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University Examinations 2022/2023

FIRST YEAR, FIRST SEMESTER SPECIAL/SUPPLEMENTARY EXAMINATION FOR THE
CERTIFICATE IN BUSINESS ADMINISTRATION

SMB 2200: MATHEMATICS FOR BUSINESS MANAGERS

DATE: AUGUST 2023

TIME: 2 HOURS

INSTRUCTIONS: *Answer question one and any other two questions*

QUESTION ONE (30MARKS)

- a) Given that A is a set of positive odd numbers less than 10 and B is a set of positive even numbers less than 10, write down the members of: (4 Marks)
- i) A
 - ii) B
 - iii) $A \cup B$
 - iv) $A \cap B$
- b) Differentiate between a finite and an infinite set. (2 marks)
- c) Sketch the graph of the linear function $y = 3x - 4$ (3 marks)
- d) Solve the simultaneous equations using any suitable method (3 marks)
- $$10x + 2y = 48$$
- $$5x + 10y = 30$$
- e) Solve the quadratic equation using any suitable method. (3 marks)
- $$x^2 - 9x + 18 = 0$$
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- f) Given that the cost of producing a number of television sets by a certain manufacturing company is represented by the equation $C = 500 + 0.5N$, where cost in dollars is C and N is the number of television sets.
- What is the slope of the function? (1 mark)
 - What is the cost C of production when $N = 150$? (2 marks)
 - How many television sets N can be produced by a cost of 10,000 dollars? (2 marks)
- g) Differentiate between a sequence and a series and give an example. (4 marks)
- h) Find the interest rate on sh60,000 to accrue to sh 180,000 for a period of 3 years on simple interest. (3 marks)
- i) Given the data;

127,101,142,147,145,172,159,161.

Calculate the mean of the data. (3 marks)

QUESTION TWO (10 MARKS)

- a) The 6th term of an AP is 24 and the 9th term is 36 .Find;
- the first term and common difference (3 marks)
 - the sum of the first fourteen terms (2 marks)
- b) A businessman deposited sh12000 in a savings account.What will be the amount after 3 years at a rate of 10% p.a compound interest. (3 marks)
- c) Define a set and give an example. (2 marks)

QUESTION THREE (10 MARKS)

- a) Solve the linear equation.

$$\frac{x+1}{3} + \frac{x-1}{2} = \frac{3}{2} \quad (4\text{marks})$$

- b) The supply of cooking oil is given by the function $Q = 4 + \frac{1}{2}P$ where Q is the quantity and P is the price of the cooking oil.
- What is the quantity of the cooking oil supplied at zero price. (2 marks)
 - What is the price of cooking oil supplied when the quantity supplied is 10 (2 marks)
- c) Find the number of terms in the sequence; (2 marks)
- 4, 7, 10, ..., 40.



QUESTION FOUR (10 MARKS)

The frequency distribution below represents the number of kilograms of Camel meat sold in butchery outlet

Mass(kg)	1-5	6-10	11-15	16-20	21-25	26-30
Frequency	3	2	5	7	2	1

- a) Calculate the mean mass. (4 marks)
- b) Calculate the median mass (4 marks)
- c) State;
 - i. the modal class (1 mark)
 - ii. the modal frequency (1 mark)

QUESTIONS FIVE (10 MARKS)

- a) The cost of 5 skirts and 3 blouses is $h. 1750$. Murimi bought 3 of the skirts and 1 of the blouses for $sh. 850$. Find the cost of each item. (3 Marks)
- b) Jack deposited $sh. 4500$ in a bank which paid compound interest of 12% per annum. Calculate the amount after 2 years. (3 marks)
- c) State the y and x intercept in the linear function $y = 4x + 1$ (2 marks)

