# NAMIBIA UNIVERSITY
## OF SCIENCE AND TECHNOLOGY

**FACULTY OF HEALTH AND APPLIED SCIENCES**

**DEPARTMENT OF NATURAL AND APPLIED SCIENCES**

NAME……………………………………………………………………………………

ST. #: ……………………………………………………………………………………

QUALIFICATION(S): …………………………………(e.g. Bachelor of Computer Science)

MODE OF STUDY (FM/PM): …………………………………………………….

CLASS VENUE: ……………………………………………………………………

| | |
|---|---|
| **COURSE NAME:** | BASIC SCIENCE |
| **COURSE CODE:** | BSC410S |

**ASSIGNMENT: 1**
**DUE DATE:** 16th April 2021 @ 16H00
**MARKS:** 100

**BASIC SCIENCE ASSIGNMENT 1, SEMESTER 1, 2021**

**Course Coordinator:** **Mr. Petrus .T. Paulus**

**INSTRUCTIONS:**

1. Answer all the questions for this Assignment.
2. Use this page as your assignment cover page.
3. Your assignment **MUST be TYPED**.
4. The assignment MUST be Submitted on Campus (FHAS) by the due date & time.

**Section A: Biology  [30]**

**Question 1**                                                                                                [18]

1.1     Distinguish between Classification and Binomial Nomenclature.                      (4)


1.2     Explain why viruses are not part of the six kingdom system.                          (4)


1.3     How do protists and archaebacteria differ?                                                    (2)


1.4     In clear terms, discuss do monoecious plants differ from dioecious plants?      (4)


1.5     Both gymnosperms and angiosperms bear seeds.  Explain why are they classified differently.

                                                                                                                          (4)


**Question 2**                                                                                                [12]

2.1     Study the three diagrams below and identify the type of symbiotic relationship that each
        represent:

        2.1.1                                                                                                    (1)

2.1.2                                                                              (1)



2.1.3                                                                              (1)



3.2    Explain how seed dispersal by animals is an example of mutualism in some cases.    (2)

3.3    Explain why fungi are called heterotrophic organisms.                        (2)

3.4    The rhinoceros (rhino) is a protected animal in Namibia. It is an endangered or extinct animal, explain?                                                                              (3)

3.5    Describe two reasons why the rhinos are about to dies out completely.        (2)

**Section B: Chemistry [35]**

**QUESTION 3** [20]

3.1 All matter can be classified or identified as either pure substances or mixtures. Define the following terms:

    3.1.1 Substances (1)

    3.1.2 Mixtures (1)

3.2 Classify the following as solid, liquid or gas:

    3.2.1 Bromine (1)

    3.2.2 Aluminium foil (1)

    3.2.3 Mercury (1)

    3.2.4 Carbon monoxide (1)

3.3 Different substances within a mixture can be separated as they are not chemically bonded. Differentiate between the following techniques:

    3.3.1 Centrifugation (1)

    3.3.2 Evaporation (1)

    3.3.3 Separating funnel (1)

3.4 Differentiate between homogeneous and heterogenous mixtures. (2)

3.5 Reverse sublimation involves a change of gas to solid. Is this process a chemical or physical change? Defend you answer. (2)

3.6 Chemical reaction consists of reactants and products. Define these terms and identify reactant (s) and product (s) in the following chemical reaction: **Na *(s)* + Cl$_2$ *(g)* → NaCl *(s)*** (3)

3.7 When heated, calcium carbonate produces into calcium oxide and carbon dioxide in the following chemical reaction: **CaCO$_3$ → CaO + CO$_2$. Is this a synthesis or decomposition reaction?** Give a reason for your answer. (2)

3.8 When baking bread, the flour, yeast, and other ingredients used in creating the dough are heated. Is this an endothermic or exothermic reaction? Defend your answer. (2)

**QUESTION 4**                                                                         **[15]**

4.1     A quantitative measurement is mmeasured with accuracy, clarity, without ambiguity and
        reported as a value. Briefly define the word **value.**                        (1)

4.2     Temperature conversions are common calculations in chemistry. Perform the following
        calculations that involve temperature conversions.

        4.2.1   Body temperature is 37 °C.

                What is the equivalent in °F and Kelvin?                                (2)

        4.2.2   Pure iron melts at 1 811 K.

                What is the equivalent in °F and °C?                                    (2)

4.3     What are SI units for the following physical quantities:                        (1)

        4.3.1   Amount of substance

        4.3.2   Time


4.4     Perform the following conversions:                                             (2)

        4.4.1   2 00 mm to cm

        4.4.2   30 000 m to km

4.5     Express the following values standard form.                                     (2)

        4.5.1   $2.56 \times 10^{-3}$

        4.5.2   $2.56 \times 10^{3}$

4.6     Indicate how many *significant figures* there are in each of the following measured values. (1)

        4.6.1   200.0 g

        4.6.2   100, 230 L

4.7     Round off each of the following numbers to the indicated number of significant figures:   (1)

        4.7.1   0.0012837 cm to **three** significant figures

        4.7.2   0.0245 L to **two** significant figures

4.8     Perform the following mathematical operations:

        4.8.1   237.4 - 27.8 – 0.001                                                    (1)

        4.8.2   (0.270 × 0.012) / 0.17                                                  (1)

4.8.3   $3.5 \times 10^{6}$ / $1.00 \times 10^{-3}$                                     (1)

**Section C:  Physics [35]**

**Question 5** [10]

5.1 Differentiate between dependent and independent variables. (2)

5.2 draw a speed-time graph using the data in the table below. (5)

| Speed (m/s) | 0 | 2 | 4 | 6 | 8 | 8 | 8 | 8 | 8 | 8 |
|---|---|---|---|---|---|---|---|---|---|---|
| Time (s) | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

NOTE: all features must be labelled.

5.3 What can you say about the car's speed after four seconds? (3)

**Question 6** [15]

6.1 Give any three examples of non-renewable sources of energy. (3)

6.2 Briefly explain how energy is generated from coal. (5)
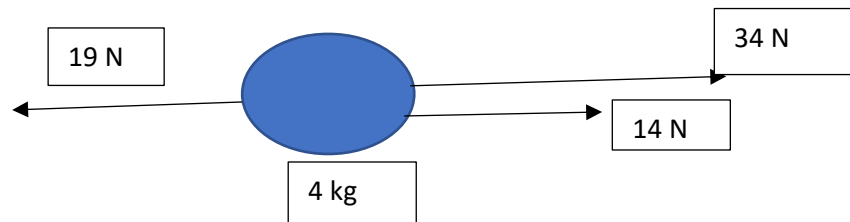
6.3 State the law of energy conservation. (2)

6.4 A cart at the top of a 0.3km hill has a mass of 420g. What is the cart's gravitational potential energy? Assuming that energy is conserved and there is no friction, calculate the cart's speed at the bottom of the hill. (5)

**Question 7** [10]

7.1 Find the resultant force of the diagram below and calculate the object's acceleration. (6)



7.2 Mention any four effects of forces. (4)

**TOTAL MARKS FOR ASSIGNMENT 01: 100 MARKS**

**END OF ASSIGNMENT 01**