KABARAK UNIVERSITY

UNIVERSITY EXAMINATIONS

2009/2010 ACADEMIC YEAR

FOR THE CERTIFICATE OF BRIDGING MATHEMATICS

COURSE CODE: BMATH 002

COURSE TITLE: BASIC ALGEBRA

STREAM: BRIDGING MATHEMATICS

DAY: THURSDAY

TIME: 2.00 – 4.00 P.M.

DATE: 29/07/2010

INSTRUCTIONS:

1. Attempt question **ONE** and any other **TWO** questions.
2. Show your **workings** clearly.

PLEASE TURN OVER

Question (30MKS)

a) Approximate the values of 0.45……..and 0.3……. **(5mks)**

b) Calculate the sum of the series ; 1,-3/2, -4,……,-49 **(5mks)**

c) Given a quadratic equation $ax^2 + bx + c=0$, use the completing square method to deduce the quadratic formula hence evaluate $2x^2+5x+3=0$ **(8mks)**

d) a) Solve the equation; $9^{(3x -1/4)} \times 27^{(x - ½)} = 81^{½(4x + 1)}$ **(3mks)**

b) Simplify $\log_{10} 120 + \frac{1}{3}\log_{10}27 - 2\log_{10}6$. **(3mks)**

c) Factorize each of the following completely;

a. $4(x - y)^2 - (x - 3y)^2$ **(2mks)**

b. Factorize $a^2 - b^2$ hence use it to evaluate the following;

i) $187^2 - 87^2$

ii) $8.87^2 - 1.13^2$ **(4mks)**

QUESTION TWO (20MKS)

a) Find the quotients of the following equations;

i) $(3a^3 + 2a^2 + 1) \div (a + 1)$ **(3mks)**

ii) $(2y^2 - y - 10) \div (y + 2)$ **(3mks)**

b) Solve for x;

i) $X^4 - 20x + 64 = 0$ **(3mks)**

ii) $2x + \frac{1}{x} = 3$ **(3mks)**

iii) $4x^2 + 15x^2 = 4$ **(3mks)**

c) Evaluate the following

i. $9^{2x}=1$ **(2mks)**

ii. $4^x+2^{2x}=2$ **(3mks)**

QUESTION THREE (20MKS)

a) solve the following systems of equations;

i) $x-2y=1$ and $4y+2x=10$ **(3mks)**

ii) $0.5x+y=8$ and $1.5x-\frac{1}{3}y=4$ **(3mks)**

iii) $\text{Log}_x y=2$ and $xy=8$ **(3mks)**

b) Find the equation of a line that is perpendicular to y=3x-1, and passes through the point (0,2). **(3mks)**

c) Find the value of x for which $\begin{bmatrix} x & 2 \\ 5 & x-3 \end{bmatrix}$ is a singular matrix **(2mks)**

d) Solve; x+2y+3z=4

2x+3y+4z=5

3x+4y+5z=6 **(6mks)**

QUESTION FOUR (20MKS)

a) Find the number of ways in which letters of the word **TERRITORY** can be arraged. **(2mks)**

b) A committee of five is to be formed from seven women and five men. In how many ways can the members be chosen so as to include at most three men. **(5mks)**

c) Evaluate;

i) $\frac{(n+2)!}{(n+1)!}$ **(3mks)**

ii) ${}^{4}p_{x} = 12$ **(3mks)**

iii) $\log_x \frac{1}{8} + \log_2 x = 2$ **(3mks)**

iv) Use binomial to expand $\left(2+\frac{x}{2}\right)^8$ upto the term containing x^4. Hence estimate the value of $(1.98)^8$ to 4dps **(4mks)**

QUESTION FIVE (20MKS)

a) The first term of an A.P is 3. Find the common difference if the sum of the first 8 terms is twice the sum of the first 5 terms. **(5mks)**

b) If the second term of the G.P is 6 and the fifth term is -162. Find the first and the common ratio and the sum of the first ten terms. **(5mks)**

c) Solve;

i) $4^x - 2^{x+1} - 3 = 0$ **(5mks)**

ii) $9^{x+1} + 3^{2x+2} = 54$ **(5mks)**