Printed Page:- Subject Code:- AMTAI0201

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

M. Tech.

SEM: II - CARRY OVER THEORY EXAMINATION (2020 - 2021)

Subject: Machine Learning

Time: 03:00 Hours Max. Marks: 70

General Instructions:

- All questions are compulsory. It comprises of three Sections A, B and C.
- Section A - Question No- 1 is objective type question carrying 1 mark each & Question No- 2 is Very short type questions carrying 2 marks each.
- Section B - Question No- 3 is Long answer type - 1 questions carrying 4 marks each.
- Section C - Question No- 4 to 8 are Long answer type -2 questions carrying 7 marks each.

1. Attempt all parts:-

1.a. Which of the following are not learning methods in ML? [CO1] 1

1. Supervised Learning
2. Human Prediction Learning
3. Semi-Supervised Learning
4. Un-Supervised Learning

1.b. Which of the following is a disadvantage of decision trees [CO2] 1

1. Factor analysis
2. Decision trees are robust to outliers
3. Decision trees are prone to be overfit
4. None of the above

1.c. What does the bayesian network provides? [CO3] 1

1. Complete description of the domain
2. Partial description of the domain
3. Complete description of the problem
4. None of the mentioned

1.d. What is full form of ANNs? [CO4] 1

1. Artificial Neural Node
2. AI Neural Networks
3. Artificial Neural Networks
4. Artificial Neural numbers

1.e. Produces two new offspring from two parent string by copying selected bits from each parent is called [CO5] 1

1. Mutation

2. Inheritance
3. Crossover
4. None of these

2. Attempt all parts:-

2.a.	Define Supervised and Un-supervised Learning [CO1]	2
2.b.	How the value of k is chosen in KNN algorithm. [CO2]	2
2.c.	List out the advantages and disadvantages of SVM. [CO3]	2
2.d.	What is the role of activation function in neural network? [CO3]	2
2.e.	Explain the concept of genetic algorithm. [CO5]	2

3. Answer any five of the following-

3-a.	Discuss Data Science vs Machine Learning. Explain the tools used in Machine Learning [CO1]	4
3-b.	Explain how machine learning is different from Artificial Intelligence. [CO1]	4
3-c.	Compare Entropy and Information Gain in ID3 with an example. [CO2]	4
3-d.	Define K-Nearest neighbour. Also explain the steps involved in KNN algorithm. [CO2]	4
3.e.	What is linearly in separable problem? Design a two-layer network of perceptron to implement a) X OR Y b) X AND Y [CO3]	4
3.f.	Difference Between a Feedforward Neural Network and Recurrent Neural Network [CO4]	4
3.g.	Explain the concept of reinforcement learning. [CO5]	4

4. Answer any one of the following-

4-a.	Define Machine learning. What is the need of ML. Explain the issues and applications of Machine learning. [CO5]	7
4-b.	Discuss Inductive Bias in Decision Tree Learning. Differentiate between two types of biases. Why prefer Short Hypotheses? [CO1]	7

5. Answer any one of the following-

5-a.	Describe the decision tree structure. Issues in decision tree and how overfitting can be avoided. [CO2]	7
5-b.	Differentiate between the following:a. Linear regression and multiple regression b. Instance-based and model-based [CO1]	7

6. Answer any one of the following-

6-a.	Describe Perceptron Network with the learning rule . Explain ADALINE and MADALINE network for separability. [CO4]	7
6-b.	Describe Support Vector Machine. Explain the properties of SVM and issues in SVM. [CO3]	7

7. Answer any one of the following-

7-a.	Illustrate the architecture of artificial neural network with a neat diagram and explain different types of artificial neural network,[CO4]	7
7-b.	Explain briefly the terms cell body, axon, synapse, dendrite, and neuron with reference to biological Neural Network. [CO4]	7

8. Answer any one of the following-

8-a.	Explain the Reproduction in Genetic Algorithm. Discuss Roulette-wheel Selection method and Rank Selection method in Genetic Algorithm. Explain, Which one is better and why? [CO5]	7
8-b.	Explain the Genetic Algorithm. Discuss the procedure of Genetic Algorithm and its Flow Chart.[CO5]	7