



MACHAKOS UNIVERSITY

University Examination 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FOURTH YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

BACHELOR OF SCIENCE (CIVIL ENGINEERING)

ECU 400: RESEARCH METHODOLOGY

DATE: 25/7/2019

TIME: 2.00-4.00 PM

INSTRUCTIONS: Answer questions **ONE** and any other **TWO** questions.

Literature

QUESTION ONE (15 MARKS)

- a) Below is a list of activities that should be carried out in a certain proposed research project. Prepare a logical Gantt chart time-plan for the project and determine the shortest time period the project will take. Activity duration in months is shown in parenthesis.
- Theoretical model formulation (9), Evaluation of theoretical model (5), Selection of study site (1), Preliminary site visits (2), Field instrumentation (2), Geophysical survey (2), Desktop study (3), Field experiments (2), Design of field monitoring system (1), Field data analysis (4), Finalize and submit report for publication (1)

The activities are to be carried out as described below

Geophysical survey succeeds selection of study site and should be completed before design of field monitoring system can start. Field experiments and field data analysis can be done concurrently and can only start after field instrumentation is completed. Field data analysis must start before evaluation of theoretical model. Submission of final report can be done after evaluation of theoretical model is completed. Literature review and desktop study can be started at the same time. Desktop study and preliminary site visits can run concurrently,

but the former must start first. Selection of study site can only start after preliminary site visits is started. (10 marks)

b) Briefly describe the following components of a research proposal

- i. Title
- ii. Table of contents
- iii. Introduction and literature review
- iv. Problem statement
- v. Objectives
- vi. Methodology
- vii. Time plan
- viii. Budget
- ix. References
- x. Appendices

(10 marks)

QUESTION TWO (15 MARKS)

Given a research topic, describe how you will carry out and manage literature review process

(15 marks)

QUESTION THREE (15 MARKS)

Define and describe the following forms of research presentation, highlighting the two advantages and disadvantages of each:

- a) Poster presentation
- b) Oral presentation

(15 marks)

QUESTION FOUR (15 MARKS)

You carried out a research in a certain city and obtained the data in Table Q1

Table Q1

Time	Power Consumption (x 1000 kW)	
	Residential area	Industrial area
00:00	20	28
02:00	15	22
04:00	13	22
06:00	18	38
08:00	46	51
10:00	51	52
12:00	41	52
14:00	52	50
16:00	65	41
18:00	64	48
20:00	51	45
22:00	35	38
00:00	20	28

Write a brief report consisting of the following components

- a) Title
- b) Problem statement
- c) Objectives
- d) Results
- e) Discussion and conclusion (15 marks)

QUESTION FIVE (15 MARKS)

Describe the relationship between the project title, the objectives, the conclusions & recommendations. (15 marks)