education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

PROVINCIAL ASSESSMENT

GRADE 10

LIFE SCIENCES P2

NOVEMBER 2024

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 10 pages.

PRINCIPLES RELATED TO MARKING LIFE SCIENCES

1. If more information than marks allocated is given

Stop marking when maximum marks are reached and put a wav 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 are incorrect, do not credit. If sequence and links become correct again, resume credit.

9. Non-recognized abbreviations

Accept if first defined in answer. If not defined, do not credit the unrecognized 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.

SECTION A

QUESTION 1

1.1

1.1.1 D✓✓
1.1.2 B✓✓
1.1.3 A✓✓
1.1.4 B✓✓
1.1.5 A✓✓
1.1.6 C✓✓
1.1.7 B✓✓
1.1.8 B✓✓ (8 X 2) **(16)**

1.2

1.2.1 Coronary artery✓
1.2.2 Pangaea ✓
1.2.3 Altitude ✓
1.2.4 Biosphere ✓
1.2.5 Aspect✓
1.2.6 Food web✓
1.2.7 Radiometric dating✓ (7 x 1) **(7)**

1.3

1.3.1 A only✓✓
1.3.2 A only✓✓
1.3.3 A only✓✓
1.3.4 Both A and B✓✓ (4 x 2) **(8)**

1.4

1.4.1

T✓

Prokaryotes	Eukaryotes
Organisms with cells with no true nuclei✓	Organisms with cells that have true nuclei✓
Their genetic material /DNA is not enclosed by a nuclear membrane and occurs free in the cytoplasm✓	Their genetic material /DNA is enclosed by a nuclear membrane and occurs free in the cytoplasm✓
No true organelles occur in the cytoplasm✓	True organelles occur in the cytoplasm✓
Monera are prokaryotes✓	Protista, Fungi, Plantae and Animalia are eukaryotes✓

T : 1 and (3 x 2): 6 **(7)**

1.5

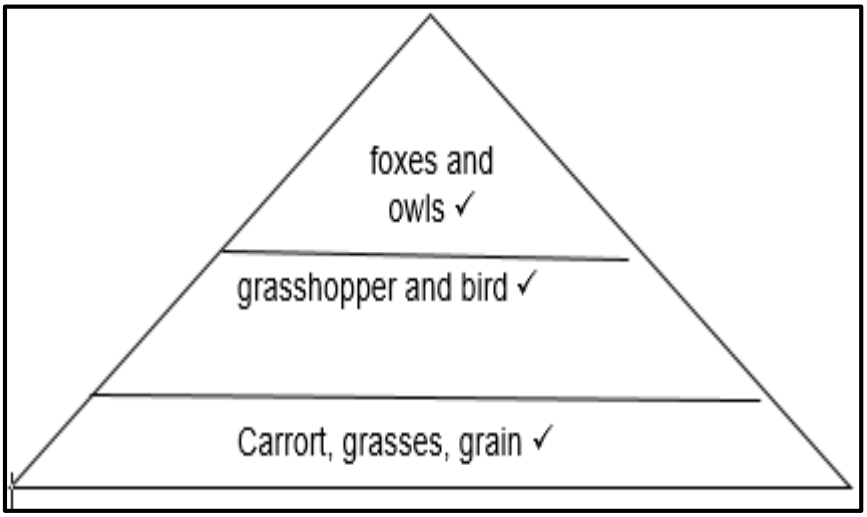
1.5.1 Food web ✓ (1)

1.5.2 An ecosystem is a particular area e.g. a pond, a forest etc. consisting of all different living organisms (biotic components) which interact with each other and their non-living environment (abiotic components). ✓✓ (2)

1.5.3 Rabbit, mice, grasshopper and bird will lack food✓ and die out✓ and as a result the foxes and owls ✓ Any 2 (2)

1.5.4

Correct diagram: ✓



(4)

1.5.5
- Carrots- rabbits-foxes✓
- Grasses-rabbits-foxes✓
- Grasses- grasshopper -birds✓
- Grains-mice-owls✓
- Grains – grasshopper- owls✓
- Grains-birds-foxes✓

Any 3 (3)

TOTAL QUESTION 1: 50

TOTAL SECTION A: 50

SECTION B
QUESTION 2

2.1

2.1.1 A- Aorta ✓
B- Bicuspid valve ✓
C- Left ventricle ✓ (3)

2.1.2 (a) F✓- Right atrium ✓ (2)
(b) E✓- Tricuspid valve ✓ (2)

2.1.3 Part c pumps blood over a long distances/to all parts of the body✓ - whereas part D pumps blood over a short distances/to the lungs only✓ (2)

2.1.4 The heart pumps the blood firstly to the lungs, and the to the rest of the body✓ through blood vessels ✓ (2)

2.1.5 **During general diastole**
- the heart relaxes✓/ventricles and atria relax
- Deoxygenated blood enters the right atrium from the inferior and superior vena cava✓
- and oxygenated blood enters the left atrium from the pulmonary vein✓
- The tricuspid and bicuspid valves are open✓
- so blood also moves into the ventricles✓ (5)
(16)

2.2

2.2.1 Carl Linnaeus ✓ Binomial system ✓ (2)

2.2.2 Kingdom- Plantae ✓
Order – Corniferales ✓
Family – Pinaceae ✓ (3)

2.2.3 *Pinus ponderosa* ✓✓ **(correctly written Genus first letter in caps and species first letter small)** (2)

2.2.4 Monera✓
Protist✓
Fungi ✓
Plantae✓
Animalia✓ (5)
(12)

2.3

2.3.1 Plant and animal species that are found in one region and nowhere else in the world✓ (1)

2.3.2 Fynbos ✓ (1)

2.3.3 There were several projects ✓aiming at encouraging responsible travel to natural areas in order to conserve the environment✓ (2)

2.3.4 $\frac{70}{100}$ ✓ x 9000 ✓= 6 300 ✓species (3)

2.3.5 Vegetation: of this biome, which is mostly small bushes✓ grows in nutrient poor soil✓
Climate: they also survive the long dry summer ✓ conditions, as well as frequent fires✓ Any 3 (3)
(10)

2.4

2.4.1 Relative dating✓ (1)

2.4.2 (a) **A**–28650✓✓ (2)
(b) **B**–2,5✓✓ (2)

2.4.3 After 60 million years✓ there is no more carbon-14 remaining✓ in the fossil (2)

2.4.4 **Radiometric dating**
● This type of dating uses different instruments to measure the radioactive elements ✓e.g. uranium, carbon etc. in fossils or rocks.
● The more the radioactive element in a fossil has decayed✓, the older the fossil. ✓
● For fossils older than 50 000 years the age of the rocks in which the fossils are embedded is determined. ✓
● Carbon 14 dating is used to measure the age of fossils that are younger than 50 000 years. ✓ (5)

[50]

QUESTION 3

3.1

3.1.1 - Ask permission✓from the owner of the farm
- Deciding on the venue✓
- Deciding on the duration ✓
- Deciding how to vary the temperature in the greenhouses✓
- Deciding how to vary the light in the greenhouses ✓
- Deciding on the species of tomato plant✓
- Deciding on the measuring techniques✓
- Deciding on the measuring apparatus ✓
- Deciding on recording method✓

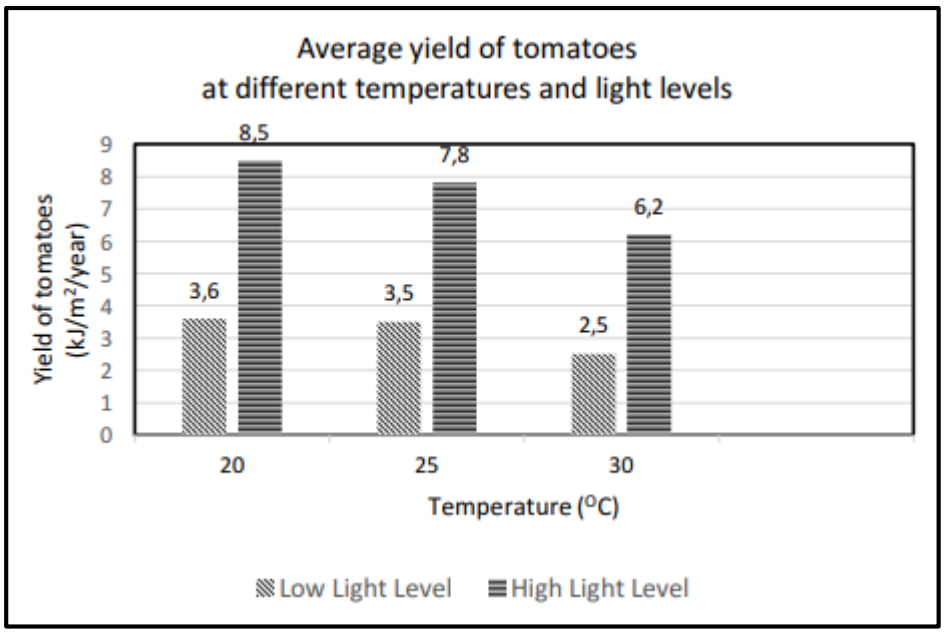
(MARK FIRST TWO ONLY) Any 2 (2)

3.1.2 (a) Temperature/Light ✓ (credit if only 1 is given) (1)

(b) Yield of potatos ✓ (1)

3.1.3 - Set up more plants in each greenhouse✓
- Repeat the investigation ✓ (2)

3.1.4



Correct type of graph **(T)**	1
Caption **(C)**	1
Correct labels for X-axis and Y-axis including correct units **(L)**	1
Correct scale for X-axis (correct width and spacing of bars) and Y-axis **(S)**	1
Plotting of bars **(P)**	1: 1-5 bars plotted correctly 2: All 6 bars plotted correctly

(6)
(12)

3.2

3.2.1 Carbon cycle ✓ (1)

3.2.2 (a) **C** - Decomposition ✓ (1)
(b) **A** - Cellular respiration✓ (1)
(c) **B** - Photosynthesis ✓ (1)

3.2.3 Cellular respiration – organic compounds in plants and animals are broken down✓ in the presence of oxygen✓ and energy, water and carbon dioxide are released. (2)

3.2.4 ●Carbon occurs in the form of carbon dioxide✓ (CO2) in the atmosphere✓/some is dissolved in water.
●Green plants use carbon dioxide during photosynthesis ✓to produce organic compounds✓/carbohydrates.
●The carbon which forms part of organic compounds in plants is transferred to animals when they eat plant material✓
●Sometimes dead plant and animal remains do not decompose but are fossilised to form fossil fuels✓ (coal and oil). Any 4 (4)

(10)

3.3

3.3.1 Continental drift✓ (1)

3.3.2 Africa✓ (1)

3.3.3 Both flightless✓ / they are flightless birds (1)

3.3.4 Biogeography ✓ (1)

3.3.5 Laurasia ✓ and Gondwanaland ✓ (2)

3.3.6 Both have developed from a common ancestor✓ that lived in the on the same continent✓Gondwanaland then they both became separated ✓ when South America and Africa broke apart due to continental drift✓ (4)

(10)

3.4

3.4.1 Extinction that occurs when many species disappear✓over the same period of time. ✓ (2)

3.4.2 65 MYA✓ **(units must be there)** (1)

3.4.3 Mesozoic✓ Era (1)

3.4.4 The common theory is that the giant meteor hit the earth✓ (as seen in the diagram), filling the atmosphere with deadly gas✓, vapourised rock and dust✓. Other factors like asteroid ✓and volcanic eruptions ✓may be considered Any 3 (3)

3.4.5 (a) Cenozoic ✓ (1)
(b) Paleozoic ✓ (1)

3.4.6 Permeian extinction ✓ (1)

(10)

3.5

3.5.1 (a) Diagram A✓ (1)
(b) Diagram B✓ (1)

3.5.2 - It has thick muscular wall✓to withstand the pressure exerted by the pumping action of the heart✓
- The lumen is smaller in diameter✓to facilitate faster movement of blood✓/Creates higher pressure Any (2 x 1) (2)

3.5.3 Diagram B✓ (1)

3.5.4 (a) Lumen ✓ (1)

(b) Muscle ✓layer (1)

(c)connective✓ tissue (1)
(8)
[50]

TOTAL SECTION B: 100
GRAND TOTAL: 150