



(University of Choice)

**MASINDE MULIRO UNIVERSITY OF
SCIENCE AND TECHNOLOGY
(MMUST)**

MAIN CAMPUS

**UNIVERSITY EXAMINATIONS
2021/2022 ACADEMIC YEAR**

THIRD YEAR FIRST SEMESTER EXAMINATIONS

**FOR THE DIPLOMA
IN
ELECTRICAL AND ELECTRONICS ENGINEERING**

COURSE CODE: DEE 081

COURSE TITLE: ENGINEERING MATHEMATICS V

DATE: Friday 22nd April, 2022

TIME: 8.00A.m – 11.00 A.m

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS.
QUESTION ONE CARRIES 30 MARKS AND ALL OTHERS 20 MARKS EACH.

TIME: 3 Hours

MMUST observes ZERO tolerance to examination cheating

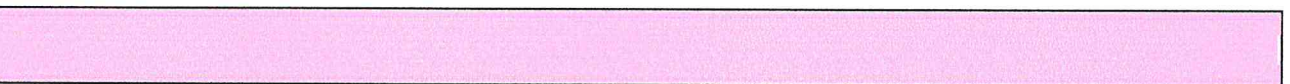
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ENGINEERING MATHEMATICS V

MASINDE MULIRO UNIVERSITY OF SCIENCE & TECHNOLOGY

END OF FIRST SEMESTER 2022 REGULAR EXAMINATION

SCHOOL	: ENGINEERING & BUILT ENVIRONMENT
DEPARTMENT	: ELECTRICAL & COMMUNICATION ENGINEERING
UNIT CODE	: DEE 081
UNIT TITLE	: ENGINEERING MATHEMATICS
TIME	: 3HOURS



INSTRUCTIONS: Answer ALL Questions in Section A and THREE

Questions in Section B

SECTION A

Question One

a)	research.	Briefly explain the meaning of the term statistics as applied in health (2marks)
b)	Explain FOUR main uses of statistics in research.	(8marks)

Question Two

a)	Using relevant examples, differentiate between mean and median as measure of central tendency explaining where one can be preferred over the other. (2marks)
b)	The gross salary earnings of the engineering workers in a consultancy firm expressed in thousands of shillings are given by;

30	38	40
28	37	48
42	32	60
58	44	72
41	43	51



- Calculate the average earnings of the engineering workers in the consultancy firm. (2marks)
- Find the median salary of the workers. (2marks)
- If the consultancy firm is a private one and the workers are agitating for a salary increase, which of the two values calculated in (i) and (ii) better represent their arguments in the public? Explain your choice. (4marks)

Question Three

- Using relevant examples differentiate
- a) parametric tests and non-parametric tests. (4marks)
- b) With reference to the conditions of the use of the test differentiate between F-test for goodness of fit and F-test for independence. (6marks)

Question Four

- a) List any FOUR types of presentation plots in statistics for health. (4marks)
- b) Highlight the essential requirements of presentation of tables and charts in research. (6marks)

SECTION B

Question Five

- a) Explain the importance of probability in the research process. (2marks)
- An Engineering student at MMUST wanted to study factors that influence the engineers work turnover in the rural firms. It is established that 10 firms in a rural based county of 60 firms have been notorious in the engineers work turnover in the past two years.
- b) i) Calculate the ration of firms notorious in the engineers' work turnover to the total number of firms in the county. (2marks)
- ii) What is the target population of the study? (2marks)
- iii) Estimate the minimum sample size of the study to give rich

Information for the study. Explain your answer. (4marks)

- c) The performance in statistics for MMUST students in ELECTRICAL department was found to be normally distributed with mean of 60 marks and standard deviation of 5 marks.
- Write a probability density function for the distribution of the marks. (4marks)
 - Find the percentage of the students who scored between 50 and 75 marks. (6marks)

Question Six

The following table represents the number of boys and the number of girls who choose each of the given possible answers in an item. On an attitude test in a questionnaire.

	Strongly Agree	Agree	Indifferent	Disagree	Strongly Disagree
Boys	20	25	5	20	5
Girls	5	10	0	10	10

- a) i) What is the total number of respondents to the item? (2marks)
- ii) Test at 95% whether there was significant sex difference in attitude to the item. (10marks)
- b) i) Differentiate between null hypothesis and alternative hypothesis (4marks)
- ii) State the null hypothesis of the responses to the table. (4marks)

Question Seven

Punctuality of patients in keeping appointment is of interest to research team. In a study of patient flow through the office of a private doctor, it was found that a sample of 35 patients were 17.2 minutes late for appointment on average. Previous research had shown that the standard deviation is 8 minutes.

- a) Construct the 95% confidence interval for the time of patient's appointment. (15marks)
- b) Using the confidence interval construction in (a) examine the significance of the lateness among patients during the appointment. (5marks)