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 ¼ .   **(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 $\dfrac{22}{7}$ 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 $\dfrac{1}{20} + \dfrac{1}{4/3} + \dfrac{8}{3/2}$ **(4 marks)**

d) The crossectional 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)**