STATISTICS WORKSHEET-5

Q1 to Q10 are MCQs with only one correct answer. Choose the correct option.

1. Using a goodness of fit,we can assess whether a set of obtained frequencies differ from a set of frequencies.
   a) Mean
   b) Actual
   c) Predicted
   d) Expected

Answer: d

Explanation:

Goodness of fit tests are used to compare observed data (actual frequencies) with expected data (predicted or theoretical frequencies) from a model or distribution. They assess how well the model or distribution fits the observed data

2. Chisquare is used to analyse
   a) Score
   b) Rank
   c) Frequencies
   d) All of these

Answer: c

Explanation:

The chi-square test is commonly used to analyze whether there is a significant association between categorical variables by comparing the observed and expected frequencies in a contingency table. It is particularly useful when dealing with nominal data and determining if there are significant differences or relationships between the categories.

3. What is the mean of a Chi Square distribution with 6 degrees of freedom?
   a) 4
   b) 12
   c) 6
   d) 8

Answer: c

Explanation:

Degrees of Freedom:

In statistics, the degrees of freedom (df) represent the number of values or quantities in the final calculation of a statistic that are free to vary. In the context of the chi-square distribution, the degrees of freedom determine the shape and characteristics of the distribution.

The mean of a Chi-square distribution is equal to its degrees of freedom. Therefore, a Chi-square distribution with 6 degrees of freedom will have a mean of 6.

4. Which of these distributions is used for a goodness of fit testing?
   a) Normal distribution
   b) Chisqared distribution
   c) Gamma distribution
   d) Poission distribution

Answer: b

Explanation:

Goodness-of-fit testing involves comparing observed data with expected data based on a theoretical distribution. The chi-squared (chi-squared) distribution is commonly used for this purpose. In a goodness-of-fit test, the chi-squared test statistic is calculated, and its distribution follows the chi-squared distribution.

5. Which of the following distributions is Continuous
   a) Binomial Distribution
   b) Hypergeometric Distribution
   c) F Distribution
   d) Poisson Distribution

Answer: c

Explanation:

F Distribution: It's continuous because it can take on any value within a specified range. It's often used in statistical inference, particularly in ANOVA (analysis of variance) to compare variances between different groups.

6. A statement made about a population for testing purpose is called?
   a) Statistic
   b) Hypothesis
   c) Level of Significance
   d) TestStatistic

Answer: b

Explanation:

A hypothesis is a statement made about a population that we want to test. It's an educated guess about a relationship or characteristic that can be supported or refuted through data analysis.

7. If the assumed hypothesis is tested for rejection considering it to be true is called?
   a) Null Hypothesis
   b) Statistical Hypothesis
   c) Simple Hypothesis
   d) Composite Hypothesis

Answer: a

Explanation:

A null hypothesis, denoted by H_0, is a tentative statement assumed to be true until proven otherwise. In hypothesis testing, we aim to reject the null hypothesis, which indicates that the observed data is unlikely to have occurred solely by chance. It's essentially the hypothesis we set up to be challenged by the data.

8. If the Critical region is evenly distributed then the test is referred as?
   a) Two tailed
   b) One tailed
   c) Three tailed
   d) Zero tailed

Answer: a

Explanation:

In hypothesis testing, the critical region is the range of values that, if observed, would lead to the rejection of the null hypothesis. A two-tailed test occurs when the critical region is divided into two parts, one on each side of the distribution. This is typically done when the alternative hypothesis is of the form "not equal to" or "different from" a certain value. So, if the critical region is evenly distributed on both sides, it is referred to as a two-tailed test.

9. Alternative Hypothesis is also called as?
   a) Composite hypothesis
   b) Research Hypothesis
   c) Simple Hypothesis
   d) Null Hypothesis

Answer: b

10. In a Binomial Distribution, if ‘n’ is the number of trials and ‘p’ is the probability of success, then the mean value is given by

a) np

b) n

Answer: a