

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

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?
11. How do you handle missing data? What imputation techniques do you recommend?
12. What is A/B testing?
13. Is mean imputation of missing data acceptable practice?
14. What is linear regression in statistics?
15. What are the various branches of statistics?

10 ANS. Normal distribution, also known as the Gaussian distribution, is a probability distribution that is symmetric about the mean, showing that data near the mean are more frequent in occurrence than data far from the mean. In graphical form, the normal distribution appears as a "bell curve".

11 ANS. There are two ways to handle missing data one by removing missing data and another by imputing the missing data. We remove the missing data when there are very less values. There are multiple imputation techniques like replacing with arbitrary value, replacing with mean, replacing with mode, replacing with median, forward fill (replacing with previous value), replacing with next value (backward fill) and the interpolation method.

12 ANS. A/B testing, also known as split testing, refers to a randomized experimentation process wherein two or more versions of a variable (web page, page element, etc.) are shown to different segments of website visitors at the same time to determine which version leaves the maximum impact and drives business metrics.

13 ANS. Mean imputation is typically considered terrible practice since it ignores feature correlation.

14 ANS. The weight of the person is linearly related to their height. So, this shows a linear relationship between the height and weight of the person. According to this, as we increase the height, the weight of the person will also increase.

15 ANS. Two branches, descriptive statistics and inferential statistics, comprise the field of statistics.
