Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2012

LIFE SCIENCES P2 MEMORANDUM

MARKS: 150

This memorandum consists of 9 pages.

SECTION A

QUESTION 1

1.1	1.1.1	A √√		
	1.1.2	A √√		
	1.1.3	B √√		
	1.1.4	C √√		
	1.1.5	A √√		
	1.1.6	A √√		
	1.1.7	C √√		
	1.1.8	D √√		
	1.1.9	D √√	(9 x 2)	(18)
1.2	1.2.1	Endometrium √		
	1.2.2	Herbivore √		
	1.2.3	Predator √		
	1.2.4	Fertilisation √		
	1.2.5	Symbiosis √		
	1.2.6	Population √		
	1.2.7	Census/Counting √		
	1.2.8	Decomposers √		
	1.2.9	Interspecific competition √	(9 x 1)	(9)

1.3	1.3.1	Both A and B √√		
	1.3.2	Both A and B √√		
	1.3.3	A only √√		
	1.3.4	None √√		
	1.3.5	Both A and B √√		
	1.3.6	A only √√		
	1.3.7	B only √√		
	1.3.8	B only √√	(8 x 2)	(16)
1.4	1.4.1	B √ C √ A √ D √	**(in this sequence)**	(4)
	1.4.2	D √		(1)
	1.4.3	B √		(1)
	1.4.4	Primary succession √		(1)
			TOTAL SECTION A:	**50**

SECTION B

QUESTION 2

2.1 2.1.1 (a) 3 √ (1)
(b) 2 √ (1)

2.1.2 - Amniotic fluid √ (1)

2.1.3 - Act as a shock absorber √/ protect foetus against injury
- Maintain constant body temperature/
- Medium for free movement of foetus. √
- Prevents dehydration of the foetus. √
(Mark first TWO answers only) (2)

2.1.4 Placenta. √ / chorion villi (1)

2.1.5 - Provides nourishment for the embryo √
- Supplies oxygen/ removes carbon dioxide √
- For attaching the embryo to the mother √
- Allow for diffusion of nitrogenous excretory wastes from the foetus to the mother. √
- secretes its own progesterone after ±12 weeks to maintain pregnancy √
(Mark first TWO answers only.) (2)

2.1.6 - umbilical cord √ (1)

2.2 2.2.1 A – Hypophysis / Pituitary gland √
B – Thyroid gland √
C – Pancreas √ (3)

2.2.2 (a) B √
(b) A √ (2)

2.2.3 - The pituitary gland (A) secretes the hormone TSH √ which
- stimulates the thyroid gland (B) to secrete thyroxin. √
- an increase in thyroxin in the blood inhibits the pituitary (A)
- which secretes less TSH. √
- this cause the thyroid gland to secrete less thyroxin. √
- which in turn reduce the inhibitory effect on the pituitary gland √
- which will then increase the amount of TSH that it secretes. √
(Any 4 x 1) (4)

2.3	2.3.1	A – Semi-Circular Canals. √	(1)
		B – Ampulla √	(1)
		C – Utriculus √	(1)
		D – Sacculus √	(1)
		E – Cochlea √	(1)
		F – Auditory nerve √	(1)
	2.3.2	(a) head movement √/ nodding / speed and direction of head movement	(1)
		(b) changes in the body position √/ gravity	(1)
		(c) sound waves √	(1)
	2.3.3	- by the bony labyrinth. √	(1)
	2.3.4	(a) cerebellum √	(1)
		(b) cerebrum √	(1)
			[30]

QUESTION 3

3.1 3.1.1 This visual courtship display in peacocks is a way that the males attract a mate √ of the same species as a prelude to mating √
(Any 2 x 1) (2)

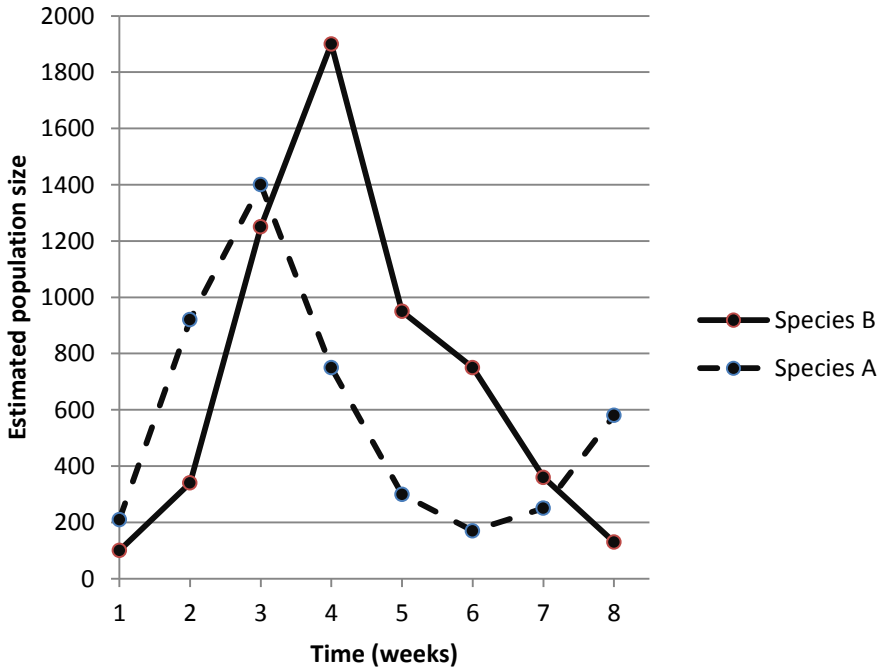
3.1.2 The embryo within the egg is protected √ from drying out by a shell, √ is nourished by the yolk √ and albumin and is able to develop successfully √ on land. (Any 2 x 1) (2)

3.1.3 Many eggs are eaten by predators √ or washed away √ by the currents and never are fertilised. So thousands off eggs are laid to ensure that some will be fertilised √ and developed into codfish. (Any 2 x 1) (2)

3.1.4 Release of sperm and eggs is synchronised √ which increase the probability that external √ fertilisation of the eggs will occur since the gametes are released in the same places √ at the same time.
(Any 2 x 1) (2)

3.1.5 Providing parental care increases the probability √ that the offspring will survive until they are independent √ and fully mature to produce their own offspring. √ (Any 2 x 1) (2)

3.2 3.2.1 The estimated population size of Species A and B over eight weeks



Guideline for the assessing of the graph

Correct type of graph and the joining of points	1
Title of graph	1
Correct label and scale x-axes	1
Correct label and scale y-axes	1
Key/ labelling of species A and B	1
Plotting of points	1: 1 to 6 points plotted correctly 2: 7 to 12 points plotted correctly 3: 13 to 15 points plotted correctly 4: all 16 points plotted correctly

(9)

NOTE:
If the wrong type of graph is drawn, 5 marks will be lost for:

- 'Correct type of graph and joining of points'
- 'Plotting of points'

If labels of the axes are transpose then 2 marks will be lost for:

- * 'Correct label and scale for X and Y axes

3.2.2 As the numbers of Species B increases the number of Species A decrease because they (Species A) are the food for Species B √ ***/*** In week 1 the numbers of Species A increase more than Species B because they had enough food √/ If Species B would have been the prey, their numbers in week two would have been less because than there would have been more predators (species A) in week 1. √ (Any 1 x 1) (1)

3.2.3 Both would die, √ because the food for Species A would be finished and species A will die leaving Species B without food and they will also die. √ (2)

3.2.4 Species A numbers will increase √ because there will be no predators to kill them. √ (2)

3.3 3.3.1
- The natural resources vary/
- Changing ecosystems
- Building of new houses, etc.
- Population growth
- Increase in waste √ (Any 1 x 1) (1)

3.3.2
- Since 1961 – 1975 the ecological footprint is higher than the biocapacity. √
- After that (1976) the ecological footprint drop below the biocapacity /biocapacity increase above the ecological footprint. √
- During the 1980's and 1990's the ecological footprint remained more or less constant. √
- and even dropped slightly in the late 90's early 2000's √

(Any 3 x 1) (3)

3.3.3 - Those countries having higher ecological footprints than their biocapacity will acquire resources from neighbouring countries, √
- thus increasing competition for the resources √/ lead to unrest/war (1)

3.3.4 - 12/13 years √ (1)
[30]

TOTAL SECTION B: 60

SECTION C

QUESTION 4

4.1 4.1.1 Extinct – species that no longer exists √ / last individual of the species have died.
Endemic – Organisms which are only found in a restricted area / part of a country. √ (2)

4.1.2 - Alien trees were removed from the area. √ (1)

4.1.3 - If endemic species go extinct, they are lost forever √***/*** as they do not occur anywhere else √ in the world. (Any 1 x 1) (1)

4.2 4.2.1 - James's hearing is better/not /same/different ✓ than Sandra's √
- James's hearing of lower frequencies is higher/lower/the same/different √ than that of Sandra's √
- Sandra's hearing of higher frequencies is higher/lower/the same/different √ than that of James. √ (Any 2 x 1) (2)

4.2.2 - James can hear things, √ that Sandra cannot hear. √ (2)

4.2.3 - 19 √ Hz (1)

4.2.4 James. √ He has a range of 19 to 20 300 = 20 281 Hz √ whereas Sandra, has a range of 18 to 20 100 = 20 082 Hz √ (3)

4.2.5 Independent – James and Sandra/person √
Dependent – Lowest and highest frequency √ of sound (2)

4.2.6 No, √ the sound that they(bats) produce have a much higher frequency √ than the range that James can hear. √ (3)

4.2.7 - hammer/maleus, √ anvil/incus √ and stirrup/stapes √ (3)

4.3
- When it is hot √
- Heat receptors √
- in the skin √
- and receptors in the hypothalamus √
- are stimulated by the high temperature √
- The stimulus in the skin is converted into an impulse √
- and transmitted to the hypothalamus √
- which acts as the heat regulating centre of the body √
- Impulses are sent from √ the hypothalamus
- to the sweat glands √
- and erector muscles √
- More sweat is produced √
- and more heat is lost √
- by evaporation of sweat √
- The erector muscles relax √
- causing the hair √
- to lie flat on the skin √
- trapping very little air between the hair √
- Insulation is thus reduced √
- Dilated blood vessels allow more blood to the skin √
- and more heat is thus lost from the body √
- by radiation/ conduction / convection √
- thus lowering the body temperature to normal √

(Any) (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

Synthesis (3)

TOTAL SECTION C: 40

GRAND TOTAL: 150