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Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 11

JUNE 2024

AMENDED LIFE SCIENCES MARKING GUIDELINES

MARKS: 150

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This marking guideline consists of 11 pages.

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PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. **If more information is given than marks allocated**
   Stop marking when maximum marks are reached and put 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 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 provincial 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.

18. **Code-switching of official languages (terms and concepts)**
    A single word or two that appear(s) 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. **Changes to the marking guideline**
    No changes may be made to the marking guideline without consulting the provincial internal moderator.

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SECTION A

QUESTION 1

1.1	1.1.1	C✓✓		
	1.1.2	A✓✓		
	1.1.3	B✓✓		
	1.1.4	C✓✓		
	1.1.5	A✓✓		
	1.1.6	D✓✓		
	1.1.7	B✓✓		
	1.1.8	C✓✓No answer – award 2 marks : Error in the question EXP 3 CO2 should've been 0.03		
	1.1.9	C✓✓	(9 x 2)	**(18)**
1.2	1.2.1	Thallus✓		
	1.2.2	Mutualism✓		
	1.2.3	Asexual✓/vegetative reproduction		
	1.2.4	Stamen✓/ Androecium		
	1.2.5	Humus✓		
	1.2.6	Invertebrate✓		
	1.2.7	Xylem✓		
	1.2.8	Rhizome✓		
	1.2.9	Assimilation✓		
	1.2.10	Anaerobic respiration✓	(10 x 1)	**(10)**
1.3	1.3.1	Both A and B✓✓/ B only		
	1.3.2	None✓✓/A only		
	1.3.3	B only✓✓	(3 x 2)	**(6)**
1.4	1.4.1	(a) C✓		(1)
		(b) B✓/ A		(1)
		(c) C✓		(1)
	1.5.2	A: Porifera✓ B: Cnidaria✓ C: Arthropoda✓		(3) **(6)**

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1.5.1		Chloroplast✓ NOT chlorophyll	(1)
1.5.2	(a)	(Double) membrane✓	(1)
	(b)	Lamellla✓/Thylakoid/granum	(1)
1.5.3	(a)	1✓ - Starch grain✓	(2)
	(b)	5✓ - Ribosome✓	(2)
		4✓ - Stroma✓	(2)
1.5.4		ATP✓/ Adenosine tri-phosphate	(1) **(10)**

TOTAL SECTION A: 50

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SECTION B

QUESTION 2

2.1 2.1.1 A - Vascular tissue✓ /Conducting tissue/Xylem and Phloem
B - Seeds✓ (2)

2.1.2 Bryophytes✓ (1)

2.1.3 - Possess vascular/conducting tissue✓ / xylem and phloem
- to push water up to tips of tall plants✓ /for strengthening/for support (2)

2.1.4 Spermatophytes✓/Spermatophyta (1)

2.1.5 - Gymnosperm seeds are naked✓/exposed on a cone
- Angiosperm seeds are enclosed✓ in an ovary/ fruit (2)

2.1.6 - Produce pollen✓
- which is carried by wind✓ to the female cones (2)
(10)

2.2 2.2.1 (a) Stigma✓ (1)

(b) Ovary✓/Ovule (1)

2.2.2 - Serves as a passage for the pollen tube✓
- Connects the stigma and the ovary✓ Any (1)
(Mark first ONE only)

2.2.3 - Stigma (**1**) is usually small and sticky✓
- so that pollen grains can attach✓ from the insect body
OR
- Stigma is situated deep inside the flower✓ (2)

2.2.4

WIND	INSECT
Flowers are small✓	Flowers are usually large✓
Flowers are green/dull✓	Brightly coloured flowers✓
Reduced scent✓	Highly scented✓
Pollen grains are smooth✓	Pollen grains are rough✓

(Mark first TWO only) 1 table + (Any 2 x 2) (5)
(10)

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2.3 2.3.1 (a) Platyhelminthes✓ (1)

(b) Annelida✓ (1)

2.3.2 A – blind gut✓
B – through gut✓ (2)

2.3.3 Bilateral✓ symmetry (1)

2.3.4
- Organisms with bilateral symmetry develop an anterior and posterior end✓
- with the development of cephalisation✓
- The organisms become more motile✓
- They have their sense organs concentrated on their head✓ and
- develop a brain✓
- This means that the animal moves head first into the environment✓
- The organisms become more motile✓
- and is able to detect food✓/danger quickly and
- can respond quickly Any (5)

2.3.5
- Phylum A is triploblastIc✓ and (award 2 marks – not a difference)
  Phylum B is triploblastic✓
- Phylum A is acoelomate✓/ has no coelom and
  Phylum B is coelamate✓/ has a coelom (4)
  (14)

2.4
- Potatoes are full of starch✓
- In the mouth✓
- teeth are used to chew the potato✓
- making smaller pieces on which enzymes can act✓
- Carbohydrase✓/salivary amylase
- breaks large polysaccharides into shorter polysaccharide chains✓
- The stomach churns✓ and further breaks down the food increasing surface area for enzymes to work
- In the duodenum, carbohyhdrase✓/pancreatic amylase
- breaks the starch into monosaccharides✓ which can be absorbed

Any **(6)**

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2.5	2.5.1	Structure of a villus✓/villi		(1)
	2.5.2	Small intestine✓		(1)
	2.5.3	Absorption of digested nutrients✓		(1)
	2.5.4	(a) Columnar epithelial cell✓		(1)
		(b) Lacteal✓/ lymph vessel		(1)
	2.5.5	- Glucose✓ - Amino acids✓ - vitamins - water **(Mark first ONE only)**	Any	(1)
	2.5.6	- The thin columnar epithelium✓ of the villus facilitates easy absorption of nutrients✓ - The columnar epithelial cells have a brush border or microvilli✓ to enlarge the surface area for absorption✓ - The columnar epithelial cells produce carrier molecules✓ - which facilitate active absorption of nutrients✓ against diffusion gradients - The goblet cells between the columnar epithelial cells secrete watery mucus✓ that prevents friction and keeps the cells moist✓ - The villi contain many capillary blood vessels and lacteals in close contact✓ with the absorption surface - to take the absorbed food away fast and therefore, maintain steep concentration gradients for fast diffusion✓ - Epithelial cells have many mitochondria✓ to provide energy for active absorption ✓ **(Mark first TWO only)**	Any (2 x2)	(4) **(10)** **[50]**

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QUESTION 3

3.1.1 An organism where the nuclear material is not enclosed in a membrane✓/ cell with no definite nucleus (1)

3.1.2 (a) Cell wall✓ (1)

(b) Nucleoid✓/chromosome/DNA (1)

3.1.3 Protects from drying out✓/desiccation/protects from antibiotics (1)

3.1.4
- Plasmid (4)/DNA from the bacterial cell/E.coli is removed✓ and
- cut with (restriction) enzymes
- Human DNA with insulin gene is also cut and inserted into cut plasmid✓
- The plasmid / recombinant DNA is re-inserted to the bacterial cell to produce human insulin✓
- Human insulin is isolated and used to treat diabetics✓ (5)

3.1.5
- Mutations occur spontaneously in bacteria✓
- Some mutations cause bacteria to be resistant to antibiotics✓
- By stopping to take antibiotics early in the course✓
- the bacteria that have acquired resistance multiply and increase their population size✓ (3) **(12)**

OR

-
-
-

3.2.1 Type of sterilizing methodt✓ (1)

3.2.2
- All volunteers were not:
  - Under dental treatment✓
  - Using antibiotics✓
  - Using antiseptic mouthwashes✓
- Treatment of toothbrushes with sterilizer was done once daily✓
- Toothbrushes were kept in each sterilizer for five minutes✓
-
-
- Toothbrushes were all transported after 21 days/ duration was the same✓
- Toothbrushes were all transported in sterile bags✓
- Same number/ Six toothbrushes/volunteers in all groups✓
- All volunteers were adults✓

(Mark first THREE only) Any (3)

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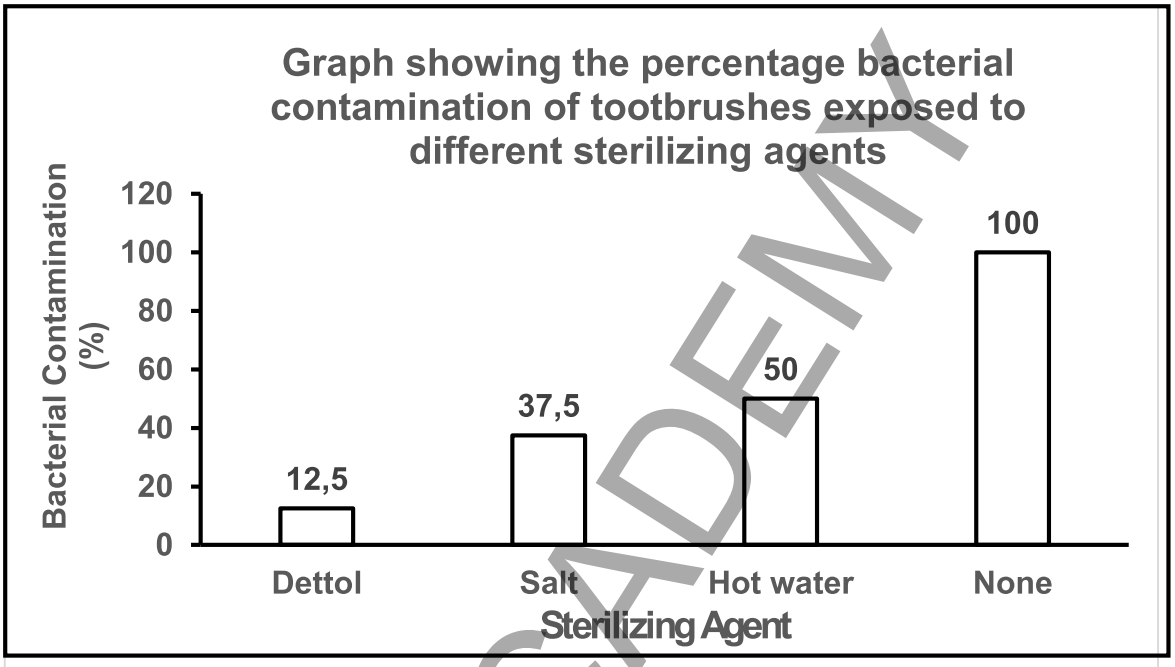
3.2.3 - To serve as a control✓
- to show that reduced bacterial contamination is due to the presence of a sterilizing agent✓ (2)

3.2.4 Dettol is the most effective sterilizing agent

OR

Hot water is the least effective sterilizing agent✓✓ (2)

3.2.5



Criteria for marking the graph:

Criteria	Mark allocation
Bar graph is drawn (**T**)	1
Caption of the graph includes both variable (**C**)	1
Correct labels on the X-axis and Y-axis with correct unit on the Y-axis (**L**)	1
Correct scale for Y-axis and equal width and space between the bars(**S**)	1
Plotting of bars correctly done for: **(P)** 1-3 Bars All 4 bars	 1 2

(6)
(14)

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3.3.1 (a)
- The leaf must be free of starch at the start of the experiment so that evidence of the need for the factor being investigated can be provided during the experiment✓
- to remove starch so that the starch present afterwards shows that photosynthesis has occurred✓
- To make sure the starch tested at the end of the investigation is the only one that was produced during the investigation✓
- To ensure that the starch present is due to the investigation not from before✓ (1)

(b) The variegated plant is placed in a dark cupboard for 48 hours✓ (1)

3.3.2 The need for light✓ during photosynthesis// light (1)

3.3.3
- The black paper must be placed on both sides of the leaves – top and bottom✓
- To make sure that the black paper is securely attached/ does not fall off/ does not come off✓
- To make sure that the black paper does not let any light through✓
- Black paper must be carefully placed around the leaf to not squash the cells underneath✓ (1)

3.3.4
- The parts covered in black paper will turn reddish-brown/ brown after iodine is added
- proving that photosynthesis requires light✓ (2)

(6)

3.4 3.4.1
- As carbon dioxide levels rise, so too does the rate of photosynthesis✓
- When the optimum level of carbon dioxide is reached✓, the rate of photosynthesis levels off
- Very high levels of carbon dioxide increases acidity/forms carbonic acid✓
- However, there is a limited number of chloroplasts available✓ and
- once they are all working to full capacity✓
- no further increase in photosynthesis is possible✓ (4)

3.4.2
-
-

/Causing the photosynthesis to stop

OR

- photosynthetic reactions are enzyme controlled✓
- High temperatures cause the enzymes to denature✓ (2)

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	3.4.3	- At temperatures above 35° all photosynthesis stops✓ - The temperatures in deserts often get far higher than 40°✓	(2) **(8)**
3.5	3.5.1	Glucose + oxygen✓ ➔ carbon dioxide + water + energy✓ (ATP)	(2)
	3.5.2	- Glucose is broken down✓/ glycolysis occurs - In the absence of (sufficient) oxygen✓ - into two pyruvic acid molecules✓ - which are converted into lactic acid✓ Any	(3)
	3.5.3	- After exercise rate and depth of breathing increases ✓/ Enough oxygen is supplied to the cell✓ - The lactic acid is converted back into pyruvic acid ✓ - for aerobic respiration to occur✓	(3)
	3.5.4	12s ÷ 60s × 8 litres✓ = 1,6✓ litres	(2) **(10)** **[50]**

TOTAL SECTION B:	**100**
GRAND TOTAL:	**150**

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