Consider the following confusion table summarising the testing results for iris classification. As you are aware, the iris data is a classic multi-class benchmark dataset (12 marks in total)

Confusion Matrix for IRIS dataset		Actual Class		
		Setosa	Versicolor	Virginica
Predicted Class	Setosa	20	0	0
	Versicolor	1	1	1
	Virginica	0	4	16

- **What is the overall classification accuracy? (2 marks)**
- **What is the sensitivity and specificity for each class? (6 marks)**
- **Use the table as an example to explain why confusion matrix is a better way to assess the performance of a classifier than the overall classification accuracy (4 marks)**

You are training a Multilayer Perceptron (MLP) neural network for a particular classification task. After, some investigation, your neural network is constructed with 5 input variables, one hidden layer with 12 nodes and one output layer with 3 nodes (the classes). How many network parameters are required to be tuned/trained? Show your detailed calculations. (4 marks)

Briefly describe the general objective of Association Rules mining. What is the "Apriori Principle"? (4 marks)

The ethics of how a Machine Learning system is to function is a common thought that arises when we read about all these advancements in this domain. To build however an ML system, we need, among others, lots of data. Unfortunately, the selection/utilisation of data for using it in our ML system generates some ethical and biased issues. Briefly describe some of them. (6 marks)

Briefly describe the term "black box" models we usually encounter in machine learning applications (2 marks). Provide an example of such a black box model and briefly discuss why you consider it as such (2 marks).

Overfitting is one important cause for the poor performance of machine learning algorithms. Briefly describe what it is and mention possible reasons for its presence (2 marks).