education

Department:
Education
PROVINCE OF KWAZULU-NATAL

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES

COMMON TEST

SEPTEMBER 2018

MARKS: 60

TIME: 1 hour

This question paper consists of 7 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 1.1.5) in the ANSWER BOOK, for example 1.1.6 A.

1.1.1 Endemic organisms …

A do not occur naturally in a particular country.
B are found in a particular country and nowhere else.
C are those that are introduced into a country.
D are organisms that occur naturally in a country.

1.1.2 The aloe grows on a north-facing slope in the southern hemisphere where it is …

A warm and dry.
B warm and moist.
C cool and moist.
D cool and dry.

1.1.3 Study the characteristics of different kingdoms below.

(i) Prokaryotic
(ii) Have cells with cell walls
(iii) Reproduce by binary fission
(iv) Have chlorophyll

Which ONE of the following combinations are characteristics of Kingdom Plantae?

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

1.1.4 Which ONE of the following is the correct way of writing the scientific name for modern humans?

A *Homo sapiens*
B *Homo Sapiens*
C *homo sapiens*
D *homo Sapiens*

1.1.5 Which ONE of the following CORRECTLY describes Kingdom Protista?

	BODY STRUCTURE	MODE OF NUTRITION
A	All are multicellular and eukaryotic	Autotrophic
B	All are unicellular and prokaryotes	Autotrophic
C	Most are unicellular and eukaryotic	Autotrophic or heterotrophic
D	All are multicellular and prokaryotic	Heterotrophic

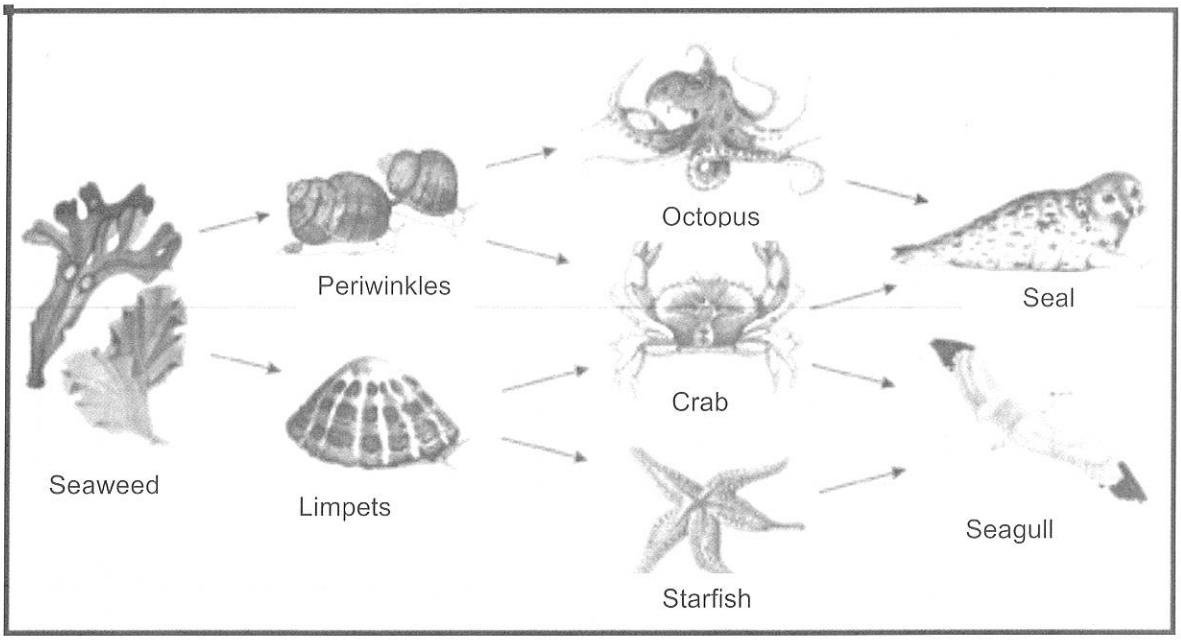
(5 x 2) **(10)**

TOTAL SECTION A: 10

SECTION B

QUESTION 2

2.1 The diagram below represents a food web.



2.1.1 Define a *food web*. (1)

2.1.2 Why is the seaweed regarded as a producer in this food web? (1)

2.1.3 From the food web, name ONE:

(a) Secondary consumer (1)
(b) Herbivore (1)
(c) Secondary carnivore (1)

2.1.4 Name two decomposers normally present in any ecosystem. (2)

2.1.5 Construct a food chain from the food web that contains FOUR trophic levels and includes the periwinkles. (4)

2.1.6 Assuming that the food chain you drew in Question 2.1.5 is the only one that existed in an ecosystem, describe what would happen if all the periwinkles died. (3)

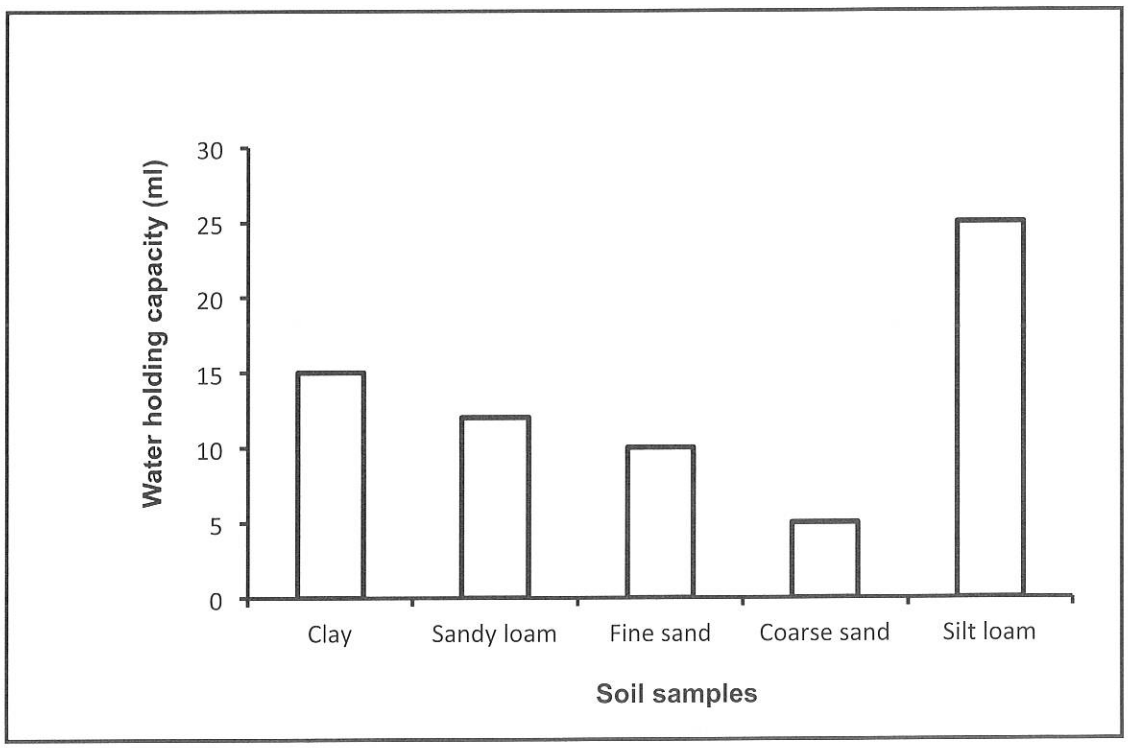
2.1.7 Consider the energy flow shown in the food chain below.

Seaweed → Limpets → Starfish → Seagull
97 000kJ 7000kJ 600kJ 50kJ

Calculate the percentage of energy that is passed on from the limpets to the starfish. Show ALL working. (3)
(17)

QUESTION 3

3.1 The graph below shows the results of an investigation carried out to determine the water holding capacity of different soil samples.



3.1.1 For this investigation identify the:

(a) Dependent variable (1)
(b) Independent variable (1)

3.1.2 What is the water holding capacity of silt loam? (1)

3.1.3 Which soil type has the lowest water holding capacity? (1,

3.1.4 State TWO ways in which the reliability of the investigation can be increased. (2)

3.1.5 Explain the consequence to plant roots if the soil became waterlogged. (3)

3.1.6 Identify TWO factors that should be kept constant in the investigation. (2)
(11)

3.2 State TWO advantages of ecotourism. **(2)**
[13]

TOTAL SECTION B: 30

SECTION C

QUESTION 4

Describe the nitrogen cycle and the carbon cycle.

Content: (17)
Synthesis: (3)
(20)

NOTE: NO marks will be awarded for answers in the form of tables, flow charts or diagrams.

TOTAL SECTION C: 20

GRAND TOTAL: 60

GRADES 10 + 11

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MEMORANDUM

MARKS: 60

This memorandum consists of 4 pages.

SECTION A

QUESTION 1

1.1
1.1.1 B✓✓
1.1.2 A✓✓
1.1.3 D✓✓
1.1.4 A✓✓
1.1.5 C✓✓

(5 x 2) **(10)**

TOTAL SECTION A: 10

SECTION B

QUESTION 2

2.1
2.1.1 A number of interacting food chains✓ (1)

2.1.2 It is autotrophic✓/can produce its own food (1)

2.1.3 (a) Octopus✓/crab/starfish (1)
(b) Periwinkles✓/limpets (1)
(c) Seal✓/seagull (1)

2.1.4
- Fungi✓
- Bacteria✓ (2)

2.1.5 Seaweed✓ → periwinkles✓ → octopus✓ → seal✓ (4)

OR

Seaweed✓ → periwinkles✓ → crab✓ → seagull✓

- An increase in the seaweed population✓
- A decrease in the crab population✓
- A decrease in the seagull population✓

2.1.6 **OR**

- An increase in the seaweed population✓
- A decrease in the octopus population✓
- A decrease in the seal population✓ (3)

2.1.7 $\frac{600}{7000}$ ✓ x 100✓ = 8,57✓/ 8,6 / 9% (3)

(17)

GREENBURY

QUESTION 3

3.1 3.1.1 (a) Water holding capacity✓ (1)
(b) Soil samples✓ (1)

3.1.2 25 ml✓ (1)

3.1.3 Coarse sand✓ (1)

3.1.4 - Repeat the investigation✓
- Have more than one set up of each soil sample✓/use average reading (2)
(Mark first TWO only)

3.1.5 - No air✓
- No oxygen available for respiration✓
- leading to rotting✓/death of plant roots (3)

3.1.6 - Equal amount of water in each soil type✓
- Same amount of soil type✓
- Same apparatus✓ Any (2)
(Mark first TWO only)

(11)

3.2 - Improves infrastructure✓/buildings/roads
- Creates employment✓
- Improves the economy✓
- Protection of the natural environment✓
- New business opportunities✓ (Any 2) **(2)**
(Mark first TWO only) **[15]**

TOTAL SECTION B: 30

SECTION C

QUESTION 4

The Nitrogen Cycle
- Nitrogen-fixing bacteria and lightning ✓
- convert N_2 into nitrates✓
- Nitrates absorbed by plants are used to make plant proteins✓
- which are then consumed by animals and converted into animal proteins✓.
- Animals release waste products such as urine and faeces✓ from their bodies
- when decomposers break down wastes and dead bodies of organisms✓
- nitrogen is released into the soil as ammonia✓
- Nitrite bacteria✓
- convert ammonia into nitrites✓
- Nitrate bacteria✓
- convert nitrites into nitrates✓
- Nitrates are absorbed by plants again✓
- Denitrifying bacteria✓
- in the soil convert nitrates into nitrogen gas✓
- which is released back into the atmosphere✓ Any 10 (10)

The Carbon Cycle
- CO_2 produced during respiration✓is released into the atmosphere
- which is used by plants for photosynthesis✓
- used to produce organic compounds✓
- Excess organic compounds are stored✓ in the plant bodies
- When animals consume other plants and animals✓
- they get their carbon✓ in this way
- They store carbon in their bodies✓ as proteins, fats and carbohydrates
- When plants and animals die, decomposers✓ break down their bodies
- to release the CO_2✓ stored in them back into the atmosphere
- Burning of fossil fuels✓ release CO_2 back into the atmosphere Any 7 (7)

Content: (17)
Synthesis: (3)
(20)

ASSESSING THE PRESENTATION OF THE ESSAY

Relevance	Logic sequence	Comprehensive
All information provided is relevant to the question	Ideas arranged in a logical cause-effect sequence	Answered all aspects required by the essay in sufficient detail
All the information provided is relevant to the: - Nitrogen cycle - Carbon cycle	All the information regarding the: - Nitrogen cycle - Carbon cycle is presented in a logical sequence	At least the following points should be included: - Nitrogen cycle 7/10 - Carbon cycle 4/7
1 mark	**1 mark**	**1 mark**

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