Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF INFORMATION SCIENCE
MID TERM EXAMINATION - APR 2023

Semester : Semester VI - 2022 - 23 - BCA - 2020
Course Code : BCA215
Course Name : Sem VI - BCA215 - Machine Learning
Program : BCA

Date : 12-APR-2023
Time : 11:30AM - 01:00PM
Max Marks : 60
Weightage : 30%

Instructions:
(i) Read all questions carefully and answer accordingly.
(ii) Question paper consists of 3 parts.
(iii) Scientific and non-programmable calculator are permitted.
(iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS **(5 X 2 = 10M)**

1. What is precision in machine learning and how is it calculated?
(CO1) [Knowledge]
2. How does the curse of dimensionality make it difficult to create accurate machine learning models?
(CO1) [Knowledge]
3. Define Reinforcement Learning
(CO1) [Knowledge]
4. List some applications of Multiple Linear Regression in real-world scenarios?
(CO2) [Knowledge]
5. How entropy in machine learning is evaluated?
(CO2) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS **(5 X 6 = 30)**

6. What is the difference between testing and validation in machine learning, and why are both important?
(CO1) [Comprehension]
7. How is the Gini Index used as a measure of node impurity in decision trees, and can you provide an example to illustrate its application?
(CO1) [Comprehension]
8. Based on a variety of demographic and health-related criteria, a medical research team is interested in estimating the survival rate of patients. How can linear regression be applied to achieving this objective?
(CO2) [Comprehension]

9. How is a decision tree built, and what is the role of impurity measures such as GINI index and entropy in this process?

(CO2) [Comprehension]

10. How will you interpret the confusion matrix to evaluate the accuracy of a classification model with example?

(CO2) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS **(2 X 10 = 20M)**

11. Explain commonly used model evaluation metrics for classification algorithms, and how are they used in machine learning?

(CO1) [Application]

12. Calculate Information gain of each attribute

age	income	student	buys_computer
<=30	high	no	no
<=30	high	no	no
31…40	high	no	yes
>40	medium	no	yes
>40	low	yes	yes
>40	low	yes	no
31…40	low	yes	yes
<=30	medium	no	no
<=30	low	yes	yes
>40	medium	yes	yes
<=30	medium	yes	yes
31…40	medium	no	yes
31…40	high	yes	yes
>40	medium	no	no

(CO2) [Application]