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Education

KwaZulu-Natal Department of Education
REPUBLIC OF SOUTH AFRICA

LIFE SCIENCES

COMMON TEST

MEMORANDUM - JUNE 2021

NATIONAL
SENIOR CERTIFICATE

GRADE 12

MARKS: 60

This memorandum consists of 5 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information than marks allocated is given**
Stop marking when maximum marks is 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 a part of it is required**
Read all and credit the relevant part.
4. **If comparisons are asked for, but descriptions are given**
Accept if the 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 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 the answer, 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, provided it was accepted at the national memo discussion meeting.
14. **If only the letter is asked for, but only the name is given (and vice versa)**
Do not credit.
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.

SECTION A**QUESTION 1**

1.1	1.1.1	A✓✓	
	1.1.2	C✓✓	
	1.1.3	D✓✓	
	1.1.4	C✓✓	
	1.1.5	B✓✓	
			(5 x 2) (10)
1.2	1.2.1	Phenotype✓	
	1.2.2	Cloning✓	
	1.2.3	Colour blindness✓	
	1.2.4	ADH✓/Anti-diuretic hormone	(4)
1.3	1.3.1	B only✓✓	(2)
	1.3.2	A only✓✓	(2)
	1.3.3	B only✓✓	(2)
			(6)
		TOTAL SECTION A:	20

SECTION B**QUESTION 2**

2.1	2.1.1	Eating chocolate will have no effect on the blood glucose level✓✓ OR Eating chocolate will increase/decrease the blood glucose level✓✓	(2)
	2.1.2	It serves as a control✓	(1)
	2.1.3	Pancreas✓/ (Liver)	(1)
	2.1.4	Insulin✓	(1)
	2.1.5	<ul style="list-style-type: none"> - Learners must be of the same age✓ - Same health status✓ - Same person taking measurements✓ - Same type of chocolate✓ - Same amount of chocolate✓ - Same gender of learners✓ - Same fitness level✓ - Two groups were used, one was given chocolate the other was not given chocolate✓ - All participants were seated✓ - The glucose levels of all participants was measured at the beginning of the investigation ✓ - Same thyroxin levels in the blood✓ 	

NSC – Memorandum

- The glucose levels of all participants was measured at regular intervals✓
Any 2 (2)

(Mark the **FIRST TWO** only)

- 2.1.6
- Increase in glucose levels✓
 - will stimulate the pancreas✓
 - to secrete more insulin✓
 - which will increase glucose absorption into the muscles/cells✓
 - The rate of cellular respiration will increase✓
 - resulting in more energy being produced/released✓ (Any 3) (3)
- (10)

2.2 2.2.1 $I^B i$ ✓ (1)

- 2.2.2
- It's controlled by alleles I^A and I^B ✓
 - which are equally dominant to each other✓
 - and are both expressed in the phenotype✓ (3)

2.2.3

P₁ Phenotype Blood group A × Blood group AB✓
Genotype $I^A i$ × $I^A I^B$ ✓

Meiosis
G/Gametes I^A , i × I^A , I^B ✓

Fertilisation

F₁ Genotype $I^A I^A$ $I^A I^B$ $I^A i$ $I^B i$ ✓
Phenotype A AB A B✓

P₁ and F₁ ✓
Meiosis and
fertilisation✓

Blood group O = 0%✓* (no chance)

Any 6

OR

P₁ Phenotype Blood group A × Blood group AB✓
Genotype $I^A i$ × $I^A I^B$ ✓
Meiosis

Fertilisation

F₁

Phenotype

P₁ and F₁ ✓
Meiosis and
fertilisation✓

Blood group AB	Blood group A	
	Gametes	
	I^A	i
	I^A	$I^A I^A$ $I^A i$
	I^B	
	I^B	$I^A I^B$ $I^B i$

Blood group A; Blood group AB; Blood group A; Blood group B

✓ (correct gametes)
✓ (correct genotype)

Blood group O = 0%✓* (no chance)

Any 6

(6)
(10)
[20]

QUESTION 3

- | | | | | |
|-----|-------|---|---------|-----------------------------------|
| 3.1 | 3.1.1 | Pituitary gland✓/Hypophysis | | (1) |
| | 3.1.2 | P✓ - Cerebrum✓ | | (2) |
| | 3.1.3 | - Motor impulses may not be generated✓
- To be sent to the effector muscles✓
- And walking/running/voluntary movements may not be coordinated✓
- Resulting in paralysis✓ | | (3) |
| | 3.1.4 | - Cristae detects the change in direction and speed✓
- Stimulus is converted into an impulse✓
- which are sent to the cerebellum✓
- which sends impulses to the skeletal muscles✓
- to restore balance✓ | Any 4 | (4)
(10) |
| 3.2 | 3.2.1 | (a) Sclera✓

(b) Optic nerve✓ | | (1)

(1) |
| | 3.2.2 | - Both are transparent✓
- Both are curved to refract light✓
- Both are flexible✓
(Mark the FIRST TWO only) | | (2) |
| | 3.2.3 | - Distant objects remain unclear✓/blurred
- Suspensory ligaments will not become taut✓
- tension on the lens will remain low✓
- causing a high refractive power✓
- causing only near objects being clear✓ | | (3) |
| | 3.2.4 | - Circular muscles contract✓
- radial muscles relax✓
- pupil constrict✓
- less light enters the eye✓ | (Any 3) | (3)
(10)
[20] |

TOTAL SECTION B: 40

GRAND TOTAL: 60