

1. (a) The probabilistic output of a binary classifier on a test set of 10 observations is depicted in the left column of Table 1 together with the true labels in the right column. Calculate the Precision and Recall for a decision threshold of 0.5. Show your working. [9]
- (b) What is the range of values the decision threshold can take in order for the classifier to get 0 False Positives on this test set? [7]
- (c) Calculate the point on the ROC curve for the probabilistic classifier using its output in Table 1 and a decision threshold of 0.6. What is the AUC and what information it conveys? [9]

$P(t^* = +1)$	True Class
0.4	-1
0.4	+1
0.6	+1
0.2	-1
0.6	-1
0.1	-1
0.6	+1
0.4	+1
0.5	+1
0.5	-1

Table 1: Your model's probabilities for class 1 assignment versus the true class of the test set.