BCOM 161

CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATIONS

**FIRST YEAR EXAMINATION FOR THE AWARD OF DEGREE
OF BACHELOR OF COMMERCE**

BCOM 161: BUSINESS MATHEMATICS I

STREAMS: BCOM (ODEL)   **TIME: 2 HOURS**

DAY/DATE: WEDNESDAY 11/4/2018   **11.30 A.M. – 1.30 P.M.**

INSTRUCTION: ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS

Q1.   (a)   Using suitable examples, distinguish between simple interest and compound interest.   [5 marks]

      (b)   Solve the following simultaneous equation

$$-4x - 2y = 8$$
$$2x - y = 2$$
                                          [5 marks]

      (c)   Solve the following quadratic equation $2x^2 + 7x - 15 = 0$ [5 marks]

      (d)   Using suitable examples explain the difference between a permutation and a combination.   [5 marks]

      (e)   A survey of 700 residents of a small village near Lake Victoria indicated that 310 ateOmena, 350 ate Tilapia and 150 ate Mbuta. 80 ate Tilapia and Mbuta, 60 ate Omena and Tilapia, 30 ate Omena and Mbuta while 10 ate all the three types of fish

         Required:

         (i)   Represent the data in a Venn diagram

         (ii)   The number of residents who ate

            (a)   Exactly one type of fish

            (b)   None of the fish   [10 marks]

2.   (a)   Four men and their wives sit on a bench. In how many different ways can they be arranged if:

(i)   There is no restriction

(ii)   Each man sits next to his wife   [10 marks]

(b)   A committee of 15 members is to be formed from 10 men, 8 women and 9 youth. If the ratio of men to women to youth in the committee is to be 2:2:1 respectively, determine the number of different ways by which the committee can be formed.

[10 marks]

3.   (a)   Explain the difference between arithmetic progression and geometric progression.

[4 marks]

(b)   In an arithmetic progression (AP), the thirteenth term is 27 and the seventh term is three times the second term. Calculate the first term, the common difference and the sum of the first ten terms.   [8 marks]

(c)   The third term of a geometric progression is 10 and the sixth term is 80. Calculate the common ratio and the first term.   [8 marks]

4.   (a)   Using suitable examples, define an annuity.   [4 marks]

(b)   Omondideposited kshs.15,000 every year into a bank account that pays compound interest at the rate of 13.25%. Calculate the amount of funds in Omondi bank account at the end of 8 years.   [8 marks]

(c)   Calculate the first four terms of the expansion $\left(1 + \frac{1}{2}x\right)^{10}$ in ascending powers of x. Hence find the value of $(1.005)^{10}$ correct to five decimal places.[8 marks]