



COMSATS UNIVERSITY ISLAMABAD
DEPARTMENT OF COMPUTER SCIENCE
Mid Term Examination, Spring 2023

Class/Section: - BSAI - 5
Subject: - Machine Learning Fundamentals (AIC 354)
Instructor: - Dr. Muhammad Usman Yaseen

Marks: - 25
Time: - 90 minutes
Dated: - Nov 14, 2022

CLO -1

Explain learning paradigms along with task and applications.

(5 marks)

Q# 01: - Answer the following questions.

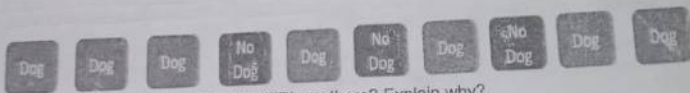
- i) Can a machine learning pipeline use multiple learning paradigms?? Give example.

Consider a dataset of dog images where 6 images are 'dog' images, and 4 images are 'No dog' images. Consider "Dog -> Positive class", "No dog -> Negative class". Suppose the model has the following predictions.

Truth



Prediction



- ii) How many True Positive (TP) and False Positive (FP) are there? Explain why?
iii) How many True Negative (TN) and False Negative (FN) are there? Explain why?
iv) What will be the Precision and Recall for Positive Class (Dog)? Explain why?
v) What will be the Precision and Recall for Negative Class (No Dog)? Explain why?

(5 marks)

Q# 02: - Case Study:

Suppose a company wants to build a predictive model to identify potential customers who are likely to purchase their product. The company has a dataset containing information about customers, including their age, gender, income, education, and previous purchases. The goal is to build a model that can accurately predict whether a customer is likely to make a purchase or not.

In this case study, explain how the company can use different learning paradigms to build the predictive model.