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**Question Paper Code : 20070**

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023.

Fourth Semester

Artificial Intelligence and Data Science

AL 3451 — MACHINE LEARNING

(Regulations 2021)

(Common to : Computer Science and Business Systems)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the objectives of machine learning.
2. Mention the various features of Machine Learning.
3. Relate entropy and information gain.
4. How does CART solve the regression problems?
5. Identify the challenges of the clustering algorithm.
6. Distinguish between Bagging and Boosting.
7. List out significant parts of biological neuron
8. Give the types of artificial neural networks.
9. List the various phases of the machine learning life cycle.
10. What is meant by cross-validation and resampling?

PART B — (5 × 13 = 65 marks)

11. (a) Examine in detail about Inductive bias with a suitable sketch. (13)

Or

- (b) Elucidate the Vapnik-Chervonenkis (VC) dimension with suitable examples. (13)

12. (a) Write short notes on

(i) Regression and Correlation (6)

(ii) Limitation of Regression model. (7)

Or

- (b) List the advantages of SVM and how optimal Hyperplane differs from Hyperplane. (13)

13. (a) Consider a boy who has a volleyball tournament the next day but feels sick today. Unusually, there is only a 40% chance he would fall sick since he is a healthy boy. Now, Find the probability of the boy participating in the tournament. The boy is very interested in volleyball, so there is a 90% probability that he will participate in tournaments and 20% fall sick, given that he participates in the tournament. (13)

Or

- (b) Explicate the weighted K-nearest Neighbour algorithm with a suitable sketch. (13)

14. (a) Discuss the steps involved in the Backpropagation algorithm. (13)

Or

- (b) Explain hyper-parameter tuning with example. (13)

15. (a) Mention the various methods of measuring Classifier Performance with suitable examples. (13)

Or

- (b) List and illuminate the Guidelines for Machine Learning Experiments. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Discuss the supervised and unsupervised learning with example.

Or

- (b) What is KNN? Where are utilise the concept? List the importance with example.
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