NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF HEALTH AND APPLIED SCIENCES AND NATURAL RESOURCES

DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES SCIENCES

QUALIFICATION: BACHELOR OF NATURAL RESOURCE MANAGEMENT	
QUALIFICATION CODE: 07BNRS	**LEVEL:** 5
COURSE CODE: BNS511S	**COURSE NAME:** BIOLOGY FOR NATURAL SCIENCES
SESSION: JUNE 2022	**PAPER:** THEORY
DURATION: 3 HOURS	**MARKS:** 150

FIRST OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Mrs Louise Theron
MODERATOR:	Mrs Clarence Ntesa

INSTRUCTIONS
1. Answer ALL the questions. 2. Write clearly and neatly. 3. Number the answers clearly.

PERMISSIBLE MATERIALS

1. All written work MUST be done in blue or black ink
2. No books, notes and other additional aids are allowed

THIS QUESTION PAPER CONSISTS OF 4 PAGES (excluding this front page)

SECTION A

QUESTION 1

Give the scientific term for each of the following: **[10]**

1.1 Cell organelle that prevents wilting in plants.
1.2 The solid part in a mixture that gets dissolved.
1.3 When elements combine to form a compound.
1.4 Cell organelle that breaks down food and destroys old cells.
1.5 Cell-wall component of Eubacteria.
1.6 Viruses exist as infectious particles known as .....
1.7 In the life cycle of *Ulva* the two generations look exactly the same, we therefore say that *Ulva* have alternation of ..... generations.
1.8 The name of the Phylum responsible for Red Tides in Namibia.
1.9 Fusion of the cytoplasm of compatible mating types (Mycota).
1.10 The Phylum where puffballs, toadstools and bracket fungi belong.

QUESTION 2

Explain the difference between the following pairs of terms. **[10]**

2.1 Dilute solution vs Concentrated solution
2.2 Mass number vs Atomic number
2.3 Fat soluble vs Water soluble vitamins
2.4 Coenocytic vs Septate hyphae in fungi
2.5 Rhodophyta vs Phaeophyta

QUESTION 3

State whether each of the following statements is true **or** false. If false, re-write the statement to correct it. **[10]**

3.1 A positively charged ion is known as an anion.
3.2 The Golgi Body is the organelle that directs traffic in the cell.
3.3 Members of the Kingdom Mycota are primarily unicellular, prokaryotic organisms.
3.4 The phase in viral reproduction where viral genomes and proteins are being put together to form new viruses is known as the Replication phase.
3.5 In the lysogenic cycle of viral reproduction the viral genes are expressed immediately after the virus infects the host cell.
3.6 Members of the Phylum Deuteromycota reproduce asexually by conidia.

SUB – TOTAL (30)

SECTION B

QUESTION 4

4.1 How are elements in the same group on the periodic table similar? (3)

4.2 Explain the term "catalyst". (2)

4.3 Which 3 elements make up the "Iron Triad"? (3)

4.4 Explain what "Bio-fertilisers" are. Provide examples (2)
[10]

QUESTION 5

5.1 In your OWN WORDS, explain the term BIOTECHNOLOGY. (2)

5.2 Explain why Biotechnology has become such a big industry worldwide (reasons for its growth over the last couple of decades). (3)

5.3 How do wine manufacturers manage to make different types of wine (red, white, rosé)? **WRITE FULL SENTENCES!!** (4)

5.4 Explain why you find "holes" in your loaf of bread. (2)

5.5 Explain how we can turn sewage (our own faeces), and cow dung into useful products for ourselves = BIOTECHNOLOGY. (4)
[15]

QUESTION 6

Write a report on the economic importance of viruses. Make use of suitable examples. **[10]**

QUESTION 7

Like all other living organisms, bacteria need a source of carbon and a source of energy. Discuss the different ways bacteria use to get their nutrition and energy by re-drawing and completing the table. **[12]**

	heterotrophic		e.g. milk souring bacteria (lactic acid bacteria)
Parasites			e.g. bacteria causing tetanus
Symbiotic			
		Obtain energy by oxidizing simple inorganic salts	
	autotrophic	Use sunlight energy to make their own food	

QUESTION 8

8.1 Name the four "Protozoa" phyla found in the Kingdom Protoctista and state the motile organs for each phylum. (8)

8.2 Explain the difference between the ectoplasma and endoplasma of *Amoeba*. Also state the function of each. (4)

8.3 Provide the causal agents for (a) malaria and (b) Ngana (2)

8.4 Explain the following structures, found in *Paramecium* (5)
(a) Pellicle
(b) Multinucleated
(c) Pathogen
(d) Oral groove
(e) Contractile vacuole

8.5 Explain why malaria patients experience sporadic outbreaks of fever. (2)

[21]

QUESTION 9

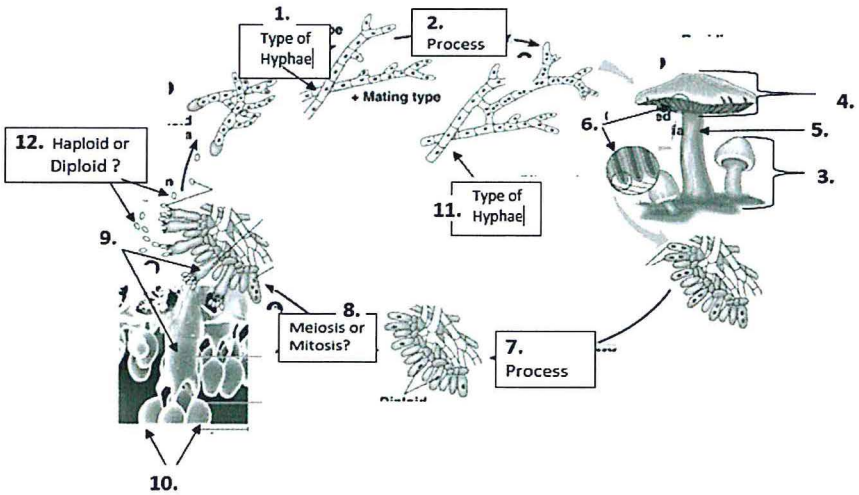
9.1 How do the cell walls of Mycota differ from those of Plantae? (1)

9.2 Name the 4 Phyla of Mycota discussed in class. (4)

9.3 Give the economic uses of each of the following fungi species:
(a) Saccharomyces
(b) Terfezia (Kalahari truffles) (4)
(c) Termitomyces shimperi (Omayowa)
(d) Penicillium notatum

9.4 Clearly distinguish between Monokaryotic and Dikaryotic hyphae in fungi.

9.5 Complete the life cycle by filling in the missing labels. Do not re-draw the life cycle, only write down 1-12 and provide the relevant information. (1)



(12)

[22]

SUB – TOTAL (90)

SECTION C

QUESTION 10

10.1 State the chemical formula for photosynthesis (3)

10.2 Where does the light reaction of photosynthesis take place? (1)

10.3 Name four internal factors that influence the rate of photosynthesis in a plant. (4)
[8]

QUESTION 11

11.1 Glycolysis it the first anaerobic stage of respiration. State where this stage takes place and discuss the inputs and outputs used and produced in this stage of respiration. (5)

11.2 Name the other stages of respiration. (3)

11.3 Discuss how water and oxygen availability affect respiration. (4)
[12]

QUESTION 12

12.1 Define osmosis (3) and discuss why it is important to life on earth (3). (6)

12.2 Define the term transpiration. (1)

12.3 State three types of transpiration that occur within a plant. (3)
[10]

SUB – TOTAL [30]

TOTAL [150]

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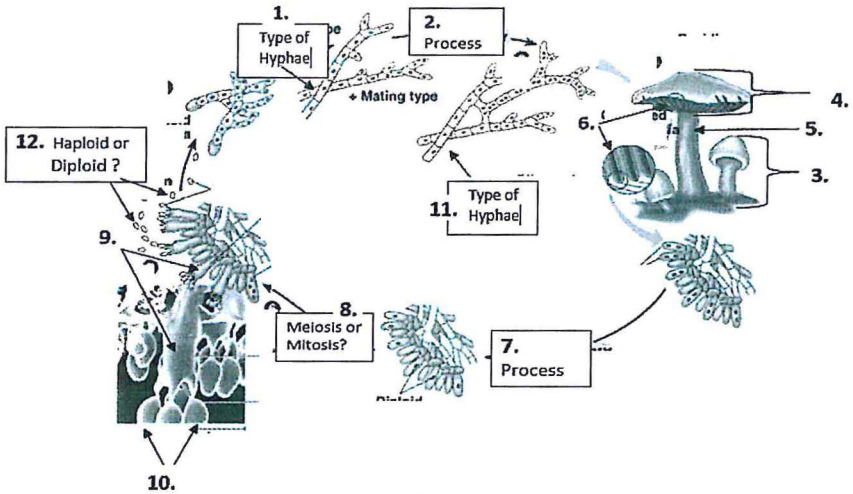

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[22]

SUB – TOTAL (90)