CHUKA   **UNIVERSITY**

UNIVERSITY EXAMINATION

RESIT/SUPPLEMENTARY / SPECIAL EXAMINATIONS EXAMINATION FOR THE AWARD OF DEGREE IN BACHELOR OF SCIENCE IN WILDLIFE ENTERPRISE AND MANAGEMENT

MATH 100: GENERAL MATHEMATICS

STREAMS: **TIME: 2 HOURS**

DAY/DATE: FRIDAY 05/11/2021   **2.30 P.M - 4.30 P.M.**

QUESTION ONE: (30 MARKS)

(a) Identify the property of real numbers being applied in each of the following
   (i)   5(2x + 7) = 10x + 35
   (ii)   24(2) = 2(24)
   (iii)   (7 + 8) + 2 = 7 + (8 + 2)

   (iv)   If 5+4=9 and 9= y, then 5+4=y   (4 marks)

(b) Define the following types of number system; give an example in each case.

   i.   Integers

   ii.   Rational numbers

   iii. Irrational numbers

   iv.   Complex numbers   (4 marks)

(c) (i) Find the simplest value of $243 \times (27)^{\frac{-4}{3}}$ without use of the calculator   (4 marks)

   (ii) Evaluate $log_5 16$ using a calculator   (2 marks)

(d) (i) The mean marks of 100 students was found to be 40. Later on it was discovered that a mark 53 was misread as 83. Find the correct mean mark   (3 marks)

   (ii) Find the standard deviation of the following data
   11, 8, 10, 15, 8, 12, 15, 11.

What information does your result tell us? (5 marks)

(e) (i) The function f is defined by $f(x) = x + \dfrac{3}{x}$. Evaluate f (-3) (3 marks)

(ii) Functions f and g are defined by $f: x \rightarrow 3x - 5$ and $g: x \rightarrow 3 - 2x$. Evaluate the composite function h given $h = g \circ f(1)$ (3 marks)

QUESTION TWO: (20 MARKS)

(a) Solve for x

(i) $x - \dfrac{1}{x} = 2\dfrac{1}{2}$ (4 marks)

(ii) $3^{2x-5} + 9^{x-2} = 4$ (4 marks)

(iii) $\log x = 1 - \log(x - 3)$ (4 marks)

(b) (i) Find the value of a, given that when $f(x) = x^5 + 4x^4 - 6x^2 + ax + 2$, is divided by x+2, the remainder is 6.
(4 marks)

(ii) Confirm your answer in (i) by long division method (4 marks)

QUESTION THREE: (20 MARKS)

(a) Find $\dfrac{dy}{dx}$ using method of choice or the indicated technique in the bracket

(i) $y = (x^3 - 5)(-2x^2 + 2)$ (Product rule) (3 marks)

(ii) $y = \dfrac{x^2 + 3x}{x+2}$ (Quotient rule) (4 marks)

(iii) $y = (2x^4 - 1)^2$ (Chain rule) (4 marks)

(b) The table below shows the marks scored by a Statistics class of Igembe Campus College

Marks	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80-89

Number of students	4	10	12	18	16	9	7	3	1

Calculate the

    i.   Mode mark   (3 marks)

    ii.   Median mark   (3 marks)

    iii.   Upper quartile   (3 marks)