BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – BBA-Hons-2023/BBA-Hons-2024/BBA(BA)-Hons-2024
Course Name – Business Statistics
Course Code - BBA10001/BBB10001
(Semester I)

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) Choose the example of a discrete variable from the list below.
a) Temperature b) Time
c) Number of brothers d) Weight

(ii) "Please indicate how satisfied you are with the customer service you received by selecting one of the following options: Very Dissatisfied, Dissatisfied, Neutral, Satisfied, or Very Satisfied". In the above type of Survey question, identify the scale of measurement that is the most appropriate:
a) Ordinal b) Interval
c) Ratio d) Nominal

(iii) Identify the mean of the following dataset: 10, 15, 20, 25, 30, 35.
a) 20 b) 22.5
c) 25 d) 30

(iv) Determine the median of the following dataset: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.
a) 5 b) 5.5
c) 6 d) 6.5

(v) Identify the mode of the following dataset: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10.
a) 1 b) 5
c) 9 d) There is no mode

(vi) Identify the primary difference between simple correlation and multiple correlation.
a) Simple correlation involves only two variables, while multiple correlation involves more than two variables.
b) Simple correlation is used to measure the strength of a linear relationship, while multiple correlation is used to measure the strength of a non-linear relationship.
c) Simple correlation is calculated using a single equation, while multiple correlation requires multiple equations.
d) Simple correlation is always positive, while multiple correlation can be positive or negative.

(vii) Explain the meaning of the statement 'Correlation does not imply causation'.

a) A strong correlation between two variables proves that one causes the other

b) A strong correlation between two variables does not necessarily mean that one causes the other

c) A weak correlation between two variables proves that one does not cause the other

d) A weak correlation between two variables does not necessarily mean that one does not cause the other

(viii) Select the correct option. The slope of the regression line of Y on X is also called the____.

a) Correlation coefficient of X on Y
b) Correlation coefficient of Y on X
c) Regression coefficient of X on Y
d) Regression coefficient of Y on X

(ix) Select the correct option. The difference between simple linear regression and multiple regression is that:

a) Simple linear regression involves only one independent variable, while multiple regression involves two or more

b) Simple linear regression is more accurate than multiple regression

c) Multiple regression can only be applied to large datasets

d) Simple linear regression cannot be used for prediction

(x) Select the correct option. Correlation measures the:

a) Strength of linear relation between two variables

b) Causation between two variables

c) Difference between two variables
d) Sum of variables

(xi) Select the correct option. The slope of the regression line of X on Y is also called the_____.

a) Correlation coefficient of X on Y
b) Correlation coefficient of Y on X
c) Regression coefficient of X on Y
d) Regression coefficient of Y on X

(xii) Identify: Suppose the population standard deviation is known. Identify the appropriate test to use.

a) Z-test
b) T-test
c) ANOVA test
d) Chi-square test

(xiii) Choose the correct option. In a Z- test, the null hypothesis is typically a statement of:

a) No difference between sample mean and population mean

b) Significant difference between the sample mean and population mean

c) Positive correlation between variables

d) Negative correlation between variables

(xiv) Choose the correct option. In a two-sample Z-test for independent means, identify the number of populations are compared.

a) One
b) Two
c) Three
d) It depends on the sample size

(xv) Calculate the probability of drawing a Heart from a standard deck of 52 cards?

a) 1/4
b) 1/52
c) 1/13
d) 1/3

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Using the following data points, create a scatter plot and analyze the correlation: (3)

- **X Values:** 1, 2, 3, 4
- **Y Values:** 2, 4, 6, 8

1. Plot the given data points on a scatter plot.

2. Based on your observation, describe the type of correlation present in the data.

3. Examine the following frequency distribution table and identify the median interval: (3)

Age Range	Number of Participants
18-25	15
26-33	30
34-41	25
42-49	10

4. Explain the difference between nominal and ordinal scales of measurement. Provide an example for each. (3)

5. Describe the Mutually Exclusive Events. (3)

6. Three dice are rolled together. Estimate the probability as getting at least one '4'. (3)

OR

Explain the concepts of type-I error and type-II error in the context of testing of hypothesis. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. The following frequency table is given below: (5)

Class	1-2	2-3	3-4	4-5	5-6	6-7
Frequency	17	14	2	10	15	10

Predict the mode of the frequency distribution.

8. A deck of cards consists of 52 cards, which includes 26 red cards and 26 black cards. If one card is drawn at random and it is found to be red, what is the probability that the next card drawn is also red, assuming that the first card is not replaced? (5)

9. **A factory produces two types of products: Type A and Type B. Type A products have a defect rate of 2%, while Type B products have a defect rate of 5%. In a particular week, 70% of the products produced are Type A, and 30% are Type B. If a randomly selected product is found to be defective, what is the probability that it is a Type A product?** (5)

10. Define regression analysis and discuss its importance in statistical modeling. In your explanation, include: (5)

    1. A clear definition of regression analysis.
    2. The purpose of regression analysis in predicting outcomes.
    3. The difference between dependent and independent variables.

4. Examples of real-world applications where regression analysis is used.

11. Predict the spearman's correlation coefficient. (5)

x	1	2	3	4	5
y	6	8	11	9	12

12. Explain the concept of hypothesis testing in statistics. What are its essential components? Outline the procedure for conducting a hypothesis test and provide examples of both null and alternative hypotheses. (5)

OR

The three ships, A, B, and C, sail from India to Africa. If the probability of ship A reaching safely is 2/7, ship B reaching safely is 3/10, and ship C reaching safely is 6/17, estimate the probability of all of them arriving safely. (5)

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