



"Investing in Africa's Future"

COLLEGE OF HEALTH, AGRICULTURE AND NATURAL SCIENCES

**DEPARTMENT OF BIOMEDICAL AND LABORATORY SCIENCES
BACHELOR OF MEDICAL LABORATORY SCIENCES HONOURS**

**NSHS 204 RESEARCH METHODS AND ETHICS IN HEALTH RESEARCH
END OF FIRST SEMESTER FINAL EXAMINATIONS**

NOVEMBER 2024

LECTURER: Dr S L Mutambu

DURATION: 3 HOURS

INSTRUCTIONS

1. Write your candidate number on the space provided on top of each page
2. Answer **all** questions in sections A Part I and Part II on the question paper.
3. Answer **all** questions in section B on separate answer sheets provided.
4. Answer any **2** questions in section C on separate answer sheets provided
5. The mark allocation for each question is indicated at the end of the question
6. Credit will be given for logical, systematic and neat presentations in sections B and C

SECTION A**PART I: TRUE (T) OR FALSE (F) QUESTIONS [20 MARKS]**

Answer **all questions** by encircling the correct response **T** for **TRUE** or **F** for **FALSE** for each statement in all the questions. Each correct response is allocated a quarter mark.

1. The logical steps of conceptualization of the research process can either be a systematic or cyclic series of these logical steps:

T	F	a) Identifying the problem
T	F	b) Formulating a hypothesis
T	F	c) Developing the research plan
T	F	d) Collecting and analysing the data
2. Longitudinal design means:

T	F	a) A study completed far away from where the researcher lives
T	F	b) A study with two contrasting cases
T	F	c) A study completed over a distinct period of time to map changes
T	F	d) A study done in the rural communities
3. Types of research can be based on:

T	F	a) A study system
T	F	b) Study inquiry mode employed
T	F	c) Study site
T	F	d) Study sample
4. A theory:

T	F	a) Is a belief or assumption about how things relate to each other
T	F	b) Establishes a cause-and-effect relationship between variables with a purpose of explaining and predicting phenomena
T	F	c) Is based on inductive reasoning
T	F	d) Is a concrete, specific statement about the relationships between Phenomena
5. Analysed data can be presented in the form of:

T	F	a) Histograms
T	F	b) Frequency distribution
T	F	c) Root and leaf plots
T	F	d) Bar graph
6. Regarding Ethnography:

T	F	a) The purpose of ethnographic research is to try and understand what occurs naturally in a setting and to interpret the data gathered to see what conclusion could be drawn from the data.
T	F	b) Therefore it relies on collection of data from the natural environment.
T	F	c) Researchers study how the behaviour of individuals is influenced or mediated by the culture in which they live
T	F	d) Human behaviour can be understood properly if studied in the setting in which it occurs.

7. The following are various types of research:

- | | | |
|---|---|---------------------------|
| T | F | a) Descriptive research |
| T | F | b) Conventional research |
| T | F | c) Implied research |
| T | F | d) Correlational research |

8. The advantages of descriptive studies are:

- | | | |
|---|---|---|
| T | F | a) The people under study are unaware that they are being studied |
| T | F | b) They are more expensive and time consuming than quantitative studies |
| T | F | c) They collect a large amount of data for detailed studying |
| T | F | d) Since they are descriptive, they are used to start a research |

9. The control of effects of extraneous variables on the Dependent Variable in true experimental designs can be ascertained through:

- | | | |
|---|---|--|
| T | F | a) Matching |
| T | F | b) Counterbalancing |
| T | F | c) Dilution Effects |
| T | F | d) Homogeneity using statistical tests |

10. The following are important types of Quasi-Experimental designs:

- | | | |
|---|---|---|
| T | F | a) Pretest-posttest non-equivalent design |
| T | F | b) Non-equivalent before - after design |
| T | F | c) Time-series design |
| T | F | d) Posttest equivalent design |

11. Sample size depends on:

- | | | |
|---|---|---------------------|
| T | F | a) Population size |
| T | F | b) Study area |
| T | F | c) The t-test |
| T | F | d) Confidence level |

12. Experimental designs have these key features:

- | | | |
|---|---|--------------------------|
| T | F | a) Manipulation or Trial |
| T | F | b) Control |
| T | F | c) Randomization |
| T | F | d) Data collection tools |

13. The advantages of cross-over Randomized Control Trials (RCT) are:

- | | | |
|---|---|---|
| T | F | a) All participants serve as own controls and error variance is reduced, thus reducing sample size needed |
| T | F | b) All participants receive treatment (at least some of the time) |
| T | F | c) Statistical tests assuming randomisation can be used |
| T | F | d) Blinding cannot be maintained |

14. Ethics are:

- | | | |
|---|---|----------------------------|
| T | F | a) Moral Principles |
| T | F | b) What is good and bad |
| T | F | c) What is right and wrong |
| T | F | d) Based on value system |

15. Research issues that give rise to ethical concerns include:

- | | | |
|---|---|---------------------------|
| T | F | a) Stem Cell Research |
| T | F | b) Research Cloning |
| T | F | c) Genome Project Results |
| T | F | d) Fertility Research |

16. A data collection plan is a document that defines all the details of the data to be collected including:

- | | | |
|---|---|--|
| T | F | a) The reason for collecting the data |
| T | F | b) Where the data will be collected |
| T | F | c) The type of data that will be collected |
| T | F | d) How the right data will be collected |

17. Features of Qualitative Data:

- | | | |
|---|---|--|
| T | F | a) Associated with details |
| T | F | b) Implemented when data cannot be segregated into well-defined groups |
| T | F | c) Collected data can just be observed and not evaluated |
| T | F | d) Examples include, scents, appearance, beauty, colours, and flavours |

18. The Quantitative Research Approach has:

- | | | |
|---|---|-------------------------------------|
| T | F | a) Clearly stated questions |
| T | F | b) Developed research procedures |
| T | F | c) Large samples |
| T | F | d) Traditional statistical analyses |

19. Some of the tools used to collect data are:

- | | | |
|---|---|----------------------------|
| T | F | a) Focus group discussions |
| T | F | b) Case studies |
| T | F | c) Interviews |
| T | F | d) Expert opinion |

20. These terminologies are used in sampling:

- | | | |
|---|---|----------------------|
| T | F | a) Sampling Unit |
| T | F | b) Sampling Universe |
| T | F | c) Respondent |
| T | F | d) Survey Subject |

PART II: MULTIPLE CHOICE MATCHING QUESTIONS [10 MARKS]

Answer **all** questions by matching List I with answers in List II. Each correct response carries one (1) mark.

LIST I	LIST II	
Research concept	Description	Answer
A. Correlational research	I. Study subjects are exposed to more than one treatment	
B. Randomisation	II. An occurrence of a specific data item that is recorded about a data unit. It may be numeric or non-numeric.	
C. Deductive reasoning	III. Process of inspecting, cleaning, transforming, and modelling data with the goal of useful highlighting information, suggesting conclusions, and supporting decision making.	
D. Cross over design	IV. Looking for genetic mutations the confer a higher risk for developing disease	
E. Observation	V. Individuals must make rational and free decisions as to whether the research trials are compatible with their interests	
F. Data Collection	VI. Goal of the researcher is to test concepts and patterns known from theory using new empirical data	
G. Data analyses	VII. Process of obtaining useful information for a defined purpose from various sources	
H. Susceptibility testing	VIII. Looking for genetic mutations that have a high penetrance(usually autosomal dominance)	
I. Informed consent	IX. Every subject has an equal chance of being assigned to experimental or control group	
J. Pre-symptomatic testing	X. Systematic investigation or statistical study of relationships among two or more variables, without necessarily determining cause and effect.	

SECTION B**SHORT ANSWER QUESTIONS [30 MARKS]**

Answer all questions in this section

- List any five (5) key words that are used in the definition of Scientific research. (5 marks)
- The **PICOTS** format uses a set of six (6) questions to address the question “What makes good research?” State any three (3) of the questions in the

PICOTS format. (3 marks)

3. Name any five (5) frequent issues that Research Ethics Committees raise in connection with research protocols submitted to them by researchers. (5 marks)
4. State four (4) Ethical codes that contributed to the development of modern medical ethics. (4 marks)
5. Give three (3) examples of sources of secondary data. (3 marks)
6. List five (5) qualities of an Institutional Review Board (IRB). (5 marks)
7. State the main components of a research proposal (5 marks)

SECTION C

LONG ESSAY ANSWERS [40 MARKS]

Answer any 2 questions in this section on separate answer sheets provided. Each question carries 20 marks.

1. Giving examples, discuss in detail the key features of Experimental designs listed below:
 - a) Manipulation or Trial
 - b) Control
 - c) Randomization
2. Giving examples, discuss in detail the various Probability Sampling techniques that can be used to select patients for collecting clinical samples for laboratory tests.
3. Ethics is concerned with moral principles, values and standards of conduct. Discuss in detail how the Principles of Medical Ethics apply in a clinical laboratory environment.
4. Give a detailed account of various players and their role in research studies involving New Preventive Technologies.

END