17142

BRAINWARE UNIVERSITY

Term End Examination 2025-2026
Programme – BCA-Hons-2023
Course Name – Machine Learning
Course Code - BCA57204 (T)
(Semester V)

Full Marks : 40 **Time : 2:0 Hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question) 1 x 10=10

1. *Choose the correct alternative from the following :*

(i) Which of the following best defines Machine Learning?

a) Hard-coding decisions into software
b) Making computers intelligent without data
c) Programming computers to learn from data
d) Installing AI tools in a system

(ii) Machine Learning is a subfield of:

a) Data Structures
b) Artificial Intelligence
c) Cyber Security
d) Software Engineering

(iii) What does a neural network mimic?

a) Computer hardware
b) Human brain
c) Animal cells
d) Search engine

(iv) In which scenario is classification most appropriate?

a) Grouping customers
b) Predicting temperature
c) Identifying spam emails
d) Calculating averages

(v) What is the first step in training a machine learning model?

a) Model evaluation
b) Feature engineering
c) Data preparation
d) Hyperparameter tuning

(vi) Which algorithm is commonly used for regression problems?

a) Logistic Regression
b) Linear Regression
c) Decision Tree Classifier
d) K-Means

(vii) How can machine learning enhance decision-making in business operations?

a) By eliminating all human jobs
b) By automating employee scheduling
c) By randomly guessing outcomes
d) By disabling manual processes

(viii) Which of the following best describes a business problem suitable for machine learning?

a) A decision with no data involved
b) A task based on random opinions
c) A one-time decision by management
d) A repetitive, data-driven decision task

(ix) Which ensemble technique uses bootstrapped datasets?

a) AdaBoost
b) Stacking
c) ECOC
d) Random Forest

(x) Why does stacking often use different types of models as base learners?

a) To reduce accuracy
b) To increase model complexity
c) To maximize diversity in predictions
d) To eliminate the need for testing

Group-B

(Short Answer Type Questions) 3 x 5=15

2. What does "leveraging machine learning" mean? (3)
3. Explain an application of supervised learning and how it is used in that context. (3)
4. How would you implement a basic classification model in Python? (3)
5. Explain how machine learning can enhance customer experience in online businesses. (3)
6. Evaluate the performance differences between Random Forest and AdaBoost in ensemble learning. (3)

OR

Justify the use of stacking over voting in ensemble models. (3)

Group-C

(Long Answer Type Questions) 5 x 3=15

7. Describe the role of statistics and data mining in the machine learning process. (5)
8. Demonstrate how to preprocess a dataset and train it using at least two algorithms. (5)
9. Build an ensemble learning pipeline for email spam detection. (5)

OR

Construct an ensemble-based medical diagnosis model to support clinical decisions. (5)

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