



**KIBABII UNIVERSITY COLLEGE**

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**UNIVERSITY REGULAR EXAMINATIONS**

**2013 /2014 ACADEMIC YEAR**

**SEMESTER EXAMINATIONS**

**(MAIN EXAMINATION)**

**FOR THE DIPLOMA IN INFORMATION TECHNOLOGY**

**COURSE CODE:** DIT 063:

**COURSE TITLE:** BASIC MATHS EXAMS

**DATE:** 20<sup>TH</sup> AUGUST, 2014

**TIME:** 9:00A.M.-11:00A.M.

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**INSTRUCTIONS TO CANDIDATES:**

Attempt question **ONE (1)** and **ANY TWO (2)** other questions from section B.

## QUESTIONS

**Instructions to candidates: Answer all questions in section A**

### **SECTION A (24mks) and SECTION B (36mks)**

#### QUESTION # 1

- (a) Find the value of X that satisfy the equation below:

$$X^2 - 5x + 6 = 0 \quad (3\text{mks})$$

- (b) (i) show that  $x^0 = 1$  (3mks)

(iii) Find the values of  $(32)^{2/5}$  (2mks)

(ii) Given that  $\log_2 = 0.3010$  (3mks)

$$\text{Log}_3 = 0.4771$$

Find  $\log 72$

- (c) (i) Find the next three terms of : 1, 3, 5, 7, ..., .., ..  
(6mks)

- (d) The cost of the land in the year 2013 was 5,000,000.00. At the end of each year, the land value increases by 2%. What will be the value of the land by the end of the year 2015.  
(4mks)

- (e) Evaluate:

$${}_5P_3 \quad (3\text{mks})$$

### **SECTION B (36mks)**

#### QUESTION # 2

- (a) The 20<sup>th</sup> term of an arithmetic sequence is 60 and the 16<sup>th</sup> term is 20. Find the first term and the common difference. (5mks)
- (b) The first term of a G.P. is  $x+1$ . If the third term of the same sequence is  $(x+1)(x^2-2x+1)$   
Show that the second term is  $x^2-1$ . (5mks)

- (c) The 2<sup>nd</sup>, 4<sup>th</sup> and 7<sup>th</sup> terms of an A.P. are the first three consecutive terms of a G.P., if the common difference of the AP is 2. (8mks)

Find:

- i) the common ratio
- ii) The sum of the first eight terms of the G.P.

### QUESTION # 3

- (a) Find the value of x in

$$15^{2x-6} = 3^{2x-6} \quad (6\text{mks})$$

(b)  $2^{2x} + 3(2^x) - 4 = 0$  (6mks)

- (c) There are two competing financial institutions A and B. A offers a simple interest services to the clients and B offers a compound interest services to the clients given that the rates for the two institutions are the same. Lilian and Evans decided to deposit 10,000 each, in institution A and institution B respectively at the rate of 8% p.a. Find the difference in their accounts (6mks)

### QUESTION # 4

- (a) Find the x-intercept for the graph of each function given below:

(i)  $f(x) = x^2 + 2x - 3$  (3mks)

(ii)  $g(x) = x^2 + 2x - 1$  (3mks)

- (b) Given that  $\cos \theta = 4/5$  find:

(i)  $\cos^2 \theta + \sin^2 \theta$  (4mks)

(ii)  $\cos^2 \theta + \tan^2 \theta / 4 \sin \theta$  (2mks)

- (c) Convert the following :

(i)  $3/5^\circ$  to degrees (2mks)

(ii)  $720^\circ$  to radians (2mks)

QUESTION # 5

(a) John has 8 friends. In how many ways can he invite one or more of them to a dinner  
(4mks)

(b) (i) How many different signals can be made by 5 flags from 8 flags of different colors?  
(6mks)

(c) Show that :

(i)  $a^0=1$  (4mks)

(ii) find the values of X in  $9^{(2x-4)}=6^{(2x-4)}$  (4mks)