



TECHNICAL UNIVERSITY OF MOMBASA

School of Business

Department of Accounting & Finance

UNIVERSITY EXAMINATION FOR:

CERTIFICATE IN BUSINESS MANAGEMENT

CERTIFICATE IN BUSINESS ADMINISTRATION

CERTIFICATE IN PROCUREMENT AND MATERIAL MANAGEMENT

CERTIFICATE IN HUMAN RESOURCE MANAGEMENT

CERTIFICATE IN FRONT OFFICE AND OPERATIONS

CERTIFICATE IN SALES AND MARKETING

BAC 1103: BUSINESS CALCULATIONS

SPECIAL / SUPPLEMENTARY EXAMINATION

SERIES: MARCH 2025

TIME: 2 HOURS

DATE: Pick Date Aug 2024

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of **FIVE** questions. Attempt question ONE (Compulsory) and any other **TWO** questions.

Do not write on the question paper.

Question ONE

a) Given the following matrices:

$$A = \begin{pmatrix} 1 & 3 \\ 2 & 2 \end{pmatrix} \quad B = \begin{pmatrix} 2 & 1 \\ 1 & 1 \end{pmatrix} \quad C = \begin{pmatrix} 1 & 2 & 0 \\ 4 & 1 & 3 \end{pmatrix}$$

Find:

i. $A + B$ ii. $A.C$ iii. $B. A^T$

ii. Show that $AB \neq BA$

(12 Marks)

b) Find the Inverse of $\begin{pmatrix} 4 & -7 & 6 \\ -2 & 4 & 0 \\ 5 & 7 & -4 \end{pmatrix}$ (8 Marks)

c) Solve the system of linear equations using matrices.

$$x + y + z = 6$$

$$2x - 3y + 4z = 8$$

$$3x - 2y + 2z = 5$$

(10 Marks)

Question TWO

A survey of 500 pupils taking the early childhood skills of Reading, Writing and Arithmetic revealed the following number of pupils who excelled in various skills:

Reading	329	Reading and writing	83
Writing	186	Reading and Arithmetic	217
Arithmetic	295	Writing and Arithmetic	63

Required:

- A Venn diagram for the above information (7 Marks)
- The number of pupils who excelled in all the skills (3 Marks)
- The number of pupils who excelled in two skills only (4 Marks)
- The number of pupils who excelled in Reading or Arithmetic but not both (3 Marks)
- The number of pupils who excelled in Arithmetic but not writing (3 Marks)

Question THREE

- John wishes to invest 1,000,000 for four years at 12% interest rate per annum
 - Calculate the amount of interest he will receive using simple interest. (4 marks)
 - Calculate the total amount he will receive the four years; if he had invested in a fixed account earning a compound interest of 12% per year. (6 marks)
- Three sons: John, James and Jones shared their father's inheritance at a ratio of 3:1:2. If James got 5,000,000.
 - Calculate the amount John and Jones got. (6 marks)
 - Find the total amount of inheritance. (4 marks)

Question FOUR

- a) Solve the following quadratic:
- $4x^2 - x = 3$ (4 marks)
 - $3x^2 - 7 + 2 = 0$ (4 marks)
- b) Solve the following simultaneous equation:
- $$4x + 3y = 7$$
- $$3x - 2y = 9$$
- (6 marks)
- c) 30 men working for 8 hours a day can finish a job in 50 days. How many hours will 20 men require to work every day in order to finish the job in 40 days. (6 marks)

Question FIVE

- a) The table below shows the salaries earned by 104 employees of Excel Ltd, in the month of April 2021:

Monthly Salary sh. "000"	No. of employees
10 and under 15	10
15 and under 20	34
20 and under 25	42
25 and under 30	6
30 and under 35	6
35 and under 40	4
40 and under 50	2

Required:

- The mean monthly salary (3 Marks)
 - The median monthly salary (4 Marks)
 - The standard deviation of the monthly salary (4 Marks)
 - The coefficient of variation of the monthly salary (2 Marks)
- b) The following data was extracted from the books of Adan Ltd pertaining to his monthly sales in various business branches. Present this information using a component bar chart – amount in Kshs. '000' (7 Marks)

District	Mombasa	Nairobi	Kisumu	Eldoret
Yr. 2010	829	1070	108	313
Yr. 2011	2670	2443	274	615