**18ECD32**

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| **IV/IV B.Tech (Supplementary) DEGREE EXAMINATION** | | | |
| **April,2023** | **Electronics & Communication Engineering** | | |
| **Seventh Semester** | **Machine Learning** | | |
| **Time:** Three Hours | | **Maximum: 5**0 Marks | |
| *Answer Question No. 1 Compulsorily.* | | | (10X1 = 10 Marks) |
| *Answer* ***ANY ONE*** *question from each Unit.* | | | (4X10=40 Marks) |

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| 1. | a) | Summarize the importance of moving towards intelligent machines. | CO1(BL1) | |  |
|  | b) | What is the guiding principle of machine learning? | CO1(BL1) | |  |
|  | c) | Define Occam’s Razor principle. | CO1(BL1) | |  |
|  | d) | How to calculate the Euclidian distance? | CO2(BL1) | |  |
|  | e) | State the minimum description length principle. | CO2(BL1) | |  |
|  | f) | Why LMS is called a stochastic gradient algorithm? | CO2(BL1) | |  |
|  | g) | Name various methods for measuring the performance of a regressor. | CO3(BL1) | |  |
|  | h) | List out the variants of basic SVM techniques. | CO3(BL1) | |  |
|  | i) | Differentiate supervised learning and unsupervised learning. | CO4(BL1) | |  |
|  | j) | What is exploratory data analysis? | CO4(BL1) | |  |
| **Unit - I** | | | | | |
| 2. | a) | Examine some application domains, wherein machine learning is present and is yielding encouraging results. | CO1(BL4) | **5M** | |
|  | b) | Demonstrate various metrics ­for­ assessing­ the classification­­ accuracy. | CO1(BL3) | **5M** | |
|  |  | **(OR)** |  |  | |
| 3. | a) | What is Bias and Variance Problem in machine learning? Explain | CO1(BL4) | **5M** | |
|  | b) | Outline and discuss each step of the design cycle in machine learning. | CO1(BL2) | **5M** | |
| **Unit - II** | | | | | |
| 4. | a) | Inspect the simplest statistical measures employed in data exploration. | CO2(BL4) | **5M** | |
|  | b) | Elucidate various discriminant functions and regression functions. | CO2(BL2) | **5M** | |
|  |  | **(OR)** |  |  | |
| 5. | a) | Assess the Fisher’s linear discriminant and thresholding for classification. | CO2(BL3) | **5M** | |
|  | b) | Illustrate the mechanism of k-nearest neighbor (k-NN) classifier. | CO2(BL2) | **5M** | |

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| **Unit - III** | | | | |
| 6. | a) | Diagnose the usage of linear discriminant functions for binary classification. | CO3(BL3) | **5M** |
|  | b) | Interpret the implementation of regression by support vector machines. | CO3(BL2) | **5M** |
|  |  | **(OR)** |  |  |
| 7. | a) | Describe perceptron training algorithm and its limitations for classification problems. | CO3(BL2) | **5M** |
|  | b) | Elaborate the basic concepts related to kernel-induced feature spaces. | CO3(BL2) | **5M** |
| **Unit - IV** | | | | |
| 8. | a) | Infer the task of expectation-maximization algorithm and gaussian mixtures clustering. | CO4(BL3) | **5M** |
|  | b) | Explain the role of principal components analysis for attribute reduction. | CO4(BL2) | **5M** |
|  |  | **(OR)** |  |  |
| 9. | a) | Demonstrate the operation of decision tree for a binary classification task. | CO4(BL2) | **5M** |
|  | b) | Inspect the procedure followed by K-means clustering algorithm. | CO4(BL3) | **5M** |

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