



TECHNICAL UNIVERSITY OF MOMBASA
Faculty of Business & Social Studies

DEPARTMENT OF BUSINESS STUDIES

CERTIFICATE IN BUSINESS MANAGEMENT
CERTIFICATE IN STORES MANAGEMENT

BAC 1103: BUSINESS CALCULATIONS

SUPPLEMENTARY/SPECIAL EXAMINATIONS

SERIES: OCTOBER 2014

TIME: 2 HOURS

INSTRUCTIONS:

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

This paper consists of Three printed pages.

QUESTION 1 (Compulsory)

a) Given $a = -3$ $b = 2$ $c = -2$

Evaluate:

i) $2a^2 + 3b^2 - 4ac$ **(4 marks)**

ii) $\sqrt{2a - 3b + abc}$ **(4 marks)**

b) Determine the compound interest and simple interest earned at the end of three years at a rate of 10% per year when the principal amount is 60,000. **(6 marks)**

c) Determine the sum of the following: upto the 18th term:

i) $200 + 250 + 300 + \dots$ **(5 marks)**

ii) $8 + 16 + 32 + 64 \dots$ **(5 marks)**

d) Evaluate $\frac{2}{3}$ of $600(13 - 30 \div 15)$ **(3 marks)**

e) Mary sold an item at Ksh. 600 after giving a commission of 5%. If she made a profit of sh. 100 even after giving that commission. What was the purchasing price of the item by Mary. **(3 marks)**

QUESTION 2

a) Determine the difference between the reciprocals of 5 and $\frac{1}{4}$. **(2 marks)**

b) i) Determine the total surface area (of inside and outside surface) of a box measuring 6m long 3m wide and 4m height (closed box). **(6 marks)**

ii) What would be the amount of the water that would occupy upto $\frac{3}{4}$ of the height of the tank in b (i). **(4 marks)**

c) A goat is tied with a rope to a fixed peg in an open grass area.

Determine the maximum area of grazing if the rope length was $\frac{22}{7}$ metres. **(4 marks)**

d) An amount of Ksh. 180,000 was shared among three students in the ration 1:2:3.

Determine the amount each got. **(4 marks)**

QUESTION 3

- a) A machine cost Ksh. 160,000 depreciated to Ksh. 100,000 in 4 years. Use straight line depreciation method to determine the value of the machine after six years. **(4 marks)**
- b) Solve:
- i) $3a \div 9 = 27$ **(2 marks)**
- ii) $2x + 3 - 4x = 19$ **(3 marks)**
- c) Evaluate $\frac{1}{20} + \frac{1}{\frac{4}{3}} + \frac{8}{\frac{3}{2}}$ **(4 marks)**
- d) The cross-sectional area of cylinder is a circular base of radius 70cm. determine the volume of a liquid which is 60cm in height. **(3 marks)**
- e) A piece of land bought at Ksh. 500,000 depreciated at rate of 6% per year on a reducing balance. Determine the value of the land after 6 years. **(4 marks)**

QUESTION 4

- a) In a school of students 80% are male and 20% female 20% of these men are hardworking while 60% of female students are hardworking. If the total number of hardworking students was 700. Determine the total number of students in the school. **(6 marks)**
- b) A company started production of 1800 cars per month in 1984. It planned to increase production annually by 100 units.
- i) Determine the number of units produced in 1994. **(6 marks)**
- ii) Determine the total number of units produced by the company after 21 years of production. **(8 marks)**

QUESTION 5

- a) What single amount of money to be invested now so as to equal to Ksh. 600,000 two years from at a rate of 5% per annum. **(6 marks)**
- b) A machine valued at Ksh. 200,000 reduced value to Ksh. 160,000 in 4 years. Use straight method to determine the value of the machine in 3 years time. **(6 marks)**
- c) Determine the depreciation rate. **(4 marks)**
- d) The data below relates to conversion of currency of some countries.
1 £ is equivalent to Ksh. 120
Ksh. 10 is equivalent to T sh. 90
- Juma had £1000 changed them to Tanzanian shilling and spent half of the money.
Determine
- i) The amount money remaining in Tsh. **(4 marks)**