

April-2024

B.C.A., Sem.-VI

**CC-309 Introduction to AI and ML
(Theory)**

Time : 2:30 Hours]

[Max. Marks :

1. Write the following :

- (i) Define Artificial Intelligence. Explain the Turing Test approach of AI in detail.
- (ii) List and explain property task environments in detail.

OR

1. (i) List out the basic kind of agent programs and explain Simple Reflex Agent and Model Based Reflex Agent in detail with proper diagram.
- (ii) List and explain applications of Artificial Intelligence with example.

2. Write the following :

- (i) Explain Depth First Search and Depth Limited Search in detail.
- (ii) Discuss the concept of Greedy Best First Search algorithm with example.

OR

2. (i) Explain A* algorithm in detail with example.
- (ii) List and explain the components used to formulate the problem.

3. Write the following :

- (i) List out Applications of NLP and explain it in detail with example.
- (ii) Define Information Retrieval and explain Page Rank algorithm in detail.

OR

3. (i) What is Text Classification ? Explain Classification by data compression with example.
- (ii) Define the term Information extraction and also explain Finite State Automata for information extraction.

4. Write the following :

- (i) What is Machine Learning ? List and explain the application areas of machine learning with real world example.
- (ii) What is Supervised Machine Learning ? Discuss Classification versus Regression in detail.

OR

4. (i) What is Unsupervised Machine Learning ? Discuss unsupervised problem solving clustering in detail with example.
- (ii) List out the different types of machine learning and explain Semi Supervised and Reinforcement machine learning in detail.
5. Attempt any seven out of twelve :
- (i) _____ and _____ are categorized under the same umbrella of unsupervised machine learning.
- (a) Regression (b) Clustering
- (c) Association (d) Both (b) and (c)
- (ii) _____ Search is also known as Brute Force Search.
- (a) Informed (b) Uninformed
- (c) Semi Informed (d) None of these
- (iii) Define Agent.
- (iv) The area of AI that investigates methods of facilitating communication between people and computers is known as _____.
- (a) Natural Language processing (b) symbolic processing
- (c) decision support (d) robotics
- (v) Identify the type of learning in which labelled training data is used.
- (a) Supervised (b) Unsupervised
- (c) Reinforcement (d) None of these
- (vi) Identify the successful applications of ML.
- (a) Learning to classify new astronomical structure
- (b) Learning to recognize spoken words
- (c) Learning to drive automatic vehicle
- (d) All of these
- (vii) The Task Environment of an agent consists of _____.
- (a) Sensors (b) Actuators
- (c) Performance Measures (d) All of these
- (viii) Agents behaviour can be best described by _____.
- (a) Perception sequence
- (b) Agent function
- (c) Sensors and Actuators
- (d) Environment in which agent is performing
- (ix) _____ search technique is also known as Heuristic Search.
- (a) Uninformed (b) Informed
- (c) Semi Informed (d) None of these

(x) What is the term known as on which the machine learning algorithms build a model based on sample data ?

(a) Testing Data

(b) Training Data

(c) Transfer Data

(d) None of these

(xi) Match the following :

1. Thinking Humanly	A. The Laws of Thought Approach
2. Acting Humanly	B. The Rational Agent Approach
3. Thinking Rationally	C. The Cognitive Modelling Approach
4. Acting Rationally	D. The Turing Test Approach

(a) $1 \rightarrow A, 2 \rightarrow C, 3 \rightarrow D, 4 \rightarrow B$

(b) $1 \rightarrow C, 2 \rightarrow D, 3 \rightarrow A, 4 \rightarrow B$

(c) $1 \rightarrow C, 2 \rightarrow B, 3 \rightarrow D, 4 \rightarrow A$

(d) $1 \rightarrow A, 2 \rightarrow B, 3 \rightarrow D, 4 \rightarrow C$

(xii) Who is known as the – “Father of AI” ?

(a) Fisher Ada

(b) Alan Turing

(c) John McCarthy

(d) Allen Newell
