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| **DIT UNIVERSITY DEHRADUN**   |  |  | | --- | --- | | **MCA** | **MIDTERM EXAMINATION, ODD SEM 2022-23 (SEM III)** | | | | | | | | | | | | | |
| **Roll No.** |  |  |  |  |  |  |  |  |  |  |  |  |
| **Subject Name: Machine Learning** | | | | | | | | | | | | |

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| **Time: 2 Hours** | **Total Marks: 50** |
| **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: | | |  | (a) | Explain Min- Max Normalization technique. | |  | (b) | Explain the K Means Clustering. | |  | (c) | Explain the applications of Machine learning. | |  | (d) | For a moderately skewed distribution, the mean and median are respectively 26.8 and 27.9. What is the mode of the distribution? | |  |  | [4 x 2.5= 10] | | Q.2) | Attempt all Parts: | | |  | (a) | What is the mathematical formula representation for the following:  (a) Statistical representation of Machine Learning.  (b) Mean Squared Error  (c) Sigmoid cost function  (d) Linear Regression  (e) Logistic Regression | |  | (b) | One card is drawn from a deck of 52 cards, well-shuffled. Calculate the probability that the card;  (a) Will be an ace.  (b) Will not be an ace. | |  | (c) | Explain well posed learning problems in machine learning. | |  | (d) | Compare between Classification and Regression. | |  |  | [4 x 2.5= 10] | | Q.3) | Attempt any Two Parts : | | |  | (a) | Which regression analysis is applied to design “Weather Forecasting Model”? Elaborate the identified type in detail. | |  | (b) | Explain the process of Data Cleaning in Machine Learning. | |  | (c) | What is the mean, median and mode for the following dataset;23, 18, 24, 23, 31, 37, 28, 30, 25, 40, 35, 35, 27, 25 | |  |  | [2 x 5= 10] | | Q.4) | Attempt any Two Parts : | | |  | (a) | Apply Linear Regression to solve the following; | |  | (b) | Explain different types of learning in machine learning | |  | (c) | Explain the steps required for designing a learning system. | |  |  | [2 x 5= 10] | | Q.5) | Attempt any Two Parts : | | |  | (a) | Apply Bayes Theorem to solve the following:  Three urns are there containing white and black balls; first urn has 3 white and 2 black balls; second urn has 2 white and 3 black balls and third urn has 4 white and 1 black balls. Without any biasing one urn is chosen from that one ball is chosen randomly which was white. What is probability that it came from the third urn? | |  | (b) | Explain the following terms:  (a) Regularization  (b)Logistic Regression  (c) Lasso Regression  (d) Ridge Regression | |  | (c) | Apply Z Score Normalization Technique to solve the following; 1200,1400,1600,1800 and 2000 | |  |  | [2 x 5= 10] | | -----END OF PAPER ---- | | | | |