



MACHAKOS UNIVERSITY

University Examinations for 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF COMPUTING AND INFORMATION TECHNOLOGY

THIRD YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (INFORMATION TECHNOLOGY)

BACHELOR OF SCIENCE (COMPUTER SCIENCE)

SCO 309: RESEARCH METHODS

DATE: 26/9/2019

TIME: 2.00-4.00 PM

INSTRUCTIONS

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

QUESTION ONE (30 marks, Compulsory)

- a) Define the following terms:
 - i. Positivism (3 marks)
 - ii. Phenomenology (3 marks)
 - iii. Triangulation (3 marks)
 - iv. Epistemology (3 marks)
- b) Distinguish between the following terms as applied in research methodology:
 - i. Research hypothesis versus Research question (3 marks)
 - ii. Population versus Universe (3 marks)
 - iii. Applied research versus Fundamental research (3 marks)
 - iv. Conceptual research versus empirical research (3 marks)
- c) Explain why research is important (6 marks)

QUESTION TWO (20 MARKS)

- a) Using examples and diagrams where appropriate, explain the following research approaches:

- i) Induction (5 marks)
- ii) Deduction (5 marks)
- b) What is the difference between Stratified random sample and quota sample (5 marks)
- c) What factors should you consider before conducting a research? Explain your answers (5 marks)

QUESTION THREE (20 MARKS)

- a) Define the following terms:
 - i. Sampling (1 mark)
 - ii. Population (2 marks)
 - iii. Research (2 marks)
 - iv. Hypothesis (2 marks)
 - v. Experiment (2 marks)
- b) Use an example to show the distinction between reliability and validity (3 marks)
- c) What do you understand by the following expressions as used in research?
 - i. Ex post facto research (2 marks)
 - ii. Extraneous variable (2 marks)
 - iii. Control (2 marks)
 - iv. Treatment (2 marks)

QUESTION FOUR (20 MARKS)

- a) Describe in details what you understand by the following sampling methods:
 - i. Probability sampling (6 marks)
 - ii. Non-probability sampling (6 marks)
 - iii. Research question (2 marks)
- b) Compare the following pairs:
 - i. Sampling unit versus sample frame (3 marks)
 - ii. Descriptive versus Analytical research (3 marks)

QUESTION FIVE (20 MARKS)

- a) Describe the phases of the scientific research process (8 marks)
- b) An educational researcher is interested in the relationship between students' participation in two after school programs and academic achievement. She states the following hypothesis in the description of her study:
- H1.** Children who participate in an after school program that emphasizes critical thinking skills will score higher on measures of academic achievement and self-esteem than students who participate in a program that emphasizes rote memorization.
- i. Identify all the variables in the study and classify them into independent variable(s) and dependent variable(s). (3 marks)
- ii. Describe how each variable varies. Provide justification for why each variable varies the way you describe (3 marks)
- c) What are the characteristics of the following:
- i. A good questionnaire (3 marks)
- ii. A good measurement (3 marks)