

18/5/24 (E)

Roll No.

Total Pages : 3

602203

May 2024

MCA II SEMESTER

Artificial Intelligence and Machine Learning (MCA-20-104)

Time : 3 Hours]

[Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART-A

1. (a) What are features of an intelligent being. (1.5)
- (b) What are areas where AI is most successful. (1.5)
- (c) What do you mean by tractable and intractable problems? (1.5)
- (d) What do you mean by AI problem solving as a searching problem. (1.5)
- (e) What is the role of heuristic function in solving AI problem. (1.5)
- (f) How does First Order Predicate Logic differ from Propositional Logic. (1.5)
- (g) What are hypothesis and hypothesis space. (1.5)

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- (h) What is the basic reason for decreasing the dimensions of input vector. (1.5)
- (i) What is matrix factorization? (1.5)
- (j) How does a decision surface is defined in a SVM classifier? (1.5)

PART-B

- 2. (a) Explain terms acting like human and thinking like human? (4,4)
- (b) Explain Turing Test in details. Are there some criticism of this test? (7)
- 3. (a) How will you design the *heuristic function* for 8-block problem? (8)
- (b) Apply a few steps of DFS and BFS on following 8-puzzle problem. (7)

2	3	1
4	6	5
8	7	

Initial State

1	2	3
4	5	6
7	8	

Final State

- 4. (a) Explain and give algorithm for Unification of predicates during resolution. (8)
- (b) What is Planning in AI and give brief introduction of Situational calculus planning. (7)

- 5. (a) Explain genetic algorithm can be applied on traveling salesman problem. (8)
- (b) Explain and give the update formula for Gradient decent method for linear regression. (7)
- 6. (a) Explain how does Naive Baye's classifier work. (9)
- (b) How Principal Component Analysis is performed. (6)
- 7. (a) Explain and give K-mean clustering algorithm. (6)
- (b) What is an ensemble methods and Explain the working of random forest. (9)