



**NAMIBIA UNIVERSITY  
OF SCIENCE AND TECHNOLOGY**

**FACULTY OF NATURAL RESOURCES AND SPATIAL SCIENCES**

**DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES SCIENCES**

<b>QUALIFICATION: BACHELOR OF NATURAL RESOURCES MANAGEMENT (NATURE CONSERVATION)</b>	
<b>QUALIFICATION CODE: 07BNTC</b>	<b>LEVEL: 7</b>
<b>COURSE CODE: NCB510S</b>	<b>COURSE NAME: NATURE CONSERVATION BIOLOGY</b>
<b>DATE: JUNE 2019</b>	
<b>DURATION: 3 HOURS</b>	<b>MARKS: 150</b>

<b>FIRST OPPORTUNITY EXAMINATION QUESTION PAPER</b>	
<b>EXAMINER(S)</b>	Mrs. Louise Theron Me Gail Morland
<b>MODERATOR:</b>	Mrs. Clarence Ntesa

<b>INSTRUCTIONS</b>
1. Answer ALL the questions. 2. Write clearly and neatly. 3. Number the answers clearly.

**PERMISSIBLE MATERIALS**

1. Examination question paper
2. Answering book

**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 The organelle that directs traffic in eukaryotic cells.
- 1.2 The stage in viral reproduction where the host cell actively produces viral genomes.
- 1.3 Two homologous chromosome pairs linked together during Metaphase 1
- 1.4 The protist phylum with two nuclei.
- 1.5 Cell wall component of Phaeophyta used in the production of paint.
- 1.6 The layer found in plant cells that keeps the primary and secondary cell walls together.
- 1.7 The layer that surrounds the capsid of some viruses.
- 1.8 The opening (NOT the groove) where food enters the body of *Paramecium*.
- 1.9 Salt-loving Archaeobacteria
- 1.10 Gametes that differ in size, shape and motility.

### QUESTION 2

Explain the difference between the following pairs of terms.

[10]

- 2.1 Lysosomes and Vacuoles
- 2.2 Chemosynthetic bacteria and photosynthetic bacteria
- 2.3 Foliose lichens and Fruticose lichens
- 2.4 Ascocarp and Basidiocarp
- 2.5 Homologous and Homozygous

### 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 Family is a taxon which includes one or a group of related species which can be clearly distinguished from other families.
- 3.2 Denitrification depletes the nitrogen in the soil and is the reverse of nitrification and nitrogen fixation.
- 3.3 Each chromosome appears as two identical chromatids joined in the middle by a centriole.
- 3.4 Ulva is an example of Phylum Rhodophyta and has alternation of isomorphic generations.
- 3.5 Bracket fungi belong to the phylum Basidiomycota and grows on the surface of dead wood or trees.
- 3.6 Mendel's First Law – the law of independent assortment – states that the factors for a pair of characters are separated during the formation of gametes.

**SUB – TOTAL (30)**

## SECTION B

### QUESTION 4

Although only unicellular, prokaryotic organisms, bacteria are very important to us as well as to the environment. Discuss 8 ways in which bacteria are useful to us or the environment and 2 ways in which they are harmful to us and/or the environment.

[10]

### QUESTION 5

Starting with "Interphase" – list the different phases of Mitosis in the correct order and explain what happens in each of the phases. State at least two "things" that happen in each phase.

[14]

### QUESTION 6

Without re-drawing the table below – fill in the missing answers. Only write down the letters A-O and the correct answer for each.

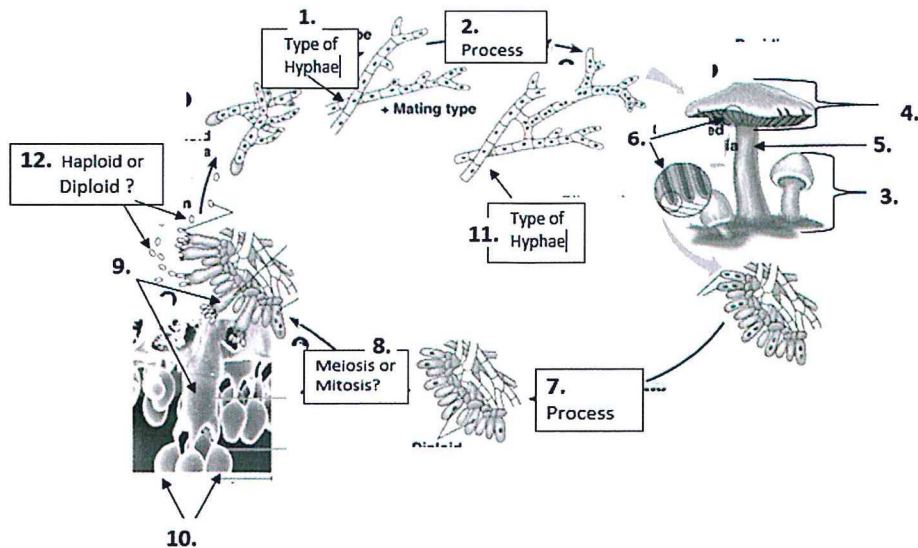
[15]

Phylum	(A)	Euglenozoa	(B)	Ciliophora
Example:	<u>Amoeba</u>	(C)	<u>Plasmodium</u>	(D)
<b>Distinguishing</b> characteristic	(E)	(F)	(G)	(H)
Pellicle absent or present?	(I)	Present	(J)	Present
Feeding (structures + method)	Pseudopodia Phagocytosis	(K) <i>Autotrophic</i>	(L) <i>Saprophytic</i>	Cilia in oral groove Holozoic
Locomotive structures?	Pseudopodia	(M)	(N)	(O)

### QUESTION 7

- 7.1 How do the cell walls of Mycota differ from those of Plantae? (1)
- 7.2 Name the 4 Phyla of Mycota discussed in class. (4)
- 7.3 Give the economic uses of each of the following fungi species: (4)
- Saccharomyces
  - Terfezia (Kalahari truffles)
  - Termitomyces shimperi (Omayowa)
  - Penicillium notatum
- 7.4 Clearly distinguish between Monokaryotic and Dikaryotic hyphae in fungi. (1)

- 7.5 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. (12)



[22]

### QUESTION 8

- 8.1 Explain the difference between dominant and recessive genes. (1)  
 8.2 Name and explain Mendel's second law, using a suitable example. (3)  
 8.3 In cats, yellow eyes (A) are dominant over blue eyes (a) and black fur (B) is dominant over white fur (b). A homozygous black cat with blue eyes mates with a white cat with (homozygous) yellow eyes.  
 (i) What is the genotype of each parent cat (P generation)? (1)  
 (ii) What is the genotype and phenotype of their offspring (F1 generation)? (2)  
 (iii) Using a Punnett square, determine the expected genotypes and phenotypes of the F2-generation. (6)  
 (iv) What will the phenotype of the cat with double recessive genes be? (1)

[14]

SUB – TOTAL (75)

### SECTION C

### QUESTION 9

- 9.1 State the chemical formula for photosynthesis (3)  
 9.2 Where does the light reaction of photosynthesis take place? (1)  
 9.3 Discuss the inputs and outputs of the Calvin cycle. (4)  
 9.4 Name one disadvantage of a plant having a waxy cuticle and discuss how they solve this problem. (3)  
 9.5 Discuss four internal factors that influence the rate of photosynthesis in a plant. (4)

[15]

**QUESTION 10**

- 10.1 Glycolysis is 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)
- 10.2 Name the other stages of respiration. (3)
- 10.3 Discuss how water and oxygen availability affect respiration. (4)
- 10.4 Copy and complete the table below comparing the differences between photosynthesis and respiration (4)

Feature	Photosynthesis	Anaerobic respiration
Raw materials	$C_6H_{12}O_6 + O_2$	
Location of electron transport chain		Cristae
Type of metabolic reaction		

**[16]****QUESTION 11**

- 11.1 Define osmosis and discuss why it is important to life on earth. (4)
- 11.2 Explain how the transpiration-cohesion model succeeds in pulling water to the top. (10)

**[14]****SUB – TOTAL [45]****TOTAL [150]**