| Student Name:<br>University Roll No.: | Printed Pages: 02 |
|---|---|
| School of Engineering<br>SecondTheory Sessional Examination<br>Even Semester (AS: 2024-25)<br>B. Tech: CSE (AI) Year: 2nd Semester:IV | |
| Course Title: Concepts of Machine Learning with Python<br>Course Code: NAI4401 | Max Marks: 30<br>Time: 1*hrs* |

***Instructions: 1-Mention any assumptions made.***
***2-Notations have usual meaning.***

| SECTION 'A'<br>Q.N.1. Attempt all parts of the following: | | Course Objective | Marks |
|---|---|---|---|
| a) | What is Naïve Bayes classifier ? | CO1 | 1 |
| b) | Which algorithm uses kernel functions for classification? Also write down any two kernel function. | CO2 | 1 |
| c) | Write short note on bagging ensemble method. | CO2 | 1 |
| d) | What is the basic purpose of PCA Algorithm? | CO1 | 1 |
| e) | Write one difference between Regression and Classification. | CO1 | 1 |
| **SECTION 'B'**<br>**Q.N.2. Attempt any two parts of the following** | | **Course Objective** | **Marks** |
| a) | Explain K-Nearest Neighbor (KNN) Algorithm in detail. | CO2 | 7.5 |
| b) | What are the key differences between K-means and K-modes clustering? | CO1 | 7.5 |
| c) | What is the purpose of Bayesian Belief Networks? | CO1 | 7.5 |
| **SECTION 'C'**<br>**Q.N.3. Attempt any one parts of the following:** | | **Course Objective** | **Marks** |
| a) | Explain the architecture of a multilayer perceptron with an example. How does it differ from a single-layer perceptron? | CO2 | 10 |
| b) | Compare and contrast bagging, boosting, and stacking with suitable examples. | CO2 | 10 |
| c) | | CO2 | 10 |

| | | Predicted | |
|---|---|---|---|
| Actual | | True Positive 120 | False Positive 2 |
| | | False Negative 5 | True Negative 73 |

From the above given confusion matrix, calculate following Performance Evaluation Metrics Accuracy, Precision, Recall, Sensitivity and F1 score

***Table 1: Mapping between COs and questions***

| COs | Questions Numbers | Total Marks |
|---|---|---|
| CO1 | 1(a, b,e). 2(b,c) | 18 |
| CO2 | 1(b,c) 2(a) 3(a,b,c) | 39.5 |