



# **THE CO-OPERATIVE UNIVERSITY OF KENYA**

**END OF SEMESTER EXAMINATION APRIL -2023**

**EXAMINATION FOR THE DEGREE OF BACHELOR OF BACHELOR OF SCIENCE IN  
COMPUTER SCIENCE, BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY,  
BACHELOR OF BUSINESS AND INFORMATION TECHNOLOGY AND BACHELOR OF  
STATISTICS AND INFORMATION TECHNOLOGY**

**(YR III SEM II)**

**UNIT CODE: BCIT 3260/BSTA 3253**

**UNIT TITLE: RESEARCH METHODS/RESEARCH METHODS IN INFORMATION  
TECHNOLOGY**

**DATE: MONDAY, 17<sup>TH</sup> APRIL, 2023**

**TIME: 9:00 AM – 11:00 AM**

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**INSTRUCTIONS:**

- **Answer question ONE (compulsory) and any other TWO questions**

**QUESTION ONE**

(a)

- \_\_\_\_\_ research is a type of research undertaken for knowledge **(1 mark)**
- \_\_\_\_\_ research is a type of research undertaken to solve a problem in real life **(1 mark)**
- Cooperative University would like to undertake research aimed at improving delivery of online classes this is an example of \_\_\_\_\_ research **(1 mark)**
- \_\_\_\_\_ is the specific issue, contradiction, or gap you will address in research and It gives your research a clear purpose and justification. **(1 mark)**

(b) Identify the type of knowledge that suits each of the following descriptions and state at which stage of research you may apply it

- Knowledge based on facts and is acquired through observations or experimentation **(1 ½ marks)**
- Knowledge acquired through subjective judgement through feelings **(1 ½ marks)**
- Knowledge acquired through reasoning from point A to B **(1 ½ marks)**
- Knowledge acquired by reading published materials **(1 ½ marks)**

(c)

- Invention and discovery without innovation are useless. Explain this observation **(2 marks)**
- Explain the meaning of the acronym SMART as a criteria for assessing fitness of research objectives **(2 marks)**
- Give TWO differences between Qualitative and Quantitative research **(4 marks)**

(d)

- Explain the meaning of research ethics **(2 marks)**

- ii. The following extract from a student's research work is an example of plagiarism. State whether this is true or false and explain your answer

(2 marks)

*According to research done by Ochido Ope Justus, Over 80% of Kenyan public universities use firewalls, access lists and passwords to secure their information systems, which include e-voting systems.*

- iii. A researcher backdated interviews and procedures to fit a specific time frame in research. What type of research misconduct is this? Explain (2 marks)
- iv. A researcher claims in his research report that he tested a chemical on 100 rodents but only used 50. What type of research misconduct is this? Explain (2 marks)
- (e) A judge is required to give a verdict using the following hypothesis
- $H_0$ : defendant is guilty  
 $H_1$ : defendant is not guilty
- i. State the verdict that the judge will deliver if he commits type I error and explain the danger posed by this verdict (2 marks)
- ii. State the verdict that the judge will deliver if he commits type II error and explain the danger posed by this verdict (2 marks)

## QUESTION TWO

(a)

- i. Explain THREE reasons why it is important to write literature review in research (6 marks)
- ii. Describe THREE organizing principles of literature review (6 marks)

(b) Use the following research topic to answer the questions that follow

***AN ONLINE PRICE PREDICTOR SYSTEM FOR SECOND HAND CARS USING MACHINE LEARNING.***

- i. Explain the broad research area that informed this topic (2 marks)
- ii. Provide an appropriate problem statement for the research (3 marks)
- iii. State any Three objectives that would guide the research (3 marks)

## QUESTION THREE

(a) Discuss FOUR reasons to justify why academic referencing is important (8 marks)

(b) Below are four sentences from various student assignments. Indicate which sentences need citations and which ones doesn't require citation giving appropriate reason in each case

(6 marks)

- **Farah:** It is likely, therefore, that Shakespeare intended the character of Bottom to provide more than comic relief.
- **Xiao:** The results of two recent studies suggest that the brain may have greater capacity to repair itself than previously thought.
- **Lucy:** Melbourne's reservoirs have a combined capacity of 1,812,175 ML.
- **Andreas:** Climate change is an issue of increasing concern to both the developing and industrialised world.

(c) Use the following research topic to answer the questions that follow

***THE ROLE OF COMPUTER PROFICIENCY IN STUDENTS' PERFORMANCE FOR AN ONLINE EXAMINATION***

- i. State whether this is an Applied or Basic research and justify your answer (2 marks)
- ii. Identify the independent and dependent variables in the research (2 marks)
- iii. Draw a conceptual framework for the research (2 marks)

#### QUESTION FOUR

- (a) Explain what is meant by the term ideation as applied in research (2 marks)
- (b) Describe the SEVEN sources of innovation according to Drucker (14 marks)
- (c)
  - i. Explain the difference between parametric and non-parametric statistics (2 marks)
  - ii. Explain how you would determine if your research data is suitable for application of parametric or non-parametric statistics (2 marks)

#### QUESTION FIVE

- (a) Outline the procedure for conducting hypothesis testing (7 marks)
- (b) In hypothesis testing explain using examples how each of the following test statistics would be applied
  - i. Z- value (2 marks)
  - ii. t- Value (2 marks)
  - iii.  $X^2$ -value (CHI-SQUARE VALUE) (2 marks)
- (c) Sometimes, statisticians refer to unusual features in a set of data. Explain the following unusual features in a data set. (2 marks)
  - i. **Gaps.**
  - ii. **Outliers**
- (d)
  - i. Explain the purpose of sampling in research. Hence provide TWO primary strengths of using a probability sampling method? (3 marks)
  - ii. List FOUR main types of probabilistic sampling methods (2 marks)