



Basic Education

KwaZulu-Natal Department of Education
REPUBLIC OF SOUTH AFRICA

LIFE SCIENCES

MEMORANDUM

COMMON TEST

SEPTEMBER 2015

NATIONAL
SENIOR CERTIFICATE

GRADE 10

N.B. This memorandum consists of 4 pages including this page.

SECTION A

QUESTION 1

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

TOTAL SECTION A: (5 x 2) [10] 10

SECTION B

QUESTION 2

- 2.1
 - 2.1.1 G – Right atrium✓
D – Left ventricle✓ (2)
 - 2.1.2 (a) A✓ (1)
(b) B✓ (1)
 - 2.1.3
 - Wall E is thicker than F✓
 - because the left ventricle has to pump blood to all body regions✓
 - while the right ventricle only has to pump blood to the nearby lungs.✓ (Any 2) (2)
 - 2.1.4
 - Cardiac muscles will not receive oxygen and nutrients✓
 - Muscle cells may die✓/ stop contraction (3)
 - May lead to heart attack✓ (9)
- 2.2
 - 2.2.1 Venule✓/vein (1)
 - 2.2.2

A	B
Has thick muscular walls✓	Has thin muscular walls✓
Has no valves✓	Has valves✓
Lumen is small in diameter✓	Lumen is large in diameter✓

 (Mark first TWO only) 1 mark for table + (2 x 2)
(5) (6) [15]

QUESTION 3

- 3.1
- 3.1.1
- The eel population would decrease✓
 - causing the bird population to decrease✓
 - due to shortage of food✓
 - The pondweed population will increase✓
 - since it will not be fed upon by the tadpoles✓ (Any 4) (4)
- 3.1.2
- The eels and the birds may have survived✓
 - as there would have been alternative sources of food✓
 - The pondweed population would not increase✓
 - as there would be other organisms to feed on them✓ (Any 3) (3)
- 3.1.3
- A single bird feeds on many eels✓
 - and thus the pesticide will accumulate✓ (2)
(9)
- 3.2
- 3.2.1 Fynbos✓ (1)
- 3.2.2 - Alien vegetation✓
- Habitat destruction✓ (1)
- 3.2.3 - To prevent extinction of species✓
- To preserve natural resources✓ (Any 2) (2)
- Economic benefit for humans✓/ attraction of tourists
(Mark first TWO only)
- 3.2.4 Found in South Africa only✓/68 % of plants are endemic (1)
- 3.2.5 - Urban expansion✓
- Agricultural use of land✓
- Harvesting natural resources for industrial use✓
- Building houses✓ (Any 1) (1)
(6)

[15]

TOTAL SECTION B: 30

SECTION C**QUESTION 4**

- The Carbon Cycle**
- CO₂ 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 CO₂✓ stored in them back into the atmosphere (Any 6)

The Oxygen Cycle

- All living organisms undergo respiration✓
- during which oxygen is used to breakdown glucose✓
- Energy is produced and CO₂✓ released into the atmosphere
- During photosynthesis, oxygen is released back into the atmosphere✓ (Any 3)

The Nitrogen Cycle

- Nitrogen-fixing bacteria and lightning ✓
- convert N₂ 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 8)

Content
Synthesis (3)**ASSESSING THE PRESENTATION OF THE ESSAY**

RELEVANCE	LOGICAL SEQUENCE	COMPREHENSIVE
All information provided is relevant to the topic	Ideas arranged in a logical/ cause-effect sequence	Answered all aspects required by the essay in sufficient detail
Only information relevant to the cycles (carbon, oxygen and nitrogen) is provided. There is no irrelevant information.	All information for each cycle is presented in a logical sequence.	Learner obtains at least 4/6 in C cycle, 2/3 in the O ₂ cycle & 5/8 in the N cycle
1 mark	1 mark	1 mark

TOTAL SECTION C: 20
GRAND TOTAL: 60