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Barasat, Kolkata -700125**Term End Examination 2025-2026****Programme – B.Sc.(MLT)-2022/B.Sc.(MLT)-2023****Course Name – Research Methodology****Course Code - BMLTE505A****(Semester V)****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 the term used to perform a complete survey of population.
 - a) Report
 - b) Sample
 - c) Census
 - d) Calculation
 - (ii) In a study comparing two populations, if the p-value is 0.03, what does this indicate about the null hypothesis?
 - a) Fail to reject the null hypothesis.
 - b) Reject the null hypothesis
 - c) The null hypothesis is proven.
 - d) The null hypothesis needs further investigation.
 - (iii) Which of the following best describes a Type I error in hypothesis testing?
 - a) Failing to reject a true null hypothesis.
 - b) Incorrectly rejecting a false null hypothesis.
 - c) Accepting the null hypothesis when it is false.
 - d) None of these
 - (iv) In logistic regression, what type of outcome variable is typically used?
 - a) Continuous
 - b) Categorical
 - c) Ordinal
 - d) None of these
 - (v) Identify the characteristics of primary data
 - a) Source of the data is not accurately known
 - b) It is less flexible
 - c) It is a real-time data
 - d) It is cheap and requires less time
 - (vi) Select the primary purpose of using questionnaires in biostatistics?
 - a) To collect qualitative data
 - b) To collect quantitative data
 - c) To conduct physical examinations
 - d) To perform statistical tests
 - (vii) Skewness in a dataset refers to:
 - a) The measure of symmetry
 - b) The measure of kurtosis
 - c) The measure of asymmetry
 - d) The measure of central tendency
 - (viii) Identify the incorrect option regarding sampling
 - a) Sample represents the population
 - b) It is random or non-random

- c) It does not have any bias
 (ix) Which of the following is an example of ratio scale measurement in biostatistics?
 a) Temperature in Fahrenheit
 b) Blood pressure categories (normal, high, low)
 c) Time to complete a race
 d) Weight in kilograms
- (x) Which of the following is a primary advantage of using computer technology in research?
 a) Slower data processing
 b) Limited data storage
 c) Increased efficiency in data analysis
 d) Less accuracy in results
- (xi) Which of the following is NOT a method of random sampling?
 a) Simple random sampling
 b) Systematic sampling
 c) Quota sampling
 d) Stratified sampling
- (xii) In systematic sampling, every nth item is selected from a list. What is the sampling interval if a list of 100 items is to be sampled with a sample size of 10?
 a) 10
 b) 11
 c) 12
 d) 9
- (xiii) Identify the study designs is best suited for assessing causality
 a) Case-control study
 b) Cohort study
 c) Cross-sectional study
 d) Descriptive study
- (xiv) Identify the critical step before selecting a research problem
 a) Conducting an extensive literature review
 b) Completing the research
 c) Consulting friends
 d) Writing a thesis
- (xv) A retrospective cohort study differs from a prospective one because:
 a) Outcomes are yet to occur
 b) It uses historical data and existing outcomes
 c) It involves experimental manipulation
 d) It does not use control groups

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Group-B

(Short Answer Type Questions)

3 x 5=15

2. Define a cross-sectional study. How does it differ from a longitudinal study? (3)
3. Differentiate between probability and non-probability sampling. (3)
4. Illustrate the Holtzman Inkblot Test (HIT) (3)
5. Calculate the relative risk of respiratory infection in exposed vs. unexposed children using the following data: Exposed: 500 children, 300 diseased Unexposed: 500 children, 120 diseased (3)
6. Analyze to explain the type of research problem according to the example given: Status of working children in any metropolitan city and Lack of chemical fertilizer in the main problem of grain food (3)

OR

Respect for the rights and dignity of the participants is an important factor in maintaining research ethics. Now analyze and explain the statement (3)

Group-C

(Long Answer Type Questions)

5 x 6=30

7. Enumerate the different methods of collecting data. (5)
8. Discriminate between the Confidence level and significance level (5)
9. The latent period of influenza virus was observed in 6 patients were 3, 7, 4, 5, 6 and 5 days. Calculate the standard deviation of latent period of influenza virus. (5)
10. Analyze a frequency distribution table (using tally marking) from the age of the students in your class: 21, 21, 20, 21, 19, 22, 24, 25, 20, 21, 22, 22, 23, 19, 20, 21, 21, 20. (5)
11. Discuss and explain different types of sampling method with possible examples (5)

12. Calculate the coefficient of skewness for a sample using the following data (5)
set:12,15,18,21,24,27

OR

The following data is the hourly pay in pounds offered to shop assistants in a survey of job (5)
vacancies for June 2003 based in Reading.

5.00 ,4.21, 4.97, 5.00, 5.00, 5.29, 5.05, 5.50, 5.79, 5.00, 5.40,5.20, 5.10, 5.06, 4.50, 4.50,
5.50, 4.50, 5.00, 5.00, 5.50

Calculate the mean, median, and mode of this data.

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