



MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

**THIRD YEAR SUPPLEMENTARY EXAMINATION FOR
BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)
BACHELOR OF SCIENCE (COMPUTER SCIENCE)**

SCO 309: RESEARCH METHODS

DATE:

TIME:

INSTRUCTIONS

- i) Answer question ONE and other TWO questions**
- ii) Write on both sides of the answer sheet**

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) Define the following terms:
 - i) Research (2 marks)
 - ii) Universe (2 marks)
 - iii) Hypothesis (2 marks)
 - iv) Experiment (2 marks)
- b) Use an example to explain what you understand by the following expressions as used in research?
 - i) Ex post facto research (3 marks)
 - ii) Extraneous variable (3 marks)
 - iii) Control (3 marks)
 - iv) Treatment (3 marks)
 - v) Research question (3 marks)
- c) Describe briefly the phases of the scientific research process (7 marks)

QUESTION TWO (20 MARKS)

- a) Describe the following types of research
 - i) Descriptive research (5 marks)
 - ii) Fundamental research (5 marks)
 - iii) Empirical research (5 marks)

- b) How does Quantitative enquiry differ from Qualitative enquiry? (5 marks)

QUESTION THREE (20 marks)

- a) Describe in details what you understand by the following sampling methods:
- i) Probability sampling (8 marks)
 - ii) Non-probability sampling (6 marks)
- b) Explain the purpose of carrying out research (6 marks)

QUESTION FOUR (20 MARKS)

- a) What is the purpose of sampling in research? (3 marks)
- b) Describe the steps used in computerized data analysis (6 marks)
- c) Differentiate between Univariate analysis and Inferential analysis (5 marks)
- d) What are the characteristics of the following:
- i) A good questionnaire (3 marks)
 - ii) A good measurement scale (3 marks)

QUESTION FIVE (20 MARKS)

- a) What is the purpose of carrying out data analysis in research? (6 marks)
- b) Distinguish between inductive and deductive research giving examples where it is applied (5 marks)
- c) For each of the following scenarios, choose an appropriate measurement scale and justify your choice
- i) A researcher wants to determine whether the circadian temperature cycle is less stable for older compared to middle aged adults. Body temperature in degrees Fahrenheit is measured every 15 minutes over a period of 3 days. (3 marks)
 - ii) As part of a test preparation course, students are asked to take a practice version of the Graduate Record Examination (GRE). This is a standardized test. Scores can range from 200 to 800 with a population mean of 500 and a population standard deviation of 100. (3 marks)
 - iii) Children in elementary school are evaluated and classified as non-readers (0), beginning readers (1), grade level readers (2), or advanced readers (3). The classification is done in order to place them in reading groups. (3 marks)