MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY (MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS
2023/2024 ACADEMIC YEAR

Main exams

FIRST YEAR FIRST SEMESTER EXAMINATIONS

FOR THE DIPLOMA

OF

HUMAN NUTRITION AND DIETETICS

COURSE CODE: DND 054

cOURSE TITLE: BASIC MATHEMATICS

DATE: 13/12/2023   **TIME: 9-11AM**

INSTRUCTIONS TO CANDIDATES

Answer **ALL** questions in section A and B
Answer **ANY TWO** questions in section C

TIME: 2 Hour

Section A (Answer ALL questions. Each question carries 1 mark. Total 10 marks)

1. Which of the following is **NOTE** a method of solving a quadratic equation.

  A. Factor method.

  B. Completing square.

  C. Elimination method.

  D. Formula method.

2. Select the correct answer for x in $x^2-2x-8=0$.

  A. 4 or 2.

  B. 6 or 2.

  C. 2 or 1.

  D. 9 or 3.

3. Evaluate $2\sqrt{3} +10\sqrt{3}$.

  A. $10\sqrt{5}$.

  B. $12\sqrt{9}$.

  C. $12\sqrt{6}$.

  D. $12\sqrt{3}$.

4. What is the logarithm of 32 to base 2.

  A. $Log_5 32 =2$.

  B. $Log_2 32 =5$.

  C. $Log_3 32 =2$.

  D. $Log_5 2 =32$.

5. Given that log 2=0.3010 and log 3 =0.4771, evaluate log 6.

  A. 0.7865.

  B. 0.8976.

  C. 0.7781.

  D. 0.87245.

6. Solve for x in $3^x=81$.

  A. 6.

  B. 9.

  C. 8.

D. 1.

7. Convert 129^0 into radians.

    A. 3.252^c.

    B. 4.252^c.

    C. 1.252^c.

    D. 2.252^c.

8. Which one among the following is a correct representation of sine rule.

    A. a/sin A= b/sinB= c/sinC.

    B. a/sin A= b/sinB= c/sinC.

    C. a/sin A= b/sinB= c/sinC=R

    D. a/sin A= b/sinB= c/sinC=2R

9. A coin is tossed twice. Find the probability of getting a tail in both tosses.

    A. 3/4.

    B. 1/4.

    C. 1/2.

    D. 3/4.

10. Identify common difference if the sequence is given as -3,0,3………..54.

    A. -3.

    B. 2.

    C. 3.

    D. 0.

Section B (Answer <u>ALL</u> questions. Each question carries 4 marks. Total -20 marks)

11. Nutritionists recommend that no more than 30% of your daily value come from Fats, with Protein making up 10%-20% and Carbohydrates 50%-60%. Possible daily values for a diet might be 30% from Fats, 10% from Protein and 60% from Carbohydrates.

    a) Draw the pie chart representing percentages of each macronutrient intake. (4mks)

    b) The following table gives the number of kcal/gram. Use this information to find the number of grams of following macronutrients in a 2000 kcal/day diet with Daily Values as given above.

Macronutrient	kcal/gram
Fats	9
Carbohydrates	4
Protein	4

     i. Fats. (4mks)

     ii. Proteins. (4mks)

     iii. Carbohydrates. (4mks)

C. The number of grams of Fats, Carbohydrates and Protein found in a 2000 Kcal diet above is an example of quantitative data. Represented this data in a bar graph. (4mks)

Section C (Answer <u>ANY TWO</u> questions. Each question carries 15 marks. Total 30 marks)

9. One cup (50 grams) of Fiber One Caramel Delight contains 25 kcal from fat, and one cup of whole milk contains 70 kcal from Fat. Suppose your bowl of cereal contains x cups of One Caramel Delight and y cups of whole milk, and 175 kcal from Fat in total.

    a) Write down a linear equation which describes this situation. (2mk)

    b) Find the x intercept for the graph of this equation. (3mks)

    c) Find the y intercept for the graph of this equation. (2mks)

    d) Put the equation in slope intercept form. (3mks)

    e) Graph the linear equation. (5mks)

10. a) Give three examples of conjugate surds. (5mks)

    b) Solve for x in the equation below. (10mks)

$$\frac{3}{2x + 1.} + \frac{4}{5x - 1}$$

11. Use two examples to show application of remainder theorem in solving factorial equations. (15mks)