

MASTER OF MEDICAL LABORATORY
TECHNOLOGY
FIRST SEMESTER
RESEARCH METHODOLOGY & BIostatISTICS
MMLT – 102

**SET
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 min.

(Objective)

Marks: 20

Choose the correct answer from the following:

1×20=20

1. Which one is the example of negative correlation
 - a. TimeSpent on Social Media and Academic Performance
 - b. Caffeine consumption and Sleep Quality
 - c. Altitude and Temperature
 - d. All of these
2. Where does the word research come from?
 - a. Ancient Greek "recherche"
 - b. Ancient Egypt "recherche"
 - c. Middle French "recherche"
 - d. None of these
3. Which of the following is not a research objective
 - a. Exploratory
 - b. Descriptive
 - c. Diagrammatic
 - d. Predictive
4. To ensure that research objectives are well-defined and achievable, one has to use the SMART criteria. The abbreviation of SMART is
 - a. Specialised, Measurable, Achievable, Relevant, and Time-bound.
 - b. Specific, Manageable, Attainable, Reliable and Time-bound
 - c. Specific, Measurable, Achievable, Relevant, and Time-bound.
 - d. All of these
5. When to Write Research Objectives?
 - a. At the end of the research project
 - b. To get the idea of research project
 - c. At the beginning of a research project
 - d. None of these
6. Which one is the characteristics of research design
 - a. Achievable
 - b. Generalised
 - c. Realistic
 - d. Nurturing
7. Research ethics include importance of publishing findings in a transparent way, not plagiarising others' work and not ____ work.
 - a. Falsifying
 - b. Copying
 - c. Imitating
 - d. None of these

8. Which among the following would be the ethical issues in a research study that involves participation of human subjects
- Lack of informed consent
 - Physical and psychological harm
 - Excessive inducements
 - Debriefing
- Choose the correct answer from the options given below
- A, B & C only
 - B, C & D only
 - A, C & D only
 - A, B, C, & D
9. The basic pre-requisite of an experimental group design is the existence of_
- More than one individual
 - More than Two individual
 - Less than two individual
 - All of these
10. The statistical approach selected for analysis of Single System design experiment should be-
- simple to compute and interpret without a high degree of statistical expertise and present a reduced likelihood of misinterpretation;
 - complement (rather than duplicate) visual analysis, especially when trend and variability patterns complicate visual analysis, providing different information;
 - free from assumptions of data independence (longitudinally) or homoscedasticity (equal variance)
 - All of these
11. A distribution which deals with only two variables is known as
- Univariate
 - Bi-variate
 - Multivariate
 - None of these
12. Which of the following is a probability sampling
- Stratified random sampling
 - Judgement sampling
 - Snow-ball sampling
 - None of these
13. When the value of Pearson's Correlation coefficient is -0.5 then the two variables are
- Positive & highly correlated
 - Negative & moderately correlated
 - Positive & moderately correlated
 - Negative & highly correlated
14. Which of the measures of central tendency is used for open end class interval
- Mean
 - Median
 - Mode
 - None of these
15. What is the mode of the following data set?
" 2, 4, 6, 8, 4, 7, 4, 6, 4, 12"
- 2
 - 4
 - 6
 - None of these
16. What type of variable is 'Country of birth' ?
- Quantitative and discrete
 - Qualitative and nominal
 - Qualitative and ordinal
 - None of these

17. Which one is the limit of positive correlation
- a. $-0.9 < r < -1$ b. $0.3 < r < 0.9$
c. $-1 < r < 0$ d. $49 \& 1.032$
18. A Research Design in which researcher examines the various variables while including numbers as well as statistics in a project to analyze its findings is known as
- a. Qualitative research design b. Experimental research design
c. Quantitative research design d. None of these
19. __ Which measure of the following is about the accuracy of a measure opt.
- a. Validity b. Reliability
c. Neutral d. None of these
20. Measurement of the consistency of reliability is
- a. Test retest b. Parallel forms
c. Internal consistency d. All of these

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(Descriptive)

Time: 2 hrs 30 min

Marks: 50

[Answer question no.1 & any four (4) from the rest]

1. What do you mean by Research Methods? Discuss in details differences of Research Methodology and Research Methods. 2+8=10
2. a. Discuss briefly three different types of research objectives. 5+5=10
b. Write 5 objectives of the following research title.
"Analyzing the Role of Exercise Prescription in Optimizing Functional Recovery: A Physiotherapy Perspective"
3. Why research ethics is important in research process? Describe three ethical issues in research. 5+5=10
4. a. What do you mean by correlation between two variables? Give two examples of both positive and negative correlations. 4+6=10

b. A random sample of recent repair jobs was selected and estimated cost and actual cost were recorded.

Estimated Cost	400	490	300	650	600	900	500	500
Actual Cost	275	496	444	280	635	872	396	457

Calculate the value of Spearman's Rank Correlation Coefficient and interpret the result.

5. What is the purpose of sampling in research? Describe different types of probability sampling techniques. 2+8=10
6. Discuss the evolution of physiotherapy research from its inception to the modern era, highlighting key milestones in its development, the role of technological advancements, and how research has influenced clinical practices in the field. 10
7. a. Define different measures of central tendency. 5+5=10
- b. The information on the observed lifetimes (in hours) of 225 electrical components are given in the following frequency table. Find the modal lifetimes of the electrical components.

The lifetime of electrical components (in hours)	0-20	20-40	40-60	60-80	80-100	100-200
Frequency	10	35	52	61	38	29

8. Write short notes on *any two*. 5+5=10
- Significance of Research Design
 - Group experimental design vs Single system design
 - Convenience sampling vs Judgement Sampling
 - Reliability and Validity in research process

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