Kasarani Campus
Off Thika Road
Tel. 2042692 / 3
P. O. Box 49274, 00100
NAIROBI
Westlands Campus
Pamstech House
Woodvale Grove
Tel. 4442212
Fax: 4444175

KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY

UNIVERSITY EXAMINATION, 2022/2023 ACADEMIC YEAR
FOURTH YEAR, FIRST SEMESTER EXAMINATION
FOR THE DEGREE OF BACHELOR OF EDUCATION (ARTS)

Date: 9th December, 2022
Time: 11.30am –1.30pm

KEF 2302 - RESEARCH METHODS IN EDUCATION

INSTRUCTIONS TO CANDIDATES

ANSWER **QUESTION ONE (COMPULSORY)** AND **ANY OTHER TWO** QUESTIONS

QUESTION ONE (30 MARKS)

Read the following excerpt and answer the questions that follow.

THE SCIENTIFIC PROCESS

Scientists use a dynamic, open-ended process to investigate questions. Here are the five steps.

1. Define a Question to Investigate

As scientists conduct their research, they make observations and collect data. The observations and data often lead them to ask why something is the way it is. Scientists pursue answers to these questions in order to continue with their research. Once scientists have a good question to investigate, they begin to think of ways to answer it.

2. Make Predictions

Based on their research and observations, scientists will often come up with a hypothesis. A hypothesis is a possible answer to a question. It is based on: their own observations, existing theories, and information they gather from other sources. Scientists use their hypothesis to make a prediction, a testable statement that describes what they think the outcome of an investigation will be.

3. Gather Data

Evidence is needed to test the prediction. There are several strategies for collecting evidence, or data. Scientists can gather their data by observing the natural world, performing an experiment in a laboratory, or by running a model. Scientists decide what strategy to use, often combining strategies. Then they plan a procedure and gather their data. They make sure the procedure can be repeated so that other scientists can evaluate their findings.

4. Analyze the Data

Scientists organize their data in tables, graphs, or diagrams. If possible, they include relevant data from other sources. They look for patterns that show connections between important variables in the hypothesis they are testing.

5. Draw Conclusions

Based on whether or not their prediction came true, scientists can then decide whether the evidence clearly supports or does not support the hypothesis. If the results are not clear, they must rethink their procedure. If the results are clear, scientists write up their findings and results to share with others. The conclusions they draw usually lead to new questions to pursue.

Adopted from American Museum

<u>Required</u>

a) "As scientists conduct their research, they make observations and collect data". There are several bases for classifying research. Identify FOUR classifications and discuss the types of research which do fall under each classification

(4 Marks)

b) "Scientists use a dynamic, open-ended process to investigate questions" This is what is often called the scientific research process. Discuss the main Characteristics of Scientific Research

(6 Marks)

c) For scientist process is illustrating a great process followed by scientists in the research journey from question definition to drawing a conclusion where it is indicated that "If the results are clear, scientists write up their findings and results to share with others." Given the above discussion state the elements of good research work

(4 Marks)

d) "A hypothesis is a possible answer to a question. It is based on: their own observations, existing theories, and information they gather from other sources." The quote illustrates the literature review stage of the research process. Explain why it is important to carry out a literature review

(6 Marks)

e) "Scientists decide what strategy to use, often combining strategies. Then they plan a procedure and gather their data."What factors should be taken into consideration by the scientist/ researcher when determining the sample size

(6 Marks)

f) The researchers/scientists "make sure the procedure can be repeated, so that other scientists can evaluate their findings." Sometimes as researchers evaluate the finding of other researchers, plagiarism can often become a topic of discussion. Discuss the meaning of plagiarism.

(4 Marks)

<u>QUESTION TWO (20 MARKS)</u>

The scientific research process comprises a series of steps or actions required to effectively conduct the research at hand. Discuss the following steps exhaustively

i) Selection of the research topic

(5 Marks)

ii) Formulation of the research problem.

(5 Marks)

iii) Determination of the Sample Design and data collection methods

(5 Marks)

iv) Writing the Research Report

(5 Marks)

QUESTION THREE (20 MARKS)

a) What is sampling as used in research? Explain the following terms as used in sampling population,

i) Element (3 Marks)

ii) Population frame (3 Marks)

iii) Subject (3 Marks)

iv) Sample (3 Marks)

b) Discuss the two advantages and two disadvantages of secondary data. (8 Marks)

QUESTION FOUR (20 MARKS)

a) Discuss five non-probability sampling methods. (10 Marks)

b) There are several methods of collecting primary data, the main ones are observation; personal interviews; questionnaires and case studies. Outline the merits and the demerits of personal interviews (10 Marks)

QUESTION FIVE (20 MARKS)

a) Discuss the factors to be taken into consideration when designing a questionnaire (10 Marks)

b) Discuss the four types of levels of measurement (10 Marks)