

Python Programming with Data Sciences

Department of Mathematics (Test # 1) **University of Karachi**

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Note: All questions carry equal marks

Total Marks: 10

Question 1:

Table 1 shows a confusion matrix for a classification problem. Calculate the following measures:

	Predicted +	Predicted -
True +	100	40
True -	60	300

- (a) What is Confusion Matrix? Describe it in a single line?
- (b) What is the difference between Type I and Type II error?
- (c) Calculate the Accuracy, Error rate, Precision and Recall. Comment on the quality or performance of the model
- (d) Name the Python Library to find confusion matrix of a dataset.

Question 2:

Draw a decision tree by selecting the root node. Make the necessary calculation of Information Gain and Entropy as well.

Rec	Age	Income	Student	Credit Rating	Buys Computer
R1	<=30	High	No	Fair	No
R2	<=30	High	No	Excellent	No
R3	31--40	High	No	Fair	Yes
R4	>40	Medium	No	Fair	Yes
R5	>40	Low	Yes	Fair	Yes
R6	>40	Low	Yes	Excellent	No
R7	31--40	Low	Yes	Excellent	Yes
R8	<=30	Medium	No	Fair	No
R9	=30	Low	Yes	Fair	Yes
R10	>30	Medium	Yes	Fair	Yes
R11	<=30	Medium	Yes	Excellent	Yes
R12	31--40	Medium	No	Excellent	Yes
R13	31--40	High	Yes	Fair	Yes
R14	>40	Medium	No	Excellent	No