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| **DIT UNIVERSITY DEHRADUN**   |  |  | | --- | --- | | **B. TECH. (CSE)** | **ENDTERM EXAMINATION, ODD SEM 2022-23 (SEM VII)** | | | | | | | | | | | | | |
| **Roll No.** |  |  |  |  |  |  |  |  |  |  |  |  |
| **Subject Name: Statistical 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 the Reinforcement Learning with example. | **L2** | **C01** | |  | **(b)** | Discuss the Inductive bias in decision tree learning | **L2** | **C01** | |  | **(c)** | Discuss the issues in decision trees learning. | **L2** | **C01** | |  | **(d)** | Explain steps to Calculate Chi-square for a split. | **L2** | **C01** | |  |  | **[4 x 5= 20]** |  |  | |  | | |  |  | | **Q.2)** | **Attempt all Parts:** | | **BTL** | **CO** | |  | **(a)** | Explain Principal Components Analysis with example. | **L2** | **C02** | |  | **(b)** | Discuss the Stochastic Gradient Descent. | **L2** | **C02** | |  | **(c)** | List various Unsupervised Learning Algorithms. | **L2** | **C02** | |  | **(d)** | Explain Variance and Covariance. | **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)** | Explain Back prorogation algorithm with suitable example. | **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)** | Explain Ensemble learning with suitable example. | **L3** | **C02** | |  | **(c)** | Explain Active learning with suitable example. | **L2** | **C02** | |  |  | **[2 x 10= 20]** |  |  | |  | | |  |  | | **Q.5)** | **Attempt any Two Parts:** | | **BTL** | **CO** | |  | **(a)** | Explain Convolution Operation with suitable example. | **L3** | **C03** | |  | **(b)** | Explain Pooling with suitable example. | **L3** | **C03** | |  | **(c)** | Explain Long Short Term Memory (LSTM) and RNN. | **L2** | **C03** | |  |  | **[2 x 10= 20]** |  |  | | **-----END OF PAPER ----** | | |  |  | | |