

Seat No. : _____

AC-104

April-2023

B.C.A, Sem.-VI

CC-309 : Introduction to Artificial Intelligence and Machine Learning

Time : 2:30 Hours]

[Max. Marks : 70

1. Write the following :

- (i) Explain thinking humanly and acting rationally in detail. 7
- (ii) How can we specify a task environment with PEAS description ? Explain with different agent types. 7

OR

- (i) List and explain various applications of AI. 7
- (ii) Explain simple reflex agents and goal-based agents in detail. 7

2. Write the following :

- (i) Explain problem solving approach by using 8-puzzle toy problem. 7
- (ii) Define informed search strategy. Explain A* search technique with example. 7

OR

- (i) Explain Breadth First Search (BFS) and Bidirectional search with example. 7
- (ii) Define problem solving agent. Discuss problem, well-defined problems and solutions with example. 7

3. Write the following :

- (i) What is Information Retrieval (IR) ? Explain HITS algorithms in detail. 7
- (ii) Define language models. Explain different types of language models. 7

OR

- (i) Write a short note on Information Extraction (IE). 7
- (ii) List and explain applications of Natural Language Processing (NLP). 7

4. Write the following :

- (i) Write a short note on supervised learning. 7
- (ii) Explain semi-supervised learning and reinforcement learning. 7

OR

- (i) Explain unsupervised learning in detail. 7
- (ii) Define Machine learning. Explain the concept of machine learning in bigger picture. 7

5. Attempt any **seven** out of **twelve** :

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- (1) To pass the total Turing Test, the computer will need _____.
(a) robotics (b) computer vision
(c) Both (a) and (b) (d) None
- (2) The _____ is an abstract mathematical description and the _____ is a concrete implementation, running within some physical system.
(a) agent function, agent program (b) agent program, agent function
(c) agent function, environment (d) environment, agent function
- (3) Give one example of single agent and multi-agent properties of task environment.
- (4) The process of looking for a sequence of actions that reaches the goal is called _____.
(a) solution (b) search
(c) execution (d) None
- (5) The set of all leaf nodes available for expansion at any given point is called the _____.
(a) repeated state (b) loopy path
(c) frontier (d) None
- (6) Search algorithms are judged on the basis of _____.
(a) completeness, optimality, time complexity and space complexity.
(b) completeness, goal test function, time complexity and path cost function.
(c) initial state, optimality, time complexity and actions.
(d) initial state, goal test function, time complexity and space complexity.
- (7) Text classification is also called categorization. [True/False]
- (8) PageRank (PR) algorithm is used for _____.
(a) information retrieval (b) information extraction
(c) information removal (d) None
- (9) A 1-gram(unigram) is a _____ word/s sequence.
(a) one (b) two
(c) three (d) four
- (10) The goal of _____ algorithm is to learn policy.
(a) Supervised learning (b) Unsupervised learning
(c) Semi-Supervised learning (d) Reinforcement learning
- (11) Give any one difference between supervised learning and semi-supervised learning.
- (12) The cluster analysis is a technique of grouping similar sets of objects in the same group that is different from the objects in another group. [True/ False]