Your name: _____

1. You are using neural networks to understand poetry. The goal is to train a neural network that has the same associations between words that humans have and can appreciate and generate poetry. Would you call this a strong AI or a weak AI project?

a) Strong AI
b) Weak AI
c) Neither strong or weak AI
d) Both strong AI and weak AI

2. Suppose that you want to use an image recognition algorithm to help doctors diagnose rare diseases. The algorithm is trained by experts on a large and often used database, so you are pretty sure it is accurate. Do you still need to do verification and validation?

a) yes, any AI application needs verification and validation before use on real patients
b) no, you only need verification and validation if you use low quality data
c) no, you only need verification or validation, but never both
d) no, verification and validation is only needed when the doctors request it

3. You want to predict car value based on car properties and you discover that there is -0.7 correlation between car height and car value. Is car height a useful variable to use for predicting car value?

a) Yes, since there is strong (negative) correlation
b) No, since the correlation is negative
c) No, since the correlation of 0.7 is small
d) You cannot tell from this data alone

4. You want to predict car value and in order to ensure explainability, you only want to use two variables. There are 11 variables in total. The two variables that are most promising are horse-power and acceleration. The correlation between horse-power and acceleration is 0.91. Should you use these two variables?

a) Yes, since these are the most promising variables
b) No, you should only use one of these two since they have a high correlation
c) No, you should not use any variables that are highly correlated
d) No, since both horse-power and acceleration are hard to explain concepts

5 Your friend is an active buyer on e-Bay. He often bids on paintings and would like to use AI to know what number to bid on specific items. What type of problem is this?

a) Classification
b) Prediction
c) Recommendation
d) Generation

6. You are training a neural network on a dataset. Which of the following situations is called 'overfitting'

a) The accuracy on the training set is much higher than on the test set
b) The accuracy on the test set is much higher than on the training set
c) The accuracy on the training set and the test set is too high

d) The accuracy on the training set and the test set is too low

7. Suppose you have a neural network with three layers: input (10 neurons), hidden (10 neurons) and output (2 neurons). How much parameters would this network have?

a) 22
b) 44
c) 100
d) 120

8. How many neurons do you need to represent a color image of 100 x 100 pixels?

a) 200
b) 10.000
c) 30.000
d) 200.000

9. You want to use an AI system to make recommendations for a large e-commerce website. It is important that the item recommended is suitable. You use a classification algorithm: the item is either recommended or not. It is not important if certain items are not recommended ever. What metric should you use to measure performance?

a) accuracy
b) precision
c) recall
d) you can use any of these metrics, all three are equally good

10. You are developing an AI algorithm for inviting candidates to job interviews. The algorithm invites 60% of all suitable candidates and the company believes this is good. Further testing shows bias: 95% of suitable male international candidates are invited, and 71% of suitable female international candidates. Would you call this a fair algorithm?

a) Yes, since 71% is more than the required 60%
b) Yes, as long as most students are not international
c) No, fairness requires a better than 80% performance
d) No, since there is a significant different in performance for male and female candidates

11. Can you use a prediction algorithm to make recommendations? If so, how would you use it? If not, why not?

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12. Can two layer neural networks (only an input and output layer) without hidden layers learn any function? If so, why? If not, can you describe a function that cannot be learned?

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