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KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 11

LIFE SCIENCES

JUNE 2022

MARKING GUIDELINE

REVISED MARKING GUIDELINE BELOW

MARKS: 120

This marking guideline consists of 6 pages.

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SECTION A

QUESTION 1

1.1
1.1.1 A✓✓
1.1.2 A✓✓
1.1.3 C✓✓
1.1.4 C✓✓
1.1.5 B✓✓
1.1.6 C✓✓
1.1.7 A✓✓
1.1.8 B✓✓
1.1.9 C✓✓

(9 x 2) **(18)**

1.2
1.2.1 Radial symmetry✓
1.2.2 Ectoderm✓
1.2.3 Parasitism✓
1.2.4. Gymnospermae✓
1.2.5 Gametophyte✓
1.2.6 Through-gut✓
1.2.7 Prokarytes✓
1.2.8 Plasmid✓
1.2.9 Pathogens✓

(9 x 1) **(9)**

1.3
1.3.1 A only✓✓
1.3.2 B only✓✓
1.3.3 A only✓✓

(3 x 2) **(6)**

1.4
1.4.1 (a) A✓ (1)
(b) B✓ (1)
(c) C✓ (1)

1.4.2 Canine✓ (1)
1.4.3 Incisor✓ (1)
1.4.4 (a) Salivary✓ gland (1)
(b) Saliva✓ (1)
(7)

TOTAL SECTION A: (40)

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SECTION B

QUESTION 1

2.1 2.1.1 (a) C✓- store starch✓ grain (2)
(b) A✓ - stroma✓ (2)
(c) D✓ - thylakoids✓ (2)

2.1.2
- Occurs in the grana✓
- Chlorophyll absorb radiant energy✓/sunlight
- Radiant energy changed into chemical potential energy✓
- Some energy is stored in ATP✓
- Some is used to split water✓ from the soil
- into hydrogen and oxygen✓
- The oxygen is released into the atmosphere✓
- The energized hydrogen is taken up by a carrier✓/NADP
- forming NADPH✓ Any (5)
(11)

2.2 2.2.1
- Carbon dioxide✓
- Ethanol✓ (2)
Mark the first TWO only

2.2.2
- Produces beer✓ /wine
- For making bread✓
- Production of cheese✓ (2)
Mark the first TWO only

2.2.3
- Glucose is broken down✓
- in the absence of oxygen✓
- to produce less energy✓
- in muscles✓
- Lactic acid is also produced✓
- leading to fatigue and stiffness✓
- during and after exercising✓ (6)
(10)

2.3 2.3.1 (a) C✓ Stomach✓ (2)
(b) A✓ Liver✓ (2)
(c) D✓ Pancreas✓ (2)

2.3.2
- It has a large surface area✓
- for more nutrient absorption✓

- It is long✓
- to allow sufficient time for absorption✓

- It has villi✓
- for the absorption of molecules✓ Any (2 x 2) (4)
Mark the first TWO only **(10)**

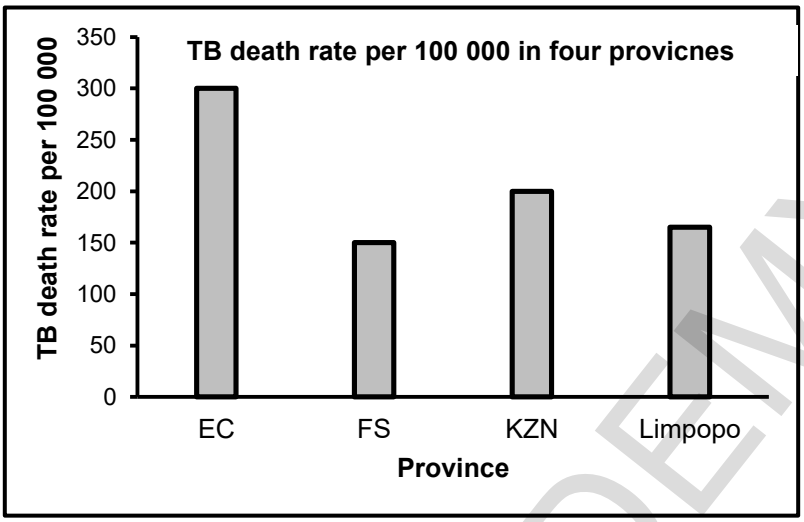
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2.4 2.4.1 Free State✓ (1)

2.4.2 - HIV weakens the immune system✓
- then the body may not fight against TB✓
- increasing the death rate✓ caused by TB (2)

2.4.3



Guideline for assessing the graph

CRITERIA	ELABORATION	MARK
Correct type of graph **(T)**	Bar graph drawn	1
Caption of graph **(C)**	Both variables included	1
Axes labels **(L)**	X- and Y-axis correctly labelled	1
Scale for X- and Y-axes **(S)**	- Equal space and width of bars for X-axis and - Correct scale for Y-axis	1
Plotting of Bars **(P)**	1 to 3 bars plotted correctly All 4 bars plotted correctly	1 2

(6)
(9)

QUESTION 3

3.1 3.1.1 - Carbohydrates release more energy✓
- that is needed by athletes✓
- for their races✓ (2)

3.1.2 $\frac{3}{37.2}$ ✓ x 100✓ = 8.0✓ (3)

3.1.3 - Tongue pushes food towards teeth✓
- for chewing/mastication✓
- Also mixes food with saliva✓
- that contains digestive enzymes✓
- for starch digestion✓ Any (4)
(9)

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3.2 3.2.1
- Bryophytes✓
- Pteridophytes✓
- Gymnosperms✓
- Angiosperms✓ (4)

Mark the first FOUR only

3.2.2 Bryophytes✓ (1)

3.2.3
- Gymnosperms depend on wind pollination✓
- for fertilisation✓
- So many pollens increase chances of fertilisation✓
- Whereas most angiosperms depend on wind /water and insects✓
- This increases chances of fertilisation✓Any (4)

(10)

3.3 3.3.1 Phylogenetic tree✓ (1)

3.3.2 Multicellular✓ (1)

3.3.3
(a) A✓ (1)
(b) C✓/D (1)
(c) D✓ (1)

3.3.4
- Provides room for organ development✓
- to allow for more complex organisms✓

- Provides a hydrostatic skeleton✓
- for support✓

- Separates gut wall from the body✓
- for more efficient digestion of food✓

- Increases respiration and nutrition✓
- by allowing nutrients to dissolve✓ Any (2x 2) (4)

Mark the first TWO only **(9)**

3.4 3.4.1 To show that germinating seeds produces carbon dioxide during respiration✓ (2)

3.4.2
- Same type of seeds✓
- Same environmental conditions✓
- Same investigator✓
- Same number of beans✓
- Same size test tubes were used✓
- Same time for the investigation✓ Any (2)

Mark the first TWO only

3.4.3
- It was not repeated✓
- Sample size was not increased✓ Any (1)

Mark the first ONE only

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	3.4.4	To remove micro-organisms that may influence the results✓ **Mark the first ONE only**		(1)
	3.4.5	To indicate carbon dioxide✓		(1) **(7)**
3.5	3.5.1	(a)	C✓ Arthropoida✓	(2)
		(b)	A✓ Cnidaria✓	(2)
		(c)	B✓ Porifera✓	(2) **(6)** **[40]**

GRAND TOTAL: 120

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REVISED MARKING GUIDELINE

SECTION A

QUESTION 1

1.1	1.1.1	A✓✓	
	1.1.2	A✓✓	
	1.1.3	C✓✓ A	
	1.1.4	C✓✓	
	1.1.5	B✓✓	
	1.1.6	C✓✓ leave out	
	1.1.7	A✓✓	
	1.1.8	B✓✓ C	
	1.1.9	C✓✓ B	
			(9 x 2) (18)
1.2	1.2.1	Radial symmetry✓	
	1.2.2	Ectoderm✓	
	1.2.3	Parasitism✓	
	1.2.4.	~~Gymnospermae~~✓ Spermatophyta	
	1.2.5	Gametophyte✓	
	1.2.6	Through-gut✓	
	1.2.7	Prokarytes✓	
	1.2.8	Plasmid✓	
	1.2.9	Pathogens✓	
			(9 x 1) (9)
1.3	1.3.1	A only✓✓	
	1.3.2	B only✓✓	
	1.3.3	~~A only~~✓✓ None	
			(3 x 2) (6)
1.4	1.4.1	(a) A✓	(1)
		(b) B✓	(1)
		(c) C✓	(1)
	1.4.2	Canine✓	(1)
	1.4.3	Incisor✓	(1)
	1.4.4	(a) Salivary✓ gland	(1)
		(b) Saliva✓	(1)
			(7)
			TOTAL SECTION A: (40)

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SECTION B

QUESTION 1

2.1 2.1.1

(a) C✓ - store starch✓ grain/granule (2)
(b) A✓ - stroma✓ (2)
(c) D✓ - thylakoids✓ / lamella (2)

2.1.2

- Occurs in the grana✓
- Chlorophyll absorb radiant energy✓/sunlight
- Radiant energy changed into chemical potential energy✓
- Some energy is stored in ATP✓
- Some is used to split water✓ from the soil
- into hydrogen and oxygen✓
- The oxygen is released into the atmosphere✓
- The energized hydrogen is taken up by a carrier✓/NADP
- forming NADPH✓

Any (5)
(11)

2.2 2.2.1

- Carbon dioxide✓
- Ethanol✓ / alcohol

Mark the first TWO only (2)

2.2.2

- Produces beer✓ /wine
- For making bread✓
- Production of cheese✓

Mark the first TWO only (2)

2.2.3

- Glucose is broken down✓
- in the absence of oxygen✓
- to produce less energy✓
- in muscles✓
- Lactic acid is also produced✓
- leading to fatigue and stiffness✓
- during and after exercising✓

Glucose (6C) - broken down to form (2 x 3C) Pyruvic acid molecules. Glycolysis process. little energy released Pyruvic Acid molecule converted into Lactic acid because no O_2 present

(6)
(10)

2.3 2.3.1

(a) C✓ Stomach✓ (2)
(b) A✓ Liver✓ (2)
(c) D✓ Pancreas✓ (2)

2.3.2

- elongated/millions
- It has a large surface area✓ for more absorption.
- ~~for more nutrient absorption~~✓
- ~~It is long~~✓ single layer of columnar epithelium
- ~~to allow sufficient time for absorption~~✓ absorption/diffusion made easy
- ~~It has villi~~✓ goblet cells✓
- ~~for the absorption of molecules~~✓ secrete mucus to facilitate absorption

Any (2 x 2) (4)
Mark the first TWO only **(10)**

Richly supplied with blood capillaries/lacteal to transport absorbed food immediately

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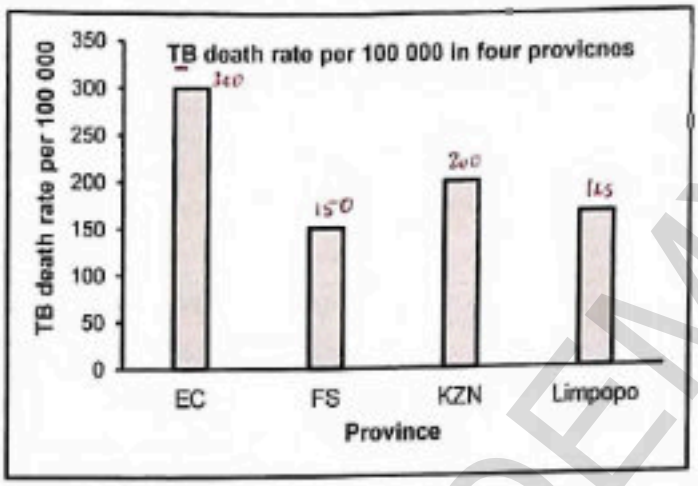
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2.4 2.4.1 Free State✓ (1)

2.4.2
- HIV weakens the immune system✓
- then the body may not fight against TB✓ / decrease fight
- increasing the death rate✓ caused by TB (2)

2.4.3



Guideline for assessing the graph

CRITERIA	ELABORATION	MARK
Correct type of graph (T)	Bar graph drawn	1
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Plotting of Bars (P)	1 to 3 bars plotted correctly All 4 bars plotted correctly	1 2

(6)
(9)

QUESTION 3

3.1 3.1.1
- Carbohydrates release (more) energy✓
- that is needed by athletes✓ / for races
- ~~for their races~~✓

(2)

3.1.2 $\frac{3}{37.2}$✓ x 100✓ = 8.0✓ $\frac{37,2}{100g} \times \frac{100}{1} = 37,2\ \%$ (3)

3.1.3
- ~~Tongue pushes food towards teeth~~✓
- ~~for chewing/mastication~~✓
- ~~Also mixes food with saliva~~✓
- ~~that contains digestive enzymes~~✓
- ~~for starch digestion~~✓

Gastric juice✓ contains enzymes proteases✓ pH is acidic✓, because of HCl✓ optimum pH for enzyme/protease action in stomach✓ protein broken down to smaller polypeptide/amino acids (any 4)

Any (4) (9)

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3.2 3.2.1
- Bryophytes✓
- Pteridophytes✓
- Gymnosperms✓
- Angiosperms✓

Mark the first FOUR only (4)

3.2.2 Bryophytes✓ (1)

3.2.3
- Gymnosperms depend on wind ✓for pollination✓
- ~~for fertilisation~~✓
- So many pollens increase chances of fertilisation✓/pollination
- Whereas ~~most~~ angiosperms depend on wind /water and insects✓
- ~~This increases chances of fertilisation~~✓

Any (4)
(10)

3.3 3.3.1 Phylogenetic tree✓ (1)

3.3.2 Multicellular✓ (1)

3.3.3
(a) A✓ (1)
(b) C✓~~B~~ (1)
(c) D✓ (1)

3.3.4
- Provides room for ~~organ development~~✓ space ✓
- ~~to allow for more complex organisms~~✓ for free movement/ growth of internal organs
- allow for temp. storage ✓ & food/metabolic waste ✓
- Provides a hydrostatic skeleton✓
- for support✓/movement/locomotion
- Separates gut wall from the body✓ wall ✓
- for more efficient digestion of food✓/so gut wall and body wall can work independently ✓
- ~~Increases respiration and nutrition~~✓ allow for metabolic process to occur ✓
- ~~by allowing nutrients to dissolve~~✓ eg osmoregulation

Any (2x 2) (4)
Mark the first TWO only **(9)**

3.4 3.4.1 To show that germinating seeds produces carbon dioxide during respiration✓✓ (2)

3.4.2
- Same type of seeds✓ seeds sterilized ✓
- Same environmental conditions✓ 35°C/ dark ✓ same type cotton wool ✓
- Same investigator✓
- Same number of beans✓
- Same size test tubes were used✓
- ~~Same time for the investigation~~✓

Any (2)
Mark the first TWO only

3.4.3
- It was not repeated✓
- Sample size was not increased✓

Any (1)
Mark the first ONE only

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3.4.4 To remove micro-organisms that may influence the results ✓✓ (1)
Mark the first ONE only

3.4.5 To indicate carbon dioxide ✓ (1)
(7)



3.5 3.5.1 (a) C ✓ Arthropoda ✓ (2)
(b) A ✓ Cnidaria ✓ (2)
(c) B ✓ Porifera ✓ (2)
(6)
[40]

GRAND TOTAL: 120

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