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KWAZULU-NATAL PROVINCE

EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 11



LIFE SCIENCES

MARCH 2022

COMMON TEST

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 Pollination in angiosperms occurs when….

A A sperm cell unites with the ovum
B Pollen moves from the anther to the stigma
C The pollen tube grows down the style
D Ovary enlarges to fruit

1.1.2 A jelly fish belongs to the phylum Cnidaria because it has…

A an exoskeleton made of chitin
B a fluid filled coelom that forms a hydrostatic skeleton
C a fluid filled gut that forms a hydrostatic skeleton
D has an endoskeleton

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

A Large anthers with long filaments
B Small, light and smooth pollen
C Stigmas are large and feathery
D Petals are large and brightly coloured

(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 1.2.4) in the ANSWER BOOK.

1.2.1 The dominant generation in bryophytes

1.2.2 Animals that remain attached to a substrate for most of their lives

1.2.3 The collective name for a stigma, style and ovary

1.2.4 The germ layer that gives rise to muscle and other internal organs

(4 x 1) **(4)**

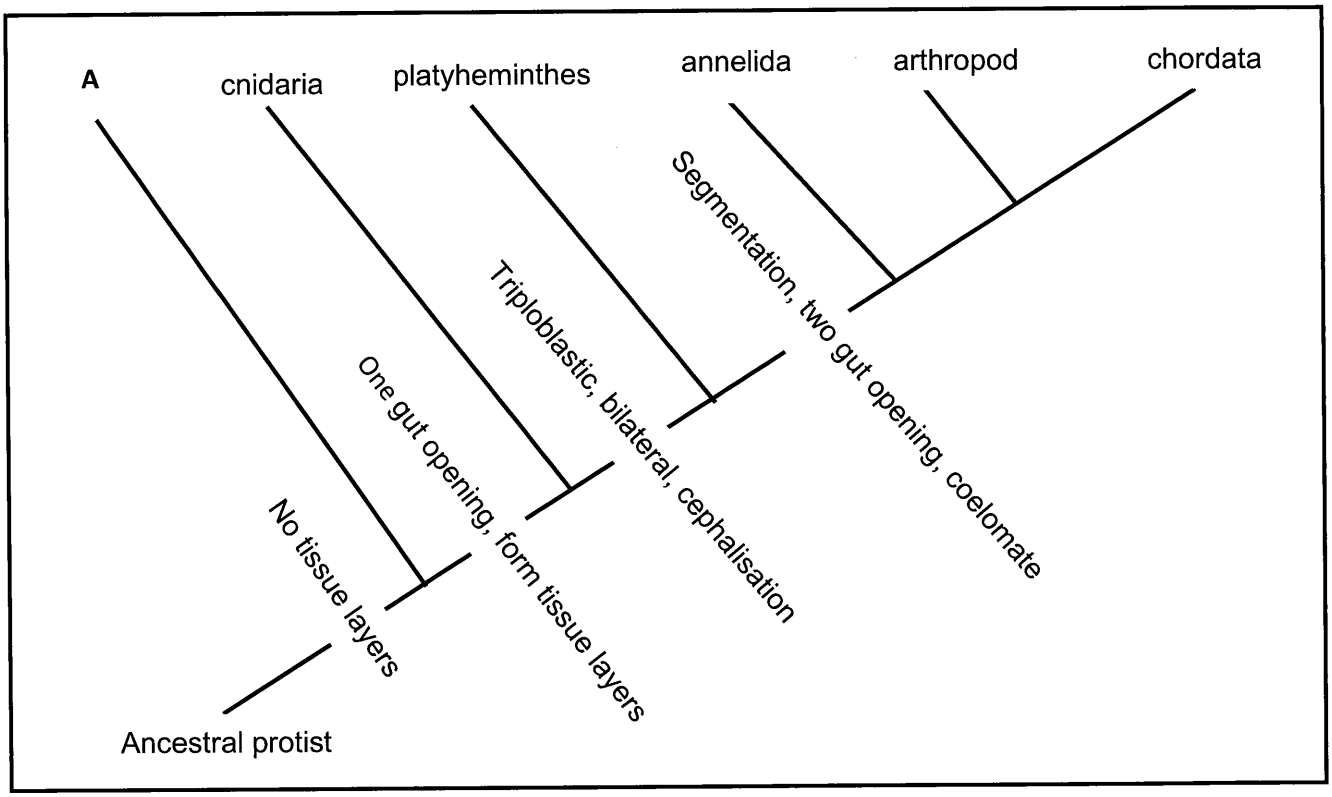
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1.3 Indicate whether each of the descriptions in COLUMN I applies to **A ONLY, B ONLY, BOTH A AND B** or **NONE** of the items in COLUMN II. Write **A only**, **B only**, **both A and B** or **none** next to the question number (1.3.1 to 1.3.5) in the ANSWER BOOK.

	COLUMN I	COLUMN II
1.3.1	Some are parasitic and therefore have a negative impact on agriculture	A: Platyhelminthes B: Annelida
1.3.2	Characterised by jointed appendages and an exoskeleton	A: Arthropoda B: Chordata

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

1.4 The following diagram show a possible evolutionary relationship within animal diversity



1.4.1 Give the name of the above evolutionary diagram above (1)

1.4.2 Which group of organisms is indicated by **A**? (1)

1.4.3 Give the names of the TWO groups that are closely related to each other. (2)

1.4.4 State the reason for your answer to QUESTION 1.4.3 (1)

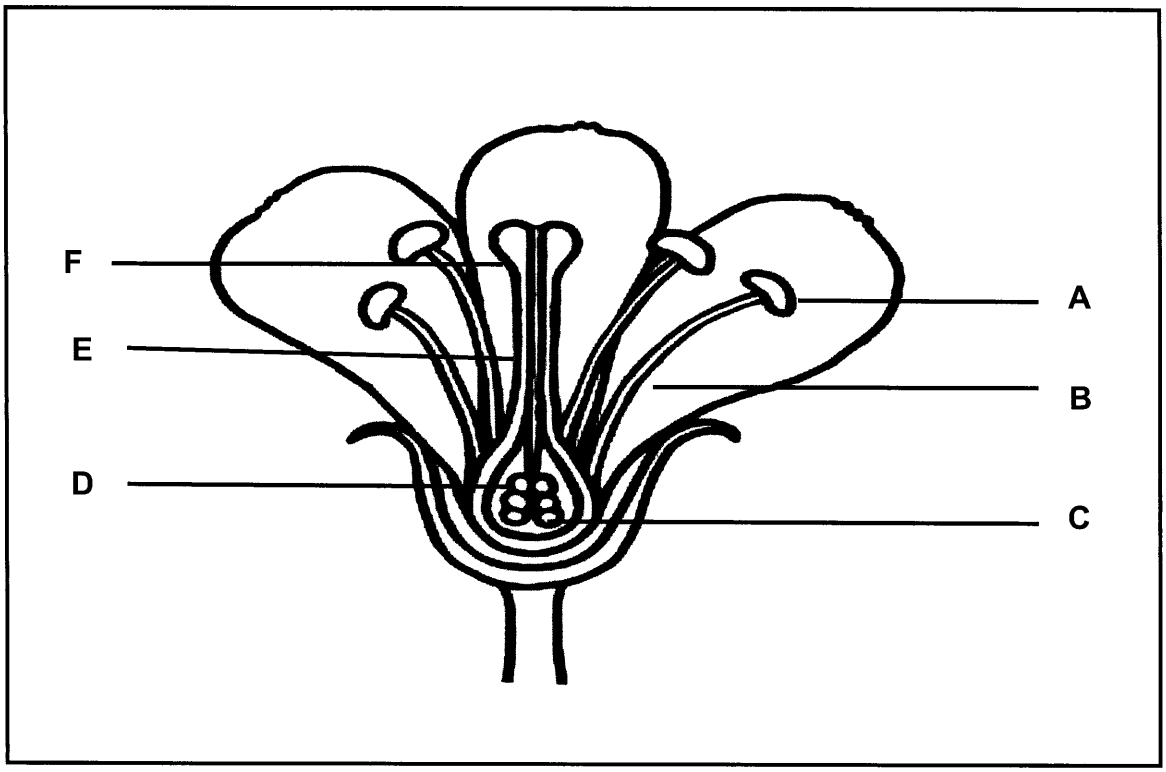
1.4.5 Identify ONE group that has two gut openings (1)
(6)

TOTAL SECTION A **20**

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SECTION B
QUESTION 2

2.1 The diagram below shows a flower.



2.1.1 Identify part:

(a) **D** (1)

(b) **E** (1)

(c) **F** (1)

2.1.2 What is the name given to part **A** and **B** together (1)

2.1.3 Give the LETTER and NAME of the part that becomes a seed after fertilisation (2)

2.1.4 State TWO functions of flowers (2)
(8)

2.2 Read the extract below...

South Africa's water crisis and rising cholera cases

Water is an essential but scarce resource. Worldwide, an estimated 663 million people do not have access to sufficient and safe water for domestic use and the demand is on the increase. It is estimated that the world will have to cope with a 40% water supply shortfall by 2030, which will unavoidably affect the availability of drinking water, sanitation and food production.

The rural communities now mostly rely on rain water, water from rivers, streams and dams of which they share with animals. The health department has recorded a high incidence of people seeking medical attention with symptoms like vomiting, dehydration and diarrhea.

2.2.1 Name the microorganism that causes cholera in humans (1)

2.2.2 List TWO symptoms of cholera mentioned in the extract (2)

2.2.3 What type of medicine is prescribed for the treatment of cholera? (1)

2.2.4 Explain what could cause poor results in a patient taking medication named in QUESTION 2.2.3 above (2)

2.2.5 Explain how the water crisis will negatively affect the South African economy (2)
(8)

2.3 Explain TWO disadvantages of asexual reproduction in angiosperms **(4)**

TOTAL QUESTION 2 20

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QUESTION 3

3.1 A mycorrhiza is a mutualistic relationship between fungal hyphae and the roots of true plants. The hyphae increase the absorptive surface of the plants roots by aiding in the absorption of water, phosphorus and other mineral ions from the soil to the roots of plants. The plant is photosynthetic and provides the fungus with carbohydrates.

Scientists conducted an investigation to determine the effect of mycorrhizal associations on plant growth

The procedure for the investigation:

- Two groups of plants of the same species were grown
- **GROUP A**: was planted in a soil that had been sterilised
- **GROUP B:** was planted in the same type of soil but not sterilised
- The plants were allowed to grow for 10 weeks
- Each week, the height (in centimetres) of plant was measured

The table below shows the growth of the plants over the 10-week period

Week	Height of plants grown in sterilised soil (cm)	Height of plants grown in non-sterilised soil (cm)
1	0,6	3.2
2	0,9	5.7
3	1,5	7.3
4	1,9	9,5
5	2,4	12,2
6	2,7	15,6
7	3,2	19,8
8	4,7	23,7
9	5,6	27,8
10	6,4	33,5

3.1.1 Identify the independent variable (1)

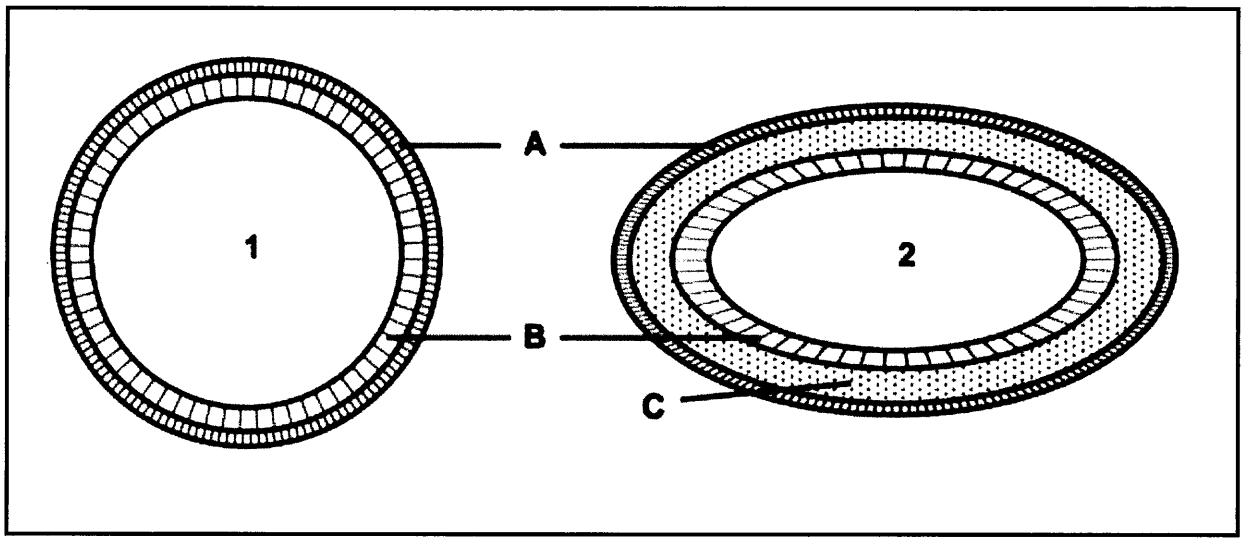
3.1.2 Identify TWO planning steps for the investigation (2)

3.1.3 State TWO factors that were kept constant during the investigation (2)

3.1.4 Calculate the percentage increase in plant height between week 8 and week 10 in sterilised soil (3)

3.1.5 What conclusion can be drawn from the result of the investigation (2)
(10)

3.2 Study the diagrams below showing the arrangement of body tissues.



3.2.1 Identify part:

(a) **A** (1)

(b) **B** (1)

(c) **C** (1)

3.2.2 Which organism **1** or **2** is diploblastic? (1)

3.2.3 Provide a reason for your answer in QUESTION 3.2.2 (1)

3.2.4 Organism **1** and **2** both lack a fluid filled cavity.

Explain ONE disadvantage of lacking a fluid filled cavity with regards to an organism's nutrition (2)

3.2.5 Name ONE organism with tissue layer indicated by diagram **1** (1)

3.2.6 Describe ONE difference between **1** and **2** with regards to their symmetry (2)
(10)

TOTAL QUESTION 3 20
GRAND TOTAL 60

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MARCH MARKING GUIDELINE

2022

MARKS: 60

TIME: 1 hour

This marking guideline consists of 5 pages

SECTION A

QUESTION 1

1.1

1.1.1 B✓✓
1.1.2 C✓✓
1.1.3 D✓✓

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

1.2

1.2.1 Gametophyte✓
1.2.2 Sessile✓/ sedentary
1.2.3 Pistil✓
1.2.4 Mesoderm✓

(1 X 4) **(4)**

1.3

1.3.1 A only✓✓
1.3.2 A only✓✓



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

1.4

1.4.1 Phylogenetic tree✓ (1)

1.4.2 Porifera ✓ (1)

1.4.3
- Arthropod✓
- Chordata✓

(MARK FIRST TWO ONLY) (2)

1.4.4 They both share most recent common ancestor✓ (1)

1.4.5
- Annelida ✓
- Arthropoda ✓
- Chordata ✓

(MARK FIRST ONE ONLY) (1)
(6)

TOTAL MARKS SECTION A: 20

SECTION B

QUESTION 2

2.1 2.1.1 (a) ovary✓ (1)

(b) Style✓ (1)

(c) Stigma✓ (1)

2.1.2 Stamen ✓ (1)

2.1.3 C✓- ovule✓ (2)

2.1.4 - Attract pollinators✓
- Contain and protect reproductive organs✓ (2)
(8)

2.2

2.2.1 Bacteria ✓ (1)

2.2.2 - Vomiting✓
- Dehydration✓
- Diarrhoea✓ (2)
(MARK FIRST TWO ONLY)

2.2.3 - Antibiotics ✓ (1)

2.2.4 - A patient may not finish the course of treatment✓
- causing bacteria to re-establish itself and grow rapidly✓ (2)

2.2.5 - Food production will decrease✓
- less food will be exported to other countries✓decreasing the country's economy (2)

(8)

2.3 - All the off springs are identical✓
if conditions become unfavourable, they will die✓
- Bad characteristics✓/traits present in parents
will be passed to off springs increasing the number of plants with this characteristic✓
(MARK FIRST TWO EXPLAINED ONLY) (Any 2 X 2) **(4)**

QUESTION 3 **TOTAL QUESTION 2** **(20)**

3.1

3.1.1 Effect of mycorrhizal association✓ (1)

3.1.2
- Decide on the time/date ✓
- Decide on the sample size✓
- Decide how to record results✓

(MARK FIRST TWO ONLY) (2)

3.1.3
- Plants were grown for the same number of weeks✓/10 weeks
- Plant height was measured each week✓
- Same species of plants used✓
- Plants were grown on the same type of soil✓

(MARK FIRST TWO ONLY) (2)

3.1.4
- $\frac{6.4 - 4.7}{4.7}$ ✓ X 100✓
  = 36✓%

(3)

3.1.5
- Growing plants in non-sterilised soil rapidly increases the height of the plants✓✓

(2)

OR

- Growing plants in sterilised soil causes plant height to grow slowly✓✓

(10)

TOTAL QUESTION 3 20

3.2

3.2.1 (a) ectoderm✓ (1)

(b) endoderm✓ (1)

(c) mesoderm✓ (1)

3.2.2 Organism **1**✓ (1)

3.2.3 - It contains two germ layers✓/ contains endoderm and ectoderm only (1)

3.2.4 - The gut wall will not be separated from the body✓ efficient digestion of food will not occur✓
- Decrease respiration and nutrition✓ as less nutrients will dissolve✓
(MARK FIRST ONE EXPLAINED ONLY) (Any 1 x 2) (2)

3.2.5 Cnidaria ✓ (1)

3.2.6 **1** / Cnidaria has a radial symmetry ✓and **2** / Annelids have a bilateral symmetry✓
(MARK FIRST ONE ONLY) (2)
(10)

TOTAL MARKS 60

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