



(University of Choice)

# MASINDE MULIRO UNIVERSITY OF SCIENCE AND TECHNOLOGY

(MMUST)

MAIN CAMPUS

UNIVERSITY EXAMINATIONS

2023/2024 ACADEMIC YEAR

FIRST YEAR; FIRST TRIMESTER MAIN EXAMINATIONS

FOR THE DIPLOMA

IN

DIPLOMA OF HUMAN NUTRITION AND DIETETICS

COURSE CODE: DND ~~501~~ 051

COURSE TITLE: PHYSICAL SCIENCES

DATE: 7<sup>TH</sup> DECEMBER, 2023

TIME: 9.00 AM

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## INSTRUCTIONS TO CANDIDATES

This paper has three sections. Sections A, B and C.

Section A carries 10 Marks, Section B, 20 marks and section C, 30 marks.

Answer **ALL** questions in **SECTIONS A and B**, and answer **ONLY TWO** questions in **SECTION C**

Read additional instructions under various sections

TIME: **TWO HOURS**

*MMUST observes ZERO tolerance to examination cheating*

*This examination consists of five printed pages. Please turn over.*



## SECTION A: MULTIPLE CHOICE QUESTIONS

THIS SECTION CONTAINS TEN QUESTIONS. EACH QUESTION IS ONE MARK.  
(TOTAL 10 MARKS)

ANSWER ALL QUESTIONS IN THIS SECTION.

1. Which of the following statements describes the atoms and molecules that make up a rock
  - A. Are in constant motion
  - B. Move only when the rock is broken
  - C. Move only when the rock is melted
  - D. Never move because the rock is solid
2. A substance that contains only one type of atom is \_\_\_\_\_
  - A. Compound.
  - B. Element.
  - C. Heterogeneous mixture.
  - D. Homogeneous mixture.
3. How are atoms and elements related?
  - A. Elements can combine to form atoms.
  - B. Every element contains only one kind of atom.
  - C. All elements contain different types of atoms.
  - D. Elements are smaller than the atoms that compose them.
4. Suppose you examine an unknown liquid. You determine that it contains a single type of molecule. What is the liquid?
  - A. A pure substance.
  - B. A heterogeneous mixture.
  - C. A type of matter with a large mass.
  - D. A homogeneous mixture.
5. Mg (+2 charge) is a magnesium ion that has:
  - A. Two fewer electrons than a neutral magnesium atom.
  - B. Two fewer neutrons than a neutral magnesium atom.
  - C. Two more protons than a neutral magnesium atom.
  - D. An atomic mass greater than that of a neutral magnesium atom.



6. Most elements on the periodic table are \_\_\_\_\_
- A. Metalloids.
  - B. Metals.
  - C. Noble gases.
  - D. Nonmetals.
7. A car travels 22 km south, 12 km west, and 14 km north in half an hour. What is the final displacement of the car?
- A. 4 km
  - B. 7 km
  - C. 6 km
  - D. 8 km
8. Which of the following refers to the relative energy?
- A. Density of a substance compared to the density of water
  - B. Density of a substance compared to the density of the isotope
  - C. Density of a water compared to the density of the substance
  - D. None of the above
  - E. To produce a healthy infant, the mother should ideally have an adequate diet:
  - F. A. During the 9 months she carries the infant
  - G. B. During the last trimester when the baby is growing so rapidly
  - H. C. During the second and third trimesters of pregnancy
  - I. D. Beginning months before conception occurs and continuing through the period of lactation
  - J. To produce a healthy infant, the mother should ideally have an adequate diet:
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  - M. C. During the second and third trimesters of pregnancy
  - N. D. Beginning months before conception occurs and continuing through the period of lactation
9. The opposite of evaporation is
- A. Condensation
  - B. Convection
  - C. Radiation
  - D. conduction



10. The moving particles in an object have \_\_\_\_\_ energy

- A. Decreasing
- B. Kinetic
- C. Potential
- D. Increasing

**SECTION B: THIS SECTION CONTAINS FIVE QUESTIONS. EACH QUESTION CARRIES FOUR MARKS. ANSWER ALL QUESTIONS IN THIS SECTION**

11. Differentiate between the following terms atoms and elements

12. State any **FOUR** thermochemical reactions

13. Define the following words

- i. Joules (1 marks)
- ii. Solvent (1 marks)
- iii. Solute (1 marks)
- iv. Decantation (1 marks)

14. Describe the terms:

- i. Buoyant force (1 marks)
- ii. Matter (1 marks)

15. State the SI units of the following basic quantities of measurement

- i. Time (1 Mark)
- ii. Electric current (1 Mark)
- iii. Luminous Intensity (1 Mark)
- iv. Amount of substance (1 Mark)

**SECTION C CONTAINS THREE QUESTIONS. EACH QUESTION CARRIES 15 MARKS. ANSWER ANY TWO.**

16. Answer the following questions on water purification.

- i. Using a well labelled diagram on water purification (5 Marks)
- ii. explain the process of water purification (10 Marks)





17. Reduction, oxidation and redox reactions occur differently in terms of oxygen, hydrogen and electron transfer. Explain each reaction in terms of:

i. Oxygen (5 Marks)

ii. Hydrogen (5 Marks)

iii. Electron transfer (5 Marks)

18. Noble gases exist in the periodic table.

A. Discuss ANY SIX uses of noble gases (12 marks)

B. Describe ANY THREE general characteristics of noble gases (3 marks)

