



# MACHAKOS UNIVERSITY

University Examinations for 2022/2023 Academic Year

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FOURTH YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR  
BACHELOR OF SCIENCE (ELECTRICAL AND ELECTRONICS ENGINEERING)

BACHELOR OF SCIENCE (MECHANICAL ENGINEERING)

BACHELOR OF SCIENCE (CIVIL ENGINEERING)

ECU 400: RESEARCH METHODOLOGY

DATE:

TIME:

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## INSTRUCTIONS

- This paper comprises of five questions. Answer **three** questions
- Question one is **compulsory** and carry's 30 marks
- Use well labelled and neat diagrams where applicable.
- Answer any other **two** questions

### QUESTION ONE (COMPULSORY) (30 MARKS)

- Differentiate between research techniques and research methods. (2 Marks)
- Outline and discuss at least four challenges faced by researchers in Kenya. (8 Marks)
- Briefly discuss five types of research designs. (10 Marks)
- With help of their sub classes where applicable. Discuss the two main basic approaches to research. (10 Marks)

### QUESTION TWO (20 MARKS)

You have been tasked to research a particular engineering problem by your professor. With the help of a sketch/flow chart discuss how you intend to carry out your research process

### QUESTION THREE (20 MARKS)

- Literature review is one of the key focus areas when conducting research. What are some of the analytical features of a literature review and its key purposes? (10 Marks)
- Discuss at least five types of literature reviews. (10 Marks)

#### **QUESTION FOUR (20 MARKS)**

The most important chapter in any engineering research write up is the chapter on Methodology, it enhances the credibility or lack thereof of the research output. Explain the Importance of a good methodology section in obtaining and analyzing your results. Also discuss what a good methodology section entails. (20 Marks)

#### **QUESTION FIVE (20 MARKS)**

- a) Explain three key issues to avoid when discussing the results of your final year project.  
(6 Marks)
- b) The goal of a research proposal is twofold: to present and justify the need to study a research problem and to present the practical ways in which the proposed study should be conducted. Discuss the most important sections that must be included in a good research proposal.  
(14 Marks)