

2111040103010003
EXAMINATION MARCH-APRIL 2024
MASTER OF COMPUTER APPLICATIONS
(THIRD SEMESTER)
MACHINE LEARNING - LEVEL 1

[Time: As Per Schedule]

[Max. Marks:70]

Instructions:

- 1. Fill up strictly the following details on your answer book**
 - a. Name of the Examination : **MASTER OF COMPUTER APPLICATIONS (THIRD SEMESTER)**
 - b. Name of the Subject : **MACHINE LEARNING - LEVEL 1**
 - c. Subject Code No : **2111040103010003**
2. Sketch neat and labelled diagram wherever necessary.
3. Figures to the right indicate full marks of the question.
4. All questions are compulsory.

Seat No:

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Student's Signature

Q.1 Answer the following (Answer any two):

14

1. Explain the types of Machine Learning in detail.
2. List the types of evaluation methods of the machine learning model.
Explain Classification matrices in detail.
3. What is Overfitting and underfitting, and How can you avoid it?

Q.2 Answer the following (Answer any two):

14

1. What is data normalization? What are the techniques of data normalization? Explain any one of them in detail.
2. What is data wrangling? What is the importance of data wrangling?
3. What is the difference between feature selection and feature extraction?

Q.3 Answer the following (Answer any two):**14**

1. What is Naïve bayes? Is naïve bayes a classification or regression algorithm? What are the benefits of naïve bayes?
2. Explain in detail: lazy algorithm.
3. This dataset is about Iris was taken from the UCI Repository. In this dataset, we have 3 attributes which have sepal length, sepal width, and species. Species have a target attribute. In target attribute, we have three species (Setosa, Virginia, and Versicolor) and our target finds the nearest species which belong from three species using the k-Nearest Neighbors. Consider the value of k as 2.

Sepal Length	Sepal Width	Species
5.3	3.7	Setosa
5.1	3.8	Setosa
7.2	3.0	Virginica
5.4	3.4	Setosa
5.1	3.3	Setosa
5.4	3.9	Setosa
7.4	2.8	Virginica
6.1	2.8	Versicolor
5.8	2.8	Virginica
6.3	2.3	Versicolor
5.1	2.5	Versicolor
6.3	2.5	Versicolor
5.5	2.5	Versicolor
5.2	3.1	?

Q.4 Answer the following (Answer any two):**14**

1. Explain the backpropagation learning algorithm with an example.
2. What is the activation function? Explain any three activation functions.
3. Explain k-means clustering. Also, explain the limitations of k-means clustering

Q.5 Answer the following (Answer any two):

1. What is the association rule? What are the limitations of the association rule? What is the importance of pruning?
2. What are the steps involved in the FP Growth algorithm? Explain by taking an example.
3. Find the frequent item sets and generate association rules using the Apriori algorithm from the given dataset.

Transaction ID	Items
T1	Hot Dogs, Buns, Ketchup
T2	Hot Dogs, Buns
T3	Hot Dogs, Coke, Chips
T4	Chip, Coke
T5	Chip, ketchup
T6	Hot Dogs, Coke, Chips
Assume that minimum support threshold ($s = 33.33\%$) and minimum confident threshold ($c = 60\%$)	
