education

Department:
Education
PROVINCE OF KWAZULU-NATAL

NATIONAL SENIOR CERTIFICATE

GRADE 10

LIFE SCIENCES
COMMON TEST
SEPTEMBER 2019

MARKS: 60

TIME: 1 hour

This question paper consists of 7 pages.

Copyright reserved

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.

Copyright reserved

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 A.

1.1.1 Which of the following describes endemic species?

A All the animals that are brought into an area from another area
B All the plants that grow from season to season and are always green
C All the plants and animals that are in an area with conditions that are new to them
D Plants and animals that are found only in a particular area and nowhere else in the world

1.1.2 Which of the following organisms would typically be found in the savanna?

A Protea ; Lion; Elephant and Giant trees such as yellow wood
B Elephant ; Zebras ; Giraffes and Leopard
C Elephant ; Lion ; Protea and Aloes
D Aloes ; Zebras ; Roiboos and Ostrich

1.1.3 Which of the following processes takes place during the carbon cycle?

(i) Burning of fossil fuels
(ii) The decay of dead organisms by decomposers
(iii) Respiration by animals
(iv) The conversion of nitrites to nitrates by bacteria

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

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

Copyright reserved

1.2 Give the correct biological term for each of the following descriptions. Write only the term next to the question numbers (1.2.1 to 1.2.4) in the ANSWER BOOK.

1.2.1 Plants that are adapted to a dry climate

1.2.2 A region characterised by a certain climate, soil and a particular type of vegetation

1.2.3 Organisms with a true nucleus

1.2.4 Kingdom into which humans belong

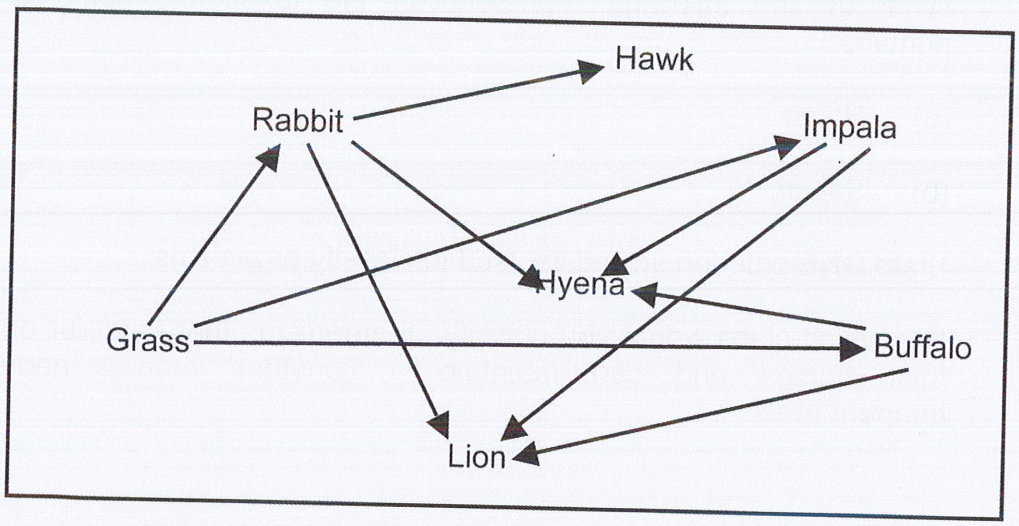
(4 x 1) (4)

Copyright reserved

SECTION B

QUESTION 2

2.1 The diagram below illustrates feeding relationships in an ecosystem in a game reserve.



2.1.1 What term is used to describe the feeding relationships illustrated on the diagram above? (1)

2.1.2 What do the arrows on the diagram represent? (1)

2.1.3 Identify the following on the above food chain:

(a) Carnivore (1)

(b) Primary consumer (1)

2.1.4 Give a reason why the Lions and Hyenas would still survive even if all the Impalas in this game reserve were to die out. (2)

2.1.5 Which organism in this ecosystem would be affected the most as a result of an outbreak of a disease that only kills rabbits? (1)

2.1.6 Give a reason for your answer to QUESTION 2.1.5 above. (1)

2.1.7 Explain how poaching (illegal killing) of Lions would affect the number of hyenas in this game reserve. (2)

(10)

Copyright reserved

2.2 There are different ways of classifying organisms. The binomial or two-name system is used internationally to identify organisms, for example, humans are called *Homo sapiens*

2.2.1 Name the Scientist who came up with the binomial system of classification of organisms (1)

2.2.2 What do the following represent on the taxonomic name of humans: (1)

(a) *Homo* (1)

(b) *Sapien* (1)

2.2.3 State ONE criterion scientists used to classify organisms.

2.2.4 Into which class would you classify all organisms that have fur on their bodies and can maintain a constant internal body temperature? (1)
(5)
[15]

QUESTION 3

3.1 An investigation was carried out to investigate the effect of alkaline pH on the growth of roots of young Austrian pine plants.

The results are shown on table below:

Plant type	Length (cm)
A	30
B	10
C	45
D	20

3.1.1 List TWO planning steps that were taken during the investigation. (2)

3.1.2 Identify the independent variable in this investigation. (1)

3.1.3 Which plant grows better in alkaline soil according to these results? (1)

3.1.4 State ONE factor that the investigator would have kept constant to ensure validity of the results. (1)

3.1.5 Using the data given on the table above, draw a bar graph to show the results of this investigation. (6)
(11)

Copyright reserved

3.2 Read the passage below.

> The steepness of a slope affects plant growth through differential incidents of radiation, wind velocity and soil type. A steep slope is susceptible to rapid surface runoff and soil erosion which cause soil degradation. Likewise, the influence of this abiotic factor on plant growth and distribution is noticeable.

3.2.1 State ONE climatic factor from the passage that has an effect on plant growth. (1)

3.2.2 State ONE disadvantage of planting on a steep slope mentioned in the passage. (1)

3.2.3 Explain why there are usually more plants on the South-facing slope than on the North-facing slope (2)

(4)

[15]

TOTAL SECTION B: 30

SECTION C

QUESTION 4

Availability of water and sufficient oxygen has a huge impact on biodiversity and ecotourism.

Describe the water cycle and oxygen cycle. Also discuss the importance of ecotourism.

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

Copyright reserved

education

Department:
Education
PROVINCE OF KWAZULU-NATAL

LIFE SCIENCES

MARKING GUIDELINE

SEPTEMBER 2019

NATIONAL SENIOR CERTIFICATE

GRADE 10

MARKS: 60

This marking guideline consists of 5 pages.

Copyright reserved

SECTION A

QUESTION 1

1.1	1.1.1	D✓✓	
	1.1.2	B✓✓	
	1.1.3	A ✓✓	
			(3 x 2) **(6)**
1.2	1.2.1	Xerophytes ✓	
	1.2.2	Biome✓	
	1.2.3	Eukaryotes✓	
	1.2.4	Animalia✓	
			(4 x 1) **(4)**

TOTAL SECTION A: 10

SECTION B

QUESTION 2

2.1	2.1.1	Food web ✓	(1)
	2.1.2	Energy flow ✓/ shows which organism feeds on another	(1)
	2.1.3	(a) Lion✓ / Hyena/hawk	(1)
		(b) Rabbit ✓/ Impala / Buffalo	(1)
	2.1.4	It feeds on Rabbits✓ and Buffalo ✓	(2)
	2.1.5	Hawk ✓	(1)
	2.1.6	Feeds only on Rabbits✓ / No other food source for Hawk on this food web.	(1)
	2.1.7	Number of Hyenas will increase✓ due to more food available to them ✓/ less competition for food from Lions	(2) **(10)**

Copyright reserved

2.2 2.2.1 Carolus Linnaeus✓ (1)

2.2.2 (a) Genus ✓/ Genera (1)

(b) Species ✓ (1)

2.2.3 Common characteristics ✓ / features (1)

2.2.4 Mammalia✓ / mammals (1)
(5)
[15]

3.1 3.1.1 -Decide on the sample size ✓
-Decide on how to record results ✓
-Decide on apparatus to be used ✓
-Decide on duration of the investigation ✓
-Decide on the method to be used ✓
-decide on the age of the plants to be used ✓ Any (2)

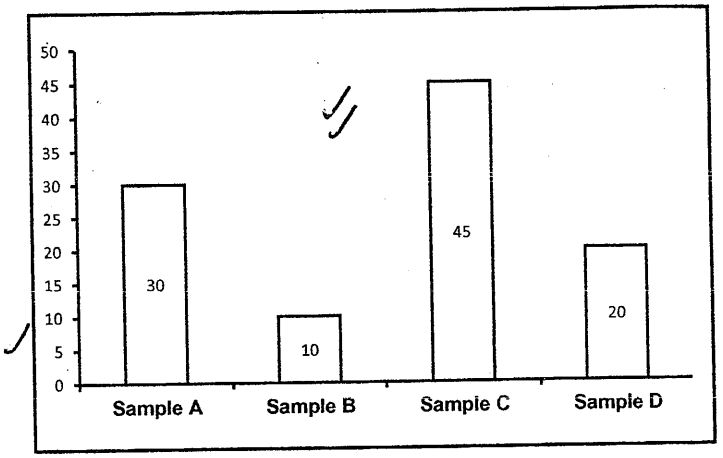
3.1.2 ~~Plant type~~✓ alkaline pH (1)

3.1.3 Plant type C✓ (1)

3.1.4 -Same amount of water✓
-Same temperature ✓
-Same duration of investigation✓
-same species of plant✓
-same amount of light✓ Any (1)

Copyright reserved

3.1.5 Bar graph showing the effect of alkaline pH on root growth of plant Type



Rubric for marking Graph

	Mark allocation
Correct type of graph	1
Correct caption for graph	1
Correct label on X and Y axis	1
Correct scale on x and y axis	1
Plotting of bars	1 (1 to 2 bars)
	2 (all 4 bars)
Note: if the wrong graph is drawn, marks will be lost for correct type of graph. If axes are transposed, marks will be lost for labelling of X-axis and Y-axis.	

(6)
(11)

3.2 3.2.1 Radiation✓ /wind velocity (1)

3.2.2 Rapid surface runoff ✓/soil erosion/ soil degradation. (1)

3.2.3 - South-facing side receives less solar radiation✓ /sun
- Will therefore be cooler✓/loses less water / there will be less transpiration/ evaporation compared to North-facing side.
Any (2)
(4)
(15)

TOTAL SECTION B: 30

Copyright reserved

Water cycle (W)

- water evaporates from the oceans✓/ rivers/ dams / lakes
- water vapour leaves plants through transpiration✓
- the water vapour rises✓ and condenses✓ to form clouds✓
- precipitation falls as rain ✓/ hail / snow / ice/ dew /
- Water runs into streams✓/ rivers / lakes / oceans
- Then evaporation takes places all over again✓ **(Any 7)** (7)

Oxygen cycle (O)

- Living organisms take in oxygen✓ during respiration✓
- And they release carbon dioxide✓ into the atmosphere
- Plants use / take in carbon dioxide✓ for photosynthesis✓
- Plants release oxygen ✓ as a by-product of photosynthesis **(Any 5)** (5)

Ecotourism (E)

- People can visit protected areas✓ / relatively unexplored natural areas
- without causing any damage ✓or change to the area
- Gives local communities financial benefits✓/ creates jobs for local people
- Allows local people to use natural resources in the ecotourism area ✓
- Gives awareness to local communities✓ on the need to conserve their natural resources ✓
- Can earn foreign currency for the country ✓ **(Any 5)** (5)

ING THE PRESENTATION OF THE ESSAY

Relevance	Logic sequence	Comprehensive
rmation provided is to the question	Ideas arranged in a logical cause-effect sequence	Answered all aspects required by the essay in sufficient detail
iformation provided int to the water cycle, cycle and sm	All the information regarding the water cycle, oxygen cycle and ecotourism is arranged in a logical manner.	At least the following points should be obtained: water cycle: 5/7. Oxygen cycle: 3/5 Ecotourism: 3/5
1 mark	**1 mark**	**1 mark**

TOTAL SECTION C: 20
GRAND TOTAL: 60

reserved