BABCOCK UNIVERSITY

DEPARTMENT OF BASIC SCIENCES

MID-SEMESTER EXAM

COURSE CODE: MATH 101 COURSE TITLE: GENERAL MATHEMATICS 1

LECTURER IN CHARGE: AKANBI BABATUNDE T.

TIME ALLOWED: 50 MINUTES DATE: NOVEMBER 10, 2015.

ATTEMPT ALL QUESTIONS

QUESTION ONE

(a) Let A and B be two arbitrary non empty sets. Use the anti-symmetric law to prove that $A - B = A \cap B^C$

(b) In a MATH 101 tutorial group of 50 students, 30 students study Nursing Science, 20 students study Medical Lab Science, while 5 students study neither Nursing Science nor Medical Lab Science. How many students study;

(i)Both Nursing Science and Medical Lab Science?

(ii)Nursing Science only?

(iii)Medical Lab Science only?

QUESTION TWO

Given a quadratic equation $ax^2 + bx + c = 0$, use the method of completing the square to show that the solution to the given equation is: $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

QUESTION THREE

(a)If the equation $x^2 + 3(k+3)x - \frac{9}{2}k = 0$ has equal roots, find the possible values of k.

(b)Determine the nature of roots for each of the following quadratic equations:

(i) $x^2 - 2x + 1 = 0$

(ii) $2x^2 - 3x + 4 = 0$

(iii) $x^2 + 4x - 2 = 0$