basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 11

LIFE SCIENCES P1

EXEMPLAR 2013

MEMORANDUM

MARKS: 150

This memorandum consists of 10 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES 2013

1. **If more information is given than marks allocated**
   Stop marking when maximum marks are reached, draw a wavy line and write '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 a whole process is given when only part of it is required**
   Read all and credit relevant parts.

4. **If comparisons are required 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 descriptions are required but diagrams with annotations are given**
   Candidates will lose marks.

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

8. **If the sequence is muddled and links do not make sense**
   Where the sequence and links are correct, credit. Where the sequence and links are incorrect, do not credit. If sequence and links becomes 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 the 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 are given in terminology**
    Accept if correct according to curriculum

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

15. **If units are not given in measurements**
Memorandum will allocate marks for units separately, except where it is already given in the question.

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

17. **Caption**
Credit will be given for captions of all illustrations (diagrams, graphs, tables, etc.) except where it is already given in the question.

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

QUESTION 1

1.1	1.1.1	D✓✓		
	1.1.2	A✓✓		
	1.1.3	B✓✓		
	1.1.4	D✓✓		
	1.1.5	A✓✓		
	1.1.6	C✓✓		
	1.1.7	A✓✓		
	1.1.8	C✓✓		
	1.1.9	A✓✓		
	1.1.10	B✓✓	(10 x 2)	**(20)**
1.2	1.2.1	Culling ✓		
	1.2.2	Pleura✓		
	1.2.3	Photosynthesis✓		
	1.2.4	Natality✓		
	1.2.5	Dialysis✓		
	1.2.6	Emphysema✓	(6 x 1)	**(6)**
1.3	1.3.1	Both A and B✓✓		
	1.3.2	A only✓✓		
	1.3.3	B only✓✓		
	1.3.4	Both A and B✓✓		
	1.3.5	A only✓✓		
	1.3.6	Both A and B✓✓	(6 x 2)	**(12)**
1.4	1.4.1	G✓		
	1.4.2	H✓		
	1.4.3	E✓		
	1.4.4	A✓		
	1.4.5	A✓	(5 x 1)	**(5)**
1.5	1.5.1	B✓		
	1.5.2	B✓		
	1.5.3	E✓		
	1.5.4	C✓		
	1.5.5	D✓		
	1.5.6	A✓		
	1.5.7	F✓	(7 x 1)	**(7)**
			TOTAL SECTION A:	**50**

SECTION B

QUESTION 2

2.1 2.1.1 A - Oesophagus✓ (1)
C - Pancreas✓ (1)
E - Rectum✓ (1)
H - Liver✓ (1)

2.1.2 (a) G✓ (1)
(b) B✓ (1)
(c) F✓ (1)
(7)

2.2 2.2.1 Blue✓ (1)

2.2.2 (a) Colour of light✓ (1)
(b) Time taken to release 20 bubbles✓ (1)

2.2.3 $\frac{80 + 40 + 160 + 140 + 70}{5}$ ✓
= 98✓seconds✓ (3)

2.2.4 2:1:4✓✓ (2)

2.2.5 Allows the plant to adjust✓ its rate of photosynthesis to the new conditions.✓ (2)

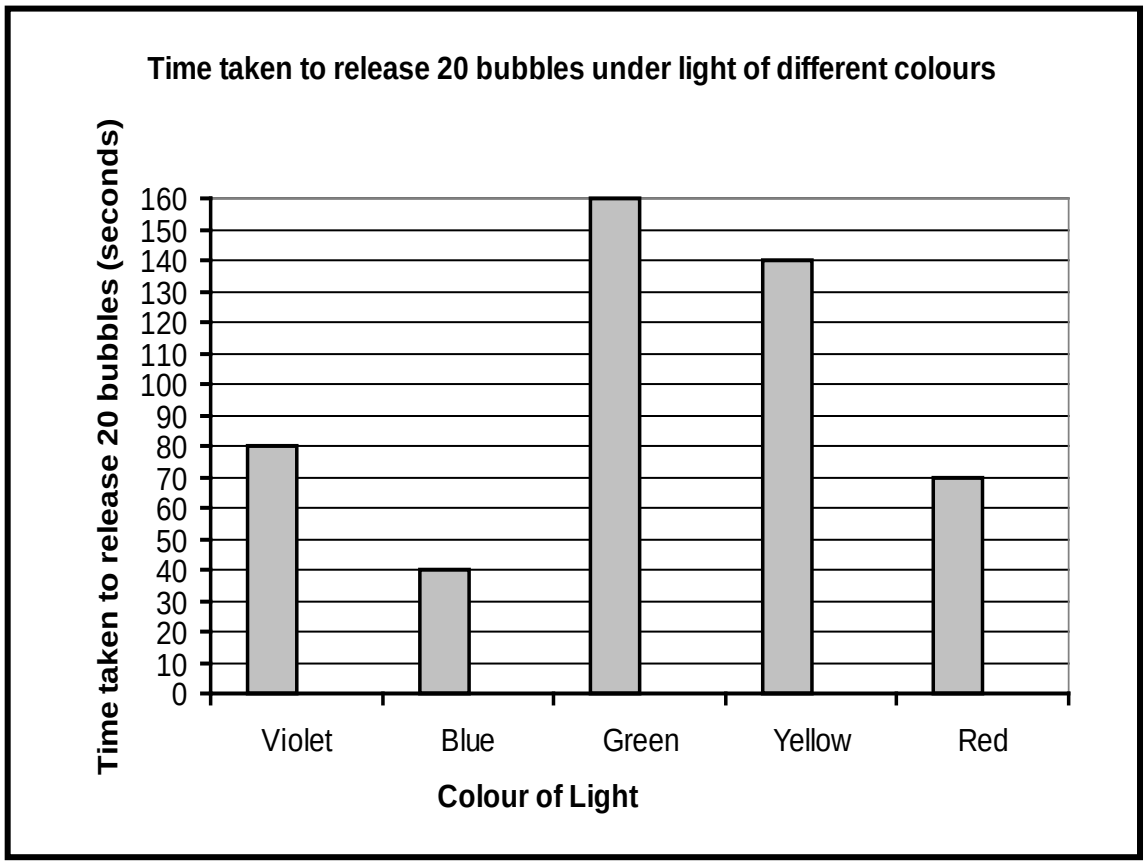
2.2.6 Repeat✓ the experiment/Take more readings for light of each colour. (1)

2.2.7 Green light poorly absorbed✓ compared to other colours.✓

OR

More green light✓ will be reflected✓ by the leaves. (2)

2.2.8



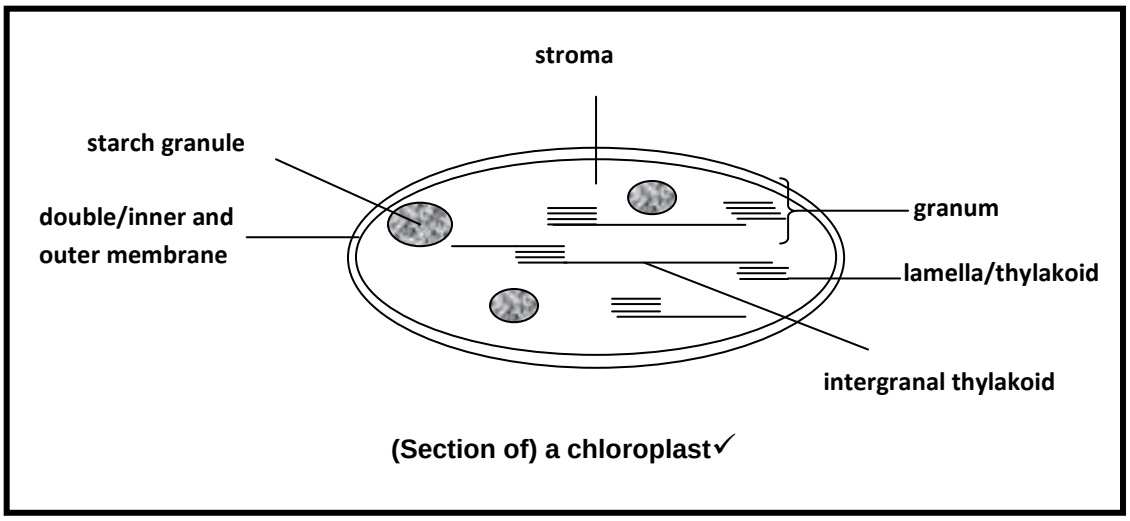
Mark allocation for the graph

Correct type of graph	1
Title of graph	1
Correct label for X-axis	1
Correct label for Y-axis including correct unit	1
Appropriate width and interval of bars	1
Appropriate scale for Y-axis	1
Drawing of bars	1: Drew 1 to 4 bars correctly 2: Drew all 5 bars correctly

NOTE: If the wrong type of graph is drawn, marks will be lost for 'correct type of graph' and for 'drawing of bars'.

(8)
(21)

2.3



Mark allocation for diagram:

Caption	1
Shape: (oval/elliptical)	1
Labels: Any 3	3

(5)

2.4

AEROBIC RESPIRATION	**ANAEROBIC RESPIRATION**
Requires oxygen✓	Independent of oxygen✓
Takes place in the cytosol and mitochondria✓	Takes place in the cytosol only✓
By-products are carbon dioxide and water✓	By-products are carbon dioxide and ethanol in plants✓ and lactic acid in animals
Releases large amounts of energy✓	Little energy released✓

(Any 3 x 2 + 1 for table) **(7)**

[40]

QUESTION 3

3.1	3.1.1	Kidney✓		(1)
	3.1.2	A: Renal cortex ✓ B: Renal pyramid ✓ D: Renal pelvis ✓		(3)
	3.1.3	(a) Protects the kidney ✓ (b) Transports urine to the bladder ✓		(1) (1)
	3.1.4	- Excretion✓ - Osmoregulation✓ - pH regulation✓ - Mineral salt regulation	(Any 3)	(3) **(9)**
3.2	3.2.1	In the cortex ✓		(1)
	3.2.2	Diffusion/Glomerular/Ultra-/Pressure filtration ✓		(1)
	3.2.3	Glomerulus/Blood capillary ✓		(1)
	3.2.4	- Walls are made of a single/thin layer ✓ to facilitate diffusion ✓ of substances. - Many tiny pores ✓act as microfilters, restricting large substances such as proteins/blood corpuscles.✓ - Lots of capillaries ✓ to ensure large surface area. ✓ **(Mark only the first two)**	(Any 2 x 2)	(4)
	3.2.5	To create a high pressure ✓in C for filtration.✓		(2)
	3.2.6	ADH✓		(1)
	3.2.7	- Makes collecting duct✓/distal convoluted tubule - more permeable to water ✓ - allowing more water to be reabsorbed.✓		(3) **(13)**

3.3	3.3.1	A✓	(1)
	3.3.2	Growth slowed down and became constant✓ since the population reached carrying capacity✓ due to environmental resistance✓/available resources.	(3)
	3.3.3	Starts slowly and then increases rapidly.✓	(1)
	3.3.4	Human population has not reached the carrying capacity✓ yet due to attempts to increase availability of resources such as food✓ using advancements in agricultural technology ✓ and the production of GMO's using biotechnology.✓	(4)
	3.3.5	Regulation of population growth by proper family planning✓ Allocation of subsidies to people that have small families.✓	(2) **(11)**
3.4	3.4.1	8✓%	(1)
	3.4.2	15-19✓ years	(1)
	3.4.3	3✓%	(1)
	3.4.4	Females ✓	(1)
	3.4.5	Pyramid B✓	(1)
	3.4.6	Low birth rate✓ Low death rate/Higher life expectancy ✓	(2) **(7)** **[40]**

TOTAL SECTION B: 80

SECTION C

QUESTION 4

Mechanical breakdown
Carbohydrates broken down to a smaller size✓
by the teeth✓
and stomach✓ which grinds the food
to become a liquid called chyme.✓ max (3)

Chemical Digestion
Carbohydrases✓ in the
saliva✓, pancreatic juice✓ and intestinal juice✓
break down the polysaccharides✓ to disaccharides✓
and eventually to monosaccharides✓
in an alkaline medium.✓ max (6)

Absorption
Glucose/Monosacccharide moves by diffusion✓
through the columnar epithelial cells✓
into the blood capillaries✓
of a villus.✓
The capillaries all join to form the hepatic portal system.✓ max (4)

Assimilation
Takes the digested food to the liver✓and muscles✓
where it can be stored✓ as glycogen✓
and from there to the rest of the body through the hepatic vein✓
to the cells✓
to produce energy through cellular respiration✓
or to synthesise other polysaccharides for growth✓/repair. max (4) **(17)**

ASSESSING THE PRESENTATION OF THE ESSAY

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

(3)

TOTAL SECTION C: 20
GRAND TOTAL: 150