



MACHAKOS UNIVERSITY

University Examinations 2018/2019

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF PHYSICAL SCIENCES

APRIL SESSION EXAMINATION FOR

MASTER OF SCIENCE (CHEMISTRY)

SCU 800: RESEARCH METHODOLOGY FOR PURE AND APPLIED SCIENCES

DATE: 14/8/2019

TIME: 2:00 – 4:00 PM

INSTRUCTIONS:

- The paper consists of **two** sections.
- Section **A** is **compulsory** (30 marks).
- Answer any **two** questions from section **B** (each 15 marks).

SECTION A (COMPULSORY)

QUESTION ONE (30 MARKS)

- a) You are required to conduct a research on “Heavy Metals Pollution in Lake Victoria”.
- i) Outline a brief background of the study (5 marks)
 - ii) Write the statement of the problem (5 marks)
 - iii) Propose a fitting hypothesis for the study (2 marks)
 - iv) Provide three objectives of the study (3 marks)
 - v) Provide a clear justification of the study (4 marks)
 - vi) Describe an appropriate research design of the study (5 marks)
- b) Differentiate between research methods and research methodology (2 marks)
- c) State and explain three characteristics of a scientific research (6 marks)

SECTION B: ANSWER ANY OTHER TWO QUESTIONS

QUESTION TWO (20 MARKS)

- a) Write short notes on the following types of research (8 marks)
- i) Qualitative and quantitative research
 - ii) Descriptive and analytical research
 - iii) Applied versus fundamental research
 - iv) Conceptual and empirical research
- b) Define research ethics and discuss the importance of research ethics. (7 marks)

QUESTION THREE (20 MARKS)

- a) State and explain five sources of research ideas to a prospective researcher. (5 marks)
- b) Explain the scope of a literature review. (4 marks)
- c) Giving examples, discuss probability and non-probability sampling. (6 marks)

QUESTION FOUR (20 MARKS)

Based on the attached publication by Ndunda et al., 2016, answer the following questions

- i) Outline the Research problem being addressed by the researcher (6 marks)
- ii) Provide the research gap identified by the researcher before commencing with the research. (3 marks)
- iii) Provide a brief summary of the methods followed to address the problem. (6 marks)

QUESTION FIVE (20 MARKS)

Based on the attached publication by Okello et al., 2012, answer the following questions

- i) Outline the Research problem being addressed by the researcher (6 marks)
- ii) Provide the research gap identified by the researcher before commencing with the research. (3 marks)
- iii) Provide a brief summary of the methods followed to address the problem. (6 marks)