education

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NORTH WEST PROVINCE

PROVINCIAL ASSESSMENT

GRADE 11

LIFE SCIENCES P1

MARKING GUIDELINES

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MARKS: 150

These marking guidelines consist of 10 pages.

SECTION A

QUESTION 1

1.1

1.1.1 B✓✓

1.1.2 C✓✓

1.1.3 A✓✓

1.1.4 A✓✓

1.1.5 D✓✓

1.1.6 C✓✓

1.1.7 B✓✓

1.1.8 A✓✓

1.1.9 D✓✓ (9 x 2) **(18)**

1.2

1.2.1 Defaecation✓/egestion

1.2.2 Migration✓

1.2.3 Mitochondrion✓

1.2.4 Emphysema✓

1.2.5 Ecological niche✓

1.2.6 ATP✓

1.2.7 Social organisation✓ (7 x 1) **(7)**

1.3

1.3.1 B only✓✓

1.3.2 Both A and B✓✓

1.3.3 A only✓✓

1.3.4 B only✓✓

1.3.5 A only✓✓

1.3.6 None✓✓

1.3.7 Both A and B✓✓ (7 x 2) **(14)**

1.4

1.4.1 High✓ (1)

1.4.2 Low✓ (1)

1.4.3 Low✓ (1)

1.4.4 High✓ (1)

1.4.5 High✓ (1)

1.4.6 Low✓ (1)
(6)

1.5

1.5.1 C✓ (1)

1.5.2 E✓ (1)

1.5.3 B✓ (1)

1.5.4 D✓ (1)

1.5.5 A✓ (1)
(5)

TOTAL SECTION A: 50

SECTION B

QUESTION 2

2.1

2.1.1

A – Oesophagus✓
C – Pancreas✓
D – Rectum✓ (3)

2.1.2

(a) G✓ (1)

(b) B✓ (1)

(c) E✓ (1)

(d) H✓ (1)

2.1.3

- To improve one's health✓/to assist learners with concentration problems
- To enhance one's performance in sport✓
- To improve one's appearance✓(beauty)/to make our hair and nails grow and our skin glow
- To have a young appearance (anti-ageing)✓
- To build muscles for body builders and athletes ✓
- To prevent certain birth defects in pregnant women in their babies

Any (4)
(11)

2.2

2.2.1 Chloroplast✓ (1)

2.2.2
- It has sets of stacked membranes called grana✓
- Grana have thylakoids which contain chlorophyll✓
- Stroma has enzymes✓
- It has a double membrane✓
- Stroma contains starch granules✓
- Ribosomes are present in the stroma✓

Any (2)

2.2.3 ATP✓ and NADPH✓/Hydrogen ions (2)

2.2.4 Removes carbon dioxide from the atmosphere✓ which is used to form glucose✓.Keeps the carbon dioxide concentration in the atmosphere fairly constant✓ for the survival of animals
Produces glucose and other energy-rich compounds✓ which provide a source of food and energy to plants and animals (4)
(9)

2.3

2.3.1 To enable plants to obtain light✓ which is essential for photosynthesis✓ (2)

2.3.2
- Boil a leaf in a beaker with water✓
- until the leaf is soft to break the cells✓
- Remove the leaf and place it in a beaker/test tube with ethanol✓/alcohol
- to remove the chlorophyll✓ from the leaf
- Remove the leaf from the ethanol/alcohol and place it in hot water✓ to soften it
- Place the leaf on a white tile✓/glass pane/petri dish
- and cover it with iodine solution✓
- to observe the colour change to black✓ Any (5)

2.3.3 (a) B✓ (1)

(b) A✓ (1)

2.3.4 In apparatus A photosynthesis will occur at a greater rate✓ than in apparatus B and more oxygen will be released (1)

2.3.5 CO_2 concentration✓ (1)

2.3.6
- Repeat the investigation✓
- Use more plants✓to do the investigation Any (1)

2.3.7 It slowly gives off carbon dioxide✓ into the air in the bag✓ (2)

(14)

2.4

2.4.1

(a) Glucose✓ (1)

(b)
- Energy✓/ATP
- Carbon dioxide✓
- Water✓ Any (2)

2.4.2 Aerobic respiration occurs in the presence of oxygen✓ and anaerobic respiration take place in the absence of oxygen✓. (2)

2.4.3 – Alcohol✓
- Carbon dioxide✓
- ATP/energy✓ Any (1)

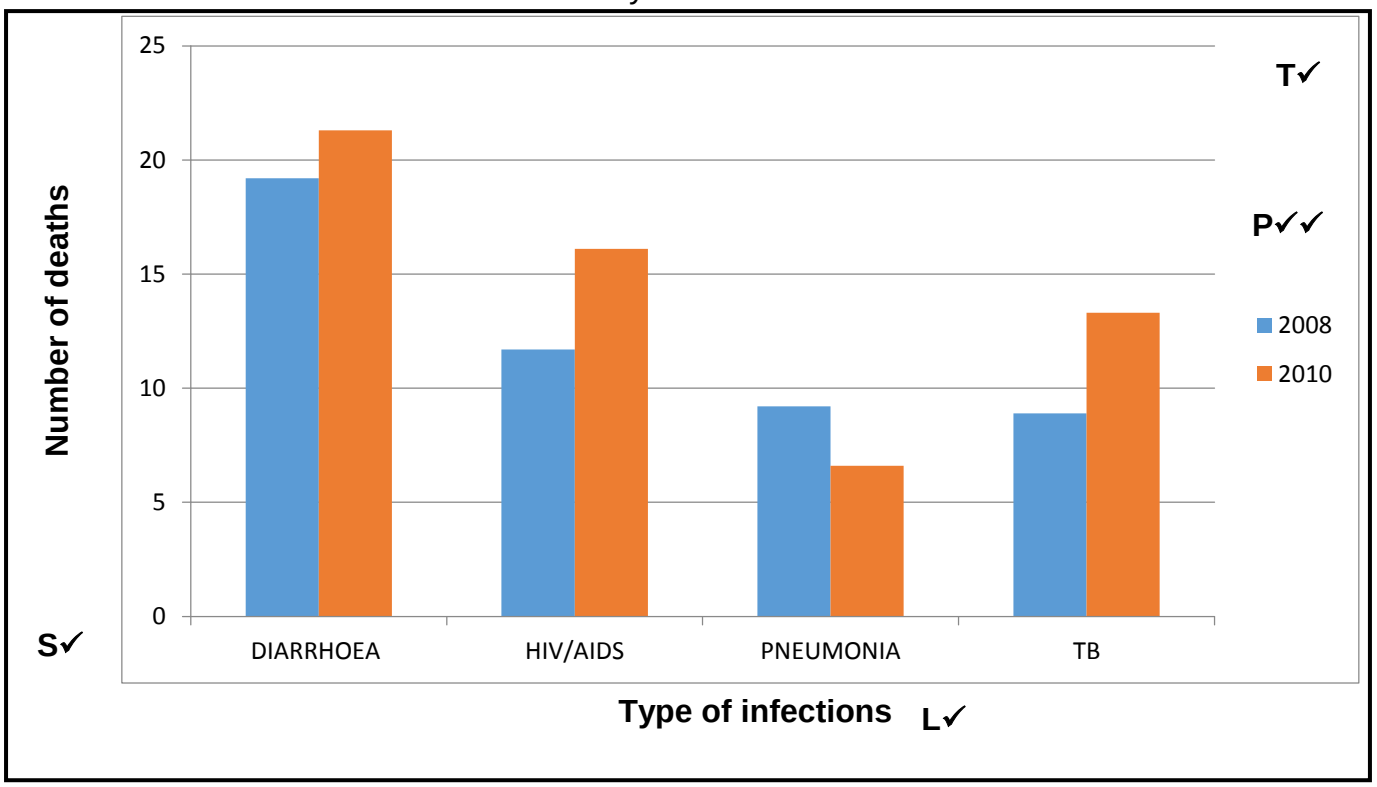
(6)

[40]

QUESTION 3

3.1

3.1.1 The top four causes of death among children under one years old in 2008 and 2010 in Khayelitsha. ✓



Mark allocation of the bar graph

Criteria	Marks
Bar graph drawn (T)	1
Title of the graph (Including both variables)	1
Correct scale for X-axis (equal width and spacing of the bars) and Y-axis (S)	1
Correct label of X-axis and correct label of Y-axis including correct unit (L)	1
Drawing of bars (P)	0: No bars plotted correctly 1: 1 to 7 bars plotted correctly 2: All 8 bars plotted correctly

NOTE:
If a line graph is drawn – marks will be lost for the 'type of graph' and for 'plotting' only.
If a histogram is drawn – marks will be lost for the 'type of graph' and' 'correct scale' only. (6)

3.1.2 The number of children with pneumonia✓ has decreased✓ (2)

3.1.3 When HIV infection is high ✓, the incidence / number of children with TB is high✓

OR

When HIV infection decreases✓, the number of TB cases also drops✓ /decreases (2)

3.1.4 Survey✓ (1)
(11)

3.2

✓ for table

Developed countries	Developing countries
Low rates of population growth✓	High rates of population growth✓
Highly industrialised✓	Less industrialised✓
Low birth rates✓/natality	High birth rates✓/natality
Low infant mortality rates✓/death	High infant mortality rates✓/death
Longer life expectancy✓	Lower life expectancy✓

Any 2 x 2 = 4 + 1 for table **(5)**

3.3

3.3.1 19✓ arbitrary units (1)

3.3.2

(a) Time✓ (1)

(b) Lactic acid concentration✓ (1)

3.3.3 The body could not supply oxygen to the muscles fast enough✓ anaerobic respiration✓ occurred in the muscles (2)

3.3.4 60 – 15 = 45✓ min✓ (2)
(7)

3.4

3.4.1 Competitive exclusion ✓ / Interspecific competition (1)

3.4.2 When grown alone population size of both species **A** and **B** increased greatly ✓***** to over 100 because there is no competition✓ ***.**
When the two species are grown together in the same habitat : population size of species **A** and **B** increases ✓ in the first week ✓ / to about 40 since there was sufficient food ✓ for the low population size of both species ✓.
As food supply decreased, competition ✓ increased. Thereafter species **A** outcompeted species **B**✓. Resulting in species **A** increasing✓ / up to 110 while species **B** stabilised ✓ / remained at 40 and then declined ✓
*2 compulsory marks + any 4 others (6)

3.4.3 Species A and B will increase for a longer period ✓ / It will take longer for species A to outcompete species B due to no ✓ / reduced competition.✓ (2)
(9)

3.5 $P = \frac{F \times S}{M}$

$= \frac{20 \times 25 \checkmark}{8\checkmark}$

= 63✓ fish **(3)**

3.6

- When the blood glucose level is too low:
- The alpha cells✓ in the islets of Langerhans✓in the pancreas✓
- secrete glucagon✓
- this converts stored glycogen✓
- back into glucose✓
- and the blood glucose level rises✓ Any **(5)**

[40]

TOTAL SECTION B: 80

SECTION C

QUESTION 4

- Blood in the glomerulus is under high pressure✓ .
- Water which are small enough are pushed across the endothelium of the glomerulus and into the Bowman's capsule of the nephron.✓
- This is called glomerular filtration/ultra-filtration.✓
- As the filtrate moves into the proximal convoluted tubule✓ a lot of water is reabsorbed back into the blood.✓
- The water which is not reabsorbed moves into the loop of Henle✓ the descending limb✓.
- Sodium is actively pumped out of the filtrate ✓ on the ascending limb of the loop of Henle✓ under the control of aldosterone.✓
- This results in the medulla of the kidney becoming 'salty'/more salt lowers water potential and this draws water out of the nephron✓.
- The filtrate then moves to the distal convoluted tubule✓.
- The amount of water that is reabsorbed from the distal convoluted tubule is under the control of the hormone ADH✓.
- On a hot day the hypothesis/ pituitary gland✓ will secrete more ADH.✓
- More ADH results in the walls of the distal convoluted tubule and collecting duct becoming more permeable to water✓.
- The more water needs to be re-absorbed, the more ADH is secreted✓ the less water is lost in the urine✓/urine becomes more concentrated.
- Water leaves the nephron in the collecting ducts✓ as part of the urine.
- The urine moves into the calyces✓ then the kidney pelvis✓ and leaves the kidney through ureters✓. The urine is stored in the bladder✓ and leaves through the urethra.✓ Any (17)

Content: **(17)**
Synthesis: **(3)**

ASSESSING THE PRESENTATION OF THE ESSAY

Relevance	Logical sequence	Comprehensive
All information provided is relevant to the question	Ideas arranged in a logical/cause-effect sequence	Answered all aspects required by the essay in sufficient detail
All information provided is relevant to: - Possible paths that water molecules may take through the nephrons of a person who is exercising in a hot weather - Start from where the water enters the nephron into the glomerulus and end when some may leave the body as part of the urine - The hormone responsible for controlling how much water is released as part of the urine. Not aldosterone.	All the information regarding the: - Possible paths that water molecules may take through the nephrons of a person who is exercising in a hot weather - Start from where the water enters the nephron into the glomerulus and end when some may leave the body as part of the urine - The hormone responsible for controlling how much water is released as part of the urine.	At least any FOURTEEN correct points should be included covering aspects indicated below: - Possible paths that water molecules may take through the nephrons of a person who is exercising in a hot weather - Start from where the water enters the nephron into the glomerulus and end when some may leave the body as part of the urine - The hormone responsible for controlling how much water is released as part of the urine. **(14/17)**
1 mark	1 mark	1 mark

TOTAL SECTION C: 20
GRAND TOTAL: 150