

THARAKA



UNIVERSITY

COLLEGE

*(A Constituent College of Chuka University)*

## UNIVERSITY EXAMINATIONS

### EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF SCIENCE IN COMPUTER SCIENCE

**COSC 380: RESEARCH METHODS IN COMPUTER SCIENCE**

**STREAMS: BSC (COSC) Y3S1**

**TIME: 2 HOURS**

**DAY/DATE: TUESDAY 07/04/2020**

**2.30 PM – 4.30 PM**

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#### INSTRUCTIONS:

- Attempt **Question 1** and any other **TWO** from **SECTION B**
- Marks are awarded for clear and concise answers
- **ONLY** the first **THREE** Questions attempted will be marked (**Question one inclusive**)

#### Question ONE [30 MARKS]

- (a) With relevant examples, explain what the activity of computer science research entails. **[4 Marks]**
- (b) What is the role of a model in computer science research. **[4 Marks]**
- (c) Differentiate between Primary data and Secondary data. **[4 marks]**
- (d) What is the role of the following components of a project proposal.
- (i) Problem statement **[2 Marks]**
  - (ii) Objectives **[2 Marks]**
  - (iii) Literature review **[2 Marks]**
  - (iv) Methodology **[2 Marks]**
  - (v) Budget **[2 Marks]**
- (e) Describe empiricism and authority as methods of inquiry. **[4 Marks]**
- (f) Describe **TWO** data collection instruments that can be used in research. **[4 Marks]**

**Question TWO [20 Marks]**

Research is a procedure by which we attempt to find systematically and with the support of demonstrable fact, the answer to a question or resolution of a problem.

- (a) Briefly describe **FIVE** distinct characteristics of research. **[10 Marks]**
- (b) Discuss **THREE** fundamental features steps of scientific approach to research. **[6 Marks]**
- (c) Give **FOUR** possible sources of research problems. **[ 4 Marks]**

**Question THREE [20 Marks]**

- (a) Simulation is a common aspect of research in the computer science discipline. While describing what **simulation** is, discuss its role in computer science research. **[4 Marks]**
- (b) Using a diagram, illustrate the method of Engineering as applied in research. **[10 Marks]**
- (c) Describe any **THREE** items that may be outputs of design and development research. **[6 Marks]**

**Question FOUR [20 Marks]**

Research conducted in computer science may be classified as basic or applied research. Differentiate basic research from applied research in relation to the following. **[20 Marks]**

- (i) Meaning
- (ii) Nature
- (iii) Utility
- (iv) Concerns
- (v) Goal

**Question FIVE [20 Marks]**

- (a) Research may be categorized as quantitative or qualitative. Differentiate quantitative research from Qualitative research. **[4 Marks]**
  - (b) Identify the key characteristics of the following approaches to quantitative research.
    - (i) Descriptive **[4 Marks]**
    - (ii) Correlational **[4 Marks]**
    - (iii) Experimental **[4 Marks]**
  - (c) Briefly describe ethnography research approach and how it can be applied in software projects development. **[4 Marks]**
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