



MACHAKOS UNIVERSITY

University Examinations 2020/2021 Academic Year

SCHOOL OF PURE AND APPLIED SCIENCES

DEPARTMENT OF MATHEMATICS AND STATISTICS

FIRST YEAR FIRST SEMESTER EXAMINATION FOR

MASTER OF SCIENCE IN MATHEMATICAL MODELING AND COMPUTATION

SMA 805: RESEARCH METHODS FOR MATHEMATICS

DATE: 25/2/2021

TIME: 2.00-5.00 PM

INSTRUCTIONS:

Answer Question **ONE** which is compulsory and any other **TWO** Questions

QUESTION ONE (30 MARKS)

- a) Explain briefly the term Research including its two main categories. (2 marks)
- b) Describe, giving examples, three conditions that must be fulfilled for a problem to require research (6 marks)
- c) Explain briefly the structure of a good introduction (6 marks)
- d) Explain briefly the three functions of a proposal. (6 marks)
- e) Outline the uses of a literature review (6 marks)
- f) Explain briefly the two main functions of a research design. (4 marks)

QUESTION TWO (15 MARKS)

- a) Outline and explain briefly the components of a research proposal. (10 marks)
- b) Explain briefly five ways in which an introduction can be done. (5 marks)

QUESTION THREE (15 MARKS)

- a) Outline and explain briefly the major components of a research report. (10 marks)
- b) Briefly explain the importance of an abstract and differentiate between the two main types of abstracts. (5 marks)

QUESTION FOUR (15 MARKS)

- a) Differentiate between an aim and an objective. (2 marks)
- b) Explain briefly two possible sources of literature for reviewing. (2 marks)
- c) “Objectives should be S.M.A.R.T”. Explain. (5 marks)
- d) A persuasive statement of the problem is usually written in three parts. Explain briefly these three parts. (6 marks)

QUESTION FIVE (15 MARKS)

- a) Outline any five questions that you need to consider when critiquing a research article. (5 marks)
- b) Research misconduct is defined as fabrication, falsification or plagiarism in proposing, performing or reviewing research, or in reporting research results. Explain. (6 marks)
- c) Outline any four professional responsibilities from the ‘Singapore Statement on Research Integrity’. (4 marks)