

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - V CS&BS : WINTER : 2024
SUBJECT: MACHINE LEARNING

Day : Monday
Date : 16/12/2024

W-24171-2024

Time : 02:30 PM-05:30 PM
Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the **RIGHT** indicate **FULL** marks.
 - 3) Assume suitable data **WHEREVER** necessary.
 - 4) Draw neat labeled diagrams **WHEREVER** necessary.
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Q.1 How does machine learning differ from traditional programming where humans provide explicit instructions? (10)

OR

Q.1 What is machine learning? Give an overview of machine learning with suitable example. (10)

Q.2 Explain the importance of splitting data into training and testing sets for building robust classification models. (10)

OR

Q.2 Describe statistical decision theory in detail. (10)

Q.3 How can Naïve Bayes be used for text classification tasks? (10)

OR

Q.3 Explain the core concept of ensemble learning and how random forests leverage it for classification. (10)

Q.4 Describe functionalities of the forward and backward algorithms in HMMs. (10)

OR

Q.4 Describe conditional random fields with part-of-speech tagging explanation. (10)

Q.5 Define Regularization. Explain in detail Overfitting and Underfitting. (10)

OR

Q.5 Explain Least squares regression algorithm with example. (10)

Q.6 Describe Minimum spanning tree clustering algorithm. (10)

OR

Q.6 How does Expectation-Maximization (EM) algorithm for unsupervised learning works? (10)
