BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – B.Sc.(BT)-Hons-2020/B.Sc.(BT)-Hons-2021
Course Name – Biostatistics
Course Code - BBTD601A
(Semester VI)

Full Marks : 60   **Time : 2:30 Hours**
[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A
(Multiple Choice Type Question)   1 x 15=15

1. *Choose the correct alternative from the following :*

(i) _____ is not a measure of central tendency. Select the correct answer:
a) Mean   b) Range
c) Median   d) Mode

(ii) Estimating the coefficients of regression model in the presence of autocorrelation leads to this test being NOT valid _____ . Select the correct option.
a) t test   b) F test
c) Chi-square test   d) All of these

(iii) The number of observations smaller than _____ is the same as the number of observations larger than it. Select the correct answer:
a) Mean   b) Mode
c) Median   d) None of these

(iv) There are several reasons for serial correlation to occur in a sample data. Which of these is NOT. Select the correct option.
a) Business cycle   b) Specification bias
c) Manipulation of data   d) Stationary data series

(v) Solve the mean of Binomial Distribution.
a) np   b) p
c) n   d) none of these

(vi) Identify the mean of the following numbers: 20, 40, 80, 60, 50.
a) 50   b) 60
c) 40   d) 30

(vii) An estimate is_____. Select the correct option.
a) The numerical value obtained after applying a formula to a given data set
b) The numerical value obtained after applying a formula to a given data set
c) The table value obtained after applying a formula to a given data set
d) The correlation coefficient obtained after applying a formula to a given data set

(viii) Student 't' test was formulated by _____. Select the correct option.
a) William Sealy Gosset
b) Carl Friedrick Gauss
c) Durbin Watson
d) BothCarl Friedrick Gauss and Durbin Watson

(ix) BLUE is _____. Select the correct option.
a) Best Linear Unbiased Estimator
b) Best Linear Unconditional Estimator
c) Basic Linear Unconditional Estimator
d) BothBest Linear Unconditional Estimator and Basic Linear Unconditional Estimator

(x) Identify the median of the dataset: 4,4,5,6,5,6,5,4,4,10
a) 5
b) 5.5
c) 6
d) 4

(xi) The term regression was coined by _____. Choose the correct option.
a) Francis Galton
b) Karl pearson
c) Carl Friedrick Gauss
d) William Sealy Goss

(xii) Given the sample, each estimator will provide only a single point value of the relevant population parameter is _____. Choose the correct option.
a) Point estimator
b) Interval estimator
c) Least square estimator
d) Both Interval estimator and Least square estimator

(xiii) Choose the correct assumption under CLRM.
a) No Autocorrelation between error term
b) Positive correlation
c) Negative correlation
d) Both poistive and negative correlation

(xiv) In a study, subjects are randomly assigned to one of three groups: control, experimental A, or experimental B. After treatment, the mean scores for the three groups are compared. Choose the appropriate statistical test for comparing these means.
a) the correlation coefficient
b) chi square
c) the t-test
d) the analysis of variance

(xv) In one-way ANOVA, choose from the following that is used within the F-ratio as a measurement of the variance of individual observations.
a) SSTR
b) MSTR
c) SSE
d) none of these

Group-B
(Short Answer Type Questions)

3 x 5=15

2. A problem is given to 5 students P, Q, R, S, T. If the probability of solving the problem individually is 1/2, 1/3, 2/3, 1/5, 1/6 respectively, compute the probability that the problem is solved. (3)

3. Define secondary data. (3)
4. Describe boxplot briefly. (3)

5. The standard deviation of a symmetrical distribution is 5. Identify the value of the fourth moment about the mean in order that the distribution be Leptokurtic. (3)

6. Evaluate the mean of the following data: 1,3,5,4,6,6,6,3,4,5,6,8 (3)

OR

Evaluate the mode of the following data: 1,3,5,4,6,6,6,6,3,4,5,6,8 (3)

Group-C
(Long Answer Type Questions) 5 x 6=30

7. Explain the concepts of measure of skewness. (5)

8. Explain an outlier of a dataset. Explain how to detect outliers. (5)

9. Describe Quantitative Data briefly. (5)

10. Describe different merits and demerits of median. (5)

11. A die is thrown 120 times. Denote the observed number of occurrences by O: 25, 17, 15, 23, 24, 16. Can we conclude that the die to be fair at the 5 per cent level of significance. (5)

12. A fertilizer mixing machine is set to give 12 kg of nitrate for every quintal bag of fertilizer. Ten 100 kg bags are examined. The percentage of nitrate are: 14, 11, 13, 12, 13, 12, 13, 11, 13, 12. Evaluate if there is a reason to believe that the machine is defective. Critical value for t-distribution for 9 d.f. is 2.262. (5)

OR

In a bolt factory, machines A, B and C manufacture respectively 25%, 35% and 40% of the total output. Of their output 5%, 4% and 2% are defective bolts. A bolt is drawn at random from the product. Evaluate the probability that it is defective. (5)

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