

STATISTICS WORKSHEET-1

Q1 to Q9 have only one correct answer. Choose the correct option to answer your question.

1. Bernoulli random variables take (only) the values 1 and 0. **a) True** b) False

2. Which of the following theorem states that the distribution of averages of iid variables, properly normalized, becomes that of a standard normal as the sample size increases?

a) Central Limit Theorem

b) Central Mean Theorem

c) Centroid Limit Theorem

d) All of the mentioned

3. Which of the following is incorrect with respect to use of Poisson distribution?

a) Modeling event/time data

b) Modeling bounded count data

c) Modeling contingency tables

d) All of the mentioned

4. Point out the correct statement.

a) The exponent of a normally distributed random variables follows what is called the log- normal distribution

b) Sums of normally distributed random variables are again normally distributed even if the variables are dependent

c) The square of a standard normal random variable follows what is called chi-squared distribution

d) All of the mentioned

5. _____ random variables are used to model rates.

a) Empirical b) Binomial **c) Poisson** d) All of the mentioned

6. 10. Usually replacing the standard error by its estimated value does change the CLT.

a) True **b) False**

7. 1. Which of the following testing is concerned with making decisions using data?

a) Probability **b) Hypothesis** c) Causal d) None of the mentioned

8. 4. Normalized data are centered at _____ and have units equal to standard deviations of the original data.

a) 0 b) 5 c) 1 d) 10

9. Which of the following statement is incorrect with respect to outliers?

a) Outliers can have varying degrees of influence

b) Outliers can be the result of spurious or real processes

c) Outliers cannot conform to the regression relationship

d) None of the mentioned

WORKSHEET Q10 and Q15 are subjective answer type questions, Answer them in your own words briefly.

10. What do you understand by the term Normal Distribution?

Ans: The normal distribution is the proper term for a probability bell curve.

11. How do you handle missing data? What imputation techniques do you recommend?

Ans: By using Encoder and imputer techniques will handle the missing data

Ans: Simple imputer.

12. What is A/B testing?

Ans: Comparing the two data set to determine the statistical relationship or not. AB test is an example of statistical hypothesis.

13. Is mean imputation of missing data acceptable practice?

Ans: Yes, when we have categorical data can apply the imputation techniques. Should not apply on continues data

14. What is linear regression in statistics?

Ans: Linear regression in statistics is linear approach it explains the modeling relationship between a scalar response and one or more explanatory variables.

15. What are the various branches of statistics

Ans: Descriptive and Inferential

MACHINE LEARNING

In Q1 to Q11, only one option is correct, choose the correct option:

1. Which of the following methods do we use to find the best fit line for data in Linear Regression?

A) Least Square Error

B) Maximum Likelihood

C) Logarithmic Loss

D) Both A and B

2. Which of the following statement is true about outliers in linear regression?

A) Linear regression is sensitive to outliers

B) linear regression is not sensitive to outliers

C) Can't say

D) none of these

3. A line falls from left to right if a slope is _____?

A) Positive B) Negative C) Zero D) Undefined

4. Which of the following will have symmetric relation between dependent variable and independent variable?

A) Regression B) Correlation C) Both of them D) None of these

5. Which of the following is the reason for over fitting condition?

A) High bias and high variance

B) Low bias and low variance

C) Low bias and high variance

D) none of these

6. If output involves label then that model is called as:

A) Descriptive model

B) Predictive model

C) Reinforcement learning

D) All of the above

7. Lasso and Ridge regression techniques belong to _____?

A) Cross validation B) Removing outliers C) SMOTE D) **Regularization**

8. To overcome with imbalance dataset which technique can be used?

A) Cross validation B) Regularization C) Kernel **D) SMOTE**

9. The AUC Receiver Operator Characteristic (AUCROC) curve is an evaluation metric for binary classification problems. It uses _____ to make graph?

A) TPR and FPR B) Sensitivity and precision C) Sensitivity and Specificity D) Recall and precision

10. In AUC Receiver Operator Characteristic (AUCROC) curve for the better model area under the curve should be less.

A) True **B) False**

11. Pick the feature extraction from below:

A) Construction bag of words from a email

B) Apply PCA to project high dimensional data

C) Removing stop words

D) Forward selection

In Q12, more than one options are correct, choose all the correct options:

12. Which of the following is true about Normal Equation used to compute the coefficient of the Linear Regression?

A) We don't have to choose the learning rate.

B) It becomes slow when number of features is very large.

C) We need to iterate.

D) It does not make use of dependent variable.

MACHINE LEARNING

Q13 and Q15 are subjective answer type questions, Answer them briefly.

13. Explain the term regularization?

Ans: is a technique in machine learning model in order to prevent the overfitting or underfitting

14. Which particular algorithms are used for regularization?

Ans: Ridge regression

15. Explain the term error present in linear regression equation?

Ans: Term error is measuring the distance of observed y-values from the predicted y-values

PYTHON – WORKSHEET 1

Q1 to Q8 have only one correct answer. Choose the correct option to answer your question.

1. Which of the following operators is used to calculate remainder in a division?

A) # B) & **C) %** D) \$

2. In python $2//3$ is equal to?

A) 0.666 **B) 0** C) 1 D) 0.67

3. In python, $6<<2$ is equal to?

A) 36 B) 10

C) 24 D) 45

4. In python, $6\&2$ will give which of the following as output?

A) 2 B) True

C) False D) 0

5. In python, $6|2$ will give which of the following as output?

A) 2 B) 4

C) 0 **D) 6**

6. What does the finally keyword denotes in python?

A) It is used to mark the end of the code

B) It encloses the lines of code which will be executed if any error occurs while executing the lines of code in the try block.

C) the finally block will be executed no matter if the try block raises an error or not.

D) None of the above

7. What does raise keyword is used for in python?

A) It is used to raise an exception. B) It is used to define lambda function

C) it's not a keyword in python. D) None of the above

8. Which of the following is a common use case of yield keyword in python?

A) in defining an iterator B) while defining a lambda function

C) in defining a generator D) in for loop.

Q9 and Q10 have multiple correct answers. Choose all the correct options to answer

9. Which of the following are the valid variable names?

A) _abc B) 1abc

C) abc2 D) None of the above

10. Which of the following are the keywords in python?

A) yield B) raise

C) look-in D) all of the above