

Roll No.

Total Pages : 3

602202

August/September 2022
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 different components of intelligence? (1.5)
(b) What are areas where AI techniques are applied? (1.5)
(c) What do you mean by problem solving as searching?
(1.5)
(d) What are the characteristics of a good knowledge representation scheme? (1.5)
(e) How will you design the rules to solve the water Jug problem? (1.5)

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- (f) What are benefits of First Order Predicate Logic over Propositional Logic? (1.5)
- (g) What is difference between logistic regression and Support vector Machine? (1.5)
- (h) What is the basic reason for reduction of the dimensions? (1.5)
- (i) What are bagging and boosting? (1.5)
- (j) How does a decision surface is defined in a classifier? (1.5)

PART-B

- 2. (a) Explain Turing Test in details. Are there some criticism of this test? (5,3)
- (b) Give structure of a biological neuron and its Mathematical equivalent. (4,3)
- 3. (a) How will you design the heuristic function for 8-puzzle problem whose Initial and Final states are given below? (8)

2	3	1
4	6	5
8	7	

Initial State

1	2	3
4	5	6
7	8	

Final State

- (b) Explain and give algorithm for Constraints satisfaction. (7)

- 4. (a) Explain and give algorithm for Unification of predicates during resolution. (8)
- (b) What is Planning in AI and give algorithm for Partial Order Planning. (7)
- 5. (a) Explain how can you apply genetic algorithm to find the solution to a problem. (8)
- (b) Explain the working of K-Nearest Neighbour classifier, how can we improve its efficiency? (7)
- 6. (a) Explain how does Naive Baye's classifier work? (10)
- (b) How Principal Component Analysis is performed? (5)
- 7. (a) Give the architecture of a Rule based expert system. (8)
- (b) Derive the formula for weight updating for logistic regression using Gradient Ascent method. (7)