Printed Page:- Subject Code:- ACSML0401

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: IV - CARRY OVER THEORY EXAMINATION - SEPTEMBER 2022

Subject: Machine Learning

Time: 3 Hours Max. Marks: 100

General Instructions:

1. The question paper comprises three sections, A, B, and C. You are expected to answer them as directed.
2. Section A - Question No- 1 is 1 mark each & Question No- 2 carries 2 mark each.
3. Section B - Question No-3 is based on external choice carrying 6 marks each.
4. Section C - Questions No. 4-8 are within unit choice questions carrying 10 marks each.
5. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION A 20

1. Attempt all parts:-

1 What is the term known as on which the machine learning algorithms build a model based on sample data? (CO1) 1

(a) Data Training

(b) Training data

(c) Transfer data

(d) None of the above

1 Which one is most important unsupervised algorithms? (CO1) 1

(a) Clustering: k-mean, hierarchical cluster analysis

(b) Association Rule Learning: Eclat, apriori

(c) Kernel PCA & PCA

(d) All of the above

1 Explain the term outliers in detail. (CO2) 1

(a) It is the main trend of our dataset

(b) Extreme datapoints in our dataset

(c) It is a regression technique

(d) Values that are correlated to eachother

1 Regression technique finds out a linear relationship between x (input) and y (output) hence it is called as - (CO2) 1

(a) Hypothesis function

(b) Related regression

(c) Linear regression

(d) none of these

1 Decision Tree is a flowchart like ___ (CO3) 1

(a) Leaf Structure

(b) Tree Structure

(c) Stem

(d) None of these

1 The effectiveness of an SVM depends upon - (CO3) 1

(a) Selection of Kernel

(b) Kernel Parameters

(c) Soft Margin Parameter C

(d) All of the above

1 A perceptron is - (CO4) 1

(a) a single layer feed-forward neural network with pre-processing

(b) an auto-associative neural network

(c) a double layer auto-associative neural network

(d) a neural network that contains feedback

1 What is back propagation? (CO4) 1

(a) It is another name given to the curvy function in the perceptron

(b) It is the transmission of error back through the network to adjust the inputs

(c) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn

(d) None of the Above

1 Real-Time decisions, Game AI, Learning Tasks, Skill Aquisition, and Robot Navigation are applications of which of the following - (CO5) 1

(a) Supervised Learning: Classification

(b) Reinforcement Learning

(c) Unsupervised Learning: Clustering

(d) Unsupervised Learning: Regression

1	The first layer is called the - (CO5)	1

(a) inner layer

(b) outer layer

(c) hidden layer

(d) None of the above

2. Attempt all parts:-

2.a.	What is Overfitting and how can you avoid it? (CO1)	2
2.b.	What are Linear and Logistic regression? (CO2)	2
2.c.	Explain the concept of Bayes theorem. (CO3)	2
2.d.	Explain Neural Network with suitable diagram. (CO4)	2
2.e.	What is Perceptron? (CO5)	2

SECTION B 30

3. Answer any five of the following:-

3	Explain well posed learning system with example. (CO1)	6
3	What are the issues in Machine Learning? (CO1)	6
3	Describe Supervised and Unsupervised Learning. (CO2)	6
3	Develop an expression to compute slope of the line equation. (CO2)	6
3.e.	Describe the ID3 Algorithm with a proper example. (CO3)	6
3.f.	Differentiate between Gradient Descent and Stochastic Gradient Descent. (CO4)	6
3.g.	Explain the uses and application of Deep Learning. (CO5)	6

SECTION C 50

4. Answer any one of the following:-

4	Describe Find S Algorithm. What are the properties and complaints of Find S? (CO1)	10
4	Define Consistent Hypothesis and Version Space. With example explain Version Space and Representation of version Space. (CO1)	10

5. Answer any one of the following:-

5	Define Regression Technique and also explain why do we use Regression Analysis? (CO2)	10
5	Compare regression, classification and clustering in machine learning along with suitable real life examples. (CO2)	10

6. Answer any one of the following:-

6	Define the following terms with respect to K - Nearest Neighbour Learning - (CO3) i) Regression ii) Residual iii) Kernel Function.	10
6	Discuss Maximum Likelihood and Least Square Error Hypothesis. (CO3)	10

7. Answer any one of the following:-

7	Define Activation and Loss Function. (CO4)	10
7	What is ‘training set’ and ‘test set’ in a Machine learning model? How much data will you allocate for your training, validation, and test sets? (CO4)	10

8. Answer any one of the following:-

8	Explain the Confusion Matrix with Respect to Machine Learning Algorithms. (CO5)	10
8	What are some of the Deep Learning frameworks or tools that you have used? (CO5)	10