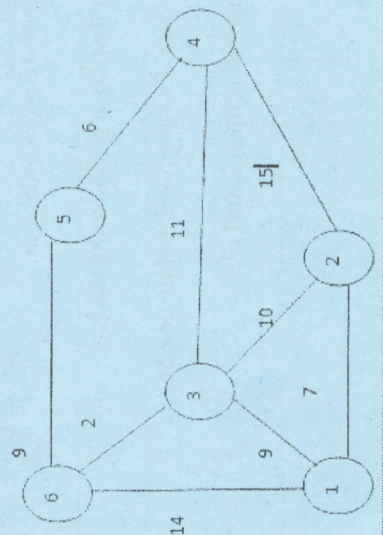


 ARKA JAIN University Jharkhand				END SEM EXAMINATION School of Engineering & IT	
Branch		Computer Science Engineering		Program	B.Tech
Subject Name		Design and Analysis of Algorithms		Semester	V
Time: 3 Hour Max. Marks : 70		• Start writing from 2nd page onwards; don't Write on the 1st Page Backside • 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>.		Year	Nov/Dec 2024
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	Mention the types of algorithm efficiencies/complexities.	2	CO1	K1
ii	Prove that $3n^3 + 2n^2 = O(n)^3$.	2	CO1	K3
iii	How the performance of an algorithm can be analysed?	2	CO4	K4
iv	Write down the characteristics of algorithm.	2	CO1	K1
v	What is amortized efficiency?	2	CO1	K2
vi	What is the difference between NP hard and NP Complete problem?	2	CO4	K2
vii	List any two advantages of dynamic problem.	2	CO5	K1
viii	Create a pseudo code to display a palindromic string.	2	CO2	K6
ix	Create a pseudo code to test if a number is prime or not.	2	CO2	K6
x	Compare the order of growth $n(n-1)/2$ and n^2 .	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	Perform a comparative analysis of Algorithm, Flowchart, Program.	5	CO1	K2
3	How does recursive technique works? Give an example.	5	CO2	K3
4	Show how the Quick sort arranges the following sequences of keys in ascending order (22, 55, 33, 11, 99, 77, 55, 66, 54, 21, 30)	5	CO3	K4
5	Create an algorithm to find the transpose of a 4x4 matrix.	5	CO3	K6
6	Solve the Greedy Knapsack problem where maximum capacity is = 5KG	5	CO2	K5
7	Create an algorithm for Matrix multiplication	5	CO3	K6
Section C (Answer any THREE out of FIVE) - 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	With reference to Graph, What is BFS and DFS? Create an algorithm to show binary search.	10	CO4	K2
9	Give the solution to the 8 queen's problems using backtracking.	10	CO5	K4
10	Determine the shortest path of the provided graph using Dijkstra's Algorithm.	10	CO4	K5



11	Consider the following instance of Knapsack problem N=3, M=20, (p1,p2,p3)=(25,24,15), (w1,w2,w3)=(18,15,10). Calculate Maximum profit, Minimum weight and Maximum profit per unit weight.	10	CO3	K3
12	What do you mean by minimum spanning tree? Explain the Backtracking Algorithm in detail.	10	CO5	K2

'E' 9/12

 ARKA JAIN University Jharkhand		 NAAC GRADE A ACCREDITED UNIVERSITY		END SEM EXAMINATION School of Engineering & IT	
Branch	Computer Science Engineering	Program	B.Tech		
Subject Name	Object Oriented Software Engineering	Semester	V		
		Year	Nov/Dec 2024 *		
Time: 3 Hour Max. Marks : 70	- 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 Result in the Cancellation of the Paper(s).				
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating		
	K2 : Understanding	K4 : Analysing	K6 : Creating		

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)					
Q. N1	QUESTIONS	Marks	COs	KL	
i	Explain debugging with example of your own.	2	CO1	K4	
ii	Explain Alpha environment and Beta environment in system testing	2	CO5	K2	
iii	What is the role of Actor in use-case diagram?	2	CO3	K2	
iv	Mention the use of Object diagram in software engineering.	2	CO3	K1	
v	Draw an UML Architecture diagram with different views	2	CO3	K1	
vi	Analyze about 'THINGS' in UML Foundations.	2	CO3	K4	
vii	Draw and explain Class Notations using example of your own.	2	CO3	K4	
viii	Draw and explain Association and Aggregation in UML.	2	CO3	K2	
ix	What is the extensibility mechanism used in UML.	2	CO3	K4	
x	Describe MetaModel and its usage.	2	CO2	K2	

CO1	To understand Software Engineering Lifecycle Models
CO2	To Perform software requirements analysis
CO3	To gain knowledge of the System Analysis and Design concepts using UML.
CO4	To understand software testing and maintenance approaches
CO5	To work on project management scheduling using DevOps
GRAPHICAL REPRESENTATION	
Bloom's Level wise Marks Distribution Course Outcome Wise Marks Distribution	

Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	List the principles of OOSE with its concepts	5	CO1	K6
3	Write in detail about Object Oriented approach for Scheduling	5	CO2	K4
4	Explain the Activities in used for Maintenance in software engineering	5	CO1	K6
5	What is SRS and how it is made. Create and explain with the template	5	CO1	K2
6	List and brief about the major steps in determining requirements for new system	5	CO2	K2
7	Explain in detail about Class-based Modeling	5	CO2	K1
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Analyze and explain about the classical waterfall life model with a neat diagram.	10	CO4	K2
9	Write about COCOMO-II Model in brief	10	CO3	K4
10	Analyze about the Challenges in Software Implementation	10	CO3	K2
11	Differentiate Verification and Validation with V-shaped model	10	CO4	K4
12	Define Regression Testing and how it differs from Retesting	10	CO5	K2

 ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED		END SEM EXAMINATION School of Engineering & IT	
Branch	Computer Science Engineering	Program	B. Tech		
Subject Name	Artificial Neural Network	Semester	V		
		Year	Nov/Dec 2024		
Time: 3 Hour Max. Marks : 70	- 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 Cancellation of the Paper(s).				
Knowledge Level (KL)	K1 : Remembering	K3 : Applying	K5 : Evaluating		
	K2 : Understanding	K4 : Analysing	K6 : Creating		

Section A (Each question Carry 02 Marks from Q1-i to x - 20 Marks)					
Q. N1	QUESTIONS	Marks	COs	KL	
i	What is associative learning?	2	CO1	K1	
ii	What is the role of synapses in biological neuron?	2	CO1	K2	
iii	What are the limitations of Bidirectional associative memory?	2	CO2	K4	
iv	What is the role of activation function?	2	CO2	K1	
v	What is the advantage of basis function over multi-layer feedforward neural networks?	2	CO3	K4	
vi	What is the use of Back Propagation networks?	2	CO4	K4	
vii	What are the applications of self-organising map?	2	CO5	K3	
viii	What are the main components of an autoencoder?	2	CO2	K1	
ix	Suppose you are doing bag-of-words text classification on a document. The raw input is a single string containing the text of the entire document. Describe in one or two sentences the pipeline to go from the raw input to a feature vector.	2	CO5	K6	
x	What is loss function? Name a loss function that is used in binary classification model.	2	CO4	K2	

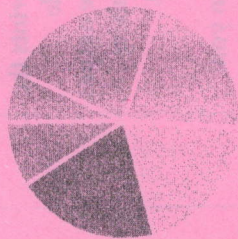
Section B (Answer any FOUR out of SIX) – 20 Marks (Each question Carry 05 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
2	Explain the structure of artificial neural network with a suitable diagram.	05	CO1	K1
3	How regularization theory helps in solving ill-posed problems?	05	CO4	K4
4	Explain the training and testing steps of discrete Hopfield net.	05	CO3	K2
5	Show that Exclusive OR problem cannot be solved by perceptron.	05	CO4	K5
6	What is Multi-layer feed forward networks? What is the importance of hidden and output layers in it?	05	CO4	K4
7	Consider a function $y = (x + 30)/2$. How many iterations does it need to reach the first negative value of the function starting from the point $x = 1$ using gradient descent (Assume the learning rate is 0.01)?	05	CO5	K5
Section C (Answer any THREE out of FIVE) – 30 Marks (Each question Carry 10 Marks)				
Q. No.	QUESTIONS	Marks	COs	KL
8	Explain the architecture of Bidirectional associative memory with a suitable diagram.	10	CO2	K1
9	Explain the training algorithm of Kohonen self-organizing feature maps with a suitable diagram.	10	CO3	K2
10	What is radial basis function (RBF)? Explain the training algorithm used for RBF network with fixed centers.	10	CO3	K2
11	What is the role of mean square error in delta learning rule? Explain the impact of continuous activation function in it.	10	CO4	K4
12	Write a short note on vector quantization. Draw a neural architecture for graph embedding.	10	CO2	K1

CO - Course Outcomes,		KL- Knowledge Level,	PO – Program Outcome
CO1	Understand the origin, ideological basics, Learning process and various Neural Architectures of ANN.		
CO2	Understand the concepts and techniques of Shallow neural networks through the study of important neural network models.		
CO3	Training Deep Neural Networks and Teaching Deep Learners to Generalize.		
CO4	Apply Attractor neural networks to particular application.		
CO5	Design a self-organizing system that are capable of extracting useful information from the environment within which they operate.		
GRAPHICAL REPRESENTATION			
Bloom's level wise Marks Distribution		Course Outcome wise Marks Distribution	
■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6		CO-1 CO-2 CO-3 CO-4 CO-5 CO-6	

CO1	Write significance of the Java bytecode in platform independence.
CO2	Knowing with the examples of how inheritance and method overriding work in Java
CO3	Specify simple abstract data types and design implementations, using abstraction Functions to document them
CO4	Recognize features of object-oriented design such as encapsulation, polymorphism, inheritance, and composition of systems based on object identity
CO5	Name and apply some common object-oriented design patterns and give.
CO6	Design applications with an event-driven graphical user interface

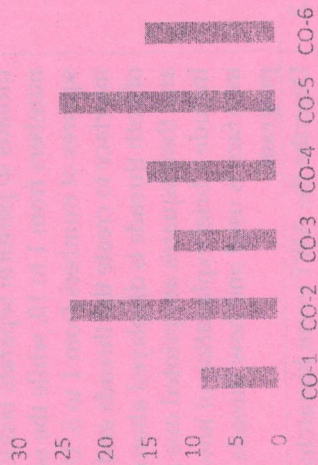
GRAPHICAL REPRESENTATION

Bloom's level wise Marks Distribution



■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6

Course Outcome wise Marks Distribution



Branch	Computer Science Engineering	Program	B. Tech
Subject Name	Object Oriented Programming	Semester	V
		Year	Nov/Dec 2024
Time: 3 Hour Max. Marks : 70	- 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 come 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

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

Q. N1	QUESTIONS	Marks	COs	KL
i	Define encapsulation and explain how it is achieved in Java.	2	CO2	KL1
ii	What is polymorphism in Java? Provide an example.	2	CO2	KL3
iii	Differentiate between a class and an interface in Java.	2	CO2	KL1
iv	Explain the use of 'this' keyword in Java with an example.	2	CO1	KL4
v	What are abstract classes in Java, and why are they used?	2	CO2	KL4
vi	Describe how exception handling is implemented in Java.	2	CO1	KL1
vii	What are inner classes in Java, and what are their advantages?	2	CO2	KL4
viii	Explain the concept of 'Object Cloning' in Java. How is it achieved?	2	CO1	KL4
ix	What is the significance of the Java bytecode in platform independence?	2	CO1	KL1
x	How do you create and start a thread in Java? Provide a simple code example.	2	CO3	KL1

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Write a Java program to create a simple banking system that includes the BankAccount class. The class should have attributes like accountNumber, accountHolderName, and balance. Include methods for deposit, withdraw, and displaying the account details. Make sure to include basic validation, such as ensuring the balance does not go negative.	5	CO1	KL4
3	Explain how inheritance and method overriding work in Java with examples. Discuss how inheritance promotes code reusability.	5	CO2	KL4
4	Discuss multithreading in Java. Explain a thread's life cycle and demonstrate how to create and manage multiple threads in a Java program.	5	CO3	KL3
5	Describe event-driven programming in Java using the Abstract Window Toolkit (AWT) or Swing. Provide an example of a graphical user interface (GUI) application that handles user events.	5	CO4	KL4
6	Explain the Java Input/Output (I/O) system. Discuss the differences between byte streams and character streams and provide an example in Java that demonstrates reading from and writing to a text file using appropriate classes.	5	CO1	KL4
7	Create a Java program using Swing that displays a simple calculator interface with buttons for digits (0-9) and basic operations (+, -, *, /). Implement event listeners to handle button clicks and display the result in a text field. Ensure proper error handling for invalid operations, such as division by zero.	5	CO4	KL1

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain how constructors in Java work. Discuss the role of default constructors, parameterized constructors, and the concept of constructor overloading. Write a Java program to demonstrate the use of different types of constructors.	10	CO1	KL4

9	Discuss the difference between static and non-static members in Java. Describe the use of static variables, methods, and blocks in a Java program using examples. What are the potential advantages and disadvantages of using static members?	10	CO1	KL4
10	Write a Java program that reads a list of student records from a text file. Each line in the file contains a student's name and their scores in three subjects, separated by commas (e.g., "John,85,90,75"). Your program should calculate the average score for each student and write their name and average score to a new file. Implement exception handling to manage errors such as NumberFormatException, FileNotFoundException, and IOException. Include a custom exception to handle the case where a student's scores are missing in the input file.	10	CO1	KL1
11	Create a Java program that creates and starts two threads to perform separate tasks: one thread prints the numbers from 1 to 10, while the second thread prints the squares of numbers from 1 to 5. Use the Runnable interface to create the threads and ensure that the output of both threads is displayed alternately (i.e., numbers and their squares are printed one after the other). Include a brief explanation of how the Runnable interface is used and how threads are managed in your program.	10	CO1	KL4
12	Describe the AWT event hierarchy in Java. How do the different event classes relate to each other? How do they enable handling various user interactions in a GUI application?	10	CO4	KL4