



**NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY
FACULTY OF HEALTH AND APPLIED SCIENCES AND NATURAL RESOURCES**

DEPARTMENT OF AGRICULTURE AND NATURAL RESOURCES SCIENCES

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

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| SUPPLEMENTARY / SECOND OPPORTUNITY EXAMINATION QUESTION PAPER | |
| EXAMINER(S) | Mrs Louise Theron |
| MODERATOR: | Mrs Clarence Ntesa |

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| INSTRUCTIONS |
| <ol style="list-style-type: none">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 5 PAGES (Excluding this front page)

SECTION A

QUESTION 1

Give the scientific term for each of the following:

[10]

- 1.1 The process whereby a solid changes directly into a gas.
- 1.2 Feeding on whole or living food, as Amoeba does.
- 1.3 Cell organelle that is responsible for modifying and packaging proteins.
- 1.4 Motile structure used by Trypanosoma.
- 1.5 Gametes of same shape and mobility but differ in size.
- 1.6 Haploid (n) and diploid (2n) bodies in the life cycle differ in appearance.
- 1.7 A small thick-walled resting cell that forms inside a bacterial cell.
- 1.8 Medication that kill bacteria without harming a person's own cells (General term!)
- 1.9 Lichens that grow as a thin crust on the surface of rocks.
- 1.10 Sperm producing gametangium.

QUESTION 2

Complete the following sentences by filling in the missing word(s). Do not re-write the sentences; only write down the letters (a) – (j) and the correct answer for each.

[10]

- ...(a) ... classification is done purely on the basis of appearance. (The old approach).
- ...(b) ... is the scientific study of the diversity of organisms and their evolutionary relationships.
- ...(c) ... is the science of describing, naming and classifying living organisms.
- ...(d)... is the procedure of assigning names to the different kinds and taxa of living organisms.
- ...(e) ... (name of scientist) simplified scientific classification by developing the ...(f)... (system) in which each species is assigned a unique ...(g)... name.
- A ...(h) ... is a group of individuals which are naturally reproductively isolated from other such groups.
- Prokaryotes lack an organized ...(i) ... and membrane bound organelles and have cell walls containing ...(j)

QUESTION 3

Explain the difference between the following pairs of terms.

[10]

- 3.1 Lysosomes and Vacuoles
- 3.2 Chemosynthetic bacteria and photosynthetic bacteria
- 3.3 Foliose lichens and Fruticose lichens
- 3.4 Ascocarp and Basidiocarp
- 3.5 Zoospores and Aplanospores

SUB – TOTAL (30)

SECTION B

QUESTION 4

Provide the correct term for each of the following definitions/descriptions.

[8]

- 4.1 The process whereby a gas is cooled, the movement of the particles slowed down and eventually a liquid is formed.
- 4.2 A protein found in the human body that helps to transport Oxygen.
- 4.3 Fats with multiple double bonds between multiple carbons in the molecule.
- 4.4 A solution that contains as much solute as can be dissolved at a particular temperature.
- 4.5 Atoms of the same element, with the same number of protons, but different number of neutrons.
- 4.6 An atom that have gained one or more electrons.
- 4.7 An element that consists naturally as a two-atom molecule, for example Hydrogen.
- 4.8 The elements in Group 7 on the periodic table.

QUESTION 5

Say whether each of the following statements is TRUE or FALSE. If false – re-write the statement to correct it.

[12]

- 5.1 The kinetic theory of matter stated that the higher the temperature, the lower the average kinetic energy of the particles.
- 5.2 The kinetic energy of molecules is highest in gases and least in liquids.
- 5.3 Melting ice cubes on the stove is an example of an exothermic reaction.
- 5.4 Impurities lowers the freezing point of a substance and raises its boiling point.
- 5.5 Compounds can be decomposed by ordinary chemical means.
- 5.6 The process whereby compounds are split up to give simpler substances in known as synthesis.
- 5.7 The atomic number tells you how many protons and neutrons there are in the nucleus of an atom.

QUESTION 6

- 6.1 Distinguish between a virulent phage and a temperate phage.

(2)

- 6.2 Re-draw the table below and use it to explain how viruses differ from living cells (Column A) and the similarities they share with living cells (Column B). (7)

| A Differ from living organisms | B Similar to living organisms |
|--------------------------------|-------------------------------|
| | |
| | |
| | |
| | |

[9]

QUESTION 7

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)

[10]

QUESTION 8

- 8.1 Distinguish between the feeding methods of *Amoeba* and *Plasmodium*. Also name the type of feeding found in each. (4)
- 8.2 Name the causal agent, as well as the vector for Ngana. (2)
- 8.3 The opening (not the groove) where food enters the body of *Paramecium* is known as the (1)
- 8.4 Provide examples of the common harmful effects of HAB's (harmful algal blooms). (4)
- 8.5 Briefly comment on the economic and ecological importance of the Bacillariophyta. (4)

[15]

QUESTION 9

Without re-drawing the table below – fill in the missing answers. Only write down the letters (a) – (n) and the correct answer for each. (14)

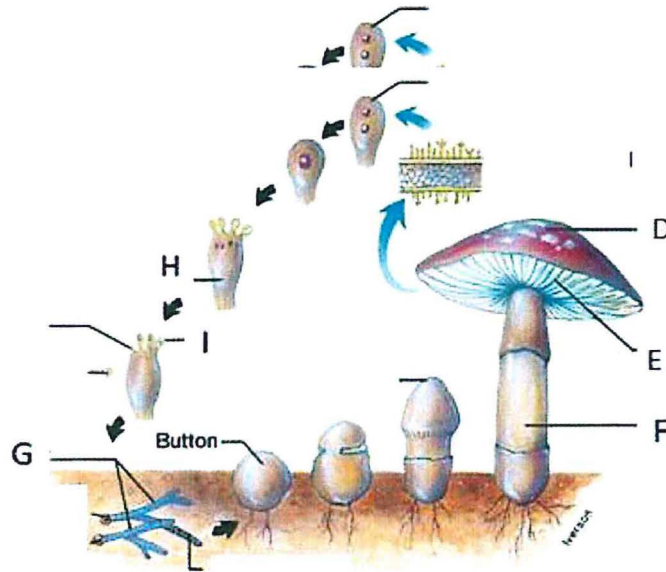
[14]

| | | | | |
|--------------------------------------|---------------|------------|-------------------|----------------------|
| Phylum | (a) | Euglenozoa | (b) | Ciliophora |
| Example: | <u>Amoeba</u> | (c) | <u>Plasmodium</u> | (d) |
| Distinguishing characteristic | (e) | (f) | Sporozoits | (g) |
| Pellicle absent or present? | (h) | Present | (i) | Present |
| Feeding structures | Pseudopodia | (j) | (k) | Cilia in oral groove |
| Locomotive structures? | Pseudopodia | (l) | (m) | (n) |

QUESTION 10

- 10.1 Write a report on the ecological (8) and economic (4) importance of the Kingdom Mycota. (12)
- 10.2 Explain the importance of "bracket fungi" (4)
- 10.3 Mushrooms e.g. *Agaricus campestris*, reproduce by special spores on the gills of the fruiting body. Provide labels for D to I (only) on the diagram below. (6)

[22]



SECTION C

QUESTION 11

- 11.1 List the products and waste products produced during the light dependent phase of photosynthesis. (3)
- 11.2 Where do the carbon fixation reactions take place during photosynthesis? (1)
- 11.3 State one disadvantage of a plant leaving their stomata open and discuss how the plant solves this problem. (3)
- 11.4 Discuss how temperature and light intensity affect the rate of photosynthesis in plants. (4)

[11]

QUESTION 12

- 12.1 The Citric acid cycle is the third stage of respiration. State where stage 3 occurs and name the products and their quantities. (5)
- 12.2 Name the three other stages of respiration. (3)

[8]

QUESTION 13

- 13.1 Define diffusion. (3)
- 13.2 Explain how each of the following influence the rate of transpiration: (8)
- (a) number of leaves
 - (b) number of stomata
 - (c) thickness of the cuticle
 - (d) relative humidity
- [11]

SUB – TOTAL [30]

TOTAL [150]