



education

MPUMALANGA PROVINCE
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

Stanmorephysics.com
LIFE SCIENCES

TOPIC TEST

4 MARCH 2024

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MARKS: 50

TIME: 50 Minutes

This question paper consists of 9 pages.



INSTRUCTIONS AND INFORMATION

1. Answer ALL the questions.
2. Write ALL the answers in the ANSWER BOOK.
3. Start the answers 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. ALL drawings should be done in pencil and labelled in blue or black ink.
7. Only draw diagrams or flow charts when asked to do so.
8. The diagrams in this question paper are NOT all drawn to scale.
9. Do NOT use graph paper.
10. Non-programmable calculators, protractors and compasses may be used.
11. Write neatly and legibly.

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 1.1.3) in the ANSWER BOOK, for example 1.1.4 C

1.1.1 Moss plants live in moist/damp places because ...

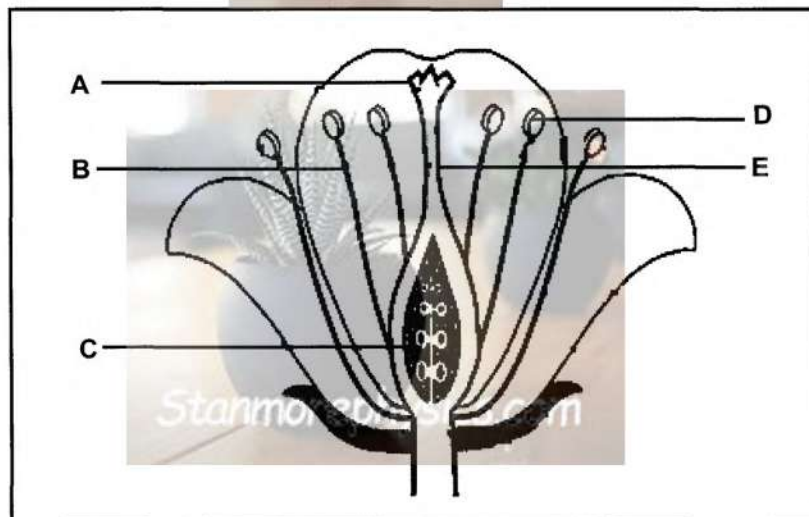
- A. water is needed for fertilisation.
- B. moss plants have conducting tissue.
- C. moss plants produce spore.
- D. Water is not needed for fertilisation.

1.1.2 The ... generation is dominant in flowering plants.

- A. spores
- B. gametophyte
- C. sporophyte
- D. gametes



1.1.3 The diagram below represents the flower.





Which of the following combinations below represents the male sexual organs of the flower?

- A. A and C
- B. D and E
- C. B and D
- D. A and E

(3 x 2) (6)

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 1.2.3) in the ANSWER BOOK.

1.2.1 The part of a flower that becomes the fruit after fertilization.

1.2.2 The heart shaped structure that germinates from a spore of a fern and represents the gametophyte generation.

1.2.3 The generation that is sexual and produces gametes.

(3 x 1) (3)

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 1.3.3) in the ANSWER BOOK.

COLUMN I	COLUMN II
1.3.1 A plant body that did not differentiate into true root, stem and leaves.	A: Thallus B: Sorus
1.3.2 Plants with naked seeds	A: Bryophytes B: Pteridophytes

(2 x 2) (4)

1.4 The diagram below shows the branch of a pine tree.



- 1.4.1 To which group does the pine tree belong? (1)
- 1.4.2 Identify one visible reason for your answer in Question 1.4.1 (1)
- 1.4.3 Explain the significance of the shape of the leaves in the diagram above. (1)
- 1.4.4 State ONE disadvantages of wind pollination. (1)
- (4)**

TOTAL SECTION A: 17

SECTION B

QUESTION 2

2.1 Study the diagram below showing non-seed vascular plant.



- 2.2.1 To which plant group does the plant above belong to? (1)
- 2.2.2 What is the dominant generation of the plant above? (1)
- 2.2.3 Name the green photosynthetic structure that grows into a gametophyte. (1)
- 2.2.4 Identify part A. (1)
- 2.2.5 Name ONE function of part A. (1)
- 2.2.6 Explain why the gametophyte plants live in moist habitats. (1)
- 2.2.7 The plant shown above can grow into a large plant. (1)

Name TWO features that will enable this plant to survive in terrestrial life. (2)

(8)

2.2 Grade 11 learners conducted an investigation to determine the effect of petals on insect pollination in apple flowers. When flowers are self-pollinated, the pollen tubes grow a little into the stigma and style, and fertilisation does not take place. Method followed:



- 5 flowers with petals and 5 flowers without petals were used; flowers were from the same plant species
- Both groups of flowers were exposed to pollinating agents for ten days
- After ten days the extent of pollination and fertilisation was recorded

The results are shown in the table below:

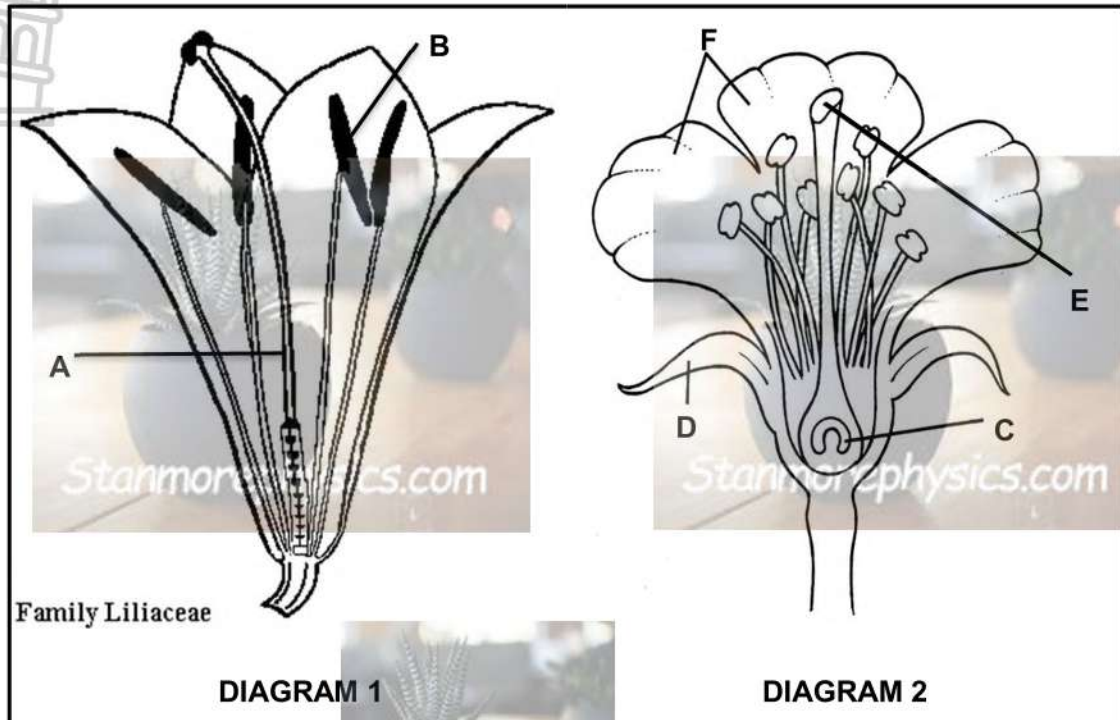
Features	Type of flower	
	Flower with petals	Flower without petals
Pollen on stigma	135	33
Pollen tubes in style	72	7
Ovules fertilized	25	4

- 2.2.1 State the hypothesis for the above investigation. (2)
- 2.2.2 Identify the dependent variable for the investigation. (1)
- 2.2.3 Suggest TWO ways in which learners ensured that the results of their investigation are valid. (2)
- 2.2.4 Explain why there is more pollen on the stigmas of the flowers with petals than on the flowers without petals. (2)
- 2.2.5 Explain why there are more pollen tubes present in the styles of flowers with petals than the number ovules fertilised. (2)
- (9)**

TOTAL QUESTION 2: 17

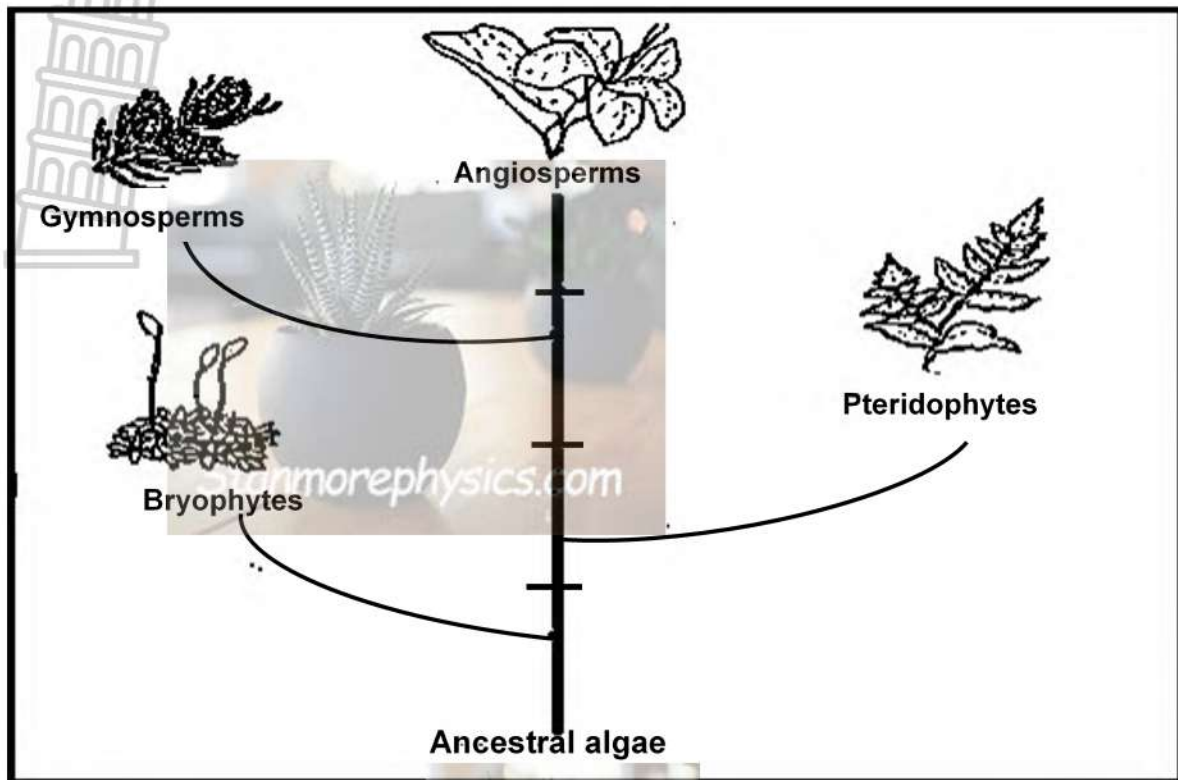
QUESTION 3

3.1 Study DIAGRAMS 1 and 2 of angiosperm flowers below and answer the questions that follow.



- 3.1.1 Provide labels for structures A and D. (2)
 - 3.1.2 Give the letter of the structure where the seed is formed. (1)
 - 3.1.3 Neither of these flowers is wind pollinated. Give TWO ways how you would identify a wind pollinated flower. (2)
 - 3.1.4 Give TWO advantages of sexual reproduction. (2)
- (7)**

3.2 Study the diagram below representing plant diversity.



3.2.1 Which group of plants is represented as non-vascular in the diagram? (1)

3.2.2 From the phylogenetic tree above, which group of plants were the last to develop? (1)

3.2.3 Tabulate TWO differences between bryophytes and angiosperms. (5)

(7)

TOTAL QUESTION 3: 14

GRAND TOTAL: 50



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LIFE SCIENCES

**INFORMAL TEST MARKING GUIDELINES
3 MARCH 2024**

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This marking guideline consists of 8 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**

Stop marking when maximum mark is 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 but 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 unrecognised 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 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 national memo discussion meeting.

14. If only letter is asked for but only 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, drawings, 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 learner's assessment language used to the greatest extent in his/her answers should be credited, provided it is correct. A marker that is proficient in the relevant official language should be consulted. This is applicable to all official languages.



SECTION A

QUESTION 1

1.1

1.1.1 A ✓✓

1.1.2 C ✓✓

1.1.3 C ✓✓

(6)

1.2

1.2.1 Ovary ✓

1.2.2 Thallus ✓

1.2.3 Gametophyte ✓

(3)

1.3

1.3.1 A only ✓✓

1.3.2 None ✓✓

(4)

1.4

1.4.1 Gymnosperms ✓

(1)

1.4.2 The presence of cones ✓

(1)

1.4.3 The leaves are needle shaped to reducing the surface area exposed to the sun. ✓

OR

Leaves have a thick cuticle that reduces water loss/transpiration. ✓

(1)

1.4.4 Water is not required for fertilisation ✓

It can only occur during windy conditions ✓

Pollen is transported in any direction/randomly ✓

Requires a large amount of pollen to be produced. ✓

Cones of ovules must be sticky for pollen to stick ✓

Chance of landing on cones/flowers of different species ✓ (1)

(4)

TOTAL SECTION A: 17

SECTION B

QUESTION 2

2.1

2.1.1 Pteridophyte ✓ (1)

2.1.2 Sporophyte ✓ (1)

2.1.3 Prothallus ✓ (1)

2.1.4 Rhizome ✓ (1)

2.1.5 Stores food in a form of starch and proteins. ✓ (1)

2.1.6 Gametophyte generation depends on water for fertilization. ✓

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OR

Sperm require water to swim to the ova for fertilization. ✓ (1)

2.1.7 True roots, stems and leaves.✓



OR

Have vascular tissues present✓ /xylem and phloem present✓

OR

Leaves are covered by cuticle

(1)

(Mark the first ONE only)

(8)

2.2

2.2.1 The presence/absence of petals increase/decrease the chances for pollination✓✓

OR

The presence/absence of petals has no effect on pollination✓✓

(2)

2.2.2 Type of flower

(1)

2.2.3 Flowers were taken from the same plant✓

Plants were exposed to pollinating agent for the same amount of time.✓

(2)

(Mark the first TWO only)

2.2.4 Flowers with petals attract more insects✓

An increase in insects increases the chance for pollination✓

(2)

2.2.5 Self-pollination occurred✓

Not all the pollen tube reached the ovary, thus fertilisation did not occur.✓

(2)

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(9)

TOTAL QUESTION 2: 17

QUESTION 3

3.1

3.1.1 A – Style ✓

D – Sepal ✓ / Calyx

(2)

3.1.2 C ✓

(1)

3.1.3

- Petals are small, green and not showy ✓
- Long filaments and anthers (stamens) that hang outside the flower ✓
- Large amount of pollen produced ✓
- Small, light pollen granules ✓
- Stigma may be large and feathery ✓
- Do not produce scent or nectar ✓

(Mark first TWO only) (Any 2 x 1)

(2)

3.1.4

- Offspring genetically different from one another and their parents which allows species to adapt to new environments. ✓
- It is a way of leaving behind parasites or diseases that the parent might have. ✓
- The zygote is surrounded by a thick protective coat which increases chance of survival. ✓
- Genetic variation may lead to new species developing. ✓
- Allows for selection of favourable characteristics. ✓

(Mark first TWO only) (Any 2 x 1)

(2)

(7)

3.2.1 Bryophytes ✓ (1)

3.2.2 Angiosperms ✓ (1)

3.2.3

Non-vascular plants	Angiosperms ✓
No vascular tissues present/no xylem and phloem present. ✓	Vascular tissues present/has xylem and phloem. ✓
Does not produce seeds ✓	Produces seeds ✓
Dependent on water for fertilisation ✓	Not dependent on water for fertilisation ✓

(2x2) (4)

(1 x table) (1)

(7)

Total Question 3: 14

GRAND TOTAL: 50

