# Basic Education

KwaZulu-Natal Department of Basic Education

REPUBLIC OF SOUTH AFRICA

**LIFE SCIENCES**

**PROVINCIAL PAPER**

**MARCH 2020**

**NATIONAL SENIOR CERTIFICATE**

**GRADE 11**

**MARKS: 60**

**TIME: 1 hour**

**This question paper consists of 8 pages.**

**INSTRUCTIONS AND INFORMATION**

Read the following instructions carefully before answering the questions.

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. 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 drawn to scale.
9. Do NOT use graph paper.
10. You may use a non-programmable calculator, protractor and a compass.
11. Write neatly and legibly.

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## 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 to D) next to the question number (1.1.1 to 1.1.3) in the ANSWER BOOK, for example 1.1.4 D.

1.1.1 The use of antibiotics is an effective treatment for …

A viral infections.
B bacterial and protist infections.
C bacterial and viral infections.
D bacterial infections only.

1.1.2 All viruses are…

A eukaryotes.
B prokaryotes.
C unicellular and disease-causing.
D capable of reproduction only in a host cell.

1.1.3 Vaccines are effective in protecting the body because they…

A trigger the immune system to produce antibodies to protect the body from a disease-causing agent.
B attack disease-causing agent as soon as it enters the body.
C help the body excrete the disease-causing agent.
D allows the disease-causing agent to multiply itself inside the host body.

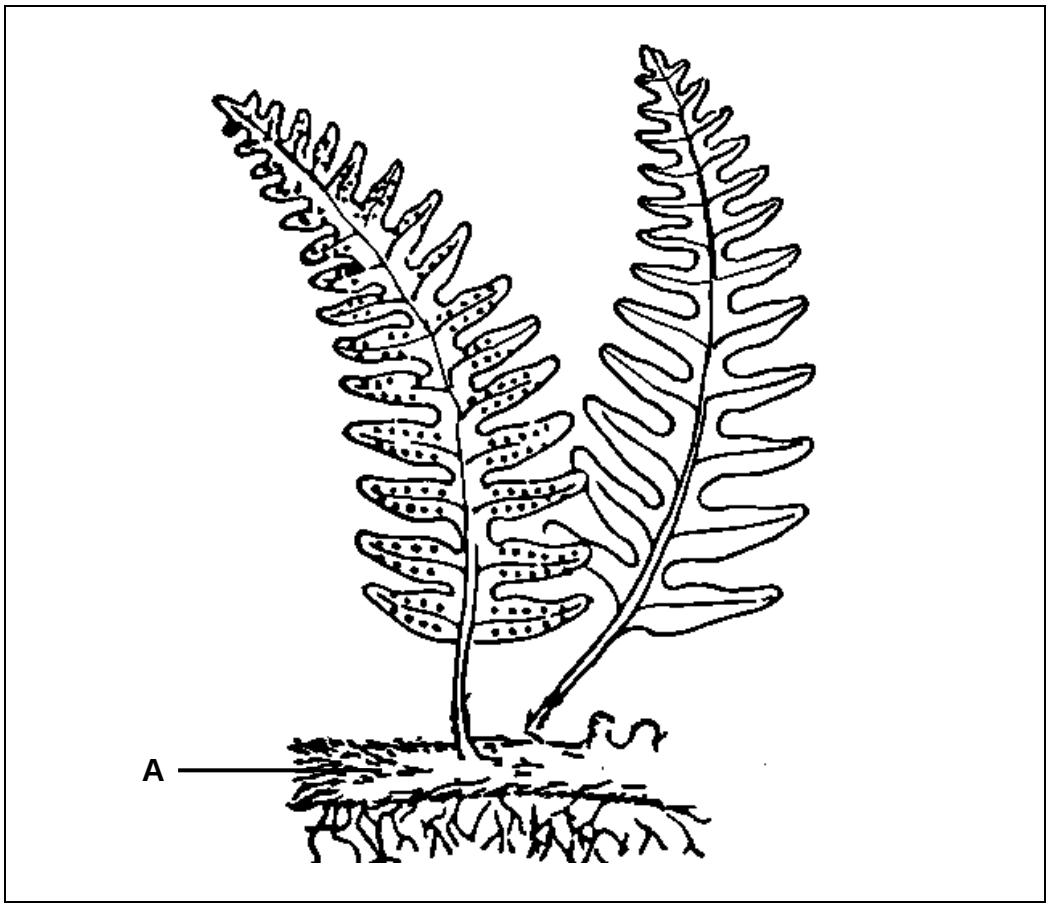
(2 x 3) **(6)**

1.2 Indicate whether each of the descriptions 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 1.3.5) in the ANSWER BOOK.

| COLUMN I | | COLUMN II |
|---|---|---|
| 1.2.1 | Cephalisation is found in | A: Platyhelminthes<br>B: Cnidaria |
| 1.2.2 | Body cavity in multicellular organisms | A: Acoelomate<br>B: Coelomate |

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

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




1.3.1 To which plant group does the plant above belong to? (1)

1.3.2 What is the dominant generation of the plant above? (1)

1.3.3 Name the green photosynthetic structure that grows into a gametophyte. (1)

1.3.4 Identify part **A**. (1)

1.3.5 State ONE function of part **A**. (1)

1.3.6 Explain why the gametophyte plants live in moist habitats. (2)

1.3.7 The plant shown above can grow into a large plant.

Name THREE features that will enable this plant to survive in terrestrial life. (3)
**(10)**

**TOTAL SECTION A: 20**

## SECTION B

## QUESTION 2

2.1 Grade11 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

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

2.1.1 State the hypothesis for the above investigation. (2)

2.1.2 Identify the dependent variable for the investigation. (1)

2.1.3 Suggest TWO ways in which learners ensured that the results of their investigation are valid. (2)

2.1.4 Explain why there is more pollen on the stigmas of the flowers with petals than on the flowers without petals. (2)

2.1.5 Explain why there are more pollen tubes present in the styles of flowers with petals than the number ovules fertilised. (2)

**(9)**

2.2 Read the passage below about malaria.

**Malaria is 100% treatable and preventable**

Malaria is a deadly disease that is transmitted to humans through a bite of an infected female Anopheles mosquito. Each year 655 000 people around the world die from malaria, 200 000 of these deaths are newborns and 10 000 mothers.

2.2.1 To which kingdom do organisms that cause malaria belong? (1)

2.2.2 Explain a possible reason why there is a high death rate due to malaria. (2)

2.2.3 Explain ONE strategy that should be employed by the department of health to reduce malaria deaths. (2)

2.2.4 Calculate the percentage of mothers who die each year according to the extract. (2)

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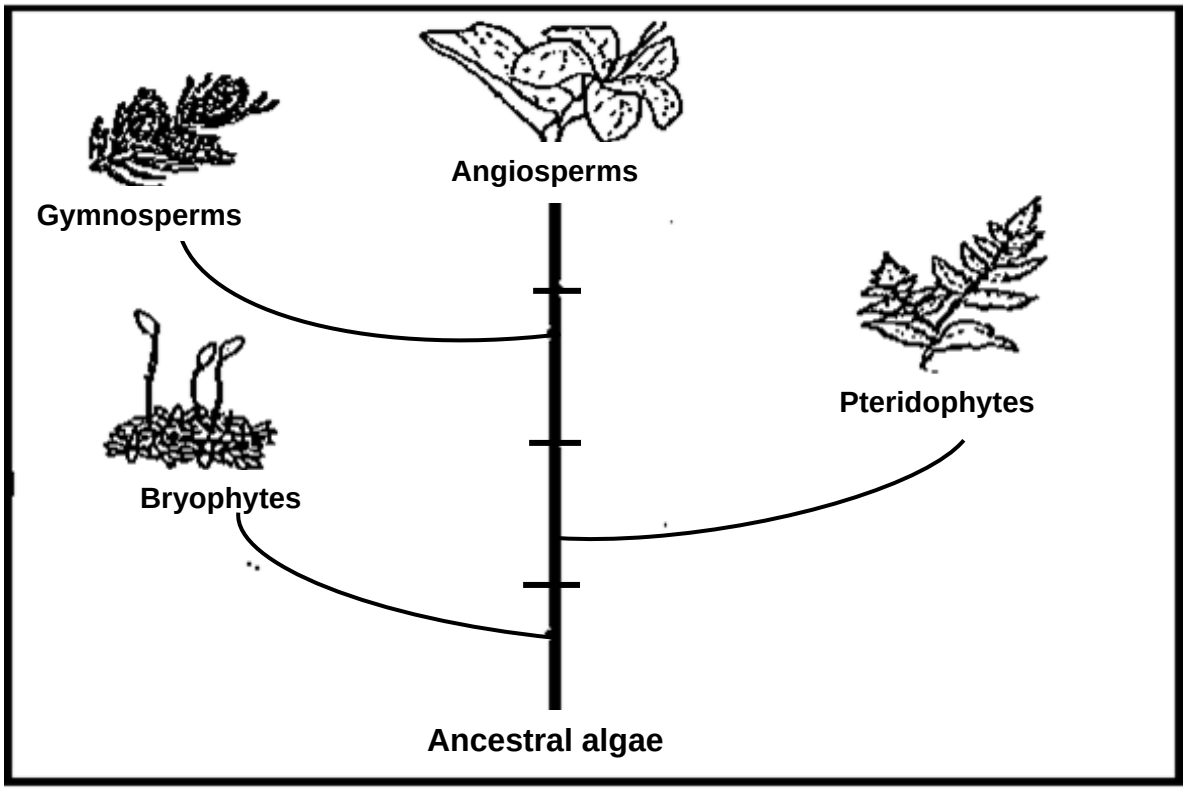
2.2.5 From the extract, how is malaria transmitted to humans? (1)

2.2.6 Explain the economic impact to the country if there is high percentage of people suffering from malaria. (2)

2.2.7 State ONE way malaria can be prevented. (1)
**(11)**

**TOTAL QUESTION 2 : 20**

3.1 Study the diagram below representing plant diversity.




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

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

3.1.3 Tabulate TWO differences between bryophytes and angiosperms. (5)
**(7)**

3.2 Complete the following table showing different animal groups and their features. Write down only the number of the question and the answer.

| Animal group (phylum) | Named example of | Type of symmetry | Tissue layers | Gut openings |
|---|---|---|---|---|
| 3.2.1 | Sponges | Asymmetrical | Cell differentiation-no tissue layers | No through-gut, filter feeding |
| Cnidaria | Jellyfish | Radial symmetry | 3.2.2 | Blind-gut |

(2)

3.2.3 Differentiate between diploblastic and triploblastic animals. (2)

3.2.4 State ONE disadvantage of having a blind gut in the organism mentioned in QUESTION 3.2.1. (1)

3.2.5 What is the significance of having a radial symmetry? (2)

3.2.6 Briefly describe THREE characteristics present in the body plans of Annelids that allows them to survive in their environment. (6)

**(13)**

**[20]**

**TOTAL SECTION: B 40**

**GRAND TOTAL: 60**

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Department:
Education
PROVINCE OF KWAZULU-NATAL

# LIFE SCIENCES

# MARKING GUIDELINE

# MARCH 2020

## NATIONAL SENIOR CERTIFICATE

## GRADE 11

**MARKS: 60**

**TIME: 1 hour**

**This marking guideline consists of 5 pages.**

## SECTION A

## QUESTION 1

1.1

1.1.1 D ✓✓
1.1.2 D ✓✓
1.1.3 A ✓✓ (3 x 2) **(6)**

1.2

1.2.1 A only ✓✓
1.2.2 B only ✓✓
(2 x 2) **(4)**

1.3 1.3.1 Pteridophyte ✓ (1)

1.3.2 Sporophyte✓ (1)

1.3.3 Prothallus ✓ (1)

1.3.4 Rhizome✓ (1)

1.3.5 Stores food in a form of starch and proteins. ✓ (1)
**(Mark the first ONE only)**

1.3.6 Gametophyte generation depends on water for fertilization. ✓
Sperm require water to swim to the ova for fertilization. ✓ (2)

1.3.7 True roots, stems and leaves. ✓
Have vascular tissues present ✓/xylem and phloem present✓
Leaves are covered by cuticle✓ (3)
**(Mark the first THREE only)** **(10)**

**TOTAL SECTION A: 20**

## SECTION B

## QUESTION 2

2.1

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

**OR**

The presence/absence of petals has no effect on pollination✓✓ (2)

2.1.2 Type of flower✓ (1)

2.1.3 - 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)**

2.1.4 - Flowers with petals attract more insects✓
- an increase in insects increases the chance for pollination✓ (2)

2.1.5 - Self-pollination occurred✓
- not all the pollen tube reached the ovary, thus fertilisation did not occur✓ (2)

**(09)**

2.2 2.2.1 Protista✓ (1)

2.2.2
- Most people are not aware that they have contracted the disease✓
- they do not seek medical attention which leads to death✓

**OR**

- People do not have sufficient knowledge about malaria✓
- hence they don't take proper precautions when visiting malaria stricken countries✓ Any 1 x 2 (2)

2.2.3
- Educate people about the causes of malaria/awareness campaigns ✓
- so that they are well informed about the disease and its causes ✓ (2)

**(Mark the first ONE only)**

2.2.4

$$\frac{10\ 000 \times 100}{655\ 000}$$✓

1.5%✓ (2)

2.2.5 - Through a bite of an infected Anopheles mosquito✓ (1)

2.2.6
- Decrease the economy✓
- as more money will be spent buying medicine✓

**OR**

- There will be a high number of people absent from work due to illness✓
- decreasing productivity and the economy of the country✓ (2)

Any 1 x 2

2.2.7
- Sleep under mosquito nets✓
- Use insect repellents ✓ (1)

**(Mark the first ONE only)** **(11)**

**QUESTION 3**

3.1 3.1.1 Bryophytes ✓ (1)

3.1.2 Angiosperms ✓ (1)

3.1.3 ✓

| 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✓ |

(5)

(2 x 2 + 1 for the table) **(7)**

3.2 3.2.1 Porifera ✓ (1)

3.2.2 Diploblastic✓ (1)

3.2.3 Diploblastic animals produce only two germ layers✓
Triploblastic animals produce three germ layers✓ (2)

3.2.4
- The animal cannot ingest and egest at the same time✓
- The ingestion, digestion and egestion are not systematic✓
- There is mixing of digested and undigested food✓
- Digested food is also expelled during egestion✓

**(Mark the first ONE only)** (1)

3.2.5 - Allows the organism to sense danger/food from all directions✓✓ (2)

3.2.6
- Has a hydrostatic skeleton✓
  which assist during movement✓
- Has coelom✓
  which provides a circulatory system✓
- Has a through-gut✓
  which allows for more efficient absorption of nutrients and removal of waste✓
- Has a high degree of cephalisation✓
  allowing for the concentration of sense organs and nervous control to be at the anterior end of the body✓
- Has a closed blood system✓
  allows for faster transportation of blood within blood vessels✓

**(Mark the first THREE only)** (6)

**TOTAL SECTION B:** **(13)**

**20**

**GRAND TOTAL: 60**

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