Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Department van Onderwys
Porafensie Ya Kapa Botjahabela: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 11

MARCH 2025

LIFE SCIENCES CONTROLLED TEST 1

MARKS:50 **TIME: 50 minutes**

This question paper consists of 7 pages.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. Answer ALL the questions.
2. Write ALL the answers in your ANSWER BOOK.
3. Start the answer to EACH question at the top of a NEW page.
4. Number the answers correctly according to the numbering system used in this question paper.
5. Present your answers according to the instructions of each question.
6. Do ALL drawings in pencil and label them in blue or black ink.
7. Draw diagrams or flow charts ONLY when asked to do so.
8. The diagrams in this question paper are NOT necessarily drawn to scale.
9. Do NOT use graph paper.
10. You may use a non-programmable calculator, protractor and a compass where necessary.
11. Write neatly and legibly.
12. Round off all calculations to two decimals after the comma.

SECTION A

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the correct answer and write only the letter (A to D) next to the question number (1.1.1 to 1.1.2) in your ANSWER BOOK, for example 1.1.3 A.

1.1.1 Which group of micro-organisms fix nitrogen in the roots of some plants and obtain nutrition in return?

A Fungi
B Protists
C Bacteria
D Viruses

1.1.2 Which of the following is a feature of an insect-pollinated flower?

A Petals are large and brightly coloured
B Large anthers with long filaments
C Small, light and smooth pollen
D Stigmas are large and feathery (2 x 2) **(4)**

1.2 Give the correct **biological term** for each of the following descriptions. Write only the term next to the question number (1.2.1 to 1.2.2) in your ANSWER BOOK.

1.2.1 Organisms that are immobile and attached to one place for life

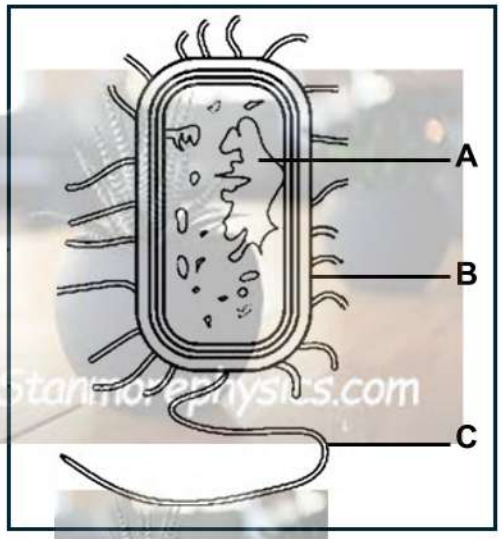
1.2.2 Plant that lacks true roots, stems and leaves (2 x 1) **(2)**

1.3 Indicate whether each of the statements in COLUMN I applies to **A ONLY**, **B ONLY**, **BOTH A AND B or NONE** of the items in COLUMN II. Write **A only**, **B only**, **both A and B,** or **none,** next to the question number (1.3.1 to 1.3.2) in the ANSWER BOOK.

	COLUMN I	COLUMN II
1.3.1	Produce spores	A: Bryophytes B: Angiosperms
1.3.2	Triploblastic	A: Platyhelminthes B: Annelida

(2 x 2) **(4)**

1.4 The diagram below shows the structure of a bacterial cell.



1.4.1 Name the shape of the bacterial cell shown. (1)

1.4.2 Give the LETTER and NAME of the part that:

(a) Assists with the movement of the bacteria (2)

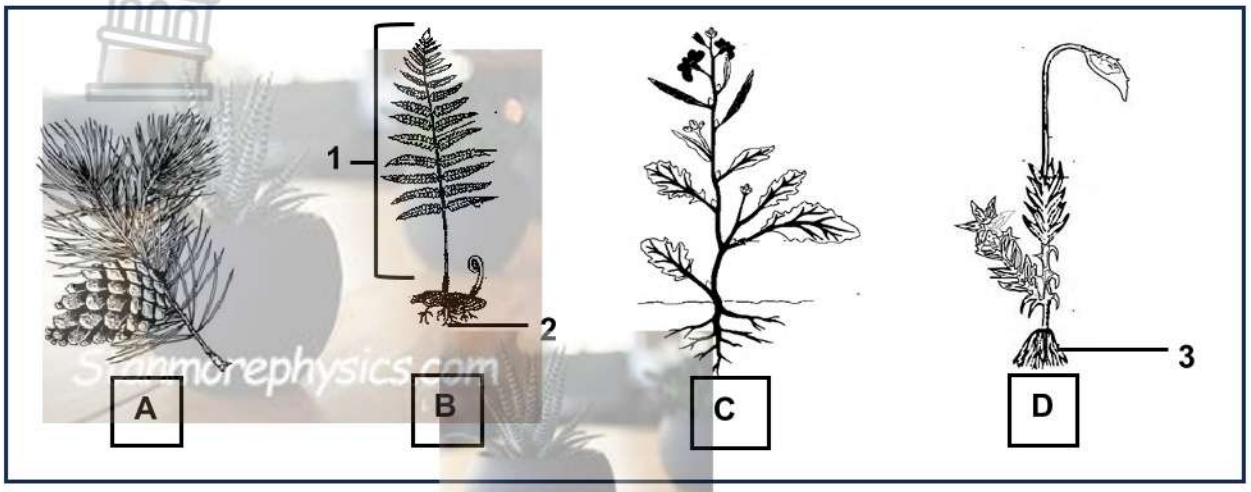
(b) Contains most of the genetic material (2)
(5)

TOTAL SECTION A: 15

SECTION B

QUESTION 2

2.1 Study the diagram of plants or part of plants from different plant groups.



2.1.1 Identify plant group **A** and **B**. (2)

2.1.2 Identify parts labelled number **1**,**2** and **3**. (3)

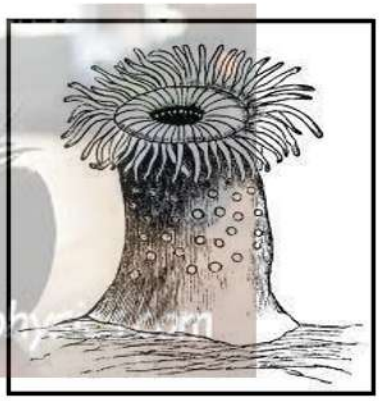
2.1.3 Explain why plant **A** and **C** are important in plant reproduction . (1)

2.1.4 Name the plant group would be the MOST successful land plant? (1)

2.1.5 Give a reason to support your answer to QUESTION 2.1.4. (1)

2.1.6 Give TWO characteristics which make plant **A**, a vascular plant. (2)
(10)

2.2 Examine the sketch below and answer the questions that follow.



2.2.1 Name the kingdom and phylum to which this animal belongs. (2)

2.2.2 Give the term used for the one digestive opening displayed in this sketch. (1)

2.2.3 State the:

(a) Type of symmetry displayed by this animal (1)

(b) Main advantage and disadvantage of this type of symmetry (2)

2.2.4 State what is meant by cephalisation (2)

(8)

[18]

QUESTION 3

3.1 A Grade 11 class wanted to investigate the comparative preference of hummingbirds on two distinct floral species, *A. formosa* and *A. pubescence*.

They:
- Determined the preference by counting how many times the hummingbirds visit the flowers
- Recorded the total number of visits of the hummingbirds to the flowers over a period of 24 hours

The table below shows the number of visits of hummingbirds to the different flowers.

Flower species	Number of visits to the flower by the Hummingbirds
A. formosa	81
A. pubescens	5

3.1.1 Identify the *dependent variable.* (1)

3.1.2 State a conclusion that can be drawn from the results. (1)

3.1.3 State TWO ways in the validity of this investigation can be improved. (2)
(4)

3.2 Post-exposure prophylaxis (PEP) is a short course of antiretroviral medication that can prevent HIV after a possible exposure. It should be taken within 72 hours of exposure.

The table below shows how effective Post Exposure Prophylaxis (PEP) drugs are if taken after different periods.

Period of Exposure (hours)	0	24	72	76	96
Effectiveness (%)	100	100	52	0	0

3.2.1 Draw a line graph to show the data in the table above. (6)

3.2.2 Use your graph to determine the percentage effectiveness of administering the PEP drugs 48 hours after exposure to HIV. (1)

3.2.3 Explain your answer to QUESTION 3.2.2. (1)
(8)

3.3 Describe how bacteria can be used to produce human insulin. **(5)**
[17]

TOTAL SECTION B: 35
GRAND TOTAL: 50

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NATIONAL SENIOR CERTIFICATE

GRADE 11

MARCH 2024

LIFE SCIENCES
CONTROLLED TEST 1
MARKING GUIDELINE

MARKS: **50**

This marking guideline consists of 5 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information is given than marks allocated**
   Stop marking when maximum marks are reached and put a wavy line and write 'max' in the right-hand margin.

2. **If, for example, three reasons are required and five are given**
   Mark the first three irrespective of whether all or some are correct/incorrect.

3. **If whole process is given when only a part of it is required**
   Read all and credit the relevant part.

4. **If comparisons are asked for but descriptions are given**
   Accept if the differences/similarities are clear.

5. **If tabulation is required but paragraphs are given**
   Candidates will lose marks for not tabulating.

6. **If diagrams are given with annotations when descriptions are required**
   Candidates will lose marks.

7. **If flow charts are given instead of descriptions**
   Candidates will lose marks.

8. **If sequence is muddled and links do not make sense**
   Where sequence and links are correct, credit. Where sequence and links are incorrect, do not credit. If sequence and links become correct again, resume credit.

9. **Non-recognised abbreviations**
   Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation but credit the rest of the answer if correct.

10. **Wrong numbering**
    If answer fits into the correct sequence of questions but the wrong number is given, it is acceptable.

11. **If language used changes the intended meaning**
    Do not accept.

12. **Spelling errors**
    If recognisable, accept the answer, provided it does not mean something else in Life Sciences or if it is out of context.

13. **If common names are given in terminology**
    Accept, provided it was accepted at the provincial memo discussion meeting.

14. **If only the letter is asked for but only the name is given (and vice versa)**
    Do not credit.

15. **If units are not given in measurements**
    Candidates will lose marks. Memorandum will allocate marks for units separately.

16. **Be sensitive to the sense of an answer, which may be stated in a different way.**

17. **Caption**
    All illustrations (diagrams, graphs, tables, etc.) must have a caption.

18. **Code-switching of official languages (terms and concepts)**
    A single word or two that appear(s) in any official language other than the learners' assessment language used to the greatest extent in his/her answers should be credited if it is correct. A marker that is proficient in the relevant official language should be consulted. This is applicable to all official languages.

19. **Changes to the marking guideline**
    No changes may be made to the marking guideline without consulting the provincial internal moderator.

SECTION A

QUESTION 1

1.1	1.1.1	C✓✓		
	1.1.2	A✓✓	(2 x 2)	**(4)**
1.2	1.2.1	Sessile✓		
	1.2.2	Thallus✓	(2 x 1)	**(2)**
1.3	1.3.1	A only✓✓		
	1.3.2	Both A and B✓✓	(2 x 2)	**(4)**
1.4	1.4.1	Bacillus✓		(1)
	1.4.2	(a) C✓ flagellum✓		
		(b) A✓ nucleoid✓	(2 x 2)	(4)
				(5)

TOTAL SECTION A: 15

SECTION B
QUESTION 2

2.1	2.1.1	A – Gymnosperms✓ B - Pteridophytes✓		(2)
	2.1.2	1- frond✓ 2 - adventitious roots✓ 3 - rhizoids✓		(3)
	2.1.3	They produce seeds✓		(1)
	2.1.4	Angiosperms✓/ Gymnosperms		(1)
	2.1.5	- True vascular tissue/ xylem and phloem for transport of water and nutrients✓ - Seeds which protect developing embryo✓/ protected in ovary or cone - Do not depend on water for sexual reproduction✓ **(Mark first ONE only)**	Any	(1)
	2.1.6	Plant group A have: - True stem, roots and leaves✓/ not a thallus plant - Conducting tissues such as xylem and phloem✓ **(Mark first TWO only)**		(2) **(10)**

2.2 2.2.1 - Kingdom Animalia✓
- Phylum Cnidaria✓ (2)

2.2.2 Blind gut✓ (1)

2.2.3 (a) Radial✓symmetry (1)

(b) Advantage: Collect food/ react to danger from any direction✓
Disadvantage: Sessile✓/ attached to a substrate/ cannot move about/ free- floating (2)

2.2.4 - the presence of a definite head✓
- that contains sense organs✓ in animals (2)
(8)
[18]

QUESTION 3

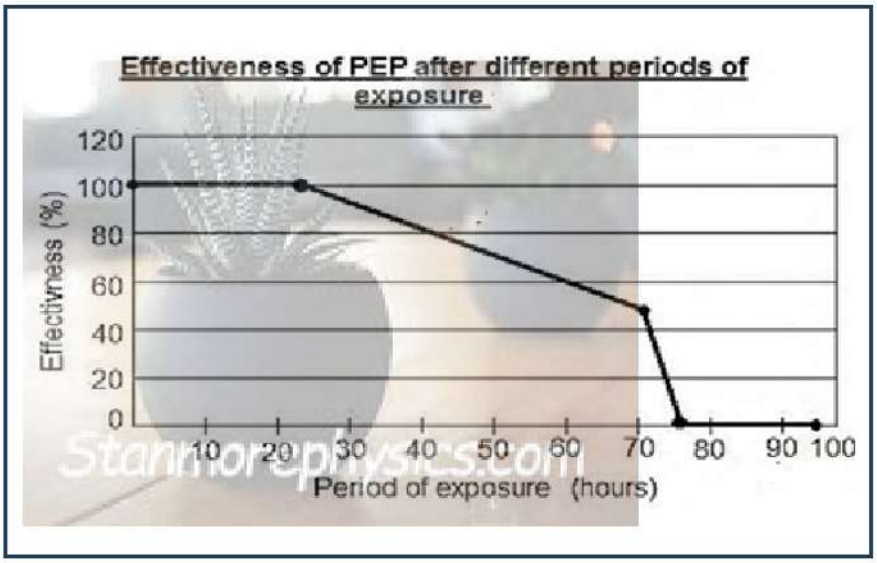
3.1 3.1.1 Preference of Hummingbirds✓ (1)

3.1.2 Hummingbird prefers A. Formosa more than A. Pubescents✓ (1)

3.1.3 Same
- Environmental conditions✓
- Number of flowers for each plant species✓
- Number of hummingbirds✓
- Person doing the experiment✓ Any (1)

(Mark first ONE only)

3.2 3.2.1



Guideline for assessing the graph

CRITERIA	MARK
Correct type of graph (T)	1
Caption of graph (C)	1
Axes labels (L)	1
Scale for X- and Y-axis (S)	1
Plotting: (P) 1 - 4 co-ordinates are plotted correctly All 5 co-ordinates are plotted correctly	 1 2

(6)

3.2.2 75%✓ (Range 72-77) (1)

3.2.3 The effectiveness of PEP drugs declines proportionally with time✓/ if administered after 24 hours (1)
(8)

3.3
- The gene coding for insulin is removed from human DNA✓and
- inserted into the plasmid of the bacterium✓
- The recombined DNA/ Plasmid is placed back into the bacterium cell✓
- The bacterium is allowed to reproduce✓
- Many bacteria cells with the desired gene coding for insulin production are formed✓
- The insulin is extracted and purified✓ Any (5)

[17]

TOTAL SECTION B: 35
GRAND TOTAL: 50