



**NAMIBIA UNIVERSITY**  
OF SCIENCE AND TECHNOLOGY

**Faculty of Health, Natural  
Resources and Applied  
Sciences**

School of Natural and Applied  
Sciences

Department of Biology,  
Chemistry and Physics

13 Jackson Kaujeua Street T: +264 61 207 2012  
Private Bag 13388 F: +264 61 207 9012  
Windhoek E: dbcp@nust.na  
NAMIBIA W: [www.nust.na](http://www.nust.na)

QUALIFICATION : <b>BACHELOR OF SCIENCE</b>	
QUALIFICATION CODE: <b>07BOSC</b>	LEVEL: <b>5</b>
COURSE: <b>GENERAL BIOLOGY 1B</b>	COURSE CODE: <b>GNB502S</b>
DATE: <b>JANUARY 2024</b>	SESSION: <b>1</b>
DURATION: <b>3 HOURS</b>	MARKS: <b>100</b>

**SECOND OPPORTUNITY / SUPPLEMENTARY: EXAMINATION QUESTION PAPER**

**EXAMINER:** DR JEYA KENNEDY

**MODERATOR:** DR LAMECH MWAPAGHA

**INSTRUCTIONS:**

1. Answer all questions on the separate answer sheet.
2. Please write neatly and legibly.
3. Do not use the left side margin of the exam paper. This must be allowed for the examiner.
4. No books, notes and other additional aids are allowed.
5. Mark all answers clearly with their respective question numbers.

**PERMISSIBLE MATERIALS:**

1. Non-Programmable Calculator

**ATTACHEMENTS**

None

**This paper consists of 9 pages including this front page**

## QUESTION 1: MULTIPLE CHOICE QUESTIONS

[10]

Evaluate the statements in each numbered section and select the most appropriate answer or phrase from the given possibilities. Fill in the appropriate letter next to the number of the correct statement/phrase on your ANSWER SHEET.

- 1.1 The organisms that live in hostile environments that cannot support other forms of life are members of the domain;
- Bacteria
  - Archaea
  - Eukarya
  - None of the above
- 1.2 The adaptive advantage associated with the filamentous nature of fungal mycelia is primarily related to \_\_\_\_\_.
- Their ability to form haustoria and parasitize other organisms
  - Avoiding sexual reproduction until the environment is favourable
  - An extensive surface area allowing invasive growth and absorptive nutrition
  - The increased probability of contact between different mating types
- 1.3 How do retroviruses, such as HIV, differ from other viruses?
- They contain DNA that is used as a template to make RNA
  - They contain nucleic acids that code for proteins
  - They have much simpler reproductive cycles than other RNA viruses
  - They can transcribe a DNA copy from an RNA template
- 1.4 From what type of tissue is endocrine and exocrine glands are formed?
- Connective
  - Blood
  - Muscle
  - Epithelial
- 1.5 During winter or periods of drought, which one of the following plant hormones inhibits growth and seed germination?
- Ethylene
  - Abscisic acid
  - Gibberellin
  - Auxin
- 1.6 Evenly thickened cells that function to support mature regions of a flowering plant are called;
- Parenchyma
  - Collenchyma
  - Sclerenchyma
  - Guard cells

- 1.7 This plant hormone interacts with auxin during the formation of callus in tissue culture;
- Florigen
  - Gibberellin
  - Cytokinin
  - Ethylene
- 1.8 A coelom is a body cavity completely lined with;
- Epithelium
  - Ectoderm
  - Mesoderm
  - Endoderm
- 1.9 Which term do we use to describe the region of the body that contains an animal's tail?
- Ventral
  - Posterior
  - Anterior
  - Dorsal
- 1.10 Which row correctly identifies xylem vessel elements and sieve tube elements?

	Xylem vessel element		Sieve tube element		Companion cell	
	nucleus	cytoplasm	nucleus	cytoplasm	nucleus	cytoplasm
a.	Y	Y	X	X	X	Y
b.	X	Y	Y	Y	Y	X
c.	X	X	Y	X	Y	Y
d.	X	X	Y	Y	Y	Y

Key Y=present X=ABSENT

**QUESTION 2: DEFINE THE FOLLOWING TERMS**

[2]

Each answer carries one mark

- 2.1 Fiddle head
- 2.2 Gram-positive bacteria

**QUESTION 3: FILL IN THE BLANK**

[3]

Each answer carries one mark

- 3.1 The *Plasmodium*, carried from host to host by a mosquito, causes \_\_\_\_\_, a very serious infectious disease.
- 3.2 A \_\_\_\_\_ is an infectious particle made of protein rather than RNA or DNA.
- 3.3 Research on a fungal disease of rice provided the first clues about this plant hormone \_\_\_\_\_.

**QUESTION 4: ONE-SENTENCE ANSWERS**

[5]

Each answer carries one mark

- 4.1 What is the function of pili in bacteria?
- 4.2 Instead of the taxon phylum, what other taxon is used for plants at this level?
- 4.3 Sclereids and fibers are examples of which plant tissue?
- 4.4 Give an example of a photosynthetic bacterium.
- 4.5 Family names for viruses end in what suffix?

**SECTION B: SHORT/LONG ANSWER QUESTIONS**

**[45 MARKS]**

Please answer ALL of the questions in this section.

**QUESTION 5:**

**Distinguish between the pairs of the following terms.**

[4]

Each answer carries two marks.

- 5.1 Chlorenchyma and aerenchyma
- 5.2 Plasmogamy and karyogamy

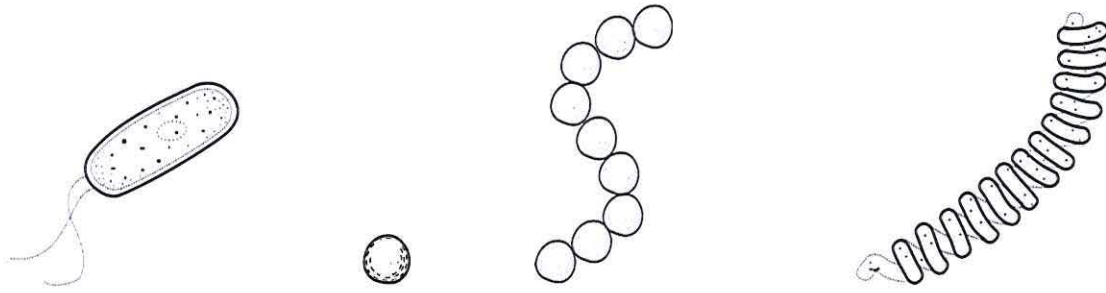
**QUESTION 6: SHORT QUESTIONS**

[25]

- 6.1 What are the 3 basic viral shapes? (3)
- 6.2 How do Trypanosoma and Paramecium move? Mention the cell wall composition of Phaeophyta and Bacillariophyta. (4)
- 6.3 Draw a well labelled diagram of neuron. (Label any four parts). (4)

6.4 Label each drawing below with the most appropriate term.

(4)



1. \_\_\_\_\_ 2. \_\_\_\_\_ 3. \_\_\_\_\_ 4. \_\_\_\_\_

6.5 List a hormone that:

(5)

- a) Is in nature, gaseous.
- b) Is in charge of phototropism.
- c) Influences femaleness in cucumber flowers.
- d) Is utilized to kill weeds(dicots).
- e) Stomata closing.

6.6 In the tabular column form mention the difference between Eubacteria and Archaeobacteria.

(5)

**QUESTION 7: LONGER QUESTIONS**

**[16]**

7.1 In the tabular column form compare protostomes and deuterostomes and give two example each.

(6)

7.2 In a tabular form distinguish the major divisions in the Plantae.

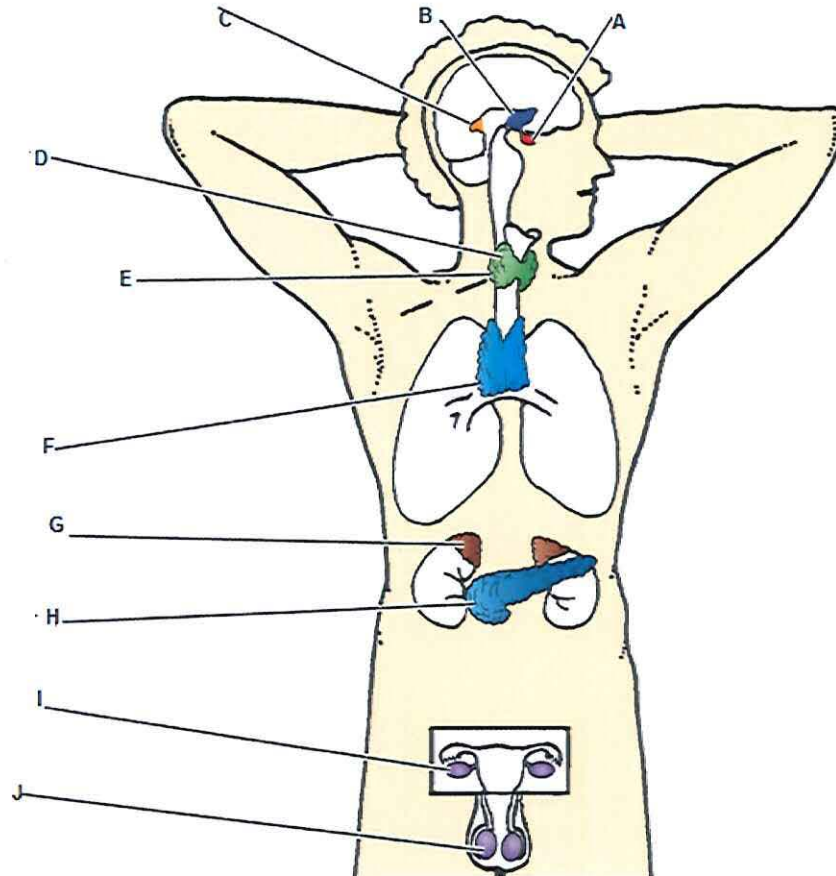
(10)



**QUESTION 8:**

Please answer ALL of the questions in this section.

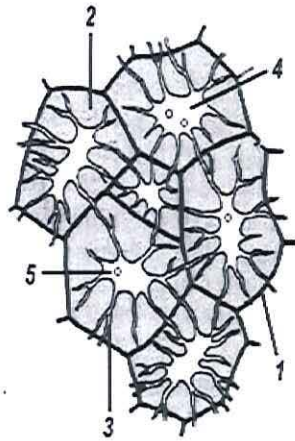
8.1 Use the diagram to answer each question of the endocrine system. [11]



- 8.1.1 Identify the structure labelled C, name the hormone it produces and describe their function. (3)
- 8.1.2 Identify the structure labelled H and state which hormone is produced by this gland? (2)
- 8.1.3 Identify the structure labelled F. (1)
- 8.1.4 Name the gland that secretes epinephrine and norepinephrine and identify the alphabet letter in the diagram for the gland that secretes epinephrine. (2)
- 8.1.6 Identify the structures labelled I in the diagram, name the two hormones it produce and describe their functions. (3)

8.2 Identify each of the following tissues, provide ONE location, and ONE function of each. [9]  
 Each answer carries three marks

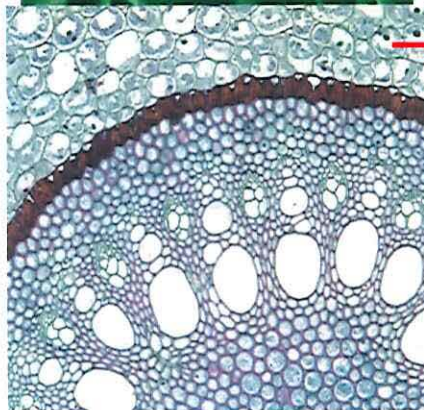
a)



b)



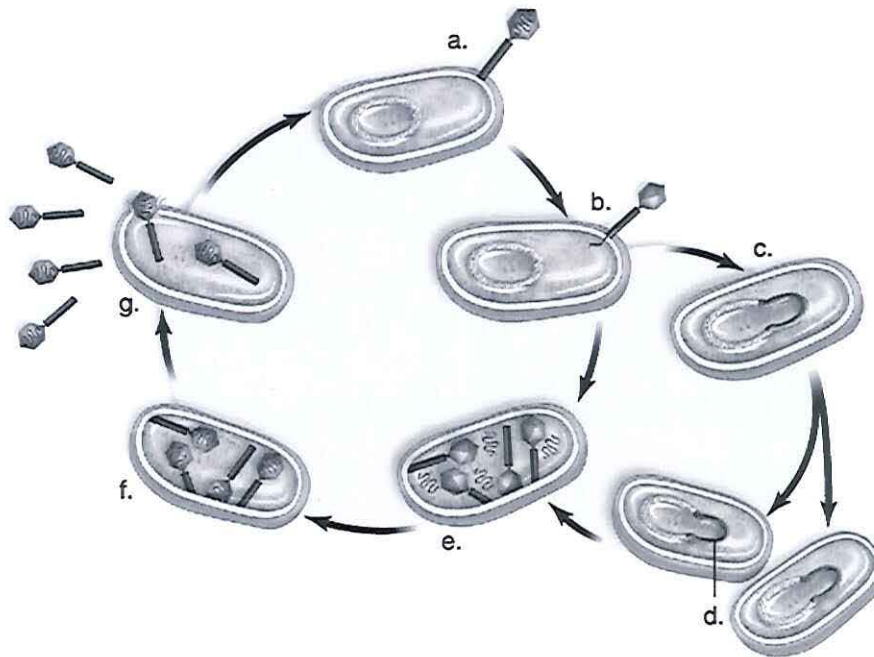
c)



8.3 Use the following diagram to answer questions.  
Each answer carries one mark

[6]

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8.3.1 Letters "a", "b", "e", "f", and "g" represent;

- a. the lysogenic cycle
- b. the process of binary fission
- c. the lytic cycle
- d. transformation
- e. conjugation

8.3.2 The letter "d" represents;

- a. bacteriophage
- b. capsid
- c. viral envelop
- d. prophage
- e. plasmid

8.3.3 Which part of the diagram is representing the replication or biosynthesis stage?

- a. a
- b. b
- c. e
- d. f
- e. g



8.3.4 Letters "b", "c", "d", "e", "f", and "g" represent;

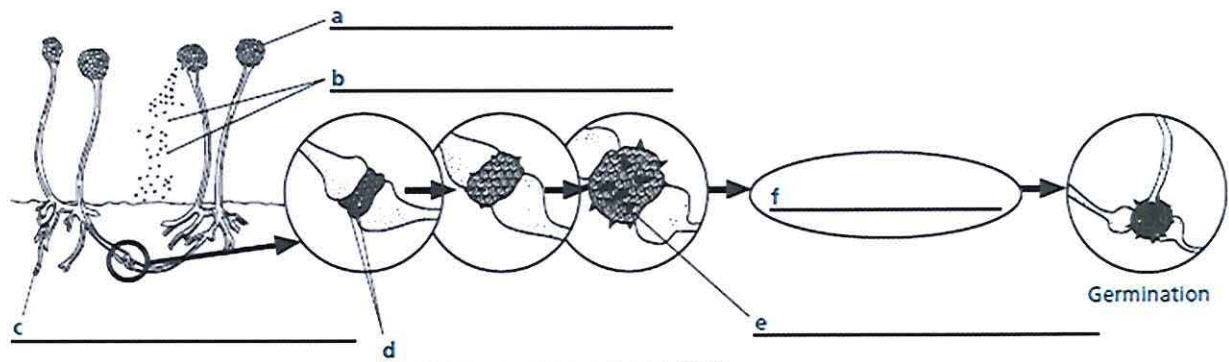
- a. the lysogenic cycle
- b. the process of binary fission
- c. the lytic cycle
- d. transformation
- e. conjugation

8.3.5 Which part of the diagram represents the recombination stage?

8.3.6 Which part of the diagram represents the assemble stage?

8.4 Use the diagram to answer each question.

[9]



8.4.1 The diagram above illustrates reproduction structure in fungi, label each structure a-f. (6)

8.4.2 What phylum does the organism in the diagram belong to? What is the common name of this organism? (2)

8.4.3 What type of hyphae do the organism in the diagram have? (1)

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END OF QUESTION PAPER