

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** :

14

- (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 a 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]