education and training

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NATIONAL SENIOR CERTIFICATE

GRADE 11

LIFE SCIENCES MARKING GUIDELINE

JUNE 2018 EXAMINATION

MARKS: 150

This Marking Guideline consists of 8 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 part of it is required**
   Read all and credit relevant part.

4. **If comparisons are asked for 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 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 is incorrect, do not credit. If sequence and links becomes correct again, resume credit.

9. **Non-recognized abbreviations**
   Accept if first defined in answer. If not defined, do not credit the unrecognised abbreviation but credit the rest of 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 recognizable accept provided it does not mean something else in Life Sciences or if it is out of context**.**

SECTION A

QUESTION 1

1.1

1.1.1	C✓✓	
1.1.2	D✓✓	
1.1.3	B✓✓	
1.1.4	C✓✓	
1.1.5	A✓✓	
1.1.6	D✓✓	
1.1.7	D✓✓	
1.1.8	A✓✓	
1.1.9	B✓✓	
1.1.10	D✓✓	**(20)**

1.2

1.2.1	Deamination✓	
1.2.2	Style✓	
1.2.3	Inhalation✓	
1.2.4	Pleura✓	
1.2.5	Epiglottis✓	
1.2.6	Anaerobic ✓respiration	**(6)**

1.3

1.3.1	A only✓✓	
1.3.2	None✓✓	
1.3.3	A only✓✓	
1.3.4	A only✓✓	
1.3.5	None✓✓	
1.3.6	B only✓✓	**(12)**

1.4

1.4.1 Gills✓ (1)

1.4.2 Large surface area✓, richly supplied by blood✓, moist✓, good ventilation and well protected.✓ **(First 3)** (3)

1.4.3
- The surface area to the volume ratio in humans is too small✓.
- The skin is not moist; it would not be able to absorb enough oxygen to meet the demands of the body✓
- Organism B depend largely on water as a source of oxygen

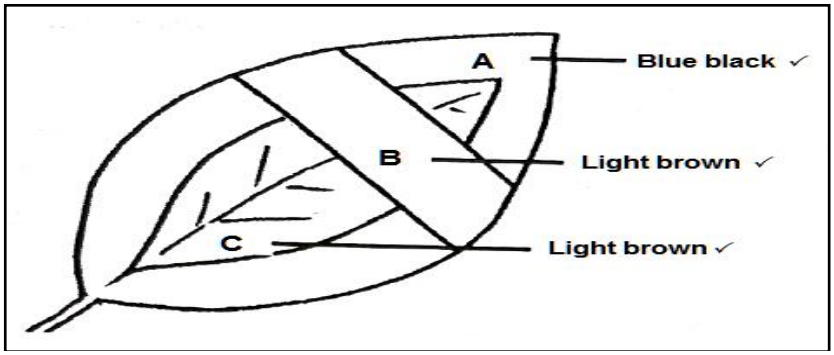
(Any 2) (2)

1.5

1.5.1
- chlorophyll✓
- light✓ (2)

1.5.2 To remove starch from the plant✓ (1)

1.5.3



(3)

TOTAL SECTION A: 50

QUESTION 2

2.1 2.1.1 B Oesophagus✓
E Pancreas✓ (2)

2.1.2 (a) D✓
(b) F✓ (2)

2.1.3 - Neutralises the acidic chyme from the stomach✓
- Emulsifies fat✓
- Provides an alkaline pH for the functioning of enzymes found in the pancreatic juice/ small intestine✓
- Acts an antiseptic and prevents decomposition of food✓
- Water in bile keeps the food fluid enabling easy movement of food✓
(First 2) (2)

2.1.4 Diabetes mellitus✓ (1)

2.1.5 - The small intestine is long to ensure maximum absorption ✓
- The wall consist of single row of cells which make it thin for diffusion✓
- presence of microvillus✓ , which increase surface area
- finger – like projections✓ increase surface area
- Presence of mitochondria✓ in the epithelial cells to provide energy
(First 3) (3)
(**10)**

2.2 2.2.1 X = Chloroplast✓ (1)

2.2.2 Y = Cellular respiration✓ (1)

2.2.3

T✓

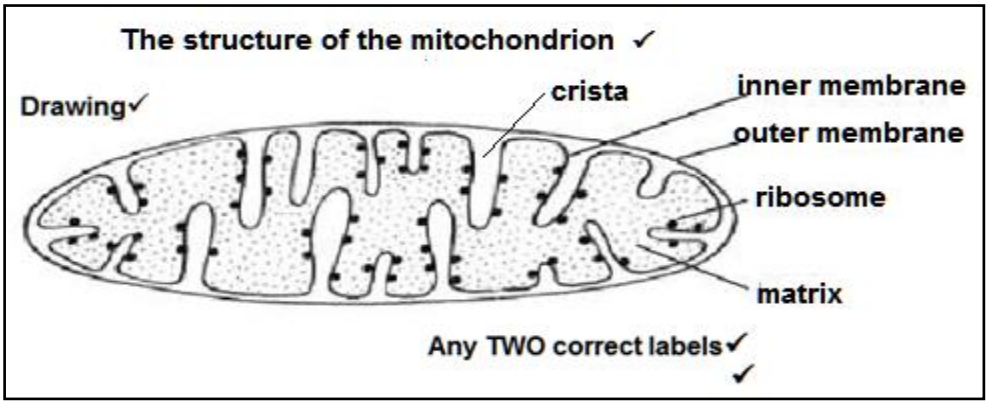
Organelle X (Photosynthesis)	**Organelle Y(Cellular Respiration)**
Occurs during the day in the presence of light✓	Occurs during the day and at night (not dependent on light) ✓
Anabolic process✓	Catabolic process✓
Uses carbon dioxide and releases oxygen✓	Uses oxygen and releases carbon dioxide✓
Main product is glucose/sugar/starch✓	Main product is energy-rich ATP✓

First 2 X 2 + 1 (Table) (5)

2.2.4 A: O_2✓ (1)
B: CO_2✓ (1)

2.2.5 - Produce oxygen, which human beings need for cellular respiration✓.
- Use up the carbon dioxide, which is produced by humans beings during cellular respiration.✓
- Produce food (glucose) for human beings.✓
Plants are the basis of all food chains. **(first TWO)** (2)

2.2.6

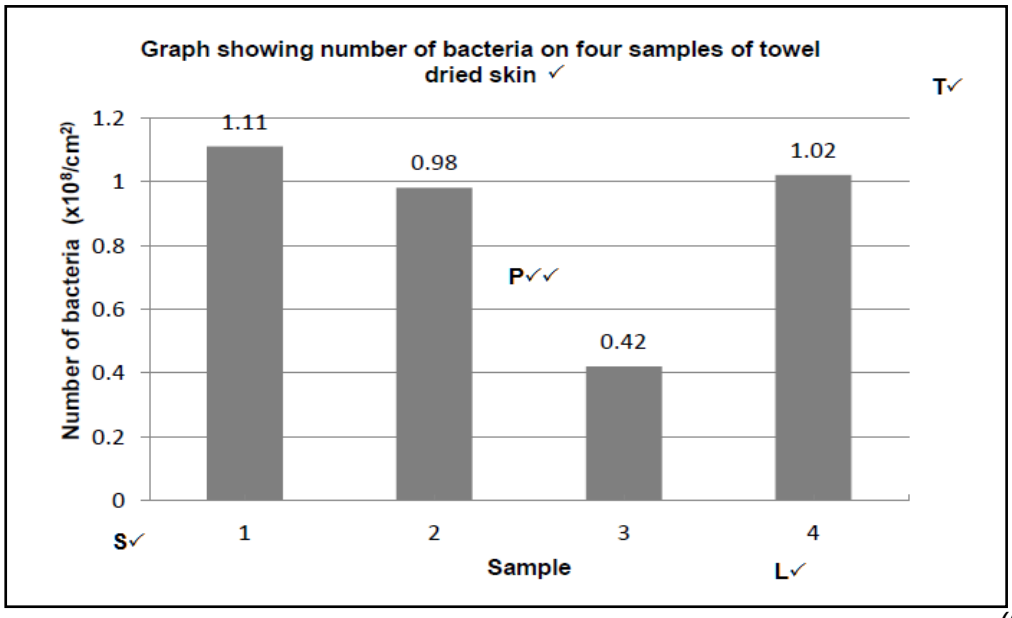


(4)
(15)

2.3 2.3.1 (a) Drying the skin✓ (1)
(b) Number of bacteria✓ (1)

2.3.2 - The atmospheric temperature / humidity in the testing venue.✓
- The time of wiping and exposure to the hot air.
- Using the same people for both methods.
- Using the same conditions for washing (e.g. amount of soap,
- Amount of water, time rinsing, etc.) **(first 1)** (1)

2.3.3



(6)

Guideline for the assessing of the graph

Correct type of graph	1
Title of graph	1
Correct label and scale of x-axis	1
Correct label and scale of y-axis	1
Plotting of bars	1 : 1 to 3 bars plotted correctly 2 : all 4 bars plotted correctly

NOTE: If axes are transposed, marks will be lost for labelling X- axis and Y-axis. **(9)**

2.4 2.4.1 A diagram that shows evolutionary relationships✓ between organisms that arose from a common ancestor✓ (2)

2.4.2 Green algae✓

2.4.3 Vascular tissues/ xylem and phloem✓ (1)

2.4.4 - Pollen grains have air sacs ✓
- Seeds have wings✓
- Produces large quantities of pollen✓
- Cones develop high up in trees✓ **(first 2)** (2)

(6)

TOTAL QUESTION 2: 40

QUESTION 3

3.1 3.1.1 Mould grows the best✓ on bread with sugar solution/tap water/lemon juice ✓ (2)

3.1.2 Lemon juice is acidic✓.
Acids hinder the growth of many common bacteria and fungi✓ (2)

3.1.3 To act as a control✓to compare✓results without the independent variable /variables. (2)

3.1.4 Saprophytism✓exists between bread mould and bread.
Mould benefits by getting food from the bread.✓
Bread is a non-living substance.✓ (3)
(9)

3.2 3.2.1 D✓ (1)

3.2.2 Insect✓ (1)

3.2.3 The male and female organs are separated physically on the flower to hinder self-pollination/ stigma is carried higher than the stamen (2)

3.2.4 - Water is not required for fertilization✓
- The presence of vascular tissue (xylem and phloem) **(first 1)** (1)
(5)

3.3 3.3.1 Kwashiorkor✓ (1)

3.3.2 His diet consists of mainly carbohydrate✓with very little protein✓ (2)

3.3.3 19 - 9✓ = 10✓kg✓ (3)

3.3.4 Fats are absorbed into the lacteal✓and are later emptied into the blood system✓ (2)

3.3.5 Villi✓/villus (1)
(9)

3.4 3.4.1 (a) Squamous epithelial ✓cells (1)
(b) Red blood corpuscle✓ (1)
(c) Haemoglobin✓ (1)

3.4.2 A Oxygen✓
B Carbon dioxide✓ (2)

3.4.3
- Lined by single layer of squamous epithelium✓to provide a thin surface for gaseous exchange✓
- Alveolus richly supplied with blood capillaries✓ for the transport of oxygen to tissues and carbon dioxide to the lungs✓
- Alveolus is lobed ✓ to provide a big surface area for gaseous exchange✓
- Film of moisture ✓ in alveolus for oxygen to dissolve for effective diffusion ✓

(first 3X2) (6)
(11)

3.5 3.5.1 Stomach✓ (1)

3.5.2 (a) pepsin✓/rennin (1)
(b) Chyme✓ (1)

3.5.3 Peristalsis✓ (1)

3.5.4 - mechanical digestion /breaks the food up into smaller particles✓
- mixes the food with the digestive enzymes✓ (2)
(6)

TOTAL QUESTION 3: 40

SECTION C

QUESTION 4

Digestion of carbohydrates

- Maize porridge is rich in carbohydrates /starch.✓
- In the mouth✓ the saliva ✓containing amalyse✓ acts on the starch✓ in the maize porridge which breaks it down into simpler substances ✓ /maltose.
- Digestion of carbohydrates (maltose) is completed in the small intestine✓ where carbohydrases✓ is secreted to form glucose✓

(any 5) (5)

Absorption

- The absorption of glucose takes place in the small intestine✓ by the villi✓.
- The absorption of glucose into the blood causes the glucose in the blood to increase✓
- The glucose is then taken to the liver ✓ and assimilation ✓takes place.

Regulation of glucose level

- The pancreas✓ is stimulated, which causes the Islets of Langerhans✓ of the pancreas to secrete insulin✓.
- Insulin travels in the blood to the liver ✓where the conversion of excess glucose✓ into glycogen✓ is stimulated
- Glycogen is then stored in the liver✓
- The glucose concentration in the blood decreases✓ and returns to normal✓
- This known as negative feedback✓ **(any 12)** (12)

ASSESSING THE PRESENTATION OF THE ESSAY

Criterion	Relevance	Logical sequence	Comprehensive
Elaboration	All information provided is relevant to the topic	Ideas are arranged in a logical/cause-effect sequence	All aspects required by the essay have been addressed
	Only information relevant to the digestion of carbohydrates (starch), absorption and regulation of glucose level is given. (There is no irrelevant information)	Digestion of carbohydrates (starch), absorption and regulation of glucose level ispresented in the correct sequence.	Digestion of carbohydrates (starch)**3/5** Absorption and regulation of glucose level **8/12**
Mark	1	1	1

(3)

(20)

TOTAL SECTION C: 20

GRAND TOTAL: 150