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| **DIT UNIVERSITY , DEHRADUN**   |  |  | | --- | --- | | **B.TECH (CSE-ML)** | **: END TERM EXAMINATION, ODD SEM 2022-23 (SEM VII)** | | | | | | | | | | | | | |
| **Roll No.** |  |  |  |  |  |  |  |  |  |  |  |  |
| **Subject Name: Machine Learning Applications using R** | | | | | | | | | | | | |

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| **Time: 3 Hours** | **Total Marks: 100** |
| **Note: All questions are compulsory. No student is allowed to leave the examination hall before the completion of the exam.**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Q.1)** | **Attempt all Parts :** | | **BTL** | **CO** | |  | (a) | Describe the 'Training set' and 'training Test'. | L1 | CO1 | |  | (b) | What are the common ways to handle missing data in a dataset? | L2 | CO2 | |  | (c) | Define Markov's Decision process and its’ usefulness. | L2 | CO1 | |  | (d) | Explain reward maximization in detail. | L1 | CO1 | |  |  | **[4 x 5= 20]** |  |  | |  | | |  |  | | **Q.2)** | **Attempt all Parts :** | | **BTL** | **CO** | |  | (a) | What are the eigenvalues and eigenvectors? | L2 | CO2 | |  | (b) | Clarify different ways to evaluate the performance of the ML model. | L1 | CO1 | |  | (c) | Describe precision and recall in machine learning? Provide an example. | L2 | CO1 | |  | (d) | Difference between features and samples? Provide an example. | L1 | CO4 | |  |  | **[4 x 5= 20]** |  |  | |  | | |  |  | | **Q.3)** | **Attempt any two parts :** | | **BTL** | **CO** | |  | (a) | Discuss SVM algorithm in detail? What are support Vectors in SVM? | L4 | CO3 | |  | (b) | What are SVM kernels? Why is it useful? Provide a working mechanism (mathematically) of any SVM kernel. | L4 | CO3 | |  | (c) | Describe decision tree? Give an example of classification using decision tree. | L2 | CO3 | |  |  | **[2 x 10= 20]** |  |  | |  | | |  |  | | **Q.4)** | **Attempt any two parts :** | | **BTL** | **CO** | |  | (a) | Write down the algorithm of K-Means clustering. Verify it with an example. | L4 | CO3 | |  | (b) | Describe the benefits of Hierarchical clustering? Explain the working mechanism of hierarchal clustering with an example. | L4 | CO3 | |  | (c) | Use the Naïve Bayes algorithm to find out the likeliness of playing tennis given the day is;  sunny, strong wind, high humidity, and cool temperature.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **Day** | **Outlook** | **Temperature** | **Humidity** | **Windy** | **Play Golf** | | 0 | Rainy | Hot | High | FALSE | No | | 1 | Rainy | Hot | High | TRUE | No | | 3 | Overcast | Hot | High | FALSE | Yes | | 4 | Sunny | Mild | High | FALSE | Yes | | 5 | Sunny | Cool | Normal | FALSE | Yes | | 6 | Sunny | Cool | Normal | TRUE | No | | 7 | Overcast | Cool | Normal | TRUE | Yes | | 8 | Rainy | Mild | Normal | FALSE | No | | 9 | Rainy | Cool | High | FALSE | Yes | | 10 | Sunny | Mild | Normal | TRUE | Yes | | 11 | Overcast | Mild | High | TRUE | Yes | | 12 | Overcast | Mild | Normal | FALSE | Yes | | 13 | Sunny | Hot | High | TRUE | No | | L5 | CO4 | |  |  | **[2 x 10= 20]** |  |  | |  | | |  |  | | **Q.5)** | **Attempt any two parts :** | | **BTL** | **CO** | |  | (a) | Write brief note on reinforcement learning. What is penalty in reinforcement learning? Explain a reinforcement learning system with an example? | L2 | CO2 | |  | (b) | What are the differences between ANN and CNN? Define how handwritten numbers are recognized with CNN? | L2 | CO2 | |  | (c) | Define regression techniques. Explain any of the regression techniques mathematically. | L2 | CO2 | |  |  | **[2 x 10= 20]** |  |  | | -----END OF PAPER ---- | | |  |  | | |