



KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA



**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

LIFE SCIENCES

COMMON TEST

APRIL 2021

MARKS: 60

TIME: 1 hour

This question paper consists of 9 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.

SECTION A

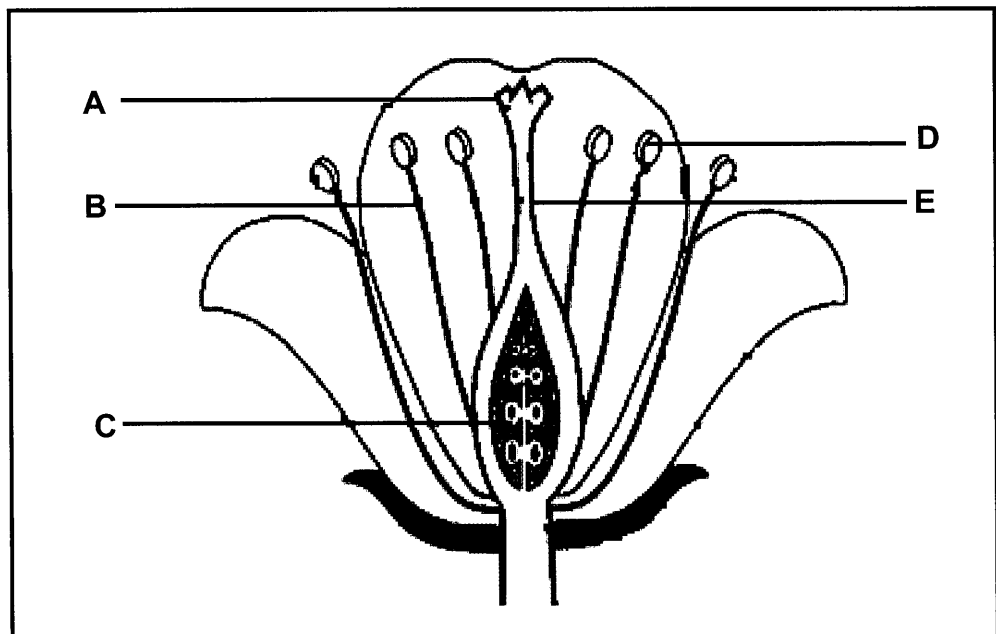
QUESTION 1

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 cell walls of most fungi are mainly composed of:

- A chitin
- B cellulose
- C protein
- D lignin

1.1.2 The diagram below represents the flower.



Which of the following combinations below represent the male sexual organs of a flower?

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

1.1.3 Which ONE of the following phyla is asymmetrical?

- A Porifera
- B Platyhelminthes
- C Cnidaria
- D Chordata

(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 gut that runs through an organism with two openings

1.2.2 The tree that shows evolutionary relationships among different species

1.2.3 A group of plants that have seeds enclosed in an ovary

1.2.4 The concentration of sense organs at the anterior end of an animal leading to the formation of a head

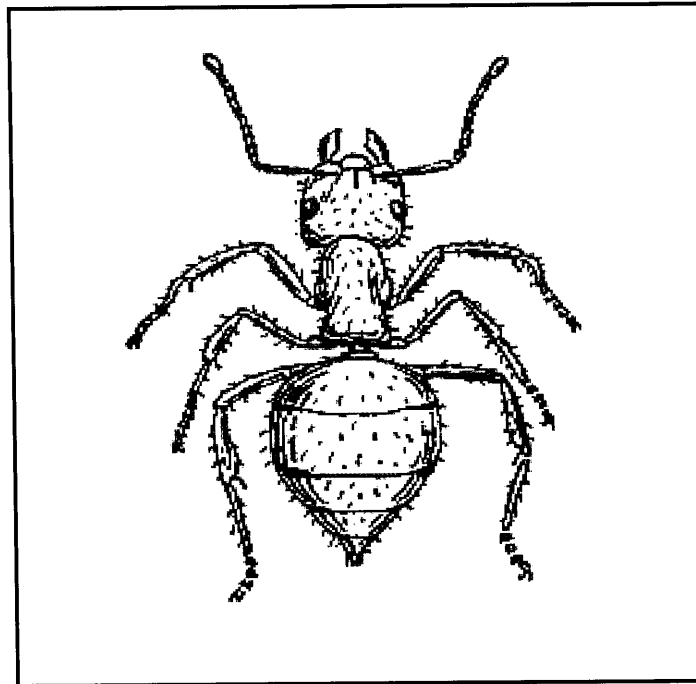
(4 x 1) (4)

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	The plant group that is a thallus plants	A:	Bryophytes
		B:	Pteridophytes
1.3.2	The phylum characterised by diploblastic	A:	Chordata
		B:	Arthropoda

(2 x 2) (4)

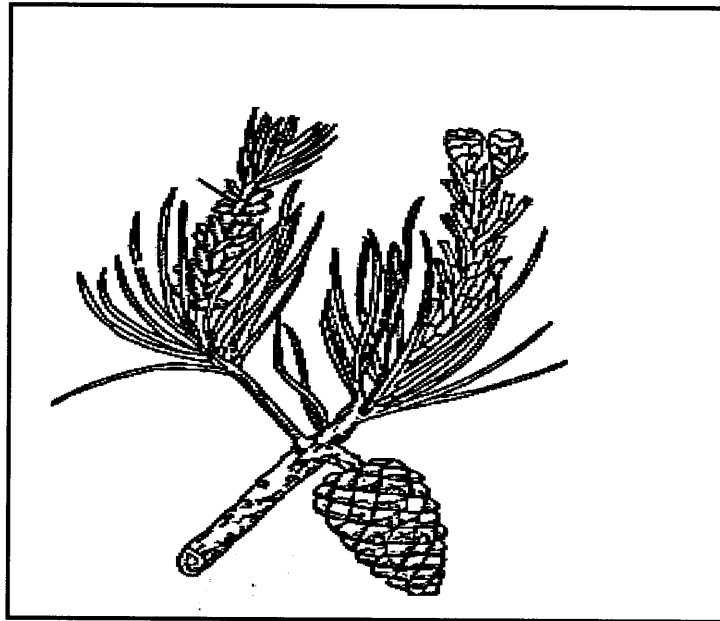
1.4 Study the diagram below showing the arrangement of body tissues.



- 1.4.1 Identify the type of symmetry shown in the diagram above. (1)
- 1.4.2 Explain ONE advantage of the symmetry mentioned in QUESTION 1.4.1. (2)
- 1.4.3 Identify the type of skeleton of the organism shown in the diagram above. (1)
- 1.4.4 State TWO disadvantages of the type of skeleton mentioned in QUESTION 1.4.3. (2)
- (6)

SECTION B**QUESTION 2**

2.1 The diagram below shows the branch of the pine tree.



- 2.1.1 To which plant group does the pine tree belong? (1)
- 2.1.2 Identify ONE visible reason for your answer in QUESTION 2.1.1. (1)
- 2.1.3 Explain TWO significance of the shape of the leaves in the diagram above. (4)
- 2.1.4 State TWO disadvantages of wind pollination. (2)
- (8)**

- 2.2 Coronavirus, the world's greatest enemy.
- 2.2.1 State TWO recommendation to prevent the spread of coronavirus. (2)
- 2.2.2 Give ONE reason why it is difficult to develop a cure for viral diseases. (1)
- 2.2.3 Coronavirus is also known to suppress the immune system.
Explain the effect of this to people with underlying conditions/
diseases. (2)
- 2.2.4 State ONE significance of vaccines in the human body. (1)
- (6)
- 2.3 Explain THREE reasons why gymnosperms and angiosperms are better suited to live on land than in water. (6)
- [20]

QUESTION 3

3.1 Scientists conducted an investigation to determine the effect of antibiotic on bacteria causing pneumonia in children from 2000 to 2006.

The procedure for the investigation:

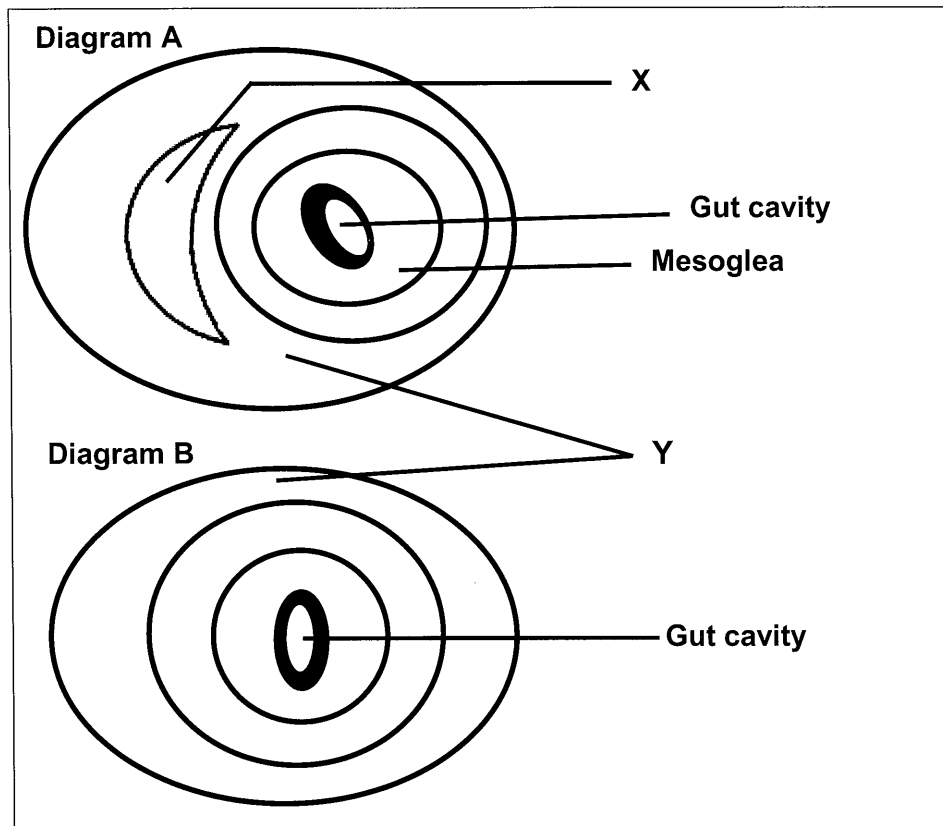
- The bacteria were cultured in the same type of agar medium in petri dishes of the same size.
- Petri dishes were divided into two groups.
- Petri dish **A** was treated with an antibiotic.
- Petri dish **B** was not treated with antibiotic.
- An antibiotic was introduced in year 2000 in petri dish **A**.
- Both petri dishes were then incubated under the same conditions and bacterial growth was examined.
- The investigation was repeated a number of years.

The table below shows the results of the investigation.

YEARS	GROWTH OF BACTERIA PER 100 000	
	PETRI DISH A	PETRI DISH B
1999	85	23
2000	60	28
2001	20	30
2002	9	40
2003	5	45
2004	2	50
2005	0.2	55
2006	0	60

- 3.1.1 Identify the independent variable of the investigation. (1)
- 3.1.2 What was the growth of bacteria in petri dish **A** in 2004? (2)
- 3.1.3 Describe the growth of pneumonia causing bacteria from 2001 to 2006 in petri dish **A**. (2)
- 3.1.4 State TWO factors that were kept constant during the investigation. (2)
- 3.1.5 State what was done by the scientists to improve the reliability of the investigation. (1)
- 3.1.6 Explain why petri dish **B** was included in the investigation. (2)
- (10)**

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



- 3.2.1 Which organism (diagram **A** or **B**) appeared first? (1)
- 3.2.2 Name THREE animal groups represented by diagram **A**. (3)
- 3.2.3 Name the phylum that evolved after cnidarians. (1)
- 3.2.4 Identify layer:
- (a) **X** (1)
- (b) **Y** (1)
- 3.2.5 Describe ONE advantage of structure **X**. (2)
- 3.2.6 Which organism (diagram **A** or **B**) is radially symmetrical? (1)
- (10)**
[20]

TOTAL SECTION B: 40

GRAND TOTAL: 60



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MEMORANDUM
PROVINCIAL PAPER
APRIL 2021**

MARKS: 60

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This memorandum consists of 4 pages.

Life sciences-Grade 11

2
NSC-memorandum

April 2021

SECTION A

QUESTION 1

- | | | | | |
|-----|-------|---|---------|-----|
| 1.1 | 1.1.1 | A ✓✓ | | |
| | 1.1.2 | A ✓✓ | (3 x 2) | (6) |
| | 1.1.3 | C ✓✓ | | |
| 1.2 | 1.2.1 | Through gut ✓ | | |
| | 1.2.2 | Phylogenetic tree ✓ | | |
| | 1.2.3 | Angiosperms ✓ | (4 x 1) | (4) |
| | 1.2.4 | Cephalisation ✓ | | |
| 1.3 | 1.3.1 | A only ✓✓ | (2 x 2) | (4) |
| | 1.3.2 | None ✓✓ | | |
| 1.4 | 1.4.1 | Bilateral ✓ | | (1) |
| | 1.4.2 | - Allows for cephalisation ✓
- making detection of prey and danger much easier ✓ | | (2) |
| | 1.4.3 | Exoskeleton ✓ | | (1) |
| | 1.4.4 | - It restrict animal growth ✓
- Skeleton needs to be regularly shed/moulting must occur and animals become vulnerable to predators ✓ | | (2) |
| | | | | (6) |

TOTAL SECTION A: 20

SECTION B

QUESTION 2

- | | | | | |
|-----|-------|---|--|-----|
| 2.1 | 2.1.1 | Gymnosperms ✓ | | (1) |
| | 2.1.2 | Presence of cones ✓
Mark first ONE only | | (1) |
| | 2.1.3 | - Leaves are needle shaped ✓
- reducing surface area exposed to the sun ✓
- Leaves have a thick cuticle ✓
- to reduce water loss/transpiration ✓ | | (4) |
| | | Mark first TWO only | | |

- 2.1.4 - Water is not required for fertilisation✓
 - It can only occur during windy conditions✓
 - Pollen is transported to any direction/randomly✓
 - Requires large amount of pollen to be produced✓
 - Cones/ovules must be sticky for pollen to stick✓
 - Chance of landing on cones/flowers of different species✓
Mark first TWO only (2) (8)
- 2.2 2.2.1 - Regular hand washing✓
 - Covering mouth and nose when coughing and sneezing✓
 - Maintain social distancing✓ Any (2)
Mark first TWO only
- 2.2.2 Viruses are non-living✓ (1)
Mark first ONE only
- 2.2.3 - They have weakened immune system✓
 - therefore, vulnerable to any form of infections
 - and their bodies are not able to fight them✓ (2)
- 2.2.4 They stimulate the immune system to produce antibodies✓ (1)
Mark first ONE only (6)
- 2.3 - Pollen grains are protected by resistant walls✓
 - to prevent desiccation✓
 - Pollen grains have air sacs✓
 - for wind pollination ✓
 - Seeds are protected by a resistant coat/testa ✓
 - to prevent desiccation✓
 - Leaves have a cuticle and sunken stomata✓
 - to reduce water loss✓
 - They have conducting tissue✓
 - to ensure efficient transport of water and minerals✓ Any (3 x 2) (6)
Mark first THREE only

QUESTION 3

- 3.1 3.1.1 Time (years)✓ (1)
- 3.1.2 200 000✓✓ (2)
- 3.1.3 As the years increases, the growth rate of bacteria decreases✓✓ (2)
- 3.1.4 - Type of agar medium✓
 - Size of petri dishes✓
 - Conditions where petri dishes were incubated✓ Any (2)
Mark first TWO only

- 3.1.5 Repeated the investigation✓ (1)
- 3.1.6 - To serve as control✓
 - so that it can be compared with group A✓
 - and show that antibiotic is the only factor that affects the results✓/
 improves validity of the investigation Any (2) (10)
- 3.2 3.2.1 B✓ (1)
- 3.2.2 Annelids✓, molluscs✓, arthropods✓, chordates✓ Any (3)
Mark first THREE only
- 3.2.3 Porifera✓ (1)
- 3.2.4 (a) coelom✓ (1)
 (b) ectoderm✓ (1)
- 3.2.5 - Provides room for organ development✓
 - allowing for more complex organisms✓
 - provides a hydrostatic skeleton✓
 - to provide support✓
 - Separates gut wall from the body✓
 - Allowing more efficient digestion of food✓
 - Increases respiration and nutrition✓
 - by allowing nutrients to dissolve✓ Any (2)
Mark first TWO only
- 3.2.6 B✓ (1) (10)



TOTAL SECTION B: 40
GRAND TOTAL: 60