

DS 3885 (BA). Data Wrangling
Trimester: Spring 2025
Class Test 3, Time: 25 Minutes, Total Marks: 10

A hospital deploys an AI model to classify patient test results into three categories:

- Class 0: Healthy
- Class 1: Pre-diabetic
- Class 2: Diabetic

After running the model on 60 test samples, the following confusion matrix was generated:

	Predicted: Healthy (0)	Predicted: Pre-diabetic (1)	Predicted: Diabetic (2)
Actual: Healthy (0)	12	2	1
Actual: Pre-diabetic (1)	3	10	2
Actual: Diabetic (2)	0	2	28

1. (a) For **Class 2 (Diabetic)** as the positive class (one-vs-rest), calculate: [4]
 - o True Positives (TP), False Positives (FP), False Negatives (FN), True Negatives (TN)
 - o Precision, Recall, Specificity, Accuracy, and F1-score
2. (b) Compute the **macro-averaged Precision, Recall, and F1-score** across the three classes. [2]
3. (c) If the model's goal is to **minimize false negatives for Diabetic patients**, which metric would be most important? Justify your answer. [2]
4. (d) For a binary classifier distinguishing only between **Healthy (0)** and **Not Healthy (1 or 2)**, reframe the confusion matrix. [2]