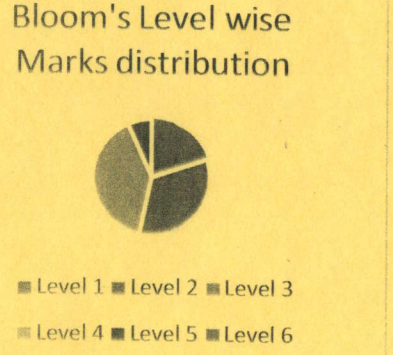
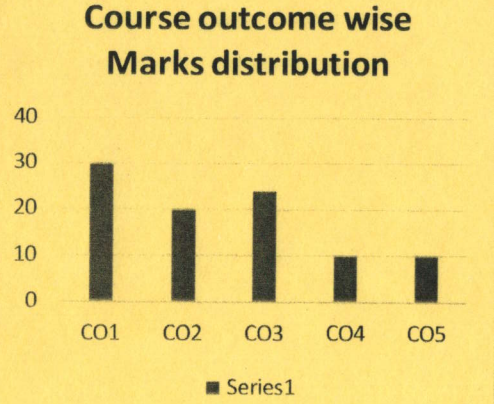
CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	The students will be able to apply interpolation methods and find approximate solution of algebraic and transcendental equations.
	CO2	The students will be able to compute several statistical measures and analyze any given bivariate data.
	CO3	The students will be able to deal with the treatment of random variables and their probability distributions.
	CO4	The students will be able to apply Statistical techniques of the Analysis of Variance and the Designs of Experiments.
	CO5	The students will be able to have idea of Queuing system and Queuing Models.

GRAPHICAL REPRESENTATION





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END SEM EXAMINATION
School of Engineering & IT

Program	**M. Tech**	**Branch**	**EVT/MS/CSE**
Subject Name	**Advanced Engineering Mathematics and Experimental methods**	**Session**	**Odd, 2025-26**
Semester	**1st**	**Year**	**Jan, 2026**

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**
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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 1	QUESTIONS	Marks	COs	KL
i	Define Interpolation with unequal intervals.	2	CO1	K1
ii	Write down formula for finding approximate root under Newton-Rapson method.	2	CO1	K1
iii	Write down the limits of Rank correlation coefficient.	2	CO2	K1
iv	Define regression coefficients in regression analysis.	2	CO2	K2
v	Compute the probability of getting exactly two heads in tossing three coins simultaneously.	2	CO3	K3
vi	What are the parameters of binomial distribution?	2	CO3	K2
vii	What is meant by one-way classification of Analysis of Variance?	2	CO4	K3
viii	Randomized Block Design is which case of classification of analysis of variance?	2	CO4	K4
ix	Explain the term Balking used in Queuing Theory.	2	CO5	K1
x	What is meant by single channel service in Queuing Theory.	2	CO5	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Establish the relation $\Delta = E - 1$	5	CO1	K3
3	The coefficient of rank correlation between marks in Statistics andmarks in Mathematics obtained by a certain group of students is 0.8. Ifthe sum of the squares of differences in ranks is given to be 33, find thenumber of students in the group.	5	CO2	K5
4	A coin is tossed 10 times. Find the probability of getting exactly 8 heads.	5	CO3	K5
5	What is random variable? Explain discrete and continuous random variables.	5	CO3	K2
6	Explain Analysis of Variance	5	CO4	K2
7	What do you understand by Queuing Theory and Queuing system?	5	CO5	K2

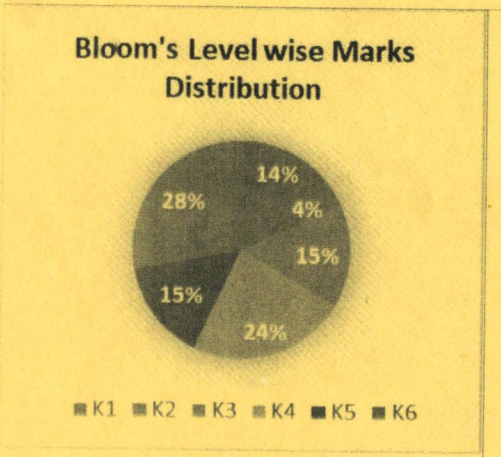
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

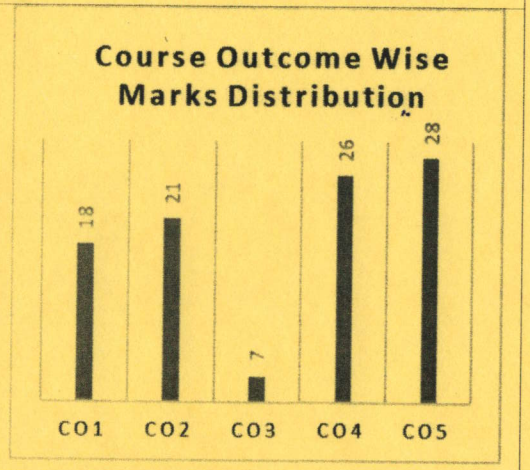
Q. No.	QUESTIONS	Marks	COs	KL
8	Given that f(0) = 8, f(1) = 68, f(3) = 123 and f(4) = 230 construct a divided difference table and determine the value of f(2).	10	CO1	K5
9	Describe Newton-Rapson method for solving Algebraic or Transcendental equation.	10	CO1	K3
10	For 10 observations on price (X) and supply (Y) the following datawere obtained (in appropriate units), $\sum X = 130$, $\sum Y = 220$, $\sum X 2 = 2288$, $\sum Y 2 = 5506$ and $\sum XY = 3467$. Obtain the line of regression of Y on X and estimate the supply when theprice is 16 units.	10	CO2	K5
11	A continuous random variable X follows theprobability law: $f(x) = Ax$, $0 \leq x \leq 2$ Determine A and find the probability that a. X lies between 0.5 and 0.8 b. X is less than 1.4	10	CO3	K5
12	Discuss Randomization, Replication and Local Control in Design of Experiment.	10	CO4	K2

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

Course Outcomes	CO1	Describe the various application layer protocols used by TCP/IP reference model. (PO1,3,4)
	CO2	Differentiate between connection oriented and connection less services of transport layer. (PO1,3,4)
	CO3	Solve problems of routing using various routing protocols and algorithms. (PO1,3,4)
	CO4	Illustrate access control protocols of data link layer. (PO1,3,4)
	CO5	Identify issues related to wireless networks, cellular networks and mobility in Internet. (PO1,3,4)

GRAPHICAL REPRESENTATION





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END SEM EXAMINATION
School of Engineering & IT

Program	**M. Tech**	**Branch**	**CSE**
Subject Name	**Advances in Computer Networks**	**Session**	**Odd, 2025-26**
Semester	**1st**	**Year**	**Jan, 2026**

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**
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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 1	QUESTIONS	Marks	COs	KL
i	What is FTP? Name any two commands used in FTP.	2	CO1	K1
ii	Why are multiplexing and demultiplexing required in the transport layer? Which layer performs this function?	2	CO2	K2
iii	What is the purpose of the TCP three-way handshake? How many steps are involved in this process?	2	CO2	K2
iv	What is DNS in computer networks? What type of service does DNS provide to users?	2	CO1	K2
v	What is flow control in TCP? Which mechanism is used by TCP for flow control?	2	CO2	K2
vi	What is the primary purpose of the 802.11 architecture in wireless LANs?	2	CO5	K1
vii	What is the role of Address Resolution Protocol (ARP) in a network?	2	CO1	K2

viii	What is the role of a socket in transport layer communication?	2	CO2	K2
ix	What is a handoff in GSM networks?	2	CO5	K1
x	What is framing in the data link layer? Why is framing necessary?	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 CRC with an example. Analyze why CRC is preferred over simple parity.	5	CO4	K4
3	Describe TCP socket programming. Delineate how TCP ensures reliable data transfer.	5	CO2	K4
4	Explain the format of an IP datagram, highlighting its key fields and their functions.	5	CO3	K3
5	Explain TCP congestion control in simple terms with an example.	5	CO2	K3
6	Explain hierarchical routing. Why its impact on scalability.	5	CO3	K4
7	What is MPLS? Illustrate how MPLS improves packet forwarding.	5	CO3	K3

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

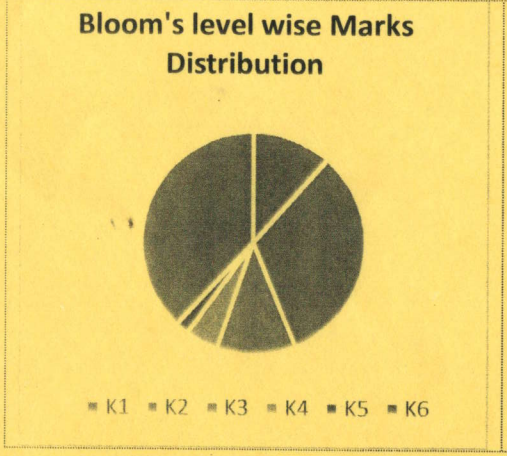
(Each question Carry 10 Marks)

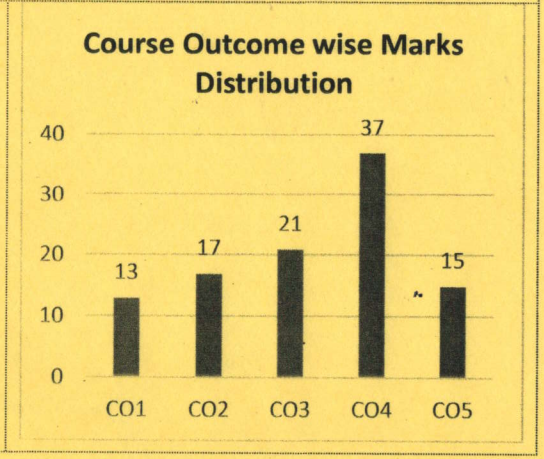
Q. No.	QUESTIONS	Marks	COs	KL
8	Explain Peer-to-Peer (P2P) file distribution and the role of Distributed Hash Tables (DHTs). Discuss how DHTs improve scalability.	10	CO1	K2
9	Explain the concepts of flow control and congestion control in TCP. Analyze how these mechanisms work together to improve network performance.	10	CO2	K4
10	What is the purpose of a routing algorithm in a network? Describe Link-State (LS) routing algorithms in terms of it's working principle.	10	CO3	K3
11	Compare Channel Partitioning Protocols and Random Access Protocols, providing examples of each.	10	CO4	K4
12	What is the role of Mobile IP in managing mobility? Discuss the process of routing a call to a mobile user in GSM.	10	CO5	K3

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

Course Outcomes	CO1	Understand the wireless security issues and threats.
	CO2	Explain the transport layer security and address the cyber security issues
	CO3	Implement secure permission systems
	CO4	Identify the hacking issues and different types of attacks
	CO5	Implement various ethical hacking issues

GRAPHICAL REPRESENTATION





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END SEM EXAMINATION
School of Engineering & IT

Program	**M. Tech**	**Branch**	**CS & IT**
Subject Name	**Network Security and Ethical Hacking**	**Session**	**Odd, 2025-26**
Semester	**1st**	**Year**	**Jan, 2026**

Time: 3 Hour
Max. Marks : 70

- Start writing from 2nd page onwards; **don't Write on the 1st Page Backside**
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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 1	QUESTIONS	Marks	COs	KL
i	Name two common tools used for exploiting WEP weaknesses in wireless hacking.	2	CO1	K1
ii	What is an "anti-pattern" in cyber security architecture?	2	CO1	K1
iii	What are the two main Web Traffic Security Approaches?	2	CO4	K1
iv	State two common types of Denial of Service (DoS) attacks.	2	CO5	K1
v	Define foot printing in the context of network security reconnaissance.	2	CO4	K2
vi	What is the role of the Wi-Fi Alliance in IEEE 802.11 standards?	2	CO2	K2
vii	List any three web security threats that HTTPS aims to mitigate.	2	CO5	K1
viii	List the four main phases of operation in IEEE 802.11i.	2	CO4	K1
ix	Define "Cipher Suite" in the context of TLS.	2	CO4	K1
x	Differentiate between Remote Access and Local Access in security context.	2	CO2	K2

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Describe the SSL/TLS Alert Protocol and list any four common alert codes with their meanings.	5	CO2	K2
3	Compare and contrast WEP and WPA2 (IEEE 802.11i) in terms of security services and vulnerabilities.	5	CO2	K4
4	Illustrate how HTTPS connection initiation works, highlighting the role of the ClientHello and ServerHello messages.	5	CO2	K3
5	Describe the steps involved in wireless scanning and enumeration during wireless hacking.	5	CO2	K4
6	How does the Encrypting File System (EFS) enhance data security on a local machine? Outline the basic steps.	5	CO4	K2
7	Discuss two major security threats to mobile devices and suggest one practical security strategy for each.	5	CO5	K4

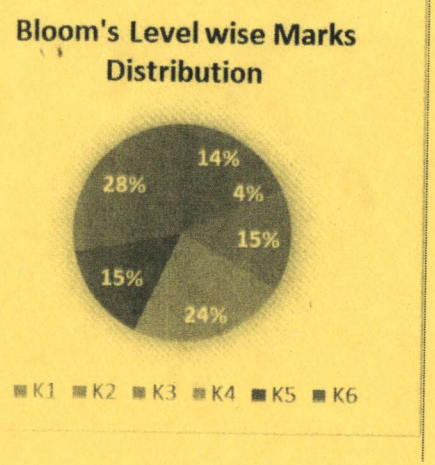
Section C (Answer any THREE out of FIVE) – 30 Marks
(Each question Carry 10 Marks)

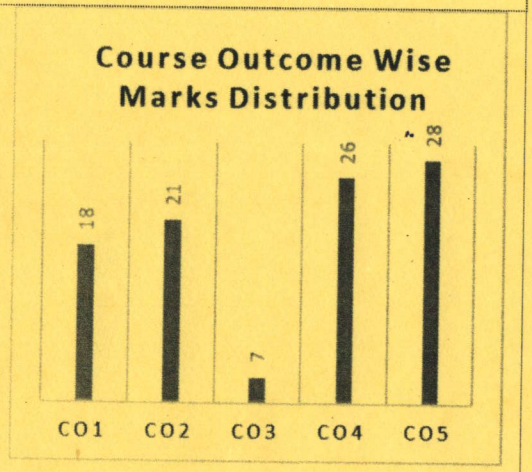
Q. No.	QUESTIONS	Marks	COs	KL
8	Analyze the architecture of SSL/TLS, describing the functions of the Record Protocol, Change Cipher Spec Protocol, and Alert Protocol. Evaluate how these components contribute to secure web traffic.	10	CO5	K4
9	Describe a complete attack scenario involving wireless footprinting, scanning, enumeration, and gaining access by exploiting WEP weaknesses. Suggest countermeasures at each stage to secure a modern wireless network.	10	CO4	K4
10	Discuss various types of DoS. Analyze the motivations of attackers and evaluate the effectiveness of common firewall-based and other mitigation techniques against them.	10	CO1	K2
11	Develop a detailed case study plan for "Network Security Monitoring" (NSM) following a network breach. Your plan should specify what to monitor (e.g., logs, traffic patterns), the tools to use, and how the analysis from the monitoring would feed into the incident response process to secure permissions and check for backdoors.	10	CO4	K6
12	Explain the web security threats and approaches to secure web traffic. Design a comprehensive strategy for implementing HTTPS in a large-scale web application, including connection initiation, closure, and handling of cipher suites/certificates.	10	CO2	K2

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

Course Outcomes	CO1	Identify Test cases, Error and fault taxonomies, Levels of testing.
	CO2	Classify different types of testing (Boundary Value Testing, Equivalence Class Testing and Decision Table-Based Testing).
	CO3	Recognize Alternative life - cycle models, recognize Basic concepts for requirements specification, assess context of interaction.
	CO4	Recognize approaches for Test Execution: from testcase specifications to test cases, Scaffolding, Generic versus specific scaffolding.
	CO5	Identify and plan strategies to test design specifications document.

GRAPHICAL REPRESENTATION





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END SEM EXAMINATION

School of Engineering & IT

Program	**M. Tech**	**Branch**	**CS & IT**
Subject Name	**Software Testing**	**Session**	**Odd, 2025-26**
Semester	**1st**	**Year**	**Jan, 2026**

Time: 3 Hour
Max. Marks: 70

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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 1	QUESTIONS	Marks	COs	KL
i	Point out the role of defect Repository.	2	CO1	K1
ii	Mention the objectives of software testing	2	CO1	K1
iii	Compare the process of testing and debugging.	2	CO1	K4
iv	Mention some of the quality metric attributes.	2	CO5	K1
v	Mention the need of code functional testing in test case design.	2	CO4	K2
vi	Write the two basic testing strategies used to design test cases	2	CO1	K1
vii	What are the goals of Reviewers?	2	CO5	K2
viii	Point out the five stages in a test plan process.	2	CO5	K1

ix	Mention the role of test engineer in software development organization	2	CO4	K2
x	List the advantages of Equivalence class partitioning	2	CO2	K1

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

(Each question Carry 05 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Compare and contrast terms errors faults and failures using suitable examples	5	CO1	K4
3	With suitable example describe how cause-and–effect graphing and state transition testing is done.	5	CO2	K3
4	What inference can you make from random testing, requirement-based testing and domain testing explains?	5	CO2	K5
5	Tabulate the black box methods and knowledge sources.	5	CO2	K2
6	Define code complexity testing. How it is related to testing?	5	CO4	K2
7	Classify the types of test defect metrics and explain	5	CO5	K4

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

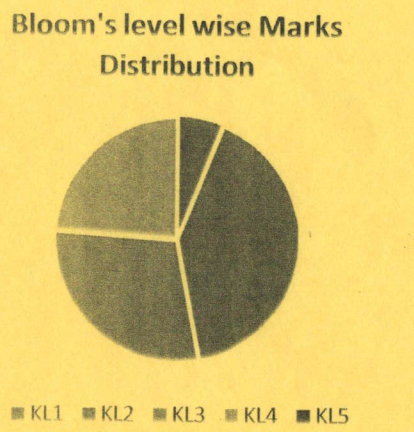
(Each question Carry 10 Marks)

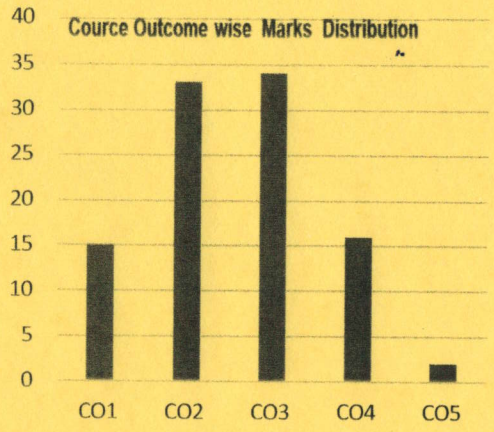
Q. No.	QUESTIONS	Marks	COs	KL
8	(a) Explain in detail about defect repository. (b) Analyze the Role of process in Software quality.	10	CO1, CO5	K2,K4
9	Why it is important to meticulously inspect test result and discover the drawbacks incase if you fail to inspect? Illustrate with example?	10	CO5	K5
10	Write a note on the following (a) Positive and Negative Testing (b) Decision Tables.	10	CO1, CO2	K2
11	Explain the various white box techniques with suitable test cases. Summarize the role of Oaths in white box testing and explain any two white box testing design.	10	CO4	K4
12	Demonstrate the various black box test cases using Equivalence class partitioning and boundary values analysis to test a module for ATM system.	10	CO2	K3

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

Course Outcomes	CO1	Identify the modern view of artificial intelligence and its applications based on agent Philosophy
	CO2	Apply First-Order Logic to solve the Knowledge Engineering process.
	CO3	Examine the various methods of handling uncertainty; planning and learning to real- world problem
	CO4	Demonstrate an understanding of the role of Natural Language processing in building intelligent systems
	CO5	Explain the influence of biologically inspired phenomena in genetic algorithms and the future of AI.

GRAPHICAL REPRESENTATION





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END SEM EXAMINATION
School of Engineering & IT

Program	**M.Tech**	**Branch**	**CSE**
Subject Name	**Artificial Intellegence**	**Session**	**Odd 2025-26**
Semester	**1st**	**Year**	**Jan, 2026**

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

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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 1	QUESTIONS	Marks	COs	KL
i	Explain the goals of AI?	2	CO1	KL2
ii	Define environment with example.	2	CO1	KL1
iii	Discuss the issues in Machine Learning.	2	CO2	KL2
iv	How can AI impact society?	2	CO3	KL3
v	Write the features of hill climbing algorithm?	2	CO2	KL1
vi	Name the types of Machine Learning	2	CC2	KL1
vii	Differentiate between Training data and Testing Data.	2	CO4	KL4
viii	Explain different types of interrupts.	2	CO1	KL2
ix	Write some common AI use cases in business.	2	CO3	KL3
x	Differentiate the supervised and reinforcement Learning.	2	CO2	KL4

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

Q. No.	QUESTIONS	Marks	COs	KL
2	Write the differences between uninformed and informed search.	05	CO2	KL2
3	Differentiate between local maximum and global Maximum in the context of optimization algorithms.	05	CO3	KL2
4	Explain the types of uninformed search.	05	CO2	KL2
5	Explain Greedy search algorithm with examples.	05	CO2	KL3
6	Write the difference between classification and regression with example.	05	CO3	KL2
7	Define simple rational agent and Goal based agents.	05	CO4	KL2

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

Q. No.	QUESTIONS	Marks	COs	KL
8	Describe Forward Chaining and Backward Chaining with proper example. Define propositional logic.	10	CO4	KL4
9	Briefly explain the properties of Environment. Explain the Heuristics function. Define Genetic algorithm.	10	CO5	KL2
10	Define the terms goal formulation and problem formulation. Explain about convolutional neural network (CNN).	10	CO3	KL3
11	Define bias in machine learning, and why is it important. Explain interrupts.	10	CO3	KL3
12	Explain the uniform cost search. Explain the various stages involved in designing a learning system	10	CO2	KL4