

No. of Printed Pages : 4

MCS-224

**MASTER OF COMPUTER
APPLICATIONS (MCA-NEW)**

Term-End Examination

June, 2022

**MCS-224 : ARTIFICIAL INTELLIGENCE AND
MACHINE LEARNING**

Time : 3 Hours

Maximum Marks : 100

Weightage : 70%

***Note :** Question No. 1 is compulsory. Attempt any
three questions from the remaining
questions.*

1. (a) Compare Narrow AI, General AI and Super AI. Give suitable example for each. 6
- (b) Briefly discuss the formulation of state space search, with a suitable example. 5

P. T. O.

- (c) Write DFS (Depth-First Search) algorithm. Give **one** advantage and **one** disadvantage of DFS. 5
- (d) Obtain Disjunctive Normal Form for the well form formula given below : 5
- $$\sim (A \rightarrow (\sim B \wedge C))$$
- (e) Briefly discuss the relevance of resolution and unification mechanism in artificial intelligence. 4
- (f) Compare supervised learning and unsupervised learning. List the algorithms for each type of learning. 5
- (g) Write Bayes' theorem and elaborate the meaning of each component in it. 5
- (h) What is Dimensionality Reduction ? Briefly discuss the ways to achieve it. 5
2. (a) What do you understand by the term "Agents" in Artificial Intelligence ? List the properties, supposed to be possessed by agents. Also, compare the SR (simple reflex) agents with model based reflex agents. 10

- (b) Draw the block diagram of machine learning cycle and briefly discuss the role of each of its components. 10
3. (a) What is Adversarial Search ? How it is different from the normal search ? Briefly discuss the types of adversarial search. 10
- (b) Differentiate between the following, with an example for each : 10
- (i) Machine learning and Data mining
 - (ii) Multi-class classification and Multi-label classification
4. (a) What is Best First Search ? How is it different from greedy best first search ? Give time complexity and space complexity of best first search. Also, give advantage and disadvantage of best first search. 10
- (b) How regression differs from classification ? What is the similarity between the two ? Briefly discuss the following type of regression : 10
- (i) Linear regression

- (ii) Multiple linear regression
- (iii) Logistic regression
- (iv) Polynomial regression

5. Write short notes on any **five** of the following :

5×4=20

- (a) Rule based systems and its types
- (b) Frames
- (c) Dempster Scheffer theory
- (d) Closed world assumption
- (e) Recursive neural networks
- (f) Generative adversarial networks
- (g) Support vector machines
- (h) Confusion matrix
- (i) Linear discriminant analysis
- (j) Pincer search