



**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>NOVEMBER 2023</b>	SESSION: <b>1</b>
DURATION: <b>3 HOURS</b>	MARKS: <b>100</b>

**FIRST OPPORTUNITY: 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 8 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 Which of the following is the correct scientific name of an organism?
- Canis lupis
  - Homo Sapiens*
  - Grant's gazelle
  - E. Coli
- 1.2 Which of the following cells or structures are associated with *asexual* reproduction in fungi?
- Ascospores
  - Basidiospores
  - Zygosporangia
  - Conidiophores
- 1.3 The disadvantage of using common names for species is that:
- The names may change
  - One name does not apply universally
  - One species may have several common names
  - All the above
- 1.4 Circular RNA molecules that function like a virus in plants are termed \_\_\_\_\_.
- Retrovirus
  - Viroid
  - Prion
  - None of the answers is correct
- 1.5 Facultative anaerobes;
- Require a constant supply of oxygen
  - Are killed in an oxygenated environment
  - Do not always need oxygen
  - Are photosynthetic but do not give off oxygen
- 1.6 Deuterostomes are characterized by;
- Spiral cleavage
  - Determinate cleavage
  - An acoelomate body plan
  - Radial cleavage

- 1.7 Match each item in column 1 with one in column II and select your answer from the codes given below.

	Column 1		Column II
1	Diatoms	a	Protein rich layer of pellicle
2	Dinoflagellates	b	Cell wall embedded with silica
3	Euglenoids	c	Spores with true walls
4	Slime moulds	d	Cellulose plates in the cell wall

Codes

	1	2	3	4
a.	b	a	c	d
b.	b	d	a	c
c.	b	c	a	d
d.	b	a	d	c

- 1.8 Which of the following is a function of epithelium?
- Protection
  - Secretion
  - Sensory surface
  - All of the above
- 1.9 Conifers, cycads and ginkgoes are collectively called\_\_\_\_\_.
- Gymnosperms
  - Angiosperms
  - Dicots
  - Seedless vascular plants

- 1.10 Which row correctly identifies xylem vessel elements and sieve tube elements?

	Xylem vessel element			Sieve tube element		
	Nucleus	Cytoplasm	End wall	Nucleus	Cytoplasm	End wall
a.	X	X	X	X	Y	Y
b.	X	Y	Y	X	Y	Y
c.	X	X	X	Y	X	X
d.	X	X	Y	Y	Y	X

Key Y=present X=ABSENT

**QUESTION 2: DEFINE THE FOLLOWING TERMS**

[2]

Each answer carries one mark

- 2.1 Cephalization
- 2.2 Epithelial tissue

**QUESTION 3: FILL IN THE BLANK**

**[8]**

Each answer carries one mark

- 3.1 Scientists who study viruses are known as \_\_\_\_\_.
- 3.2 The two simple tissues that are specialized for supporting plants are \_\_\_\_\_ and \_\_\_\_\_.
- 3.3 Chickenpox and \_\_\_\_\_ are caused by the same virus.
- 3.4 The flagellate, *Trypanosomai*, carried from host to host by an insect, causes \_\_\_\_\_, a very serious infectious disease.
- 3.5 Plant species are subdivided into \_\_\_\_\_, while bacteria are subdivided into \_\_\_\_\_.
- 3.6 A virus that transcribes DNA from an RNA template is called a(n) \_\_\_\_\_.

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

**[35 MARKS]**

**QUESTION 4: SHORT QUESTIONS**

**[15]**

- 4.1 To which other domain is the domain Eukarya (containing humans) most closely related? (1)
- 4.2 Name and sketch the 3 variations of spiral shaped bacteria. (3)
- 4.3 Show the diagrammatic representation of location of meristematic tissue in plant body and label its parts. (3)
- 4.4 Mention the type of food storage seen in Chrysophyta, Euglenophyta and the types of pigments found in Chlorophyta, Phaeophyta. (4)
- 4.5 Draw a well labelled diagram of cardiac muscle found in the human body and label it, write two differences striated and smooth muscles. (4)

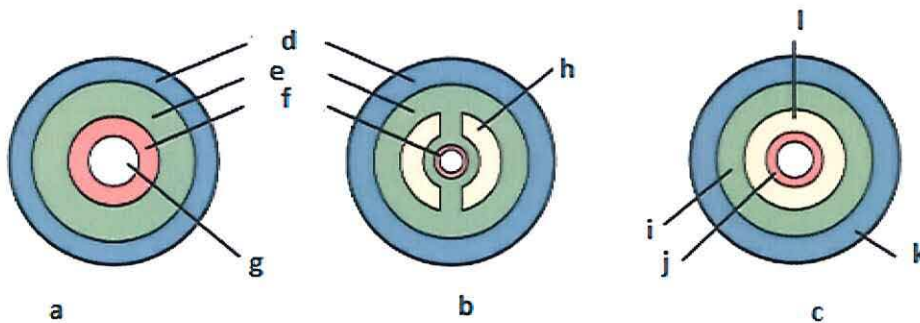
**QUESTION 5: LONGER QUESTIONS**

**[20]**

- 5.1 What is Gram stain? When examining stained cells, what is the difference in appearance between Gram-positive and Gram-negative cells? What are the medical implications of Gram-negative cells with respect to antibiotics like penicillin? (7)
- 5.2 In a tabular form compare for each of the three groups of perfect fungi (Zygomycota, Ascomycota, and Basidiomycota), common name, septate or coenocytic, type of reproduction (asexual or sexual spores or both), asexual reproduction spores name, sexual fruiting body names and provide an example. (13)

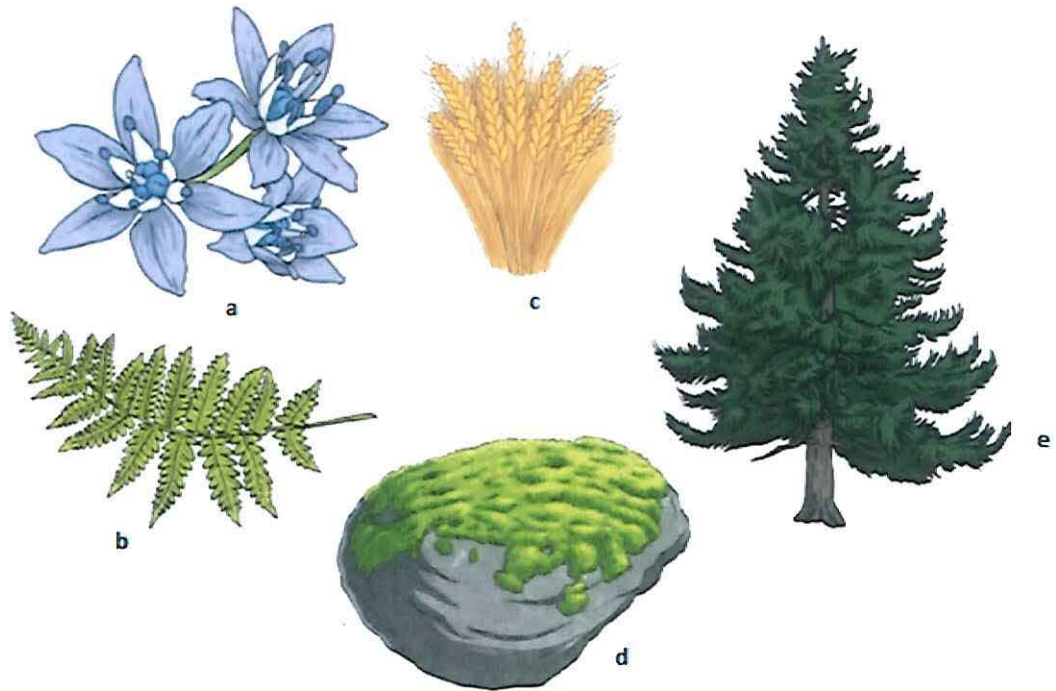
**QUESTION 6:**

- 6.1 Refer to the illustration below answer all the following questions, the structure grouped according to the types of body cavity. [15]



- 6.1.1 Observe the given figures, identify the types of body cavity from a to c. (3)
- 6.1.2 Identify which diagram, the animal that lacks an enclosed body cavity and give one example. (2)
- 6.1.3 In figure c above which germ layer that lines the digestive tract and mention the alphabet letter. (2)
- 6.1.4 Which in the diagram is mesoderm? (A) d & l (B) f & j (C) d & k (D) e & i (E) l & e? (1)
- 6.1.5 Identify the phyla that belong to the structure c. (1)
- 6.1.6 Study diagram b and answer the following questions. (i) identify the structure h, mention its name and what is its function. (ii) Give 2 phylum names which belong to this structure. (4)
- 6.1.7 Which germ layer forms muscles in the above diagram and mention the alphabet letter from the above figure. (1)
- 6.1.8 What is the function of the germ layer d. (1)

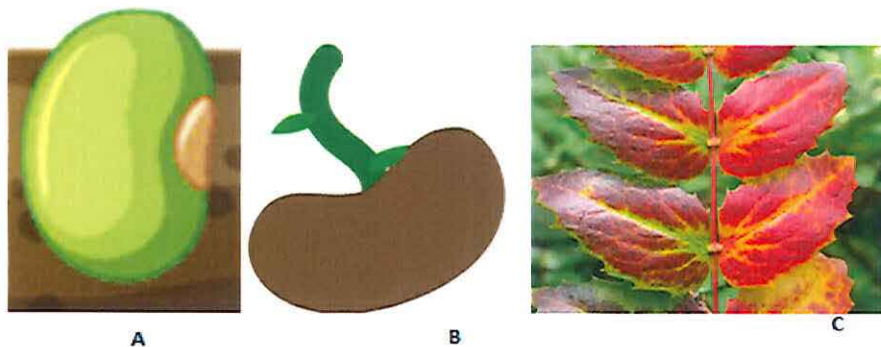
6.2 The diagram below is a phylogenetic diagram of plants. Use the diagram to answer the questions below. [10]



- 6.2.1 Under the broad classification plant, a and c belongs to which classes and why? (3)
- 6.2.2 Which stage of plant life cycle is dominant in plant a and c? (1)
- 6.2.3 What covers the outside of a plant d to prevent water loss? (1)
- 6.2.4 A special name is given to the leaves of the plant b, what name is it? (1)
- 6.2.5 To which division plant b and d belong to? (2)
- 6.2.6 What phase of the plant d life cycle is dominant? (1)
- 6.2.7 How does plant b reproduce? (1)

6.3 Use the diagram to answer each question.

[4]



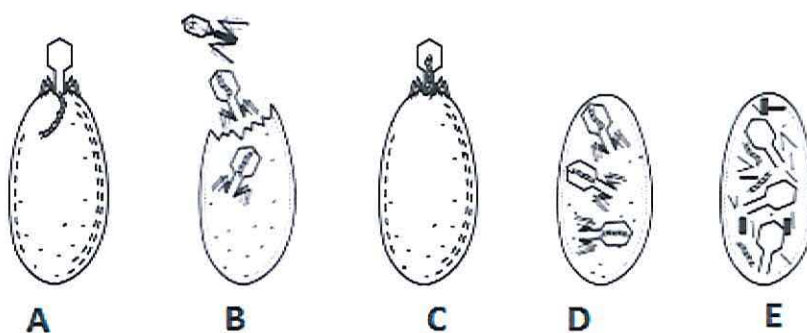
6.3.1 Can you explain the use of plant hormone in the diagram B? (2)

6.3.2 Which plant hormone is dominant in the diagram C? (1)

6.3.4 Which plant hormone is found in the diagram A of a dormant seed? (1)

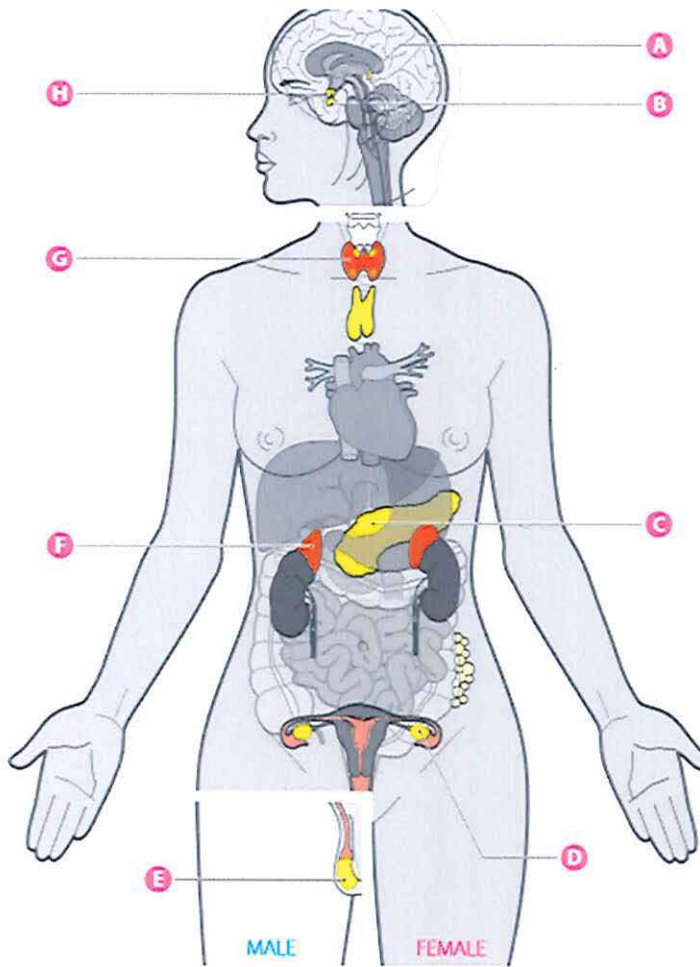
6.4 The diagrams below represent five steps in the lytic cycle of a bacteriophage. The order of the steps has been scrambled. Arrange the steps in their correct order by writing the letter of each step, and briefly describe what is happening in each step.

[5]



6.5 Use the diagram to answer each question of the endocrine system.

[11]



- 6.5.1 What is considered the “master gland” of the endocrine system? Why is it considered the master gland, and where it is located in the above figure (mention the alphabet letter)? (3)
- 6.5.2 Name the hormone secreted by the thyroid, where it is located in the above figure and state its functions. (4)
- 6.5.3 Which organ secretes a hormone when blood sugar rises in our body? Name the hormone and name one enzyme released by this organ. Identify the letter in the above figure where it is located. (3)
- 6.5.4 Which gland produces epinephrine and identify the letter in the above figure? (1)

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END OF QUESTION PAPER