



B.Tech VI Semester (MBU-22) Continuous Internal Assessment Test -I, FEB.2025

**(22AI102006) DEEP LEARNING
(COMMON TO CSE(AIML), DS&IT)**

MAX.MARKS:50

TIME: 90 MINUTES

DATE:13-02-2025

PART-A

Answer All Questions. All Questions Carry Equal Marks

10x2=20 Marks

Question

- | | | | | |
|---------------|---|--------------|-----------|-----------|
| Q. No. | Question | Marks | BL | CO |
| 1. a) | How does a multiclass classification model differ from a binary classification model? | 2Marks | L1 | CO1 |
| b) | What are the basic principles of autoencoders? | 2Marks | L1 | CO1 |
| c) | What is the significance of using nonlinear activations in neural networks? | 2Marks | L1 | CO1 |
| d) | What is the role of feature selection in machine learning? | 2Marks | L1 | CO1 |
| e) | What is a binary classification problem? | 2Marks | L1 | CO1 |
| f) | What is Polyak averaging, and how does it improve optimization? | 2Marks | L1 | CO2 |
| g) | Describe the concept of gradient clipping. | 2Marks | L2 | CO2 |
| h) | List the types of gradient clipping | 2Marks | L2 | CO2 |
| i) | What is the role of dynamic programming in backpropagation? | 2Marks | L2 | CO2 |
| j) | What is the purpose of learning rate decay in gradient-based optimization? | 2Marks | L2 | CO2 |

PART-B

Answer One Question from each Module. All questions carry equal marks

2x15=30 Marks

- | Q. No. | Question | Marks | BL | CO |
|---------------|---|--------------|-----------|-----------|
| | SET-I | | | |
| 2. a) | Compare and contrast neural architectures for binary and multiclass classification models | 8 Marks | L2 | CO1 |
| b) | Discuss the working of autoencoders with a focus on encoding and decoding. How can these principles be applied in dimensionality reduction? | 7 Marks | L3 | CO1 |
| 3. a) | Explain the concept of backpropagated saliency and its role in feature selection. Provide a detailed example. | 8 Marks | L2 | CO1 |
| b) | Discuss Multi layer Feed forward neural network in detail? | 7 Marks | L2 | CO1 |
| 4. a) | Provide examples of how gradients are updated for different activation functions such as ReLU, Sigmoid, and Tanh. | 7 Marks | L2 | CO2 |
| b) | Explain backpropagation using the computational graph abstraction, highlighting the role of dynamic programming.
<i>Rectified Linear Unit</i> <i>hyperbolic tangent</i> <i>node operations</i> <i>edge flow data</i> | 8 Marks | L3 | CO2 |
| 5. a) | What is the significance of backpropagation in neural networks | 8 Marks | L2 | CO2 |
| b) | Evaluate its effectiveness in overcoming issues like local minima and slow convergence | 7 Marks | L3 | CO2 |



MBU MOHAN BABU UNIVERSITY

Sree Sainath Nagar, Tirupati 517 102

B. Tech VI Semester (MBU22) CIAT-I Examinations, February 2025

(22CS102010) SOFTWARE TESTING AND QUALITY ASSURANCE

(Common to: CSE(DS), IT)

Max. Marks: 50

Time: 90 Minutes

Date: 12.02.2025 (FN)

PART-A

Answer All Questions. All Questions Carry Equal Marks

10x2=20 Marks

Question

1. a) Explain the primary difference between traditional testing and agile testing in terms of timing? L1 CO1
- b) Name two key principles of agile testing derived from the Agile Manifesto L1 CO1
- c) Distinguish agile tester's mindset from a typical tester? L1 CO1
- d) Explain the significance of each member of an agile team seeing themselves as a tester? L1 CO1
- e) Explain continuous testing in agile methodologies? L1 CO1
- f) Define the role of independent QA teams in an agile environment? - Product owner L1 CO2
- g) Describe how testers be effectively integrated into an agile project? Scrum meeting L1 CO2
- h) Explain the significance of the tester-developer ratio in agile teams? L1 CO2
- i) List one challenge in hiring an agile tester. L1 CO2
- j) Describe a "self-organizing team" in agile? L1 CO2

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) Explain agile team that has been struggling with late-stage defects due to insufficient testing during development. Design a continuous testing strategy that integrates automated tests into the CI/CD pipeline. Describe specific steps would you take to implement this strategy, and how would you measure its effectiveness? 8 Marks L3 CO1
- b) Describe a sprint, the product owner frequently changes requirements, leading to confusion and delays in testing. As an agile tester, how would you adapt your testing approach to accommodate these changes? Provide a detailed plan that includes communication strategies and adjustments to your test cases. 7 Marks L2 CO1

OR

3. a) Explain how Stakeholders are unaware of the testing process and its importance, leading to unrealistic expectations. How would you engage stakeholders to ensure they understand the value of testing in an agile project? Outline a plan that includes communication methods and educational initiatives. 8 Marks L3 CO1
- b) Explain agile testing practices, traditional methods. As an agile tester, how would you address this resistance? Provide a strategy that includes training, demonstrations, and ways to showcase the benefits of agile testing to the team. 7 Marks L2 CO1

Set-II

4. a) Explain how to evaluate the effectiveness of an independent QA team within an Agile project. Design an experiment to measure the impact of this team on the overall project delivery time and defect rates. What metrics would you collect, and how would you analyze the results? 8 Marks L3 CO2
- b) Explain challenges that lack of integration between testers and developers. Propose a structured approach to integrate testers into the Agile team. Create a plan that includes specific activities, tools, and communication strategies to enhance collaboration. 7 Marks L3 CO2

OR

5. a) Explain Agile team, the current tester-developer ratio is 1:5, suspect this is affecting the quality of the product. Design an experiment to determine the optimal tester-developer ratio for your team. What factors would you consider, and how would you gather data to support your findings? 8 Marks L3 CO2
- b) Develop a series of workshops aimed at fostering self-organization among team members. Outline the content of these workshops and the expected outcomes for team dynamics and performance. 7 Marks L5 CO2

B / Km

**(22CS101005) DISTRIBUTED SYSTEMS
(CS, IT), DS****Max. Marks: 50****Time: 90 Minutes****Date: 14.02.2025(FN)****PART-A****Answer All Questions. All Questions Carry Equal Marks****10x2=20 Marks**

	Question	BL	CO
1.	a) What is a parallel multiprocessor system.	L1	CO1
	b) Why is fault tolerance important in distributed systems.	L1	CO1
	c) Define Message Passing System	L1	CO1
	d) How does asynchronous execution benefit performance in parallel systems	L1	CO1
	e) What is the use of Maekawa's algorithm	L1	CO1
	f) What is logical clock in distributed systems.	L2	CO2
	g) Define Scalar Time.	L2	CO2
	h) What is meant by Distributed Shared Memory (DSM).	L2	CO2
	i) What is the need of using Matrix Time.	L2	CO2
	j) Define NTP.	L2	CO2

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) What is the role of interconnection networks in parallel multiprocessor and multicomputer systems.	7 Marks	L2	CO1
	b) Explain about the message-passing systems and shared memory systems in detail.	8 Marks	L2	CO1
OR				
3.	a) What are the advantages and disadvantages of using synchronous execution in distributed systems.	8 Marks	L2	CO1
	b) Explain the different models of process communication in distributed systems.	7 Marks	L3	CO1
Set-II				
4.	a) Discuss about the scalar time and vector time as methods for ordering events in a distributed system	8 Marks	L2	CO2
	b) How do vector clocks work in distributed systems? Explain.	7 Marks	L3	CO2
OR				
5.	a) Define Matrix time and its structure, which extends vector clocks to represent causal relationships in a matrix form.	8 Marks	L3	CO2
	b) Explain about the physical clock-based synchronization in distributed systems.	7 Marks	L2	CO2

B. Tech VI Semester (MBU22) CIAT-I Examinations, FEBRUARY 2025
(22DS101017) COMPUTER ARCHITECTURE AND ORGANIZATION
(Common to: DS, CS and CSIT)

Max. Marks: 50
Time: 90 Minutes
Date: 13-02-2025 (AN)
PART-A
Answer All Questions. All Questions Carry Equal Marks
10x2=20 Marks
Question
BL CO

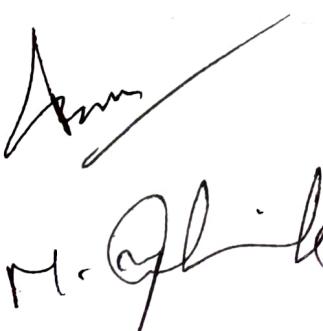
1. a) What is the significance of addressing modes in instruction execution? L2 CO1
- b) How does stack-based memory allocation differ from queue-based allocation? L4 CO1
- c) List the functional units in a computer system? L1 CO1
- d) Differentiate between system software and application software. L4 CO1
- e) Define the bus structure of a computer system. L1 CO1
- f) Define hardwired control. L1 CO2
- g) Differentiate between multi-programmed and micro-programmed control. L4 CO2
- h) What is the function of the ALU in a CPU? L2 CO2
- i) Define integer division in ALU operations. L1 CO2
- j) What is a multiple-bus organization? L2 CO2

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 impact of software on system performance. 8 Marks L2 CO1
 - b) Explain the basic operational concept of a computer with a diagram. 7 Marks L4 CO1
- OR**
3. a) Explain in detail about different additional instructions with an example. 8 Marks L2 CO1
 - b) Discuss the role of subroutines in programming. 7 Marks L4 CO1

Set-II

4. a) Solve: Perform $25_{10} - 18_{10}$ using binary subtraction. 8 Marks L3 CO2
 - b) Write booth algorithm to perform signed multiplication 7 Marks L3 CO2
- OR**
5. a) Perform signed binary subtraction of $1101_2 - 1011_2$. 8 Marks L3 CO2
 - b) Explain the steps involved in the multiplication of positive numbers. 7 Marks L2 CO2



B. Tech VI Semester (MBU22) CIAT-I Examinations, FEBRUARY 2025
(22AI102002) ARTIFICAL INTELLIGENCE
(Common to: CSE(DS) & CSIT)

Max. Marks: 50
Time: 90 Minutes
Date: 12-02-2025 (AN)
Answer All Questions. All Questions Carry Equal Marks
PART-A
10x2=20 Marks
Question
BL CO

1.	a)	Define Artificial Intelligence.	L1	CO1
	b)	Explain the difference between strong AI and weak AI.	L4	CO1
	c)	Provide an example of AI in everyday life and explain its purpose.	L1	CO1
	d)	What does rationality mean in AI?	L3	CO1
	e)	Differentiate between a simple reflex agent and a problem-solving agent.	L2	CO1
	f)	Explain the role of the goal test in problem-solving agents.	L2	CO2
	g)	Explain the main difference between Greedy Best-First Search and A* Search.	L4	CO2
	h)	Name two types of uninformed search strategies.	L1	CO2
	i)	Compare Depth-First Search (DFS) and Breadth-First Search (BFS) in terms of completeness and optimality.	L4	CO2
	j)	What makes a heuristic function admissible?	L2	CO2

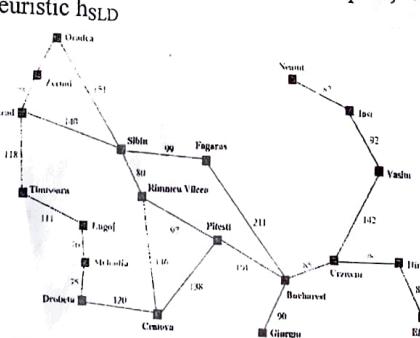
PART-B
Answer One Question from each set. All Questions Carry Equal Marks
2 x 15=30 Marks
Q. No.
Question
Set-I
Marks BL CO

2.	a)	Discuss the risks and benefits of artificial intelligence.	7 Marks	L2	CO1
	b)	Explain about the history of Artificial Intelligence.	8 Marks	L2	CO1

OR

3.	a)	Define a rational agent? Formulate a percept sequence for a house cleaning robot and explain in detail.	7 Marks	L2	CO1
	b)	Differentiate between Model-based reflex agents and Simple-reflex Agents with a neat sketch	8 Marks	L2	CO1

Set-II

4.	a)	Construct a Tree by using greedy best-first Search- from Arab to Bucharest showing the least cost path, with the straight-line distance heuristic h_{SLD}	7 Marks	L3	CO2
					

Arad	366	Mehadia	241
Bucharest	0	Neamt	234
Craiova	160	Oradea	380
Drobeta	242	Pitesti	100
Eforie	161	Rimnicu Vilcea	193
Fagaras	176	Sibiu	253
Giurgiu	77	Timisoara	329
Hirsova	151	Urziceni	80
Iasi	226	Vaslui	199
Lugoj	244	Zerind	374

b) Construct a Tree by using A* Search from Arab to Bucharest showing the least cost path, with the straight-line distance heuristic h_{SLD} . Which One is the Best Heuristic Search?

7 Marks L3 CO2

OR

5.	a)	Explain the terms Best-First Search, Search Data Structures and Redundant Paths	8 Marks	L2	CO2
	b)	Describe the Naive Bayes classification method. How is it used for text classification?	8 Marks	L4	CO2