

**B. Tech VI Semester (MBU22) CIAT-II Examinations, FEBRUARY 2025**  
**(22AI102002) ARTIFICIAL INTELLIGENCE**  
**(Common to: Data science & CSIT)**

**Max. Marks: 50**
**Time: 90 Minutes**
**Date: 05-05-2025 (AN)**
**PART-A**
**Answer All Questions. All Questions Carry Equal Marks**
**10x2=20 Marks**
**Question**
**BL CO**

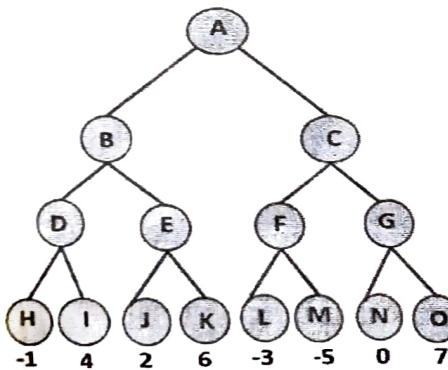
1. **a)** Define Hill Climbing search L1 CO2
- b)** What is the difference between a temperature and a cooling schedule in simulated annealing? L2 CO3
- c)** What is Genetic Algorithms? L1 CO3
- d)** What are the three main sources of uncertainty in AI systems? L1 CO3
- e)** What is the difference between a prior probability and a conditional probability? L2 CO3
- f)** What is the difference between a Bayesian network and a full joint probability distribution? L2 CO3
- g)** What are the three main sources of uncertainty in AI systems? L1 CO3
- h)** List the types of robot joint notations. L1 CO4
- i)** What are the main types and examples of application domains for robots? L2 CO4
- j)** List the benefits of Industrial Robots. L1 CO5

**PART-B**
**Answer One Question from each set. All Questions Carry Equal Marks**
**2 x 15=30 Marks**
**Q. No.**
**Question**
**Marks BL CO**
**Set-I**

2. **a)** Discuss the Working Principle of Local Search Algorithm. 7 Marks
- b)** Explain about the Hill-climbing search, Simulated annealing in Artificial Intelligence. 8 Marks

**OR**

3. **a)** Explain briefly the Min-Max Algorithm steps wise with the example below


**7 Marks L2 CO2**

- b)** Discuss the importance of using move ordering and apply move ordering in Gaming with an example.

**8 Marks L2 CO2**
**Set-II**

4. **a)** Analyze Monte Carlo localization algorithm using a range-scan sensor model for robots.

**7 Marks L2 CO4**

- b)** Discuss the working of hidden Markov model with an example.

**8 Marks L3 CO3**
**OR**

- a)** Write the importance of using transition and sensor models to handle dynamic situation.

**7 Marks L4 CO2**

- b)** Outline the Trust and Transparency mechanism in artificial intelligence.

**8 Marks L2 CO5**

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**B.Tech VI Semester (MBU-22) CIAT-2 Examinations APRIL-2025**

**(22AI102006) DEEP LEARNING**

**(Common to CSE (DS), IT, and CSE(AI&ML))**

**MAX.MARKS:50**

**TIME: 90 MINUTES**

**DATE: 07-05-2025(F.N)**

**PART-A**

**Answer All Questions. All Questions Carry Equal Marks**

**10x2=20 Marks**

	<b>Question</b>	<b>MARKS</b>	<b>BL</b>	<b>CO</b>
1.	a) What is the bias-variance trade-off in machine learning?	2 Marks	L1	CO3
	b) What is early stopping in model training?	2 Marks	L2	CO3
	c) What is the purpose of L1 and L2 regularization?	2 Marks	L2	CO3
	d) Define ensemble methods and give one example.	2 Marks	L1	CO3
	e) What is a Recurrent Neural Network (RNN) used for? <i>→ long short term</i>	2 Marks	L1	CO4
	f) How does LSTM solve the vanishing gradient problem in RNNs?	2 Marks	L2	CO4
	g) Name two CNN architectures and their contribution.	2 Marks	L1	CO5
	h) What is the role of filters/kernels in CNNs?	2 Marks	L2	CO5
	i) What is content-based image retrieval (CBIR)?	2 Marks	L2	CO5
	j) What is unsupervised pretraining, and how does it help?	2 Marks	L1	CO5

**PART-B**

**Answer One Question from each Module. All questions carry equal marks 2x15=30 Marks**

<b>Q. No.</b>	<b>Question</b>	<b>Marks</b>	<b>BL</b>	<b>CO</b>
<b>SET-I</b>				
2.	a) Explain the Bias-Variance Trade-Off in machine learning. How does it affect model generalization, and what techniques can be used to balance it?  b) What is Early Stopping in model training? How does it help in preventing overfitting, and what are the challenges in implementing it effectively?	8 Marks	L3	CO3
OR				
3.	a) Discuss any two real-world applications of RNNs in detail, such as Machine Translation and Time-Series Forecasting.  b) Explain the architecture and working of a Recurrent Neural Network (RNN). What makes RNNs different from feedforward neural networks?	8 Marks	L4	CO4
<b>SET-II</b>				
4.	a) Describe the application of CNNs in Content-Based Image Retrieval (CBIR). How does feature extraction work in this context?  b) CNNs are being used in domains beyond image data. Explain the application of CNNs in Natural Language Processing and Sequence Learning. Provide examples.	7 Marks	L3	CO5
OR <i>pooling layer</i> <i>convolutional layer</i> <i>fully connected layer</i> <i>softmax layer</i>				
5.	a) What is meant by visualizing the features of a trained CNN? Discuss any two techniques used for feature visualization and their significance in understanding model behavior.  b) Describe the architecture of a Long Short-Term Memory (LSTM) network with a diagram. Explain the roles of input, forget, and output gates.	8 Marks	L4	CO5
7 Marks				

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## **MOHAN BABU UNIVERSITY**

Sree Sainath Nagar, Tirupati 517 102

**III B. Tech VI Semester (MBU22) CIAT-II Examinations, MAY 2025**  
22CS102010 - SOFTWARE TESTING AND QUALITY ASSURANCE

**Max. Marks: 50**

CSI(DS), IT

**Time: 90 Minutes**

Date: 05.05.2025 (FN)

## PART-A

**Answer All Questions. All Sections.**

**10x2=20 Marks**

- |    |    | Question  | 10x2=20 Marks |
|----|----|---|---------------|
| 1. | a) | What are lightweight processes in software testing, and why are they important                                | L1 CO3        |
|    | b) | Define defect tracking and explain its role in quality assurance  | L1 CO3        |
|    | c) | What is the purpose of audits in the context of software testing?   | L1 CO3        |
|    | d) | What does testing "behind the GUI" involves, and why is it important?   | L1 CO3        |
|    | e) | Describe the importance of testing documents and documentation during the software testing process            | L1 CO4        |
|    | f) | Name two tools that assist with exploratory testing and briefly describe their utility                        | L1 CO4        |
|    | g) | Discuss how demonstrations can be used as a testing technique to validate product features and functionality. | L1 CO5        |
|    | h) | Why is proper documentation important for the testing process   | L1 CO5        |
|    | i) | How do reports from testing help improve the quality of a product?  | L1 CO5        |
|    | j) | Discuss the challenges of testing "behind the GUI"  | L1 CO5        |

**PART-B**

Answer One Question from each set. All Questions Carry Equal Marks  $2 \times 15 = 30$  Marks

**Q. No.**

## Question

Marks BI CO

2. a) Evaluate the importance of maintaining traceability matrices during the testing lifecycle 8 Marks L3 CO3  
b) How do frameworks and models support the standardization of software testing processes 7 Marks L2 CO3

**OR**

3. a) Discuss how demonstrations can be used effectively to critique a software product 8 Marks L3 CO4  
b) What techniques can be used to test the accuracy and reliability of system-generated reports? 7 Marks L3 CO4

SET-II

4. a) Describe the role of scenario testing in evaluating software 7 Marks L2 CO4  
functionality.  
b) What ways does usability testing assess the user experience of a product? 8 Marks L3 CO5

(COR)

5. a) What are the key challenges in conducting usability testing for complex software products, and how can they be mitigated through effective planning and tools? 8 Marks L3 C05  
b) Explain how testing behind the GUI impacts overall product quality and the need for specialized tools and techniques 7 Marks L5 C05

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**B.Tech VI Semester (MBU22) Continuous Internal Assessment Test -II, May-2025**  
**(22CS101005) DISTRIBUTED SYSTEMS**  
 $(CS, IT, DS)$

**Max. Marks: 50**
**Time: 90 Minutes**
**Date: 06.05.2025(FN)**

**PART-A**  
**Answer All Questions. All Questions Carry Equal Marks**

 **$10 \times 2 = 20$  Marks**

	<b>Question</b>	<b>BL</b>	<b>CO</b>
1.	a) How does the Chandy-Lamport algorithm ensure a consistent snapshot.	L1	C03
	b) Define a quorum in Agarwal-El Abbadi's quorum-based algorithm.	L1	C03
	c) What is the purpose of global state recording in distributed systems.	L1	C03
	d) Define scalar time in the context of logical clocks.	L1	C03
	e) What is the key feature of Maekawa's algorithm.	L1	C04
	f) What is the significance of fairness in Lodha and Kshemkalyani's algorithm.	L1	C04
	g) What is the main idea of the Ricart-Agrawala algorithm.	L1	C04
	h) What is the primary characteristic of the AND model of deadlock.	L1	C05
	i) What are the main components of a system model in distributed systems.	L1	C05
	j) What is the difference between a system deadlock and a resource deadlock.	L1	C05

**PART-B**

**Answer One Question from each set. All Questions Carry Equal Marks       $2 \times 15 = 30$  Marks**

**Q.No.**
**Question**
**Marks**
**BL**
**CO**
**Set-I**

2. a) Explain the concept of monitoring the global state in a distributed system. 7 Marks L2 C03
- b) Discuss the challenges in capturing a consistent snapshot when message order is not guaranteed. 8 Marks L2 C03

**OR**

3. a) Discuss Singhal's Dynamic Information-Structure (DIS) algorithm for mutual exclusion in distributed systems. 8 Marks L2 C04
- b) What are the steps involved in Suzuki-Kasami broadcast algorithm? Explain 7 Marks L3 C04

**Set-II**

4. a) Analyze the Chandy-Misra-Haas algorithm for the AND model with an example. 8 Marks L2 C05
- b) Explain about the Knapp's classification of distributed deadlock detection algorithms. 7 Marks L2 C05

**OR**

5. a) What is distributed shared memory (DSM), and how does it differ from traditional shared memory systems? Explain. 8 Marks L3 C05
- b) Compare and contrast the AND model and OR model for distributed deadlock detection. 7 Marks L2 C05

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