

CHUKA UNIVERSITY
FIRST YEAR FIRST SEMESTER EXAMINATIONS FOR MASTERS OF
SCIENCE IN COMPUTER SCIENCE

COSC 861 RESEARCH METHODS IN COMPUTER SCIENCE

SECTION A: COMPULSORY

QUESTION 1: [30 MARKS] COMPULSORY

- a) At postgraduate level, a student is tasked to undertake research. Explain FOUR objectives of undertaking research. (4 marks)
- b) Discuss to what extent is plagiarism accepted in postgraduate research, hence outline FOUR types of plagiarism. (6 marks)
- c) Information sources play an important role in research. Explain how these sources play a significant role in the quality of research. Hence outline FOUR considerations a researcher would put in place in evaluating the quality of information sources. (6 marks)
- d) *“Ambient intelligence has really revolutionize human computer interaction”*. In line with the above statement, write the following parts of research proposal. A research topic of your choice, a problem statement, justification, THREE objectives, and the scope of your study; which should be in line with your selected topic. (10 marks)
- e) Describe FOUR conditions that justifies that a research problem do exist (4 marks)

SECTION B: ANSWER ANY TWO QUESTIONS FROM THIS SECTION

QUESTION 2: [15 MARKS]

- a) Explain the term research plan, hence outline FOUR contents that are expected to be in an effective research plan. (6 marks)
- b) Discuss FIVE probabilistic sampling techniques that a researcher may use to select a sample from a population giving an advantage and disadvantage for each. (5 marks)
- c) Describe FOUR considerations for selecting an effective research problem. (4 marks)

QUESTION 3: [15 MARKS]

- a) Explain FOUR sources of measurement errors during data collection. (4 marks)
- b) Briefly explain FIVE characteristics of an effective scientific research. (5 marks)
- c) You have been tasked to guide other student on the process of writing a journal article. Write short notes under the following topics with reference to journal article: -

- i) Journal selection (1 mark)
- ii) Journal template (1 mark)
- iii) Open access Journal / Subscription fees (1 mark)
- iv) Blind review process (2 marks)
- v) Accept with major corrections (1 mark)

QUESTION 4: [15 MARKS]

- a) Discuss the importance of literature review, clearly indicating its objective in a research proposal. (5 marks)
- b) Explain the nature of a hypothesis in a research process; hence explain FOUR characteristics of a good hypothesis. (5 marks)
- c) Discuss the reasons why it is important to write a research proposal before engaging in any field research exercise. (5 marks)

QUESTION 5: [15 MARKS]

- a) Name SIX scientific journal indexing where effective computer science journals could be indexed (3 marks)
- b) Explain FIVE considerations that a researcher has to make during sampling design. (5marks)
- c) Select a research topic in *big data*; hence with reference to the selected topic differentiate between the following terms as used in research.
 - i. Topic selection (1mark)
 - ii. Reliability and validity (2 marks)
 - iii. Antecedent variables and Intervening variables (2 marks)
 - iv. Cross-sectional research and Longitudinal research (2 marks)