

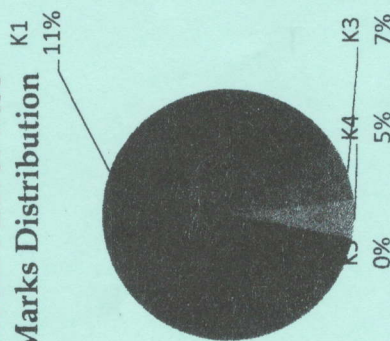
JGI ARKA JAIN University Jharkhand NAAC GRADE A ACCREDITED UNIVERSITY [07-05-2025] END SEM EXAMINATION School of Engineering & IT			
Program	Computer Science & Engineering	Branch	B. Tech
Subject Name	Advance Java Programming	Session	Even, 2024-2025
Semester	VI	Year	May, 2025
Time: 3 Hour Max. Marks : 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 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.N	QUESTIONS	Marks	COs	KL
1				
i	List any two AWT classes used for creating graphical user interfaces (GUIs).	2	CO1	K1
ii	What is the port number for the following services: ftp, smtp, http, POP3?	2	CO2	K3
iii	List any two Swing components and describe their basic functionalities.	2	CO1	K1
iv	With reference to networking, what is a Socket?	2	CO4	K2
v	Create an Applet code to show a String in red font color.	2	CO1	K6
vi	With reference to AWT, what is an event?	2	CO1	K2
vii	What is object-relational mapping (ORM) in Hibernate?	2	CO4	K2
viii	Compare Hibernate with JDBC.	2	CO4	K1
ix	Explain any two Datagram Packet constructors.	2	CO3	K2
x	What is the difference between a TCP socket and a Datagram?	2	CO3	K2

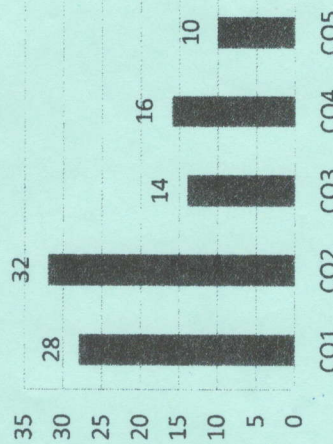
CO1	Familiarize and compare the concepts of POP and OOP
CO2	Test and execute the programs and correct syntax and logical errors.
CO3	Understanding various components of networking that can be programmed
CO4	Decompose a problem into functions and synthesize a complete program and their implementations using JDBC
CO5	Develop reusable component for Graphical User Interface applications

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	Describe the different stages in the life cycle of a servlet. What happens in each stage?	05	CO2	K2
3	What is the role of a proxy server in a network? How does it enhance security and performance?	05	CO3	K2
4	Draw the AWT class hierarchy and mention any two component class.	05	CO1	K1
5	Write a code snippet that uses event listeners to handle multiple events such as button clicks, checkbox selections, and text input.	05	CO2	K6
6	How would you use the javax.servlet package to handle HTTP requests and responses in a servlet?	05	CO3	K3
7	Provide any 5 comparative analyses between AWT and Swing.	05	CO1	K4

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

Q. No.	QUESTIONS	Marks	COs	KL
8	What is JDBC? Explain the types and role of JDBC drivers.	10	CO5	K2
9	What is an IDE? Write a java code to display a Text box, label and a button using AWT or Swing.	10	CO1	K6
10	Create a Java code to show the currency conversion. Also design the interface.	10	CO2	K6
11	What is the purpose of the InetAddress class in Java? How does a URLConnection class work in Java? Write a code snippet to demonstrate how to open a URL connection and read its content.	10	CO4	K6
12	Explain Grid Layout, and Border Layout. Design a layout to show 2 Text boxes, 2 Labels, and 4 Buttons (Add, Sub, Pro, Div). Also write the code to perform these arithmetic operations.	10	CO2	K6

 ARKA JAIN University Jharkhand		NAAC GRADE A ACCREDITED UNIVERSITY	[09-05-2025] END SEM EXAMINATION School of Engineering & IT	
Program	Computer Science & Engineering		Branch	B. Tech
Subject Name	Open Elective-I - Cyber Law and Ethics		Session	Even, 2024-2025
Semester	VI		Year	May, 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 come under <u>Unfair Means</u> and will <u>Result</u> in the <u>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
i	Define Cyber Forensic.	2	CO1	K1
ii	Name 4 types of Intellectual Property Rights.	2	CO4	K2
iii	What is Piracy and Privacy?	2	CO2	K1
iv	How is a hacker different from a cracker?	2	CO2	K1
v	What is IT amendment Act 2008?	2	CO1	K3
vi	What is cyber bullying?	2	CO2	K3
vii	Compare Virus and Worms.	2	CO4	K1
viii	What is phishing? Give example.	2	CO4	K2
ix	What are the different types or categories of hacker?	2	CO1	K2
x	What is section 66 of IT Act 2000?	2	CO3	K1

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

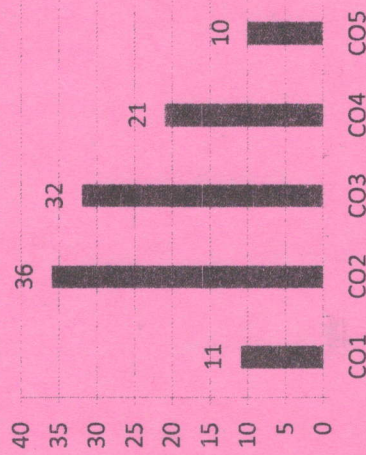
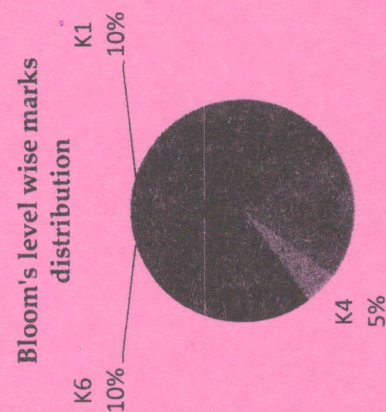
Q. No.	QUESTIONS	Marks	COs	KL
2	Explain human right issue in investigating cybercrimes.	05	CO3	K3
3	What are various ecommerce models? Explain any one.	05	CO1	K4
4	Explain the term cyber stalking and intruder.	05	CO2	K3
5	Describe the key amendments in IT Act 2008.	05	CO2	K2
6	What is DoS attack? What are the methodologies to handle DoS attack?	05	CO3	K4
7	What are the various phases of hacking method?	05	CO4	K3

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

Q. No.	QUESTIONS	Marks	COs	KL
8	What is digital signature? How is it issued? Explain the key components associated with digital signature.	10	CO5	K3
9	Explain with a suitable example hashing and asymmetric cryptosystem technique.	10	CO2	K3
10	What is patent? How or why is it important? Summarize briefly the steps in patenting process.	10	CO3	K2
11	Analyse the risks involved in running E-business site. Explain virus contamination and identity theft with example.	10	CO4	K4
12	Explain any two: a) Insecure Network connections b) Malicious code c) Concept of Fire wall Security	10	CO3	K2

Course Outcomes	CO1	Conduct a Cyber security risk assessment
	CO2	Measure the performance and troubleshoot cyber security systems
	CO3	Implement cyber security solutions
	CO4	Ability to use cyber security, information assurance, and cyber forensics software tools.
	CO5	Understand about digital signature with its components.

GRAPHICAL REPRESENTATION





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[12-05-2025]

END SEM EXAMINATION
School of Engineering & IT

Program	Computer Science & Engineering		Branch	B. Tech
Subject Name	Compiler Design		Session	Even, 2024-2025
Semester	VI		Year	May, 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 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
1				
i	Mention any two properties of a Compiler.	2	CO1	K1
ii	Write two important points about heap management.	2	CO4	K2
iii	Compare compiler and interpreter.	2	CO1	K1
iv	Differentiate between synthesized translation and inherited translation.	2	CO1	K1
v	Construct Deterministic Finite Automata to accept the regular expression: $(0+1)^*(00+11)(0+1)^*$	2	CO2	K3
vi	Write the regular expression for: $R=R1+R2$ (Union operation).	2	CO2	K3
vii	What is a LEX compiler?	2	CO3	K1
viii	Write the production rules to eliminate the left recursion and left factoring problems.	2	CO2	K2
ix	Write quadruples, triples and indirect triples for the expression: $-(a*b)+\{c+d\}-(a+b+c+d)$	2	CO3	K2
x	What is the procedure to store the names in symbol table?	2	CO3	K1

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

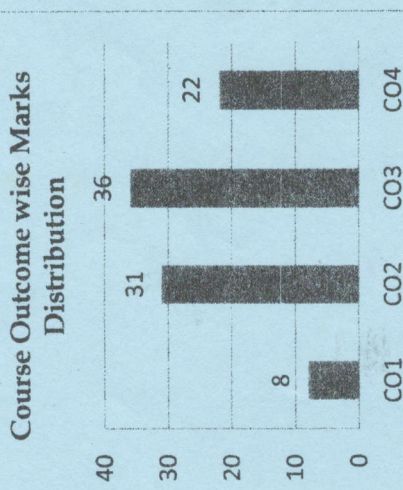
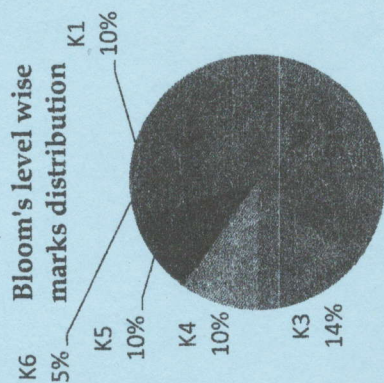
Q. No.	QUESTIONS	Marks	COs	KL
2	Draw the syntax tree and DAG for the following expression: $(a*b)+(c-d)*(a*b)+b$	05	CO3	K3
3	What is a Dependency Graph? Write the comparison among SLR Parser, LALR parser and Canonical LR Parser.	05	CO3	K4
4	Construct a Directed Acyclic Graph (DAG) to represent the following basic block: 1. $x = a + b$ 2. $y = c - d$ 3. $z = x * y$	05	CO4	K6
5	What is syntax directed translation (SDD)? Explain the role of a code generator in a compiler.	05	CO2	K2
6	For the grammar $S \rightarrow aAd \mid bBd \mid aBe \mid bAe, A \rightarrow f, B \rightarrow f$ Construct LR(1) Parsing table. Also draw the LALR table.	05	CO3	K4
7	Construct syntax tree and postfix notation for the following expression: $(a+(b*c)^d-e)/(f+g)$	05	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 Rules to construct FIRST Function and FOLLOW Function.	10	CO2	K2
9	Write the rules to construct the SLR parsing table. Describe the relationship between finite state machines and regular expressions.	10	CO2	K2
10	What is Finite State machine? Discuss how regular expressions are used in lexical analysis and pattern matching.	10	CO3	K2
11	Check whether given grammar is ambiguous or not. If ambiguous then convert it into unambiguous grammar: $E \rightarrow E+E \mid E^*E \mid id$.	10	CO4	K5
12	Write short notes on any 4: YACC, Handle Pruning, Ambiguity, LEX compiler, Augmented Grammar, Polish notation.	10	CO3	K2

CO1	For a given grammar specification develop the lexical analyzer
CO2	For a given parser specification design top- down and bottom-up parser
CO3	Develop syntax directed translation scheme
CO4	Develop algorithms to generate code for a target machine

GRAPHICAL REPRESENTATION



	ARKA JAIN University Jharkhand		[14-05-2025] END SEM EXAMINATION School of Engineering & IT
Program	Computer Science & Engineering	Branch	B.Tech
Subject Name	Predictive Analytics using R	Session	Even, 2024-2025
Semester	VI	Year	May, 2025
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 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

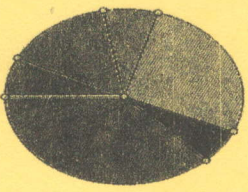
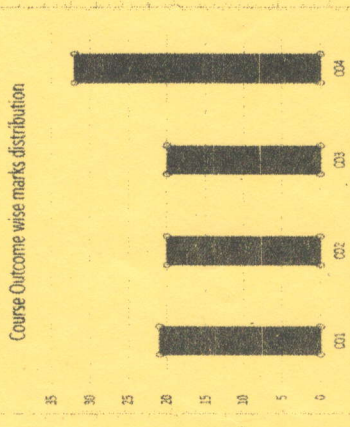
Section A (Each question Carry 02 Marks from Q1-i to x) - 20 Marks			
Q. N	QUESTIONS	Marks	COs
1			KL
i.	Explain the Data Objects of R. *	2	CO1
ii.	What is a package? Describe any five packages of R.	2	CO4
iii.	List the difference between arrays and matrices in R.	2	CO2
iv.	What is the need of the ensemble effect in machine learning	2	CO1
v.	Define predictive analytics and its purpose	2	CO2
vi.	Name different types of target variables used in predictive modelling.	2	CO2
vii.	Define predictive modelling in the context of machine learning	2	CO1
viii.	List the common machine learning algorithms used for predictive modelling.	2	CO2
ix.	Mention common metrics used for assessing predictive models.	2	CO2
x.	What is the role of activation functions in neural networks?	2	CO4

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2.	Define function. Write an R function to print the addition of two numbers	5	CO2	K3
3.	Write a function in R to calculate the factorial of a number	5	CO2	K6
4.	Write an R program to create a matrix and transpose it.	5	CO4	K6
5.	Differentiate between qualitative and quantitative measures in predictive models	5	CO4	K4
6.	Use logistic regression to classify whether an email is spam or not.	5	CO4	K6
7.	List the key motivations for using model ensembles	5	CO1	K6

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

Q. No.	QUESTIONS	Marks	COs	KL
8.	Create an R script using control structures to generate the Fibonacci sequence up to a given number	10	CO1	K6
9.	Compare Bagging and Boosting in terms of their approach to model aggregation.	10	CO4	K2
10.	Differentiate between supervised and unsupervised machine learning with examples.	10	CO4	K4
11.	Compare the different types of analytics and their applications in business scenarios.	10	CO3	K4
12.	Develop an R script to calculate and plot the mean and median of a numeric vector	10	CO3	K6

Course Outcomes	CO1	CO2	CO3	CO4
Understand the processing steps for predictive analytics using R.				
Construct and deploy prediction models with integrity				
Explore various techniques (machine learning/data mining, ensemble) for predictive analytics				
Apply predictive analytics models to public dataset using R.				
GRAPHICAL REPRESENTATION				
Bloom's Level Wise Marks Distribution  • K1 = 40 • K2 = 30 • K3 = 15 • K4 = 10 • K5 = 5 • K6 = 0		Course Outcome wise marks distribution  • CO1 = 20 • CO2 = 15 • CO3 = 10 • CO4 = 5		

	ARKA JAIN University Jharkhand			[16-05-2025] END SEM EXAMINATION School of Engineering & IT	
Program	Computer Science & Engineering		Branch	B.Tech	
Subject Name	Elective-III - Neural Networks and Deep Learning		Session	Even, 2024-2025	
Semester	VI		Year	May, 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 Phones or any kind of <u>Written Material, Arguments with the Invigilator or 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 Mark from Q1-i to x) - 20 Marks					
Q. N	QUESTIONS	Marks	COs	KL	
i	Define a feed forward neural network.	2	CO1	K1	
ii	What is the role of regularization in neural networks?	2	CO2	K2	
iii	How does a convolutional layer differ from a pooling layer?	2	CO3	K2	
iv	What is the main purpose of a Boltzmann Machine?	2	CO4	K2	
v	What is NLP in the context of deep learning?	2	CO5	K2	
vi	List three popular deep learning frameworks	2	CO5	K1	
vii	What is the primary use of auto encoders in deep learning?	2	CO4	K2	
viii	What is over fitting, and how does it affect neural networks?	2	CO3	K2	
ix	What is model selection in deep learning?	2	CO2	K1	
x	List common activation functions used in neural networks.	2	CO1	K1	

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Evaluate the performance of auto encoders in anomaly detection? What are their limitations?	05	CO4	K4
3	How does a convolutional neural network (CNN) work? What is the role of pooling?	05	CO3	K3
4	Explain regularization methods like L1 and dropout? How do they prevent over fitting?	05	CO3	K3
5	Discuss supervised, unsupervised, and reinforcement learning? Compare their differences.	05	CO3	K3
6	Describe the back propagation algorithm? Explain its significance in minimizing loss.	05	CO2	K3
7	Compare Caffe, Theano, and Torch in terms of usability? Highlight their advantages.	05	CO5	K4

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Compare and contrast different activation functions like sigmoid, tanh, and ReLU. Analyze their advantages and disadvantages in terms of their impact on learning efficiency, gradient vanishing, and computational complexity	10	CO1	K4
9	Given a classification problem, how would you choose an appropriate loss function for training a neural network? Discuss how different tasks (e.g., binary P classification, multi-class classification, and regression) influence your choice of loss function.	10	CO2	K5
9	Compare and contrast the architecture of a Deep Feed Forward Network with that of a Recurrent Neural Network.	10	CO3	K4
11	Define a Hopfield Network. Explain the working of a Hopfield network with a neat sketch of its architecture	10	CO4	K4
12	How does sparse coding differ from traditional coding techniques in terms of data representation?	10	CO5	K4

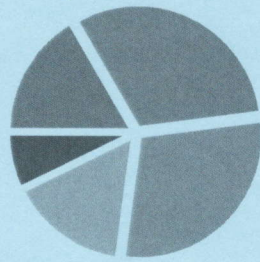
CO- Course Outcomes, KL- Knowledge Level, PO – Program Outcome

Course Outcomes	CO1	CO2	CO3	CO4	CO5
Identify learning paradigms and their applications in deep learning.					
Implement neural networks to solve supervised and unsupervised tasks.					
Analyze the role of optimization and regularization techniques in deep models.					
Develop advanced neural network models for spatiotemporal problems.					
Apply deep learning frameworks for real-world problem-solving.					
GRAPHICAL REPRESENTATION					
Bloom's Level wise Marks Distribution			Course Outcome Wise Marks Distribution		
■ K1 ■ K2 ■ K3 ■ K4 ■ K5 ■ K6			CO1 CO2 CO3 CO4 CO5		

Course Outcomes	CO1	Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations.
	CO2	Apply basic principles of AI in solutions that require problem solving
	CO3	Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models
	CO4	Demonstrate proficiency developing applications in an 'AI language', expert system shell, or data mining tool.
	CO5	Demonstrate proficiency in applying scientific method to models of machine learning.

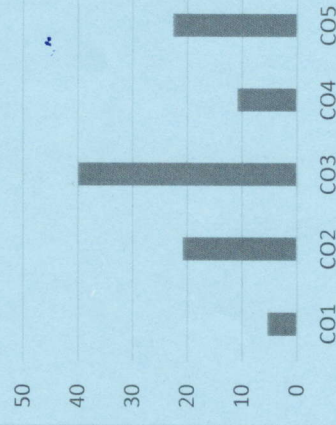
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Bloom's level wise Marks Distribution



■ KL1 ■ KL2 ■ KL3 ■ KL4 ■ KL5

Course Outcome wise Marks Distribution



JGI ARKA JAIN University Jharkhand	NAAC GRADE A ACCREDITED UNIVERSITY		[19-05-2025] END SEM EXAMINATION School of Engineering & IT	
	Program	Computer Science & Engineering	Branch	B. Tech
	Subject Name	Elective-II - Artificial Intelligence	Session	Even, 2024-2025
	Semester	VI	Year	May, 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 come 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	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 the term "search space" and explain its significance in AI problem-solving.	2	CO2	KL2
ii	Define Artificial Intelligence (AI) and briefly explain its significance in modern technology.	2	CO1	KL1
iii	Explain the concept of "Heuristic Search" and its application in AI problem-solving. How does it relate to intelligent agents?	2	CO1	KL2
iv	What is the purpose of the STRIPS problem-solving system?	2	CO2	KL1
v	Summarize the importance of knowledge representation in AI.	2	CO2	KL2
vi	How do frames and scripts help in AI-based reasoning?	2	CO4	KL2
vii	Show how semantic networks can be used to represent relationships in a knowledge base.	2	CO3	KL3
viii	What are LISP and Prolog used for in AI?	2	CO3	KL1
ix	Briefly justify the use of heuristic search techniques in AI applications.	2	CO2	KL5
x	How does the AO* algorithm differ from the A* algorithm?	2	CO1	KL2

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Use situation calculus to model a simple robotic action sequence.	5	CO4	KL3
3	Assess the role of theorem proving in AI-based reasoning.	5	CO2	KL5
4	Use resolution theorem proving to verify the argument: 1. "Every student who studies AI is intelligent." 2. "John is a student studying AI." Conclusion: "John is intelligent."	5	CO3	KL4
5	Construct truth tables for the following logical expressions: a) $(A \wedge B) \wedge \neg C$ b) $\neg(A \wedge B) \vee C$	5	CO3	KL3
6	Design a decision-making problem and solve it using the AO* algorithm. Evaluate its efficiency compared to other search methods.	5	CO5	KL5
7	Design an intelligent agent for a smart home automation system.	5	CO4	KL6

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Explain the Minimax procedure for game tree searching and demonstrate how it is used to make optimal decisions in a two-player game, such as Tic-Tac-Toe. Compare the efficiency of the MINIMAX algorithm with alpha-beta pruning against a brute-force search method when playing a strategy game like Chess.	10	CO 2	KL2
9	Compare and contrast Dempster-Shafer Theory of Evidence with traditional probabilistic reasoning. Highlight the advantages and limitations of both approaches in handling uncertainty. Given a set of evidence and a hypothesis, apply Dempster-Shafer Theory of Evidence to calculate the belief and plausibility of the hypothesis.	10	CO3	KL4
10	State and explain Bayes' Theorem. What is its significance in probabilistic reasoning and AI? Use Bayes' Theorem to calculate the probability of an event	10	CO5	KL2

occurring based on prior knowledge. Provide a practical example.

11	Evaluate the use of probabilistic inference in AI decision-making. What are the strengths and weaknesses of probabilistic models in uncertain reasoning? Provide an overview of Natural Language Processing (NLP) and its applications in AI.	10	CO5	KL3
12	a) Define monotonic and non-monotonic reasoning. Provide examples of each in the context of artificial intelligence (AI). b) Explore the applications of AI in E-commerce	10	CO3	KL1