



UNIVERSITY EXAMINATIONS

SECOND SEMESTER 2023/2024 ACADEMIC YEAR

**THIRD YEAR EXAMINATION FOR THE DEGREES OF
BACHELOR OF SCIENCE IN (ICT) AND BACHELOR OF
COMPUTER SCIENCE**

**COMP 323/BICT 322 : RESEARCH METHODS AND TECHNICAL
WRITING**

STREAM: R

TIME: 2 HRS

DAY: FRIDAY [11.30A.M – 1.30P.M]

DATE: 12/04/2024

THIS QUESTION PAPER CONSISTS OF THREE (3) PAGES

PLEASE DO NOT OPEN UNTIL THE INVIGILATOR SAYS SO.

INSTRUCTIONS: ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

- a. Mr. Mwendamo has enrolled for a Post Graduate degree in Computer Science. He has come for advice on sources to consult for identification of a research problem. Recommend the sources that he can use to adequately identify a problem and how he can determine the viability of the problem identified **(8 marks)**
- b. What are the key steps involved in conducting a literature review in computing research? **(4 marks)**
- c. Describe the characteristics and applications of experimental, quasi-experimental, and non-experimental research designs in computing. **(6 marks)**
- d. Can you explain the purpose of including a problem statement and research objectives in a research proposal? **(2 marks)**
- e. Can you explain the process of synthesizing information from multiple sources in a literature review? **(6 marks)**
- f. Justify the importance of ethical considerations in computing research. Use examples. **(4 marks)**

QUESTION TWO (20 MARKS)

- a. You have been offered a position in an organization seeking to establish themselves in the Kenyan technology market. Your task is to work with the Developer Relations department to assist device the technical documentation for their use. You have been asked by the management to give a brief presentation on why technical documentation is vital and the process that can be used in doing so. What would your recommendations be? **(8 marks)**
- b. Evaluate the significance of identifying research gaps in computing literature. **(6 marks)**
- c. Analyze the potential bias present in research articles and its impact on literature reviews in computing. **(6 marks)**

QUESTION THREE (20 MARKS)

- a. Laikipia University is has hired you as a Research Assistant to understand why the adoption of a new eLearning mobile application is facing low adoption among students. You have been tasked with developing a research design, deciding the sampling techniques, and collecting data and analyzing it. Justify which techniques you would use and why? **(10 marks)**
- b. How do researchers select appropriate sampling techniques for their research studies in computing? **(2 marks)**
- c. Can you explain the process of data analysis and its importance in computing research? **(5 marks)**
- d. Analyze a scenario where different data collection methods would be used in computing research. **(3 marks)**



QUESTION FOUR (20 MARKS)

- a. Consider a researcher studying human-computer interaction (HCI) in a workplace environment. Elaborate the data collection techniques to be used and why? **(8 marks)**
- b. Can you explain the purpose of including a problem statement and research objectives in a research proposal? **(2 marks)**
- c. Describe the process of developing a research plan and timeline for a computing research project. **(4 marks)**
- d. Discuss the significance of conducting a feasibility study before initiating a research project in computing. **(3 marks)**
- e. How can researchers ensure that their research proposals are aligned with the current state of knowledge in computing? Justify your answer **(3 marks)**

QUESTION FIVE (20 MARKS)

- a. Suppose a researcher wants to test the effectiveness of different website layouts in improving user engagement. Analyze in detail how you would formulate a research problems and find verifiable insights to inform your research **(8 marks)**
- b. What is the role of hypothesis testing in computational research? Provide an example. **(2 marks)**
- c. Explain the concept of sampling in computing research. What are some common sampling techniques used in this field? **(6 marks)**
- d. Compare and contrast case study research and experimental research in computing. **(4 marks)**

