BRAINWARE UNIVERSITY

Term End Examination 2023
Programme – B.Pharm-2019
Course Name – Biostatistics and Research Methodology Theory
Course Code - BP801T
(Semester VIII)

Full Marks : 75　　　　　　　　　　　　　　　　　　**Time : 3:0 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 20=20

1.　Choose the correct alternative from the following :

(i)　Assumption of 'No multicollinearity' means the correlation between the Regressands and regressor is_____. Select the correct option.

　　a) High　　　　　　　　　　　　　　b) Low
　　c) Zero　　　　　　　　　　　　　　d) All of these

(ii)　ANOVA was used to test the outcomes of three drug treatments. Each drug was given to 20 individuals. The MSE for this analysis was 16. Compute the standard deviation for all 60 individuals sampled for this study?

　　a) 6.928　　　　　　　　　　　　　b) 48
　　c) 16　　　　　　　　　　　　　　　d) 4

(iii)　Multicollinearity is limited to_____. Select the correct option.

　　a) Cross-section data　　　　　　　b) Time series data
　　c) Pooled data　　　　　　　　　　d) All of these

(iv)　The error deviations within the SSE statistic measure distances _____. Choose the correct answer.

　　a) within groups　　　　　　　　　b) between groups
　　c) both (a) and (b)　　　　　　　　d) none of these

(v)　Identify which of the following divides a group of data into four subgroups?

　　a) Median　　　　　　　　　　　　b) Quartiles
　　c) Percentile　　　　　　　　　　　d) Variance

(vi)　In a one-way ANOVA, if the computed F value exceeds the critical F value, choose the decision which is made regarding the null hypothesis.

　　a) Reject H_0 since there is evidence of a treatment effect.
　　b) Do not reject H_0 since there is no evidence of a difference
　　c) Reject H_0 since there is evidence that all means differ.
　　d) Do not reject H_0 because a mistake has been made.

(vii) In simple linear regression, the number of variables involved are _____. Select the correct option.

a) 2

b) 1

c) 3

d) 4

(viii) The values of extreme items do not influence the measure of central tendency for _____. Select the correct answer:

a) Mean

b) Range

c) Median

d) Mode

(ix) The value of the correlation coefficient (r) should be labelled as _____. Select the correct answer.

a) Greater than 1

b) Less than 1

c) 0 to 1

d) -1 to 1

(x) _____ is not a measure of central tendency. Select the correct answer:

a) Mean

b) Range

c) Median

d) Mode

(xi) Choose which of the following ANOVA components are not additive?

a) Sum of square

b) mean sum of square

c) degrees of freedom

d) all these are additive

(xii) Identify the G.M. of 1,3,9.

a) 27

b) 3

c) 9

d) 1

(xiii) Minimum value in class limit is defined as

a) Lower limit

b) Upper boundary

c) Upper limit

d) Lower Boundary

(xiv) Determine a Type I error occurs.

a) reject null hypothesis when it is true

b) reject alternative hypothesis when it is true

c) accept null hypothesis when it is false

d) accept alternative hypothesis when it is false

(xv) Identify the sum of relative frequencies for all classes in a frequency distribution.

a) 1

b) Total number of elements in the data

c) Number of classes

d) 100

(xvi) $P(A) = 0.4$, $P(B) = 0.7$, $P(A \text{ and } B) = 0.1$. The events A and B are _____. Select the correct option.

a) Exhaustive

b) Mutually exclusive

c) Independent

d) None of these

(xvii) Solve the mean of Binomial Distribution.

a) np

b) p

c) n

d) none of these

(xviii) If the standard deviation of a population is 9, then compute population variance.

a) 9

b) 27

c) 81

d) 3

(xix) If the fourth order central moment is zero then identify the distribution.

a) Leptokurtic

b) Pyrokurtic

c) Platykurtic

d) Mesokurtic

(xx)

Identify the appropriate graph to display marital status (Married, Unmarried, Divorced, widow) is

a) Frequency polygon

b) Pie chart

c) Scatter plot

d) Histogram

2. Describe the following measure of dispersions: (i) Range, (ii) Mean deviation, and (iii) Quartile deviation. (5)

3. Explain the concept of qualitative and quantitative research.. (5)

4. Explain the concept of population and sample briefly. (5)

5. 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

Evaluate the mode of the frequency distribution.

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

Class	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	71	1	1	2	5	2

Evaluate the median of the frequency distribution.

7. The following frequency table shows the pulse rate (in bpm) of 120 patients in a hospital: (5)

Pulse rate	50-60	60-70	70-80	80-90	90-100
Frequency	?	36	28	?	2

Average pulse rate of the patients is 70 bpm. Calculate the unknown frequencies.

OR

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

Evaluate the mean of the frequency distribution.

8. The probability that the noise level of a wide band amplifier will exceed 2 dB is 0.05. for a group of 12 amplifiers, calculate: (5)

a. one will exceed 2 dB

b. at most two will exceed 2 dB

c. two or more will exceed 2 dB

Given that the switch board of a consultant's office receives on the average 0.6 calls per minute, calculate the probability that: (5)

a. in a given minute, there will be at least one call

b. in a 4-minute interval, there will be at least three calls

Group-C
(Long Answer Type Questions)
Answer all the questions.

10 x 2=20

9. Describe the limitation of simple linear regression with proper example. (10)

10. Illustrate the concept of research protocol. (10)

OR

Illustrate the concepts of type-I and type -II error briefly with an example. (10)

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