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| **DIT UNIVERSITY DEHRADUN**   |  |  | | --- | --- | | **B. TECH. (CSE)/MCA** | **ENDTERM EXAMINATION, ODD SEM 2022-23 (SEM V)** | | | | | | | | | | | | | |
| **Roll No.** |  |  |  |  |  |  |  |  |  |  |  |  |
| **Subject Name: Machine Learning** | | | | | | | | | | | | |

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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)** | Explain how to deal with big datasets? Also state high bias problem. | **L2** | **C01** | |  | **(b)** | List the differences between supervised and unsupervised learning. | **L2** | **C01** | |  | **(c)** | Write short note on K-means algorithm | **L2** | **C01** | |  | **(d)** | Explain PCA algorithm. What are the applications of PCA | **L2** | **C01** | |  |  | **[4 x 5= 20]** |  |  | |  | | |  |  | | **Q.2)** | **Attempt all Parts:** | | **BTL** | **CO** | |  | **(a)** | The heights of animals are 455mm, 450mm, 165mm, 410mm, 350mm, 750mm and 800mm. Find out the mean and the standard deviation. | **L2** | **C02** | |  | **(b)** | What is neural network? Explain its working with the help of an example. | **L2** | **C02** | |  | **(c)** | Explain the Working Principle of SVM? | **L2** | **C02** | |  | **(d)** | List any five real life applications of Machine Learning. | **L2** | **C02** | |  |  | **[4 x 5= 20]** |  |  | |  | | |  |  | | **Q.3)** | **Attempt any Two Parts:** | | **BTL** | **CO** | |  | **(a)** | Define accuracy, precision and recall with an example. | **L3** | **C01** | |  | **(b)** | Explain classification task in machine learning. List any three machine learning algorithms which are used for classification. | **L3** | **C01** | |  | **(c)** | What is Bayes Rule. How Bayesian Network is used in representing the uncertainty about knowledge. Given following table of two parameters about a school then find:   |  |  | | --- | --- | | **Weather** | **School** | | Sunny | No | | Overcast | Yes | | Rainy | Yes | | Sunny | Yes | | Rainy | Yes | | Overcast | Yes | | Rainy | Yes | | Sunny | No | | Rainy | Yes | | Overcast | No | | Overcast | Yes | | Sunny | No | | Sunny | yes |   What is the chance of school being open given weather is sunny. | **L2** | **C01** | |  |  | **[2 x 10= 20]** |  |  | |  | | |  |  | | **Q.4)** | **Attempt any Two Parts:** | | **BTL** | **CO** | |  | **(a)** | **Explain the following terms:( Any Two)**  (a) Logistic Regression  (b)Linear Regression  (c) K-Nearest Neighbors | **L3** | **C02** | |  | **(b)** | Suppose you need to train a Linear Regression model with multiple features that will predict the expected monthly salary for an employee in a hiring process. Explain what features (at least three) you will use as independent features to train and test the model. Write your model hypothesis based on your selected features. | **L3** | **C02** | |  | **(c)** | Explain Decision Tree Algorithm with suitable example. | **L2** | **C02** | |  |  | **[2 x 10= 20]** |  |  | |  | | |  |  | | **Q.5)** | **Attempt any Two Parts:** | | **BTL** | **CO** | |  | **(a)** | **Explain the following terms :( Any Two)**  (a) Artificial Neural Network  (b) Feature selection  (c) Recurrent Neural Networks  (d) Convolutional Neural Networks | **L3** | **C03** | |  | **(b)** | What is online learning? Explain how machine learning is related to online learning? What are its applications? | **L3** | **C03** | |  | **(c)** | Explain perceptron model. How to realize XOR gate using perceptron model. | **L2** | **C03** | |  |  | **[2 x 10= 20]** |  |  | | **-----END OF PAPER ----** | | |  |  | | |