United International University (UIU)
Dept. of Computer Science & Engineering (CSE)
MID Exam : Trimester: Summer - 2022

Course Code: CSE 4889, Course Title: Machine Learning, Sec: A & B

Total Marks: 30   Duration: 1:45 hour

Please answer all the questions. Figures are in the right-hand margin indicates full marks.
Any examinee found adopting unfair means will be expelled from the trimester/program as per UIU disciplinary rules.

Question 1:

A. Write the short notes on the followings: 5*2=10

    I.   Why Machine Learning is needed in Business Intelligence?

    II.   Supervised and unsupervised learning.

    III. Validation set and test set.

    IV. Difference between Artificial Intelligence and Machine Learning.

    V.   Feature Engineering and Feature Selection.

Question 2:
                                                                                   3+3+4=10
A. What is R-squared test? Explain Multivariate Linear Regression.

B. Explain logistic regression and one-vs-all method.

C. Find the intercept and slope using liner regression for the following data. Provide the equation for calculating the intercept and slope.

Day	Sales
D_1	10K
D_2	15K
D_3	20K
D_4	25K
D_5	30K

$w_1 = 5$

Question 3:   3+3+4=10

A. What is Tree Pruning? Explain different types of tree pruning methods.

B. Explain confusion matrix and k-fold cross validation?

C. What is the Gini value of X2 relative to these training instances? Provide the equation for calculating the gini ratio as well as the intermediate results.

Instance	X1	X2	Classification
1	T	T	Y
2	T	T	Y
3	T	F	N
4	F	F	Y
5	F	T	N
6	F	T	N