



## Term Evaluation (Odd) Semester Examination September 2025

Roll no.....

Name of the Course: BCA

Semester: III

Name of the Paper: Foundations of Artificial Intelligence

Paper Code: TBC311

**Time: 1.5 hour**

**Maximum Marks: 50**

**Note:**

- (i) Answer all the questions by choosing any one of the sub-questions
- (ii) Each question carries 10 marks.

Q1.

(10 Marks) (CO1)

- a. Explain the relationship between AI, Machine Learning, and Deep Learning using a hierarchical diagram.

OR

- b. Compare the impact of AI in the IT industry versus the manufacturing industry with real-world examples.

Q2.

(10 Marks) (CO1)

- a. Evaluate whether the Turing Test is still a valid benchmark for AI intelligence in the era of deep learning. Justify your answer.

OR

- b. Imagine you are a consultant for an automobile company adopting AI for autonomous driving. Design a roadmap highlighting the type of AI systems and approaches needed for successful implementation.

Q3.

(10 Marks) (CO1 & CO2)

- a. During natural disasters, AI-driven robots are deployed to search for survivors in collapsed buildings. These robots must navigate unknown environments, adapt to sudden changes, and make real-time decisions under uncertainty.

Question:

- I. Explain which AI approaches (symbolic vs. data-driven) are applicable in designing such robots.
- II. Design an agent-based framework (with environment, sensors, actuators, decision-making model) that would maximize effectiveness.

OR

- b. An AI-powered retail store uses cameras and sensors to track products, customer movement, and manage billing automatically without human cashiers. It must work in



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real time, handle different customer behaviors, and prevent theft.

Question:

Analyze which type of AI (Narrow vs. General) is implemented here.

Propose the intelligent agent structure and environment type that would best suit the system.

**Q4.** (10 Marks) (CO2)

- a. Define the term Intelligent Agent. Discuss four important properties that enable such agents to function intelligently in real-world environments.

OR

- b. Define the concept of “environment” in agent design. Describe, with examples, the different categories of environments an agent can operate in

**Q5.** (10 Marks) (CO2 & CO3)

- a. Apply the Consider a self-driving car as an intelligent agent. Break down its perception, decision, and action cycle in terms of agent-environment interaction.

OR

- b. A vacuum-cleaning robot operates in an uncertain environment. Explain how a learning agent would perform better than a simple reflex agent in this case.