basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

LIFE SCIENCES P2

EXEMPLAR 2011

MEMORANDUM

MARKS: 150

This memorandum consists of 9 pages.

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PRINCIPLES RELATED TO MARKING LIFE SCIENCES 2011

1. **If more information than marks allocated is given**
   Stop marking when maximum marks are reached and put a wavy line and 'max' in the right-hand margin.

2. **If, for example, three reasons are required and five are given**
   Mark the first three irrespective of whether all or some are correct/incorrect.

3. **If whole process is given when only part of it is required**
   Read all and credit relevant parts.

4. **If comparisons are asked for and descriptions are given**
   Accept if differences/similarities are clear.

5. **If tabulation is required but paragraphs are given**
   Candidates will lose marks for not tabulating.

6. **If diagrams are given with annotations when descriptions are required**
   Candidates will lose marks.

7. **If flow charts are given instead of descriptions**
   Candidates will lose marks.

8. **If sequence is muddled and links do not make sense**
   Where sequence and links are correct, credit. Where sequence and links are incorrect, do not credit. If sequence and links become correct again, resume credit.

9. **Non-recognised abbreviations**
   Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation but credit the rest of answer if correct.

10. **Wrong numbering**
    If answer fits into the correct sequence of questions but the wrong number is given, it is acceptable.

11. **If language used changes the intended meaning**
    Do not accept.

12. **Spelling errors**
    If recognisable, accept provided it does not mean something else in Life Sciences or if it is out of context.

13. **If common names given in terminology**
    Accept provided it was accepted at the national memo discussion.

14. **If only letter is asked for and only name is given (and vice versa)**
    No credit.

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15. **If units are not given in measurements**
Candidates will lose marks. Memorandum will allocate marks for units separately.

16. Be sensitive to the **sense of an answer, which may be stated in a different way**.

17. **Caption**
All illustrations (diagrams, graphs, tables, etc.) must have a caption.

18. **Code-switching of official languages (terms and concepts)**
A single word or two that appears in any official language other than the learners' assessment language used to the greatest extent in his/her answers should be credited, if it is correct. A marker that is proficient in the relevant official language should be consulted. This is applicable to all official languages.

19. No changes must be made to the approved memoranda without consulting the provincial internal moderator, who in turn will consult with the national internal moderator (and the external moderators where necessary).

20. Only memoranda bearing the signatures of the national internal moderator and the UMALUSI moderators and distributed by the National Department of Basic Education via the provinces may be used.

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SECTION A

QUESTION 1

1.1	1.1.1	B✓✓		
	1.1.2	C✓✓		
	1.1.3	B✓✓		
	1.1.4	C✓✓		
	1.1.5	A✓✓		
	1.1.6	C✓✓		
	1.1.7	D✓✓	(7 x 2)	**(14)**
1.2	1.2.1	Binocular vision ✓/stereoscopic vision		
	1.2.2	Emigration ✓		
	1.2.3	Choroid✓		
	1.2.4	Ecological succession ✓		
	1.2.5	Census ✓		
	1.2.6	Niche ✓		
	1.2.7	Amniotic✓		
	1.2.8	Vas deferens✓		
	1.2.9	Autonomic nervous system ✓		
	1.2.10	Altricial development✓	(10 x 1)	**(10)**
1.3	1.3.1	A only✓		
	1.3.2	A only✓		
	1.3.3	None✓		
	1.3.4	Both✓/A and B✓		
	1.3.5	Both✓/A and B✓	(5 x 2)	**(10)**
1.4	1.4.1	A✓✓		
	1.4.2	B✓✓		
	1.4.3	D✓✓		
	1.4.4	D✓✓		
	1.4.5	D✓✓	(5 x 2)	**(10)**
1.5	1.5.1	Moss✓		(1)
	1.5.2	(a) Mitosis✓		(1)
		(b) Fertilisation✓		(1)
		(c) Meiosis✓		(1)
	1.5.3	Haploid✓		(1)
	1.5.4	No✓		(1)
				(6)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1 2.1.1 (a) Graafian follicle✓ (1)
(b) Corpus luteum✓ (1)
(c) Ovulation✓ (1)
(d) FSH✓ (1)
(e) LH✓ (1)

2.1.2 Meiosis✓ (1)

2.1.3 No✓ (1)

2.1.4 If fertilisation occurred✓ the corpus luteum✓ would stay intact✓ and not be destroyed (3)

2.1.5 If fertilisation occurs high levels of progesterone enters the blood✓
The high levels of progesterone inhibits the production of FSH ✓
Low levels of FSH stop the development of a ovum inside a Graafian follicle✓
No ovulation occurs when the individual is pregnant✓ (4)
(14)

2.2 2.2.1 Pollination is the transfer of pollen✓ from the anther to the stigma✓ of the flower (2)

2.2.2 Flower A✓ (1)

2.2.3 Large anthers✓
No petals✓
Large feathery stigma ✓
(Mark first TWO only) (any 2) (2)
(6)

2.3 2.3.1 Shoots✓ will grow towards✓ the light
OR
Shoots✓ will grow away✓from the light
OR
Light has no✓ influence✓ on the shoot (2)

2.3.2 It is the control✓ - To verify the results of the experiment✓./To allow for one variable only. (2)

2.3.3 Shoots grow towards the source of light✓. (2)

2.3.4 The auxins✓ that make the shoot to grow towards the light is in the tips of the shoots✓ . (2)

2.3.5 (a) Apical dominance (1)
(b) Tall growth of a plant/stimulate seed germination (1)
(10)
[30]

QUESTION 3

3.1 3.1.1 1 – pituitary gland✓
2 – thyroid gland✓ (2)

3.1.2 Thyroid stimulating hormone✓/TSH (1)

3.1.3 High thyroxin concentration in the blood will stimulate the pituitary gland✓
to secrete less TSH. ✓
The lower level of TSH will make the thyroid gland✓
to secrete less thyroxin✓
which will decrease the level of thyroxin in the blood✓ (any 4) (4)
(7)

3.2 3.2.1 Hypothalamus✓ (1)

3.2.2 37,5 ^{o}C✓ (1)

3.2.3 10✓ minutes (1)

3.2.4 Most human activities is controlled by enzymes✓ and enzymes require optimum temperatures to function (1)

3.2.5 Diagram I✓ (1)

3.2.6 Blood vessels dilated✓ to bring more blood to the surface and more heat will be lost.
OR
Increased sweat production✓which will cool down the body (2)
(7)

3.3 3.3.1 B - tympanic membrane✓
C - malleus/hammer ✓
F - cochlea✓ (3)

3.3.2 Has many ridges ✓
to direct the sound waves along the auditory canal✓
Extends outside the head/large flaps/funnel shaped✓
to trap sound waves✓
(Mark first TWO only) (any 2) (2)

3.3.3 (a) D ✓
(b) G✓
(c) E✓ (3)
(8)

3.4 3.4.1 Simple sampling✓ (1)

3.4.2 Randomly✓ (1)

3.4.3 Average number per plot 3+7+2 = 12 /3 = 4

Total no of plants	=	No of plants in sample	X	Habitat size / Sample size
		4✓	X	6 000✓ / 10
	=	2 400✓		(3)

3.4.4 Mark recapture✓ (1)

3.4.5 Planning for schools✓
Housing needs✓
Provision of resources✓
Creating employment✓
Medical service✓
(Mark first TWO only) (any 2) (2)
(8)
[30]

TOTAL SECTION B: 60

SECTION C

QUESTION 4

4.1 4.1.1 equilibrium✓/stationary (1)

4.1.2 (a) Slow growth ✓due to:
time necessary for the population to acclimatise✓/
the time needed for individuals to locate mating partners/
or time to produce offspring (2)

(b) Increasing growth✓ due to very few limiting factors✓ (2)

4.1.3 6,3✓ g/cm^3✓ mass of yeast at phase C (2)

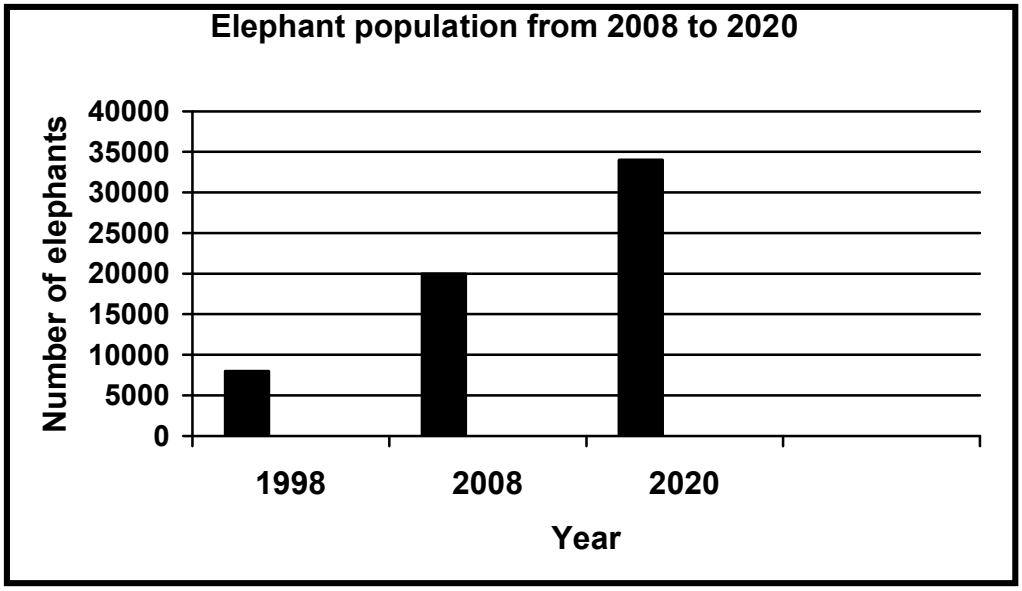
4.1.4 As the yeast population grows✓ the production of alcohol increases✓ (2)

4.1.5 - Population reached carrying capacity✓/environment cannot support any further increase due to a shortage of resources✓
OR
- Increased concentration of alcohol created toxic conditions✓ which started to kill of the yeast cells✓ (2)
(11)

4.2 4.2.1 Damage to the environment✓ (1)

4.2.2 Contraception
Relocation of elephant families
Removing fences to allow migration
(Mark first TWO only) (any 2) (2)

4.2.3



Mark allocation of the graph

Caption for graph	1
Correct label for X-axis	1
Correct label for Y-axis	1
Appropriate scale for Y-axis	1
Drawing of bars (D)	1 mark if 1 to 2 bars are drawn correctly 2 marks if all 3 bars are drawn correctly

(6)
(9)

4.3 **Possible answer**

- **Predation**

A predator captures and kill other animals (prey) for its food✓
Example: Lions that capture and feed on antelopes
Prey population will decrease and the predator population will increase✓ (3)

- **Competition**

Interspecific competition
Happens when large numbers of organisms of different species depend on same resources. ✓
Example: Flour beetles✓
One species will decrease in population size while the other will increase✓

OR

Intraspecific competition
Happens between organisms of same species that share the same available resource. ✓
Example: Owls competing for same resources. Stronger owls will survive✓
The owl population will decrease✓ (3)

- **Symbiosis** is the close association between two organisms so that one or both benefit✓

- **Parasitism**✓

One organism benefit (parasite) while the other is harmed (host) ✓
Example: Tapeworm and humans✓
The host organisms population size will decrease and the parasite population increase✓ (4)

- **Mutualism**✓

Symbiotic relationship between two organisms in which both benefit ✓
Example: Bacteria and roots of leguminous plants✓
Both populations will increase✓ (4)

- **Commensalism**✓

Symbiotic relationship between two organisms in which one benefits without harming the other. ✓
Example: Sharks and sucker fish/Remora (benefit) ✓
The population size of the organism that benefits will increase in size✓ (4)
Content: (any 17) (17)

ASSESSING THE PRESENTATION OF THE ESSAY

Marks	Description
3	All three interactions discussed with no irrelevant information
2	Two interactions discussed with no irrelevant information OR three interactions discussed with little irrelevant information
1	One interaction discussed with little or no irrelevant information OR two interactions discussed with little irrelevant information
0	Not attempted/nothing written other than question number/no correct information

Synthesis: (3)
(20)

TOTAL SECTION C: 40
GRAND TOTAL: 150

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