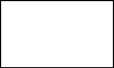
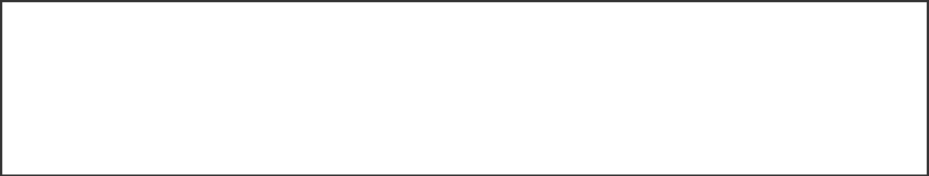
**POORNIMA UNIVERSITY, JAIPUR**

**END SEMESTER EXAMINATION, APRIL 2023**

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|  | **2BC4103** | Roll No. | Total Printed Pages: 2 |
| **2BC4103** |  |
| BCA II Year IV- Semester (Main/Back) End Semester Examination, April 2023  **(AIDS)** | |
| **BASCCA4103 : Machine Learning** | | | |

# Time: **3** Hours. Total Marks: **60**

Min. Passing Marks: **21**

*Attempt* ***five*** *questions selecting one question from each Unit. There is internal choice from Unit I to Unit V. Marks of each question or its parts are indicated against each question / parts. Draw neat sketches wherever necessary to illustrate the answer. Assume missing data suitably (if any) and clearly indicate the same in the answer.*

Use of following supporting material is permitted during examination for this subject.

# **1.--------------------------Nil--------------------** **2. ------------------Nil-----------------------**

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|  |  | **UNIT-I (CO1)** | **Marks** | **Bloom Level** |
| **Q.1** | **(a)** | What is reinforcement learning and how it is different from Supervised as well as Unsupervised Learning. Give suitable example. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | How will you identify looking at the dataset that whether the dataset involves solving a supervised or unsupervised learning problem? Give proper explanation. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.2** | **(a)** | What are the two tasks involved in Supervised Machine Learning? Explain them. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  | **(b)** | What is the difference between Classification and Clustering? Explain. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  |  | **UNIT-II (CO2)** |  |  |
|  |  |  |  |  |
| **Q.3** | **(a)** | Write short notes on   1. R2 2. Adjusted R2 | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | When Linear Regression is getting trained on the training data, what it is trying to achieve? Explain. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.4** | **(a)** | What is the relationship between Covariance and Pearson Correlation? Why is Pearson Correlation preferred over Covariance? Explain. | **(6)** | **Applying** |
|  |  |  |  |  |
|  | **(b)** | Explain Linear Regression from curve fitting perspective. | **(6)** | **Applying** |
|  |  |  |  |  |
|  |  | **UNIT-III (CO3)** |  |  |
|  |  |  |  |  |
| **Q.5** | **(a)** | Explain the following terms in the context of Decision Trees:  (i) Self Entropy (ii) Node Purity (iii) Mean Squared Error | **(6)** | **Understanding** |
|  |  |  |  |  |
|  | **(b)** | Assess the precision and recall with its use cases, that when one should use precision or recall. | **(6)** | **Applying** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **Q.6** | **(a)** | Showcase the merits and demerits of decision tree with proper example. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  | **(b)** | What is the difference between Hard and Soft Margin SVM? Explain. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  |  | **UNIT-IV (CO4)** |  |  |
|  |  |  |  |  |
| **Q.7** | **(a)** | Suppose you are mentor of a data science project. For your team members, explain all the steps involved in any clustering algorithm in a generic sense. | **(6)** | **Applying** |
|  |  |  |  |  |
|  | **(b)** | Write shorts note on:   1. K-Means Clustering 2. Gaussian Mixture Model Clustering | **(6)** | **Understanding** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.8** | **(a)** | What is one element which is common in all the Clustering algorithms and is computed in a different manner in all the clustering algorithms? Explain how it is computed in K-Means, Gaussian Mixtures and Fuzzy C-Means. | **(6)** | **Remembering** |
|  |  |  |  |  |
|  | **(b)** | Explain some real-life explanations of Clustering. | **(6)** | **Applying** |
|  |  |  |  |  |
|  |  | **UNIT V (CO5)** |  |  |
|  |  |  |  |  |
| **Q.9** | **(a)** | Give examples of real-life situations where you would prefer using Precision over anything else, Recall over anything else and F1-Score above anything else, for evaluating the performance of your classification model. | **(6)** | **Applying** |
|  |  |  |  |  |
|  | **(b)** | “Matthew’s Correlation Coefficient is a Pearson Correlation Coefficient between Predicted Categories and Ground Truth Labels.” Explain this statement. | **(6)** | **Understanding** |
|  |  |  |  |  |
|  |  | **OR** |  |  |
|  |  |  |  |  |
| **Q.10** | **(a)** | Explain what Silhouette Score is and how it is used in Clustering. | **(6)** | **Evaluating** |
|  |  |  |  |  |
|  | **(b)** | Explain what Elbow Visualization is and what different metrics can be used in Elbow Visualization. | **(6)** | **Evaluating** |