STATISTICS WORKSHEET- 6

Ans 1 :- (D) All of the mentioned

Ans 2 :- (A) Discrete

Ans 3 :- (A) pdf

Ans 4 :- (C) Mean

Ans 5 :- (A) Variance

Ans 6 :- (D) None of the mentioned

Ans 7 :- (C) 0 and 1

Ans 8 :- (B) Bootstrap

Ans 9 :- (B) Summarized

Brief Answers

Ans 10 :- Difference between a Boxplot and Histogram :-

1) Histograms are better to determine the underlying probability Distribution of the data and Boxplots are better to tell if the distribution is symmetric or skewed.
2) Histograms gives us the minimum data point, maximum data point , median , Standard median and range of the chart from left to right . and Boxplot give us the 5 number summary which are, Sample minimum , third quartile , second quartile , first quartile and Sample maximum.
3) Histogram are more detailed and take up more space. And Boxplot are less detailed and take up less space
4) Both the plots are used to give graphical representation for the frequency of Numerical data type.
5) Both the plots allow to visually shows the central tendency, variation in the data, presence of gaps and outliers.
6) Both the plots are ideal to represent moderate to large amount of data.

Ans 12 :- To assess statistical significance, we use Hypothesis Testing. the Null Hypothesis and Alternate Hypothesis would be stated first. Second, you would calculate the p-value, which is the likelihood of getting the test's observed findings if the Null hypothesis is true. Finally, you would select the threshold of significant (alpha) and reject the null hypothesis if the p-value is smaller than the alpha , the result is statistically significant.

Ans 14 :- Median is a better measure than mean because :-

• Median is the middle value in a rank-ordered sequence. And Mean is the sum of all observation values divided by the number of cases observed.

• Median are not affected by Outliers, while Mean can swing wildly due to extreme anomalies that are irrelevant to the norms.

• The middle(Median) remains the same middle value regardless of the size of the highest or the lowest case, which has great effects on the average.

• In a statistically random population sample, the Median remains very close to the mode, so the median is a superior measure of the norm. theMean can bounce all over the place,based on the outliers and the sample distribution.

• The smaller the sample size and the more non-standard the population observation distribution, the large the differences between the Median and the Mean.

Ans 15:- Likelihood function is a fundamental concept in statistical inference. It indicates how likely a particular population is to produce an observed sample. The likelihood is a quantity proportional to the probability that, from a population having a particular value of θ, a sample having the observed value $x_0 -$. should be obtained . Likelihood ,being the outcome of a likelihood function thus defined, describe the plausibility, under a certain statistical model(the null hypothesis in hypothesis testing), of a certain parameter value after observing a particular outcome.

. Formally: $L(\theta; x_0) \propto f(x_0; \theta), \forall\theta\in\Theta$.