NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH, NATURAL RESOURCES AND APPLIED SCIENCES

DEPARTMENT OF NATURAL RESOURCE SCIENCES

QUALIFICATION: BACHELOR OF NATURAL RESOURCE MANAGEMENT	
QUALIFICATION CODE: 07BNRS	**LEVEL:** 7
COURSE CODE: BNS511S	**COURSE NAME**: Biology for Natural Sciences
SESSION: JULY 2025	**PAPER:** THEORY (PAPER 1)
DURATION: 3 HOURS	**MARKS:** 120

SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Mrs. G.L. THERON
MODERATOR:	Mr. H TJIKURUNDA

INSTRUCTIONS
1. Answer ALL the questions. 2. Read all the questions carefully before answering. 3. Number the answers clearly

THIS QUESTION PAPER CONSISTS OF _4_ PAGES (Including this front page)

SECTION A: Short questions **[40 marks]**

QUESTION 1 **[15]**

Give the scientific term for each of the following:

1.1 An atom that has gained one or more electrons.
1.2 The process whereby a gas is cooled, the movement of the particles slows down, and eventually a liquid is formed.
1.3 The way *Amoeba* feeds - engulfing the entire organism it feeds on.
1.4 The type of lichens that grow as a thin crust on the surface of rocks.
1.5 The Phylum that *Amoeba* belongs to.
1.6 The structures used to anchor *Laminaria* (similar to the roots of plants)?
1.7 Fungal hyphae that lack cross-walls completely.
1.8 The Phylum that the field mushroom (*Agaricus*) belongs to.
1.9 The type of mixture where the particles are blended completely.
1.10 The process whereby a gas changes directly into a solid.
1.11 The collective name for the elements in group 8 on the Periodic table.
1.12 The Phylum (Protoctista) with TWO nuclei in each unicellular organism.
1.13 The organelle responsible for regulating the water content in cells.
1.14 The cell wall material (compound) found in Bacillariophyta
1.15 The type of lichens that grow as a thin crust on the surface of rocks.

QUESTION 2 **[10]**

Explain the difference between the following pairs of terms.

2.1 Chemosynthetic bacteria and Photosynthetic bacteria.
2.2 Antheridium and Archegonium
2.3 Isogametes and Oogametes
2.4 Ascocarp and Basidiocarp
2.5 Zoospores and Aplanospores

QUESTION 3 **[15]**

State whether each of the following statements is True **OR** False.

3.1 The kinetic theory of matter states that the higher the temperature, the lower the average kinetic energy of the particles.
3.2 Melting ice cubes on the stove is an example of an exothermic reaction.
3.3 Compounds can be decomposed by ordinary chemical means.
3.4 *Porphyra* and *Ulva* are typical examples of algae that have alternation of isomorphic generations.
3.5 Agar and Carrageenan are commercially important cell wall products harvested from Chlorophyta.
3.6 Mushrooms have chitin in their cell walls.
3.7 Members of the Phylum Phaeophyta are commonly known as brown algae.
3.8 Members of the Phylum Apicomplexa are multinucleated.
3.9 The granular cytoplasm of *Amoeba* is known as the ectoplasm, and is responsible for the formation of the pseudopodia.
3.10 During plasmogamy, the cytoplasm of two cells fuse.
3.11 The "bracket fungi" belong to the phylum Deuteromycota.
3.12 Fruticose lichens are small, fine fern-like bushes that are unattached to the substrate.
3.13 The horizontal above-ground hyphae found in some fungi are known as stolons.

3.14 The causal agent for malaria is *Plasmodium*.

3.15 Members of the phylum Apicomplexa have an infectious stage known as sporozoites.

SUB – TOTAL (40)

SECTION B: Longer questions **[80 marks]**

QUESTION 4 **[15]**

4.1 In **TABLE format,** explain 5 differences between mixtures and compounds. (5)

4.2 Give the scientific term for each of the following: (4)

4.2.1 The liquid in which the solution is made.

4.2.2 A solution that contains as much solute as can be dissolved at a particular temperature.

4.2.3 The process that separates an insoluble solid from a liquid.

4.2.4 Atoms of the same element, with the same number of protons, but different numbers of neutrons.

4.3 Indicate how many neutrons each of the following elements have. (3)

4.3.1 $^{131}I_{53}$

4.3.2 $^{201}Hg_{80}$

4.3.3 $^{207}Pb_{82}$

4.4 Indicate how many electrons each of the following elements has. (2)

4.4.1 $^{20}Ne_{10}^{3+}$

4.4.2 $^{226}Ra_{88}^{2-}$

4.5 Which is larger – a proton or an atom of Lead? (1)

QUESTION 5 **[15]**

5.1 Provide the correct term for each of the following statements: (4)

5.1.1 The protein shell of a virus, enclosing its genetic material.

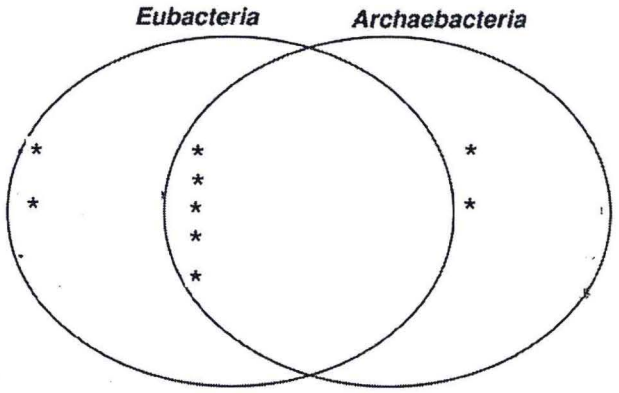
5.1.2 Archaebacteria found in salt pans.

5.1.3 The "polymer" found in the cell walls of bacteria.

5.1.4 The process by which bacteria reproduce.

5.2 Explain the difference between a virulent phage and a temperate phage. (2)

5.3 Re-draw the following diagram and complete it – to compare the Archaebacteria and the Eubacteria. (9)



QUESTION 6 **[10]**

6.1 Distinguish between the ecto- and endoplasm of the Rhizopoda. Explain **how** they differ and also name the **function** of each. (4)

6.2 Explain – in detail – how *Paramecium* feeds. Make use of FULL sentences! (6)

QUESTION 7 **[10]**

7.1 Write a report on the ecological and economic importance of the Phaeophyta. (5)

7.2 Explain the difference between "Alternation of Isomorphic generations" and "Alternation of Heteromorphic generations" as found in the life-cycles of seaweed. Also provide an algal example (**Genus names** only) for each. (4)

7.3 Name the Phylum that "red" algae belong to. (1)

QUESTION 8 **[15]**

8.1 Explain the difference between dikaryotic and monokaryotic hyphae. (2)

8.2 How does the feeding of fungi differ from that of most animals? Name at least **ONE** animal that has a similar type of digestion to that of fungi. (5)

8.3 What is your understanding of the term "mycorrhiza"? (3)

8.4 Explain why it is important for us to protect the lichens that grow near Wlotzkasbaken as well as the ones found on the rocks at Waterberg. (5)

QUESTION 9 **[15]**

9.1 Define the term diffusion. (3)

9.2 List the products and the waste products produced during the light-dependent phase of photosynthesis. (3)

9.3 Complete the table below by filling in the missing information for each of the four stages of respiration. [Write down **only** the LETTERS (a-e) and the ANSWER for each] (5)

Step	Location	Oxygen Requirement	Main Inputs	Main Outputs
Glycolysis	Cytoplasm	(a)	Glucose	2 ATP, 2 NADH, 2 Pyruvate
Formation of Acetyl CoA	Mitochondrial Matrix	Aerobic	(b)	2 NADH, 2 CO_2, Acetyl CoA
(c)	Mitochondrial Matrix	Aerobic	Acetyl CoA, Oxaloacetate	(d)
Electron Transport & Chemiosmosis	(e)	Aerobic	NADH, $FADH_2$, O_2	~32 ATP, H_2O

9.4 Explain how each of the following influences the rate of transpiration: (4)
(a) Number of leaves
(b) Thickness of the cuticle

SUB – TOTAL (80)

TOTAL [120]