Introduction

Question 1

A computer program is said to learn from experience E with respect to some task T and some performance measure P if its performance on T, as measured by P, improves with experience E.
Suppose we feed a learning algorithm a lot of historical weather data, and have it learn to predict weather. What would be a reasonable choice for P?

- [ ] The process of the algorithm examining a large amount of historical weather date.
- [x] ***The weather prediction task.***
- [ ] The probability of it correctly predicting a future date's weather.
- [ ] None of these.

Question 2

Suppose you are working on weather prediction, and use a learning algorithm to predict tomorrow's temperature (in degrees Centigrade/Fahrenheit).
Would you treat this as a classification or a regression problem?

- [x] ***Regression***
- [ ] Classification

Question 3

Suppose you are working on stock market prediction, Typically tens of millions of shares of Microsoft stock are traded (i.e., bought/sold) each day. You would like to predict the number of Microsoft shares that will be traded tomorrow.
Would you treat this as a classification or a regression problem?

- [x] ***Regression***

- [ ] Classification

Question 4

Some of the problems below are best addressed using a supervised learning algorithm, and the others with an unsupervised learning algorithm. Which of the following would you apply supervised learning to? (Select all that apply.) In each case, assume some appropriate dataset is available for your algorithm to learn from.

- [x] ***Given genetic (DNA) data from a person, predict the odds of him/her developing diabetes over the next 10 years.***
- [x] ***Have a computer examine an audio clip of a piece of music, and classify whether or not there are voclas (i.e., a human voice singing) in that audio clip, or if it is a clip of only musical instruments (and no vocals).***
- [ ] Given data on how 1000 medical patients respond to an experimental drug (such as effectiveness of the treatment, side effects, etc.), discover whether there are different categories or "types" of patients in terms of how they respond to the drug, and if so what these categories are.
- [ ] Given a large dataset of mdical records from patients suffering from heart disease, try to learn whether there might be different clusters of such patients for which we might tailor separate treatments.

Question 5

Which of these is a reasonable definition of machine learning?

- [ ] Machine learning is the field of allowing robots to act intelligently.
- [ ] Machine learning is the science of programming computers.
- [x] ***Machine learning is the field of study that gives computers the ability to learn without being explicitly programmed.***
- [ ] Machine learning learns form labeled data.