



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

SEPTEMBER 2011

**LIFE SCIENCES P2
MEMORANDUM**

MARKS: 150

This memorandum consists of 8 pages.

SECTION A**QUESTION 1**

- 1.1 1.1.1 A ✓✓
- 1.1.2 B ✓✓
- 1.1.3 C ✓✓
- 1.1.4 C ✓✓
- 1.1.5 D ✓✓ (5 x 2) (10)
- 1.2 1.2.1 Commensalism ✓
- 1.2.2 Organ of Corti ✓
- 1.2.3 Thallus ✓
- 1.2.4 Ovipary ✓
- 1.2.5 Cells of Leydig ✓ (5 x 1) (5)
- 1.3 1.3.1 Both / A and B ✓✓
- 1.3.2 A only ✓✓
- 1.3.3 B only ✓✓
- 1.3.4 B only ✓✓
- 1.3.5 A only ✓✓
- 1.3.6 B only ✓✓ (6 x 2) (12)
- 1.4 A Hypothalamus / Pituitary gland ✓
- B Kidney ✓
- C Adrenal gland ✓
- D Kidneys ✓
- E Adrenal gland ✓
- F Muscles / brain / heart ✓
- G Thyroid ✓
- H Pituitary / heart / digestive tract ✓ (8)

- | | | | |
|-----|-------|--|-----|
| 1.5 | 1.5.1 | 1 – Archegonia ✓
2 – Sperm ✓
3 – Embryo ✓
4 – Protonema ✓ | (4) |
| | 1.5.2 | A – Fertilisation ✓
B – Meiosis ✓ | (2) |
| | 1.5.3 | Mature plant ✓
Haploid / n ✓ | (2) |
| 1.6 | 1.6.1 | Metamorphosis ✓ | (1) |
| | 1.6.2 | Complete ✓ | (1) |
| | 1.6.3 | There are 4 stages which can be seen. ✓ | (1) |
| | 1.6.4 | 1 – Pupa ✓
2 – Egg ✓
3 – Larva ✓ | (3) |
| | 1.6.5 | Cocoon ✓ | (1) |

TOTAL SECTION A: 50

SECTION B**QUESTION 2**

- 2.1 2.1.1 A – Dendrite ✓
 B – Axon ✓
 C – Cell body ✓
 E – Interneuron / connector neuron ✓ (4)
- 2.1.2 (a) Sensory neuron ✓ Diagram 2 ✓ (2)
 (b) Motor neuron ✓ Diagram 1 ✓ (2)
- 2.1.3 (a) Take impulses from the central nervous ✓ system to the effector. ✓ (2)
 (b) Take impulses from receptor ✓ to the central nervous system. ✓ (2)
- 2.1.4 A microscopic gap between the axon terminals of one neuron ✓ and the dendrite of another. ✓ (2)
- 2.1.5 Neuron ✓ (1)
- 2.2 2.2.1 A ✓ – aqueous humour / fluid ✓ (2)
- 2.2.2 F ✓ – yellow spot / fovea centralis ✓ (2)
- 2.2.3 B ✓ – iris ✓ (2)
- 2.2.4 E ✓ – choroid ✓ (2)
- 2.3 2.3.1 Cold. ✓ (1)
- 2.3.2 The bloodvessels are constricted ✓ therefore less blood to the skin ✓ and less heat being loss to the environment ✓/ less sweat produced. ✓ (Any 2) (2)
- 2.3.3 Radiation ✓ (1)
- 2.3.4 Y ✓ (1)
- 2.3.5 Endothermic ✓✓ (2)

[30]

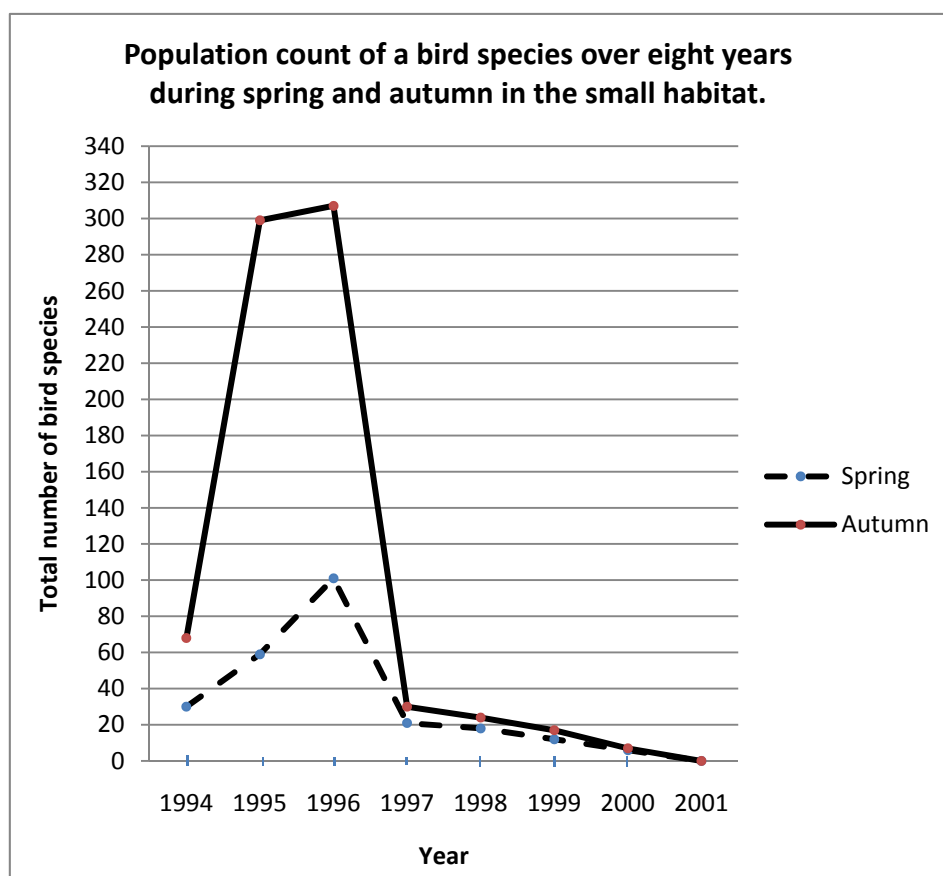
QUESTION 3

3.1 3.1.1 1998 ✓ (1)

3.1.2 Because the habitat is small, meaning that the carrying capacity ✓ is also small. They can only accomodate a certain amount ✓.
If growth excede the carrying capacity ✓ there would be no food for all the birds and they will die. ✓ (Any 2) (2)

3.1.3 The bigger the habitat, ✓ the bigger the population size ✓/ The smaller the habitat, ✓ the smaller the population size. ✓ (2)

3.1.4



Correct type graph	1
Caption of graph	1
Correct scale for X-axis	1
Correct label for X-axis	1
Correct scale for Y-axis	1
Correct label for Y-axis	1
Key	1
Plotting of points	1: 1 – 3 points correct 2: 4 – 7 points correct 3: 8 – 10 points correct 4: 11 – 14 points correct

(11)

- 3.2 3.2.1 300 rabbits ✓ (1)
- 3.2.2 190 to 200 ✓✓. (2)
- 3.2.3 W – Lag / Establishment phase ✓
X – Exponential / Geometric / Accelerating phase / Logarithmic ✓ (2)
- 3.2.4 (a) W - Few reproducing individuals ✓
- Individuals adjusting / acclimatising to new environment ✓
- Breeding partners do not meet ✓ (Any 2 x 1) (2)
- (b) X - Favourable conditions ✓
- Absence of predators ✓
- Increased natality ✓
- No / Little environmental resistance ✓ (Any 2 x 1) (2)
- (c) Y - Density independent factors /
- Temperature extremes /
- Drought /
- Fire /
- Floods ✓
- Degradation of the environment ✓
- Diseases ✓
- Lack of food and water ✓
- Competition (for food, shelter, etc.) (Any 2 x 1) (2)
- 3.2.5 * Overpopulation is prevented ✓ / population size is regulated
* More resources ✓ available for surviving rabbits.
* Improve gene pool of rabbits. ✓
* Because weaker ✓ rabbits are caught by predators. (Any 3 x 1) (3)
- [30]**

TOTAL SECTION B: 60

SECTION C

QUESTION 4

- 4.1 4.1.1 2,2 – 2,3 ✓ million (1)
- 4.1.2 1,8 – 1,9 ✓ million (1)
- 4.1.3 2,2 (2,3) + 1,9 (1,8) ✓ = 4,0 – 4,2 ✓ million (2)
- 4.1.4 5.4 ✓ million ✓ (2)
- 4.2 4.2.1 *Tribolium confusum* ✓
100 ✓ survived in bottle 6 when the temperature was 24 °C and the relative humidity was 30%. (2)
- 4.2.2 Density-independent ✓ (1)
- 4.2.3 Approximately 50 ✓ of each species ✓/ both would be between 50 and 90 but below 100 i.e ± 50 each. (2)
- 4.2.4 Interspecific competition ✓
Since two different species are involved. ✓ (2)
- 4.3 4.3.1 Plants provide animals, including humans, with food. ✓ They are producers of organic food substances. ✓ Plants maintain the oxygen balance in the air. ✓ They also provide habitats for other organisms. ✓ Many plants are used for traditional medicines. ✓ (Any 2 x 1) (2)
- 4.3.2 Climate change ✓
Habitat loss ✓
Invasive alien species ✓
Over-exploitation of plants. ✓ (Any 3 x 1) (3)
- 4.3.4 Seed banks are used to store seeds of plants that are endangered to prevent them from becoming extinct. ✓
They also provide a source of seed material for research ✓ and they contribute to education and awareness about plant conservation. ✓ (Any 2 x 1) (2)

- 4.4
- Person in an emergency situation/ is in shock/when frightened ✓
 - that lowers blood sugar level ✓
 - which stimulates adrenal gland ✓ to secrete adrenalin
 - that inhibits insulin ✓ secretion
 - but stimulates glucagon ✓ secretion
 - which is transported to the liver and skeletal muscles by the blood ✓
 - to convert excess glycogen to glucose ✓
 - adrenalin causes the bronchi to dilate ✓
 - to increase ventilation ✓
 - and also the constriction of the skin capillaries, ✓ increasing blood pressure ✓
 - and the person becomes pale ✓
 - less blood flow to the intestine ✓
 - because blood flow is diverted to the heart muscles ✓
 - and the skeletal muscles / brain ✓ where it is needed
 - adrenalin increases the rate and depth of breathing ✓
 - heartbeat increases ✓
 - and blood pressure also increases ✓
 - so that more oxygen and glucose ✓
 - can be transported to skeletal muscles ✓
 - more energy becomes available for muscle activity / increases respiration / metabolism ✓
 - allowing rapid removal of CO₂/waste ✓
 - hair stands on end ✓
 - pupil dilates ✓
 - skeletal muscle tone is increased, enabling muscles to respond more quickly. ✓
- (Any 17 x 1) (17)

ASSESSING THE PRESENTATION OF THE ESSAY

Marks	Descriptions
3	Well structured – demonstrates insight and understanding of question.
2	Minor gaps in the answer.
1	Attempted but with significant gaps in the answer.
0	Not attempted/nothing written other than question number/no correct information.

Synthesis (3)

TOTAL SECTION C: 40

GRAND TOTAL: 150