Multiple Choice Questions

Information

Part 1: Multiple Choice Questions (15 marks in total)
This part consists of 15 Multiple Choice Questions and is worth 15 marks. Each question is worth 1 mark. Please answer ALL questions. Identify the choice that best completes the statement or answers the question. There is only one best answer for each question. Sometimes two answers may appear feasible, but you are to pick the one you believe is the best.

Marking Scheme for Multiple Choice Questions:
1 mark for a correct answer
0 marks for a wrong
0 marks for no answer

Please pay attention that this is a sample exam, and we provided some questions to give you an insight into the type of questions which you would have in your final exam. The number of questions is less than what you will see in your final exam. You will have 15 multiple choice question and 25 short answer questions in your final exam.

Question 1
Drew Conway Venn Diagram: Which of the following best explains the "Danger Zone" intersection in the Drew Conway Venn Diagram?

A. It is an area where people conduct trial and error experiments with data and report the best results

B. It describes people who are not sure what they are doing, although they can explain the meaning of the output of the coefficients.
C. It is an area that we should not enter as it is dangerous and can result in harmful analysis.
D. It describes people who are well versed in conducting end to end machine learning and report coefficients, but without understanding what they mean.

Question 2
Machine learning is useful when:
A. human expertise is not available
B. humans cannot explain their expertise (as a set of rules)
C. humans are expensive to use for the work
D. ALL of the other cases

Question 3
What is the proper explanation for the following Python code:
(No answer given, you try on your own Jupyter. Read the titanic dataset, etc. :)

```
titanic.groupby(['sex','class'])['age']
```

A. It groups the data by the data based on Sex and Class and returns the average

B. It shows the average of age in each class and sex
C. It groups the data based on Sex and Class
D. It first groups the data by sex. Then shows the average age in different classes

Question 4

What is Hadoop?

A. An abbreviation for “Hadrian's Loop”, a firewall management system
B. A programming language designed for agile development
C. An encryption system used extensively at Google
D. A system for partitioning computation across a compute cluster

Question 5

The 3Vs of big data are important because:

A. they are an industry standard.
B. they are the basis for the development of more Vs (e.g. Value).
C. they are used to describe in what way a dataset may be too big to handle.
D. they are from the influential Gartner Inc.

Question 6

Privacy: What is the technological reason for the continued increase in lack of privacy?

A. the flow of technology makes surveillance easier unless particular measures are set in place.
B. the increase in cybercrime and terrorism makes it a necessity.
C. the open internet and the cloud remove privacy.
D. it follows from Koomey's Law.

Short Answer Questions

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Part 2: Short Answer Questions (50 marks in total)
This section consists of 25 Short Answer Questions and is worth 50 marks. Each question is worth 2 marks. Your answer should be written in clear, simple English and should be complete enough in addressing the question. Extensive prose is not required. Structured bullet points are acceptable.
The questions are numbered from 16 onwards as in the actual exams (actual exams will have Questions 16 – 40).

Question 16
Explain what big data is. Consider the four V's of big data and explain veracity in a few words.

Sample answer:
BIG DATA is any attribute (among the V's) that challenges constraints of a system capability or business need and veracity is uncertainty of data.

- Volume is size of data.
- Velocity is the frequency/Pace of incoming data that needs to be processed.
- Variety refers to different types of data.
- Veracity refers to the fact that how accurate or truthful a data set may be. More specifically, how accurate and reliable the data is

Question 17
Assume you are collecting data about traffic accidents in Melbourne to develop a predictive model. Would it be better to collect "more data" (e.g., the locations of accidents over many years) or "more types of data" (e.g., the types of vehicles involved, the weather conditions, etc)? Give a brief justification.

Sample answer:
Assuming there is sufficient data for building a predictive model, usually more types of data helps a predictive model more than just collecting the more data.
However, if there are insufficient amount of data, then it would be better to ensure that there is sufficient data for the model building.

Question 18
Explain the differences between a classification and a regression. Which one can be used to predict a salary based on age and job title of a person?

Sample answer:

- Classification: The depended variable is a categorical variable. i.e., discrete values (categorical), such as Spam or not Spam.
- Regression: The depended variable is a continuous value such as price.

We can use regression to predict the salary based on the age and job as salary is a continuous value.

Question 19
Would you consider user's emails as to be sensitive information? Why or why not?

Sample answer:
Yes, emails should be considered as sensitive information. They may contain different types of private information such as addressed, cell phone numbers, vacation notices, financial information and so on. This information should be confidential.

Question 20
Explain the k-means algorithm.

Sample answer:
K-Means is an unsupervised clustering machine learning algorithm which groups the similar data points together to help us discover the underlying patterns by looking at the fixed number of clusters (k). The algorithm is as follows:

1. Define the K
2. Initialize the centroids
3. Assigns the data points to the centroids 4- Update the centroids
4. If the new values of the centroid changed significantly from the previous values, return to step 3; otherwise, stop the algorithm.

(In the actual exams, there will be questions until question 40)

END OF EXAMS