BRAINWARE UNIVERSITY

Term End Examination 2023-2024
Programme – MBA(HM)-2023
Course Name – Biostatistics
Course Code - MBAHM106
(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) Identify, when the population standard deviation is unknown, which test is appropriate to use

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

(ii) Select the correct option. If any of the value in the data set is zero then the measurement that is not affected is:

a) Mean
b) Median
c) standard deviation
d) None of these.

(iii) Select the correct option. Relation between A.M, G.M and H.M

a) A.M>G.M>H.M
b) A.M=G.M=H.M
c) A.M<G.M<H.M
d) None of these

(iv) Select the correct option. When the regression line passes through the origin then

a) Regression coefficient is zero
b) Correlation is zero
c) Intercept is zero
d) Association is zero

(v) Choose the correct option. A speaks truth in 75% of cases and B in 80% of cases. Find the percentage of cases are they likely to contradict each other, narrating the same incident

a) 25%
b) 35%
c) 45%
d) 50%

(vi) Identify the formula for Bayes' Theorem is:

a) $P(A|B) = P(B|A) * P(A) / P(B)$
b) $P(A|B) = P(A) * P(B) / P(A \cap B)$
c) $P(A|B) = P(B|A) * P(A) / P(B|A) + P(B|\neg A) * P(\neg A)$
d) $P(A|B) = P(B|A) * P(A) + P(B|\neg A) * P(\neg A)$

(vii) Select the correct option. Which type of diagram is best suited for representing the frequency distribution of categorical data?

a) Scatter plot
b) Histogram
c) Line graph
d) Bar chart

(viii) Identify a Type 1 error in hypothesis testing.

a) Rejecting a true null hypothesis
b) Accepting a true null hypothesis
c) Rejecting a false null hypothesis
d) Accepting a false null hypothesis

(ix) Select the correct option. When b_{xy} is positive, then examine b_{yx} will be

a) Positive
b) Negative
c) Zero
d) One

(x) Identify the following statements about Type 1 error is true.

a) It is also known as a false negative.
b) It occurs when a true null hypothesis is accepted.
c) It is unrelated to the significance level.
d) It is not a concern in hypothesis testing.

(xi) Select the correct option. The variance of 5 numbers is 10. If each number is divided by 2, then evaluate the variance of new numbers is

a) 0
b) 20
c) 5
d) 2.5

(xii) Calculate the median of prime numbers between 21 and 50

a) 31
b) 37
c) 39
d) 43

(xiii) Identify the mode of a binomial distribution with p=1/2 and n=7

a) 3,4
b) 4,5
c) 4
d) 5

(xiv) Choose the correct option. Suppose two coins are tossed simultaneously, find the chances of getting at least one tail?

a) 1/7
b) 2/7
c) 3/7
d) 4/7

(xv) Select by which the standard normal distribution is represented

a) N(0,0)
b) N(0,1)
c) N(1,1)
d) N(1,0)

Group-B

(Short Answer Type Questions) 3 x 5=15

2. A random sample of size 20 from a Normal population gives a sample mean 42 and sample standard deviation 6.estimate the value of test statistics if the population mean is 44 using appropriate test statistics. (3)

3. Write down the steps used in hypothesis testing. (3)

4. Explain the advantages and disadvantages of arithmetic mean (3)

5. Describe quartile deviation with examples (3)

6. Describe scatter diagram with graph. (3)

OR

Estimate the value of regression coefficient of y on x if rxy=0.67,sx=3.13 and sy=2.14 (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	12	14	15	10	8	9

Plot a bar diagram.

8. A survey was conducted to gather information about people's favorite fruits. The results showed that 30% preferred apples, 25% preferred bananas, 15% preferred oranges, and the rest had other preferences. Represent this data using a pie chart. (5)

9. A fair coin is tossed twice such that E: event of having both head and tail, and F: event of having atmost one tail. Estimate the value of P(E), P(F) and P(E|F) (5)

10. Find the mean and median of the following data: (5)

Height(inches)	60-62	63-65	66-68	69-71	72-74
Frequency	5	18	42	27	8

11. From the following data estimate the regression equation: (5)

sales	91	97	108	121	67	124	51	73	111	57
Purchases	71	75	69	97	70	91	39	61	80	47

12. Illustrate the formula of regression line using least square method. (5)

OR

Predict the value of the correlation coefficient from the data given in the following table: (5)

x	43	21	25	42	57	59
y	99	65	79	75	87	81

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