Question 1
High classification accuracy always indicates a good classifier.

a. True
b. False

Question 2
A false negative is always worse than a false positive.

a. True
b. False

Question 3
Suppose a binary classifier produced the following confusion matrix.

	Predicted Positive	**Predicted Negative**
Actual Positive	5600	40
Actual Negative	1900	2460

What is the **precision** of this classifier?

a. 0.75
b. 0.81
c. 0.99

Question 4
We are interested in reducing the number of false negatives. Which of the following metrics should we primarily look at?

a. Precision
b. Accuracy
c. Recall

Question 5
Given the following confusion matrix:

	Predicted Positive	Predicted Negative
Condition Positive	96	4
Condition Negative	8	19

What is the **recall**?

a. 92.31%
b. 90.55%
c. 96%

Question 6

It is often the case that false positives and false negatives incur different costs. In situations where false negatives cost much more than false positives, we should

a. Require higher confidence level for positive predictions
b. Require lower confidence level for positive predictions

Question 7

In a future society, a machine is used to predict a crime before it occurs. If you were responsible for tuning this machine, what evaluation metric would you want to maximize to ensure no innocent people (people not about to commit a crime) are imprisoned (where crime is the positive label)?

a. Precision
b. F1
c. Accuracy
d. Recall
e. AUC

Question 8

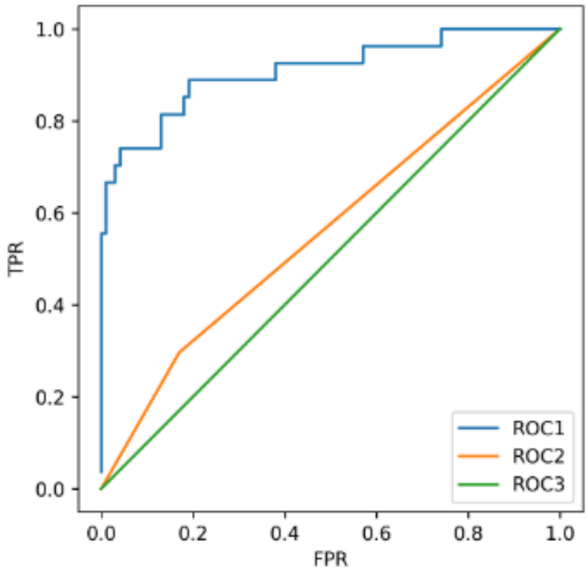
A classifier is trained on an imbalanced multi-class dataset. After looking at the model's precision scores, you find that the micro averaging is much smaller than the macro averaging score. Which of the following is most likely happening?

a. The model is probably misclassifying the frequent labels more than the infrequent labels
b. The model is probably misclassifying the infrequent labels more than the frequent labels.

Question 9

Given the following models and AUC scores, match each model to its corresponding ROC curve.

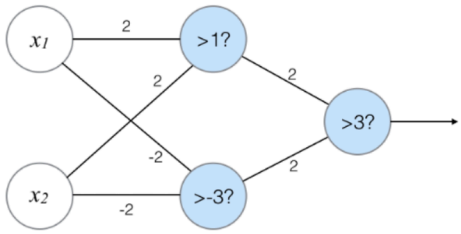
- Model 1 test set AUC score: 0.91
- Model 2 test set AUC score: 0.50
- Model 3 test set AUC score: 0.56



a. Model 1: Roc 1; Model 2: Roc 3; Model 3: Roc 2
b. Model 1: Roc 3; Model 2: Roc 2; Model 3: Roc 1
c. Model 1: Roc 1; Model 2: Roc 2; Model 3: Roc 3
d. Not enough information is given
e. Model 1: Roc 2; Model 2: Roc 3; Model 3: Roc 1

Question 10

Given the neural network below, find the correct outputs for the given values of x1 and x2. The neurons that are shaded have an activation threshold, e.g. the neuron with >1? will be activated and output 1 if the input is greater than 1 and will output 0 otherwise.



A)

x1	x2	output
0	0	1
0	1	0
1	0	0
1	1	1

B)

x1	x2	output
0	0	0
0	1	1
1	0	1
1	1	1

C)

x1	x2	output
0	0	0
0	1	1
1	0	1
1	1	0

D)

x1	x2	output
0	0	0
0	1	0
1	0	0
1	1	1

a. B
b. C
c. A
d. D