(Knowledge for Development)

KIBABII UNIVERSITY
(KIBU)

UNIVERSITY EXAMINATIONS

2019/2020 ACADEMIC YEAR

SPECIAL/SUPPLEMENTARY EXAMINATIONS

FIRST YEAR SECOND SEMESTER

FOR THE DIPLOMA IN
(INFORMATION TECHNOLOGY)

COURSE CODE: DIT 063

COURSE TITLE: BASIC MATHEMATICS

DATE: 16/02/2021   **TIME:** 8.00 A.M – 10.00 A.M.

INSTRUCTIONS

ANSWER QUESTIONS ONE and ANY OTHERTWO.

QUESTION ONE (COMPULSORY) [24 MARKS]

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

$X^2-5x+6=0$ [3 Marks]

(b) (i) show that $x^0=1$ [3Marks]

   (iii) Find the values of $(32)^{2/5}$ [2 Marks]

   (ii) Given that $\log_2=0.3010$ [3Marks]

           $\log_3=0.4771$

   Find $\log 72$

(c) (i) Find the next three terms of : $1,3,5,7,\_,\_,\_,$ [6 marks]

(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.

                                                                [4 Marks]

(e) Evaluate:

   $_5P_3$ [3 Marks]

QUESTION TWO [18 MARKS]

(a)   The 20th term of an arithmetic sequence is 60 and the 16th term is 20. Find the first term and the common difference.   [5 Marks]

(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.   [5 Marks]

(c) The 2nd, 4th and 7th terms of an A.P. are the first three consecutive terms of a G.P., if the common difference of the AP is 2.   [8 Marks]

Find:

   i)   the common ratio

   ii)   The sum of the first eight terms of the G.P.

QUESTION THREE [18 MARKS]

(a) Find the value of x in

   $15^{2x-6}=3^{2x-6}$ [6 Marks]

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

(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 [6Marks]

QUESTION FOUR [18 MARKS]

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

    (i) $f(x)=x^2+2x-3$ [3 Marks]

    (ii) $g(x)=x^2+2x-1$ [3 Marks]

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

    (i) $\cos^2\beta+\sin^2\beta$ [4 Marks]

    (ii) $\cos^2\beta+\tan\beta/4\sin\beta$ [2 Marks]

(c) Convert the following :

(i) $3/5\pi^c$ to degrees [2 Marks]

(ii) $720°$ to radians [2 Marks]

QUESTION FIVE [18 MARKS]

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

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

(c) Show that :

    (i) $a^0=1$ [4 Marks]

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