

Reg. No.

Question Paper Code

12021

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023

Third Semester

Artificial Intelligence and Data Science

20AIPC302 - FUNDAMENTAL OF MACHINE LEARNING TECHNIQUES

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | <i>Marks,
K-Level, CO</i> |
|---|-------------------------------|
| 1. What are the types of machine learning? | 2,K1,CO1 |
| 2. How does Human Learning vary from Machine Learning? | 2,K2,CO1 |
| 3. What is ROC Curve and what does it represent? | 2,K1,CO2 |
| 4. Define Silhouette Width. | 2,K1,CO2 |
| 5. What are Principal Components? Why they are used? | 2,K1,CO3 |
| 6. What are the strengths and weaknesses of KNN Algorithms? | 2,K1,CO3 |
| 7. State Gauss Markov Theorem. | 2,K1,CO4 |
| 8. What is the slope of the simple linear regression model? | 2,K1,CO4 |
| 9. Define Instance based Learning. | 2,K1,CO6 |
| 10. What is Uncertainty sampling in Active learning? | 2,K1,CO6 |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11. a) Compare and Contrast Supervised, Unsupervised and Reinforcement Learning types. 13,K2,CO1
- OR**
- b) How Machine Learning algorithms help in detecting fraudulent activities in Banking? Also state some of the real-time software used. 13,K2,CO1
12. a) Explain Qualitative and Quantitative data in detail. How missing values are handled? 13,K2,CO2
- OR**
- b) Explain in detail about histograms with standard deviation and variance. 13,K2,CO2
13. a) Explain in detail about Support Vector Machines with algorithms. 13,K2,CO3

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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OR

- b) Discuss Random forest model in detail. What are the strengths and weaknesses of it? *13,K2,CO3*
14. a) Define simple linear regression using a graph. Explain rise, run, and slope in a graph. *13,K2,CO4*

OR

- b) Brief about the following :- *13,K2,CO4*
(i) Elastic Net Regression (ii) Stepwise Regression
15. a) Illustrate how Bagging, Gradient Boosting works with Ensemble Learning? *13,K3,CO6*

OR

- b) What is active learning? Explain its heuristics. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) How the distance between clusters is measured in hierarchical clustering. *15,K2,CO5*

OR

- b) Discuss the strengths and weaknesses of the k-means algorithm by implementing it in any dataset. *15,K3,CO5*