



KAIMOSI FRIENDS UNIVERSITY

THIRD YEAR SECOND SEMESTER UNIVERSITY EXAMINATIONS

2025/2026 ACADEMIC YEAR

SPECIAL EXAMINATIONS

FOR THE DEGREE OF BACHELOR OF COMMERCE

COURSE TITLE: MANAGERIAL STATISTICS

COURSE CODE: BCB 318

DAY/DATE: 19/06/26

TIME: 12:00 PM – 02:00 PM

INSTRUCTIONS TO STUDENTS

1. Answer **QUESTION ONE** and **ANY OTHER TWO** from the choices given.
2. Phones, smart watches, ear phones or any other unauthorized digital and AI gadgets and applications are **not allowed** in the examination room.
3. Answer all questions in the exam answer booklet provided.
4. Do not write on this question paper.
5. All KAFU examination rules and regulations apply.
6. DURATION OF EXAMINATION: **TWO (2) HOURS**
7. Show all your workings and Use 5% level of significance unless stated otherwise
KAFU observes ZERO tolerance to examination cheating. *This paper consists of THREE printed pages. Please turn over.*

QUESTION ONE (COMPULSORY) (30 MARKS)

a) Explain **five reasons for studying sampling theory in business research.** (5 marks)

b) Differentiate between:

i. Point estimate and interval estimate

ii. Correlation and regression (4 marks)

c) State **four characteristics of the t-distribution.** (4 marks)

d) The probability that a customer defaults on a loan is **0.1**.

If 6 customers are selected at random, find the probability that:

i. None will default

ii. At least one will default (6 marks)

e) The mean weight of packages handled by a courier company is **12 kg** with a standard deviation of **2 kg**.

Assuming normal distribution and 2,000 packages:

i. How many weigh more than 14 kg?

ii. How many weigh between 10 kg and 14 kg? (6 marks)

f) Outline **five uses of statistical quality control in production.** (5 marks)

QUESTION TWO (20 MARKS)

a) Explain the **difference between Z-test, t-test and F-test.** (6 marks)

b) A sample of 36 observations has a mean of 25 and standard deviation of 4.

Test the hypothesis that the population mean is 27 at 5% level of significance. (14 marks)

QUESTION THREE (20 MARKS)

a) Define **simple linear regression** and state its assumptions. (6 marks)

b) The following data show advertising expenditure and sales:

Advertising (KSh '000) 2 4 6 8 10

Sales (KSh '000) 40 44 46 52 58

i. Fit a regression line

ii. Estimate sales when advertising is KSh 7,000

iii. Compute the correlation coefficient (14 marks)

QUESTION FOUR (20 MARKS)

A factory monitors the number of defective items per day:

12, 9, 15, 10, 14, 8, 11, 13

a) Construct a **control chart for the process mean**. (10 marks)

b) Comment on whether the process is under control. (4 marks)

c) Explain the importance of control charts in quality management. (6 marks)

QUESTION FIVE (20 MARKS)

a) State **four assumptions of the chi-square test**. (4 marks)

b) A goodness-of-fit test is carried out to determine whether customer arrivals follow a Poisson A company, Unilever, is comparing the productivity of workers in two different factories: Factory A and Factory B. Management wants to determine whether there is a significant difference in the average daily output of workers in the two factories.

A random sample of workers is selected from each factory, and the following information is obtained:

Statistic	Factory A	Factory B
Sample size (n)	50	60
Sample mean (units/day)	120	115
Population standard deviation (σ)	20	25

Required:

- State the null and alternative hypotheses to test whether there is a difference in mean productivity. (4 marks)
- At a 5% level of significance, perform a two-sample Z-test to determine whether there is a significant difference between the two factories. (12 marks)
- State the decision rule and conclusion. (4 marks)