education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

PROVINCIAL ASSESSMENT

GRADE 11

LIFE SCIENCES P2

NOVEMBER 2024

MARKS: 150

TIME: 2½ hours

This question paper consists of 15 pages.

INSTRUCTIONS AND INFORMATION

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, tables or flow charts only when asked to do so.
8. The diagrams in this question paper are NOT necessarily all drawn to scale.
9. Do NOT use graph paper.
10. You must use a non-programmable calculator, protractor and compass where necessary.
11. Write neatly and legibly.

SECTION A

QUESTION 1

1.1 Various options are provided as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question numbers (1.1.1 to 1.1.10) in the ANSWER BOOK, e.g. 1.1.11 D.

1.1.1 Which organism does not belong to a kingdom?

A Virus
B Fungus
C Bacterium
D Protozoa

1.1.2 Which ONE of the following produces antibodies?

A Blood plasma
B Lymphocytes
C Macrophage
D Red blood cells

1.1.3 The following is a list that describe viruses:

(i) they play an important role as decomposers
(ii) they are major pathogen of human
(iii) they are parasites
(iv) they produce within a host cell

Which ONE of the following combinations are of biological importance in viruses?

A (i),(ii) and (iii) only
B (ii),(iii) and (iv) only
C (i),(iii) and (iv) only
D (ii) and (iv) only

1.1.4 Which of the following combinations are the two essential parts of a flower for reproduction?

A Ovary and Anther
B Corolla and Ovary
C Pistil and Stamens
D Calyx and Ovary

1.1.5 The gametophyte is the dominant generation in …

A bryophytes.
B gymnosperms.
C pteridophytes.
D angiosperms.

1.1.6 Which ONE of the following invasive alien plant control measures are the most effective and the least threatening to our indigenous biodiversity?

A Slashing
B Chemical control
C Biological control
D Burning

1.1.7 The zygote of a moss plant …

A results from the fusion of two spores.
B develops into the sporophyte.
C develops into a protonema.
D is part of the gametophyte generation.

1.1.8 The outer layer of a Cnidarian is the …

A ectoderm and contain specialized protective stinging cells.
B ectoderm and has modified cells for digestion.
C mesoglea and comprises non-living substance.
D endoderm and is concerned mainly with locomotion.

1.1.9 Which of the following may be reasons for the exploitation of natural resources?

(i) poverty and shortage of food
(ii) use of indigenous plants for medical purposes
(ii) use of wood to generate heat energy
(iv) for entertainment

A (i), (ii) and (iv)
B (i) and (iii)
C (ii) and (iii)
D (i), (ii) and (iii)

1.1.10 The following are some of the gases which surrounds the earth.

(i) Argon
(ii) Carbon dioxide
(iii) Copper dioxide
(iv) Methane

Which combination below represent greenhouse gases?

A (i) and (ii)
B (ii) and (iii)
C (iii) and (iv)
D (ii) and (iv)

(10 x 2) **(20)**

1.2 Give the correct **biological term** for each of the following descriptions. Write only the term next to the question numbers (1.2.1 to 1.2.7) in the ANSWER BOOK.

1.2.1 Organisms that have a define nucleus

1.2.2 The process used by lymphocytes to engulf bacteria

1.2.3 A symbiotic relationship in which one organism benefits while the other is harmed

1.2.4 The movement of individuals of a population out of a habitat

1.2.5 Pollution that results of warm or very hot water waste pumped into a water body

1.2.6 The phase during population growth where animals adapt to new environment

1.2.7 Total head count of all individuals in a population

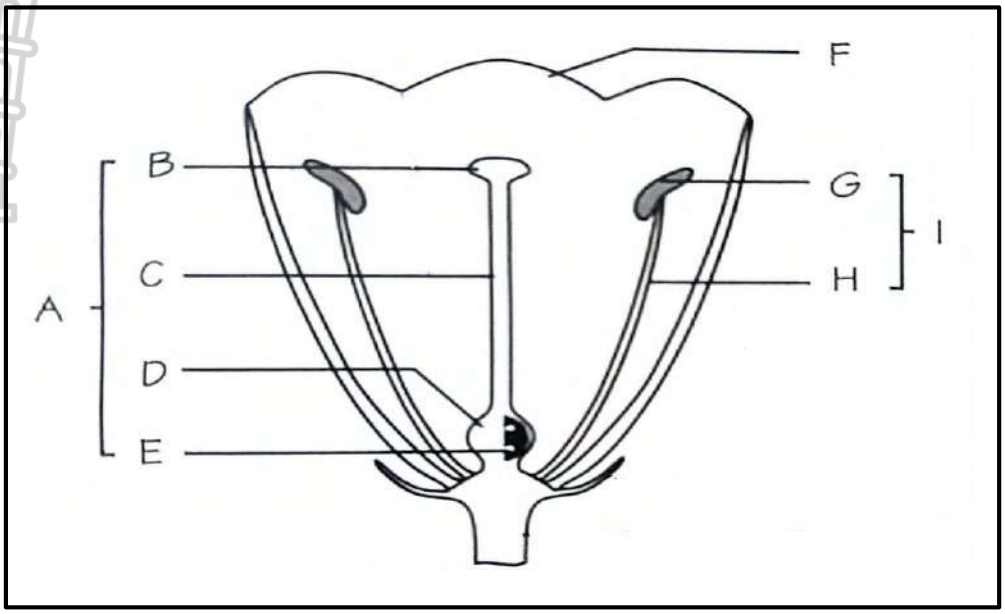
(7 x 1) **(7)**

1.3 Indicate whether each of the statements in COLUMN I apply 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 numbers (1.3.1 to 1.3.4) in the ANSWER BOOK.

COLUMN I		COLUMN II	
1.3.1	Whip-like structures used for locomotion in bacteria	A: B:	Flagella Cilia
1.3.2	Part that form from a fertilized ovum	A: B:	Fruit Seed
1.3.3	Kitten competing for their mother's milk	A: B:	Interspecific competition Intraspecific competition
1.3.4	Resource partitioning	A: B:	Forest stratification Lions and leopards

(4 x 2) **(8)**

1.4 The diagram below represents the structure of a flower.



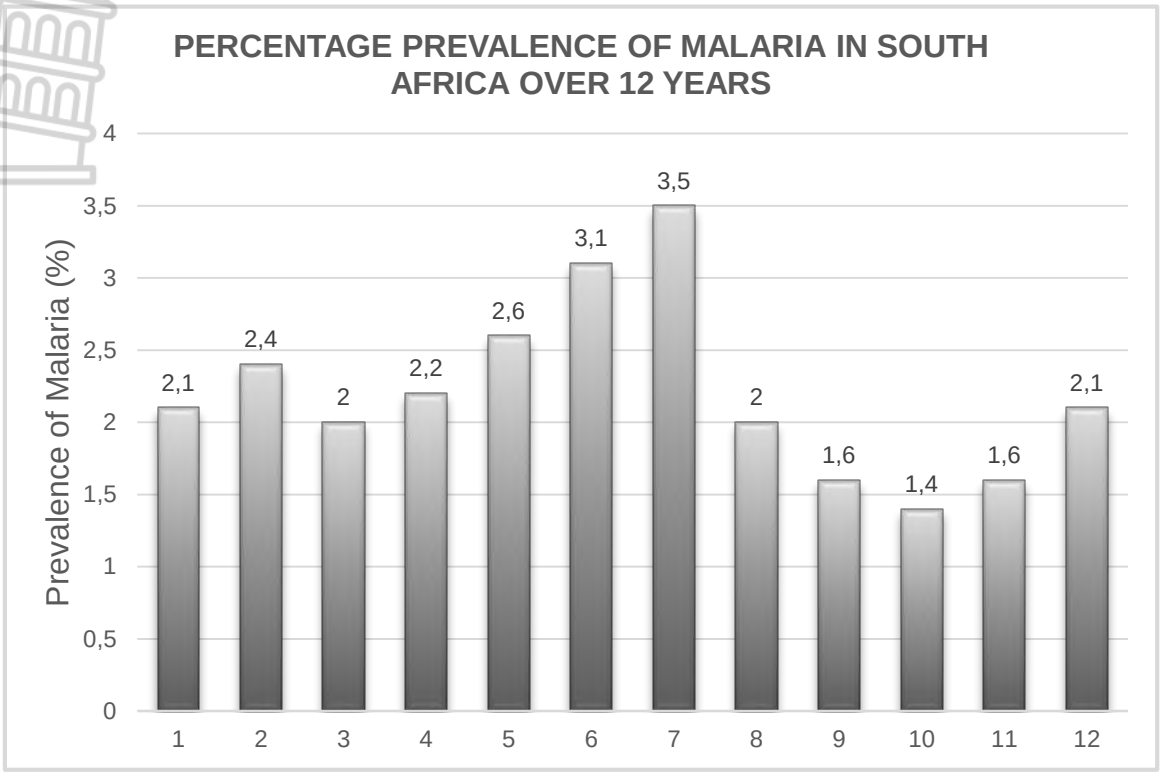
1.4.1 Label part **F** and **H**. (2)

1.4.2 Name the LETTER and the PART which produces pollen. (2)

1.4.3 Give ALL the letters that represent the female whorl. (2)

1.4.4 Give the collective name for all the parts labelled as **I.** (1)
(7)

1.5 The graph below shows prevalence of malaria over years.



1.5.1 In which year was the percentage of malaria the highest? (1)

1.5.2 Calculate the percentage increase in malaria infections from year **3** to **6.** (3)

1.5.3 Name TWO precautionary methods that can be implemented to prevent contracting malaria when travelling to an infested area. (2)

1.5.4 Give TWO symptoms of malaria. (2)
(8)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 The table below shows the population size of mice in a 100 hectare maize field over a 10 year period.

YEAR	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
POPULATION	25	35	75	120	130	120	86	116	110	110

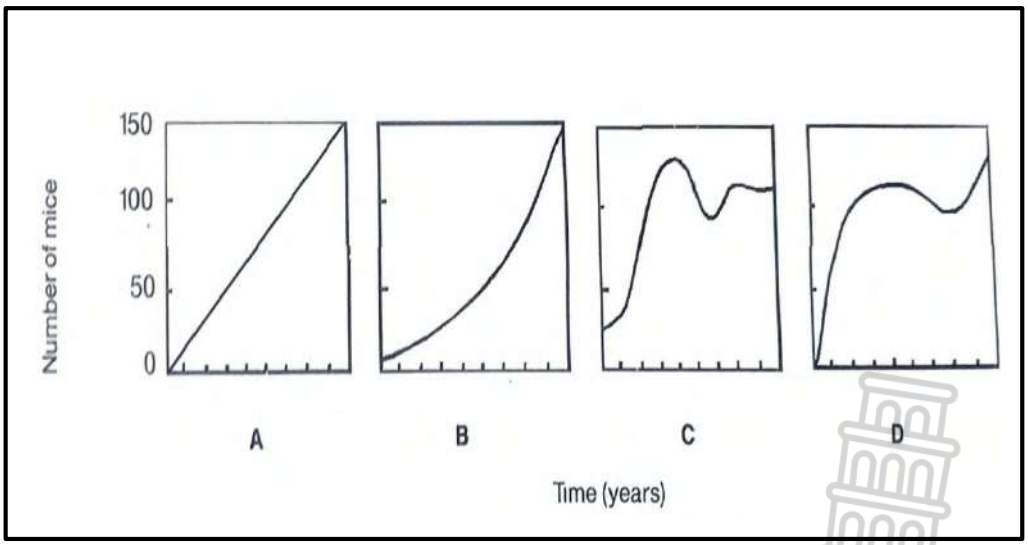
2.1.1 What is meant by the term *population*? (3)

2.1.2 Why was the rate of increase fairly slow from 2015 to 2016? (2)

2.1.3 Why did the numbers increase fast from 2016 to 2019? (2)

2.1.4 Draw a line graph representing the population size of mice from 2015 to 2019. (6)

QUESTION 2.1.5 to 2.1.7 are based on the diagram below.

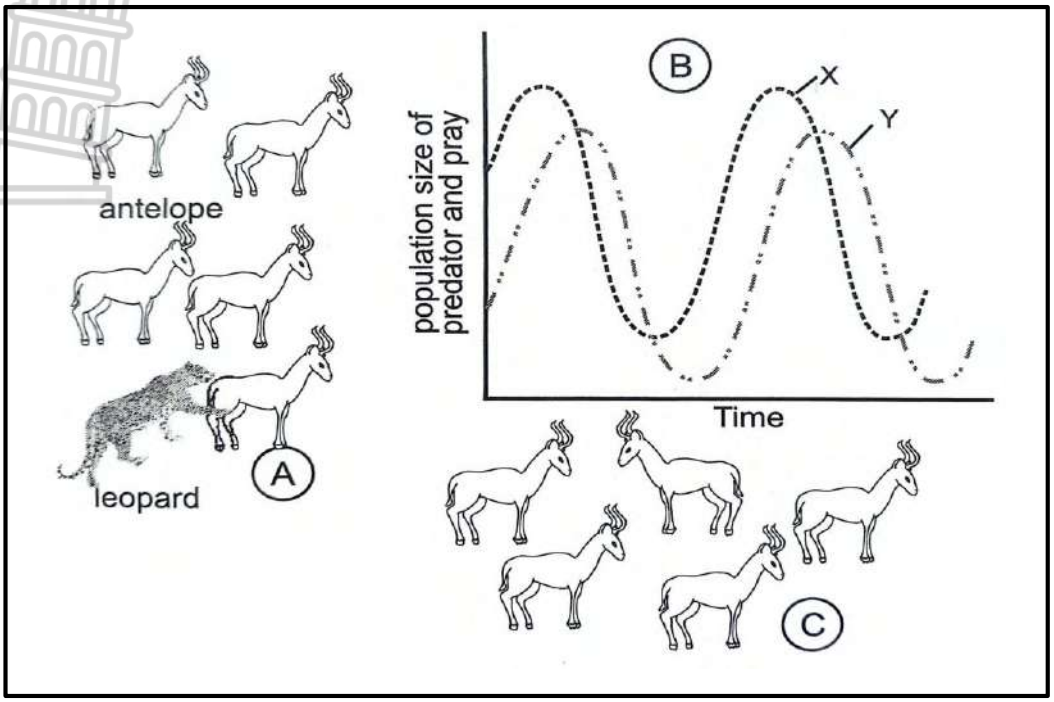


2.1.5 Which graph above represent the population of mice? (1)

2.1.6 What is the carrying capacity of the maize field? (1)

2.1.7 Give a reason for your answer in QUESTION 2.1.6? (2)
(17)

2.2 The illustration below shows the interaction between two animals.



2.2.1 What type of interaction is indicated by illustration **A**? (1)

2.2.2 Explain a reason to your answer in QUESTION 2.2.1. (2)

2.2.3 What effect will this interaction have on the size of the antelope population? (1)

2.2.4 With reference to illustration **B**, which graph represent:

(a) the antelope population? (1)

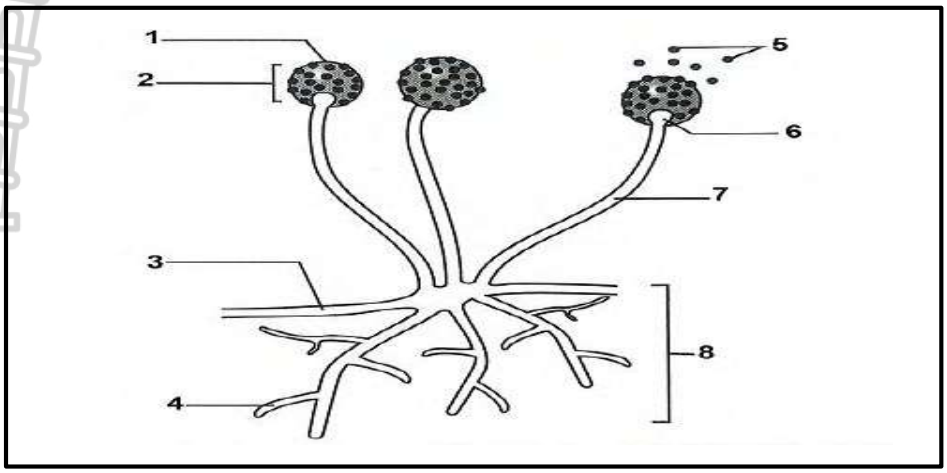
(b) the leopard population? (1)

2.2.5 Name and explain the interaction which will emerge at **C**. (2)

2.2.6 What effect will a density-independent factor have on the size of the antelope population? (1)

2.2.7 Give ONE example of such a factor which were mention in QUESTION 2.2.6. (1)
(10)

2.3 Study the diagram below.



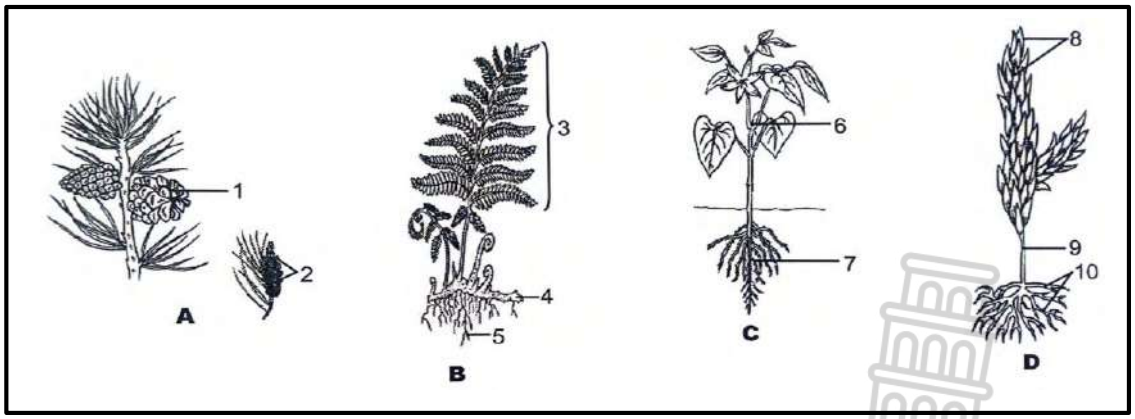
2.3.1 Name the parts labelled **3, 4** and **6**. (3)

2.3.2 State ONE function of part **1, 4** and **7** respectively. (3)

2.3.3 Name and describe the type of nutrition in this plant. (2)

2.3.4 Tabulate TWO differences between fungi and bacteria. (5)
(13)

2.4 Study the diagrams below that represent biodiversity of plants.



2.4.1 Identify the plant groups for **A** and **C**. (2)

2.4.2 Identify parts labelled **1, 3** and **4**. (3)

2.4.3 Give the name of the structure that developed from a germinated spore **B.** (1)

2.4.4 Draw a labelled diagram of the generation that lives semi-parasitically on plant **D**. (4)
(10)
[50]

QUESTION 3

3.1 Study the extract below on elephant culling.

TOO HUNGRY, TOO DESTRUCTIVE, TOO MANY: SOUTH AFRICA TO BEGIN ELEPHANT CULL

An elephant herd at the Kruger National Park has 20 000 elephants, 5 000 more than is sustainable. Ecologists say the animals' huge appetites and fondness for 'habitat re-engineering' – reducing forests to flatland by uprooting trees and trampling plants – is the main problem.

Culling of the excess elephants is seen as an advantage in that it generates revenue for the communities from the sale of ivory and other elephant products. It will also provide meat to the local communities. Alternatives to culling include contraception and relocation of entire elephant families. The removal of fences between the Kruger National Park and parks in neighbouring Mozambique will eventually help with migration into less congested areas.

The 2004 figure of 8 000 elephant increased to 20 000 in 2014 and it is expected to reach 34 000 by 2026.

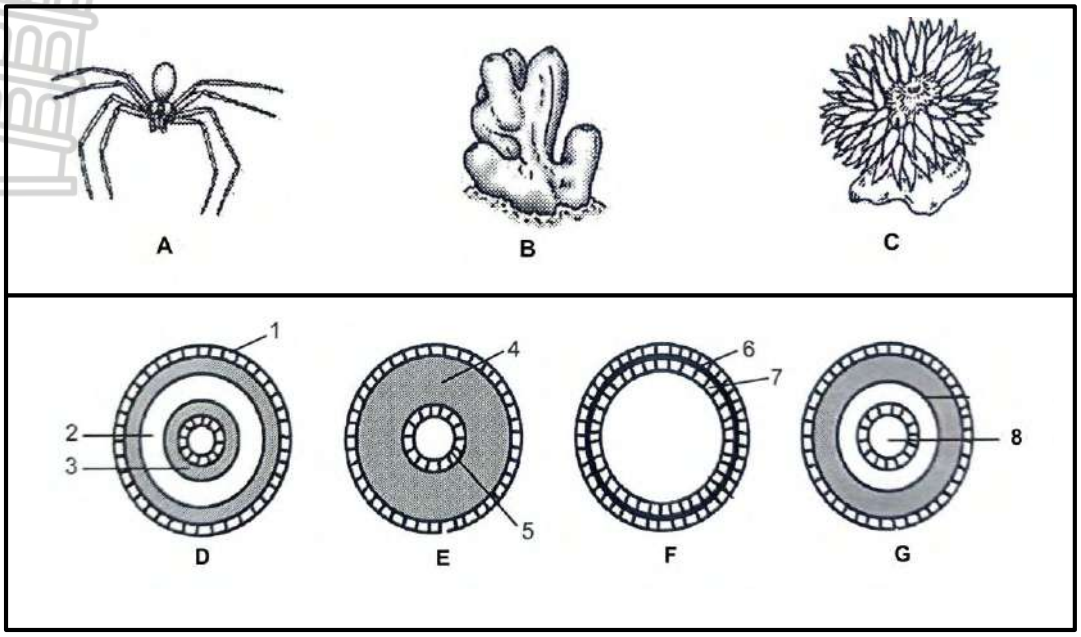
3.1.1 Give the main reason mentioned above in support of the culling of elephants. (1)

3.1.2 Name THREE alternatives to culling proposed above. (3)

3.1.3 Predict the likely elephant population number by 2040 if the population is allowed to keep growing at the same rate. (2)

3.1.4 Suggest how the community can benefit from the culling of elephants. (2)
(8)

3.2 Study the organisms and diagrams represented below.



3.2.1 Identify the type of symmetry illustrated in **A, B** and **C**. (3)

3.2.2 Identify the parts **2, 3, 6** and **8.** (4)

3.2.3 Which diagram(s) according to the number of germ layers represent:

(a) diploblastic (1)

(b) triploblastic (1)

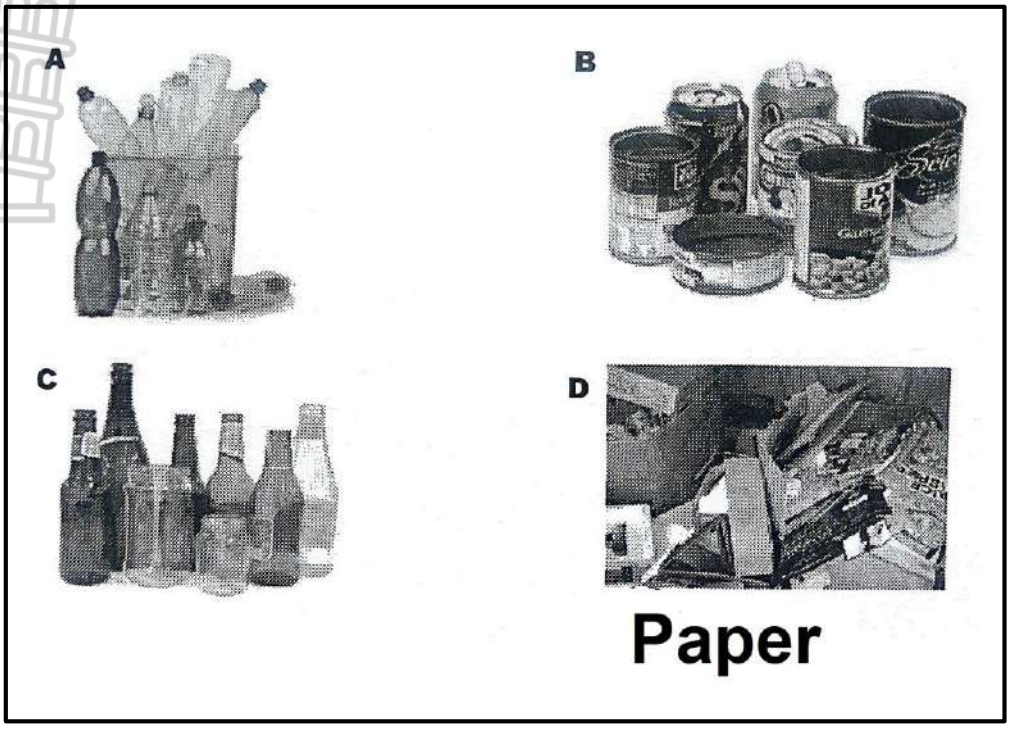
(c) acoelomate (1)

(d) coelomate (1)

3.2.4 Which ONE of the diagrams **D, E, F or G** represents the most advanced and complex animal? (1)

3.2.5 Give a reason to your answer in QUESTION 3.2.4. (2)
(14)

3.3 Study the recycle products shown below.



3.3.1 Name THREE advantages of recycling product **D**. (3)

3.3.2 In which category of household waste will **A** and **B** be classified? (1)

3.3.3 Products **C** is 100% recyclable, but not biodegradable.
What does this mean? (3)

3.3.4 Name and explain the term used to classify product **A** and **C**. (2)
(9)

3.4 Read the extract below on GMO and food security.

GMO AND FOOD SECURITY

The multinational companies controlling agricultural economics:

- impoverish farmers who are forced to buy seed, pesticides, fertilisers and even farming equipment from them at high costs.
- do not allow independent research, in order to protect their profits.
- control most GMO seed rights with patents. Farmers who traditionally saved their seed for replanting or exchanging with other farmers are no longer allowed to do so. The control and ownership of seeds - in the case of GM maize, GM soya and GM cotton in South Africa - passes entirely to multinational corporations that hold the patents, such as Monsanto (German and American) and Syngenta (American and Chinese). This undermines farmers' rights, and places control outside the country.
- the high costs of genetic modification increase food prices which negatively impacts food security.
- most South Africans are unaware that some of their staple foods are genetically modified.

[Redacted from: March Against Syngenta: Monsanto's Swiss Twin Unmasked by MultiWatch, Schwabe AG, 2016]

3.4.1 Name TWO genetically modified crops grown in South Africa. (2)

3.4.2 Explain TWO ways in which genetically modified seed companies will negatively impact on impoverished farmers. (2)

3.4.3 The extract above describes only the negative impacts of genetically modified crops. Describe how food security is positively affected by genetic modification of crops. (3)

3.4.4 How do GM seeds affect the gene pool and biodiversity? (2)

3.4.5 Describe what is meant by the following terms:

(a) Genetically modified organism (GMO) (2)

(b) Food security (2)
(13)

3.5 A population of insects on a semi-desert area are likely to be wingless because flying is dangerous for them in an area with strong winds.

Part of the semi-desert was once covered with tall trees, over years there has been deforestation in some area of semi-desert. In this semi-desert insect called robberflies, have changed. Some have wings and some do not have wings, depending on the area where they are found.

Scientist wanted to determine the relationship between the presence of tall trees and wings on the robberflies.

- they selected eight locations, of which four had tall trees and four were without trees
- using a specialised net, they collected thousand of robberflies in each location
- the sample were labelled according to the area of collection
- these samples were all collected in the morning during summer
- the number of robberflies with wings and without wings at each location was counted and recorded.

3.5.1 State the aim of this investigation. (2)

3.5.2 Identify the:

(a) independent variable (1)

(b) dependent variable (1)

3.5.3 State TWO ways in which the reliability of this investigation was ensured. (2)
(6)
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150

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PROVINCIAL ASSESSMENT

GRADE 11

LIFE SCIENCES P2

NOVEMBER 2024

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 10 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
   Stop marking when maximum marks are reached and put a wavy line and '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 part of it is required**
   Read all and credit relevant part.

4. **If comparisons are asked for and descriptions are given**
   Accept if 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 unrecognized abbreviation but credit the rest of 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 recognizable accept provided it does not mean something else in Life Sciences or if it is out of context.

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

14. **If only letter is asked for and only name is given (and vice versa)**
No 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 appears 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. No changes must be made to the marking memoranda without consulting the Provincial Internal Moderator who in turn will consult with the National Internal Moderator (and the External moderators where necessary).

SECTION A

QUESTION 1

1.1	1.1.1	A✓✓		
	1.1.2	B✓✓		
	1.1.3	B✓✓		
	1.1.4	C✓✓		
	1.1.5	A✓✓		
	1.1.6	C✓✓		
	1.1.7	B✓✓		
	1.1.8	A✓✓		
	1.1.9	D✓✓		
	1.1.10	D✓✓	(10 x 2)	**(20)**

1.2	1.2.1	Eukaryotes✓		
	1.2.2	Phagocystosis ✓		
	1.2.3	Parasitism✓		
	1.2.4	Emigration✓		
	1.2.5	Thermal pollution✓		
	1.2.6	Lag phase✓		
	1.2.7	Census✓		
			(7 x 1)	**(7)**

1.3	1.3.1	A Only✓✓		
	1.3.2	A Only✓✓		
	1.3.3	B Only ✓✓		
	1.3.4	Both A & B✓✓	(4 x 2)	**(8)**

1.4 1.4.1 F – Petals✓ /corolla (1)
H – filament✓ (1)

1.4.2 G ✓- Anther✓ (2)

1.4.3 B,C,D and E✓✓or A (All or Nothing) (2)

1.4.4 Androecium✓/stamen (1)
(7)

1.5 1.5.1 7th year✓ (1)

1.5.2 3,1✓ - 2 ✓= 1,1%✓ (3)

1.5.3
- prophylactic medication✓ (accept Medication)
- insect repellent✓
- use mosquito nets✓
- stay inside when it is dark outside✓
- wear protective clothing✓
- avoid areas where malaria and mosquitoes are present if you are at higher risk✓

MARK FIRST TWO ONLY (2)

1.5.4
- high fever✓
- shaking chills
- sweating✓
- headache✓
- nausea and vomiting✓
- muscle or joint pain✓
- diarrhea✓
- fatigue✓

MARK FIRST TWO ONLY (2)
(8)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1

- Population is a group of individuals of the same species✓
- inhabiting same or define area✓
- in such proximity that random inter-breeding can occur. ✓/ at a specific time

(3)

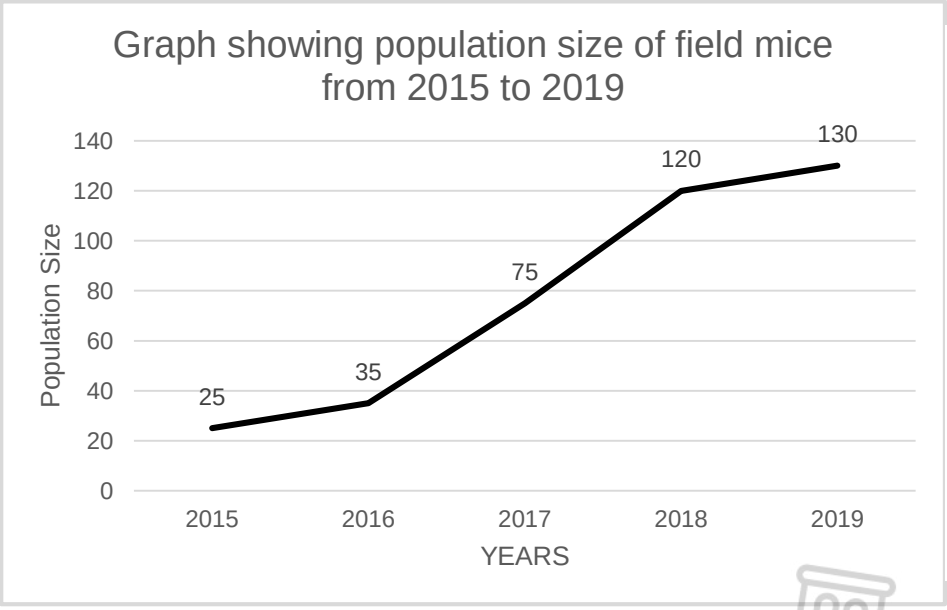
2.1.2

- there were few reproductive individuals✓
- had difficulty to find mating partners due to low density✓/
- need time to acclimatize

(2)

2.1.3 Conditions for reproduction were favourable ✓and environmental resistance is low. ✓ (2)

2.1.4



T= ✓

C= ✓

L= ✓

S= ✓

P= ✓✓

Criteria for marking graph (Rubric)

Criteria	**Mark allocation**
Line graph is drawn **(T)**	1
Correct caption of the graph includes both variables **(C)**	1
Correct labels on X—axis and Y axis **(L)**	1
Correct scale of X –axis and Y –axis **(S)**	1
Correct plotting done **(P)** **1—4 years** **All 5 years**	 1 2
Total mark	6

(6)

N.B If bar or histogram is drawn; marks will be lost for:
- Type
- scale

If axes are transposed:
- can get all marks if labels are also swopped and line graph is horizontal
- if labels are not corresponding, then
  - ➢ Marks will be lost for both labels and scale
  - ➢ plotting can be credited if coordinates are correct for given labels

2.1.5 Graph C✓ (1)

2.1.6 115 ✓ (accept 110 – 120) (1)

2.1.7 The number of field mice fluctuate around that number. ✓✓ (2)
(17)

2.2 2.2.1 Predation✓ (1)

2.2.2 Predator (Leopard) hunt✓ and kill the prey (antelope) ✓ (2)

2.2.3 Decrease ✓the population size of antelope (1)

2.2.4 (a) X ✓ (1)
(b) Y ✓ (1)

2.2.5 Competition ✓/Intraspecific competition. The interaction of the same species competing for the same resources✓ (2)

2.2.6 Decreases antelope population size✓ (1)

2.2.7
- Veld fire✓
- floods✓
- drought✓
- earth quake✓

Any 1 (1)
(10)

2.3 2.3.1 3 – stolon✓ 4 – Rhizoid ✓ 6 – columella ✓ (3)

2.3.2 1 – store /keeps spores✓/produce spore

4 – to anchor the mould /to absorb the nutrient from the bread✓

7 – for dispersal of spore✓/support and carry the sporangia high
MARK FIRST THREE (3)

2.3.3 Saprophytic ✓– derives nutrients from dead organic matters✓ (2)

2.3.4 ✓ (**table)**

FUNGI	BACTERIA
Eukaryotic cells✓/multiple nucleus	Prokaryotic cells✓/ No nucleus
Cell wall of chitin✓	Cell wall of protein, lipids& carbohydrate✓
Multicellular✓	unicellular✓

MARK FIRST TWO ONLY
(1 table + Any 2 x 2) = 5 (5)

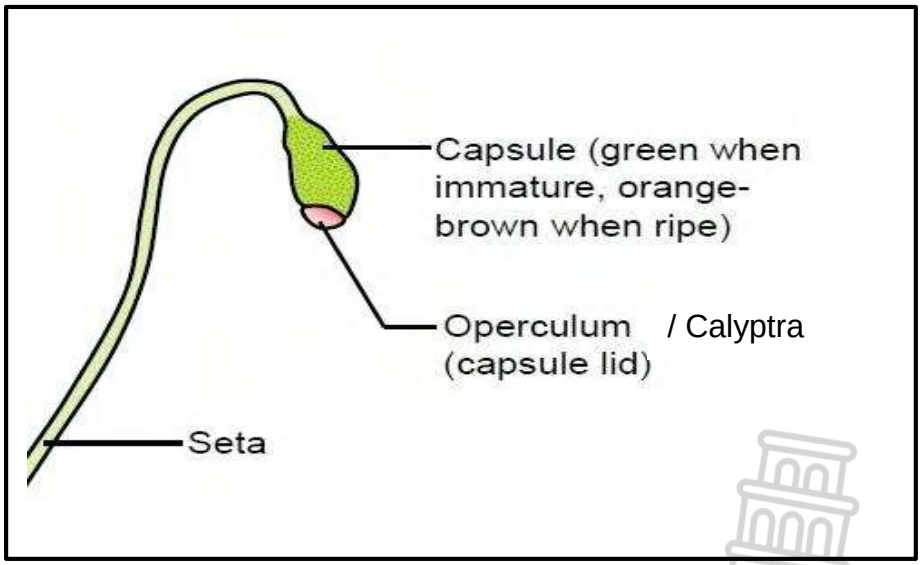
(13)

2.4 2.4.1 A – Gymnosperm✓ C – Angiosperm ✓ (2)

2.4.2 1- (female) cone ✓
3- (compound) leaf✓
4 – Rhizome ✓ (3)

2.4.3 Prothalus (1)

2.4.4



H= ✓
D= ✓
L=✓ ✓

Structure of the sporophyte generation of a moss

CRITERIA	MARKS
Correct Diagram **(D)**	1
Heading **(H)**	1
Any 2 correct labels **(L)**	2

(4)

N.B: If the learner drew whole plant including the gametophyte discredit mark for correct structure.

(10)

[50]

QUESTION 3

3.1 3.1.1 Damage to the environment ✓/ reducing trees (1)

3.1.2 contraception ✓ relocation of elephant families ✓ removing fences to allow migration ✓
MARK FIRST THREE ONLY (3)

3.1.3 50 000 (accept figures between 48 000 & 52 000) ✓✓ (2)

3.1.4 the sale of ivory and other elephant products, ✓ - as well as providing meat to the local communities. ✓ (2)
(8)

3.2. 3.2.1 A - bilateral symmetric ✓ (1)
B - asymmetrical ✓ (1)
C- radially symmetrical✓ (1)

3.2.2 2 - coelom✓ (1)
3 - mesoderm ✓ (1)
6 - mesoglea✓ (1)
8- digestive track✓ (1)

3.2.3 (a) F✓/E (1)
(b) D✓ (1)
(c) E✓ / F (1)
(d) D ✓ (1)

3.2.4 D✓ (1)

3.2.5 It has three germ layers (triploblastic) ✓and has true coelom (coelomate) ✓ (2)
(14)

3.3 3.3.1
- saves trees ✓
- saves energy✓
- saves water✓

MARK FIRST THREE ONLY (3)

3.3.2 Dry waste✓ (1)

3.3.3 Glass can be recycled many times✓ and does not lose any of its quality ✓or purity, but it is not decomposed naturally by microorganisms. ✓ (3)

3.3.4 Non-biodegradable✓ – products that cannot be broken down by living organisms. ✓ (2)
(9)

3.4 3.4.1 GM maize ✓, GM soya ✓ and GM cotton ✓
MARK FIRST TWO ONLY (2)

3.4.2 Farmers are forced to buy seeds, pesticides and fertilisers at high cost. ✓ Ownership and rights to the GMO seeds belongs to the companies and not to the farmers. ✓ Farmers using GMO seeds cannot do independent research to improve their crops. ✓ Profits go out of the country to enrich other wealthy countries ✓
MARK FIRST TWO (2)

3.4.3 Benefits of GMO: higher yields ✓, pest and disease resistant ✓, can be grown in places where conditions where previously unsuitable✓, they provide extra nutrients ✓
MARK ANY THREE (3)

3.4.4 GM could reduce the gene pool with the loss of variety ✓
This will negatively affect or reduce biodiversity ✓ (2)

3.4.5 (a) GMO: an organism that has its DNA altered ✓ for a specific purpose ✓ (2)

(b) when people have enough food ✓ to live a good, healthy life ✓/ To ensure sufficient nutritious food for all people at all the times. (2)
(13)

3.5 3.5.1 To determine the relationship between the presence of tall trees and wings on robberflies (2)

3.5.2 (a) presence of tall trees ✓ (1)

(b) wings on the robberflies (1)

3.5.3 Collected thousands of robberflies✓ (1)

Four locations for each category✓ (1)
(6)
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150