



education

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NORTH WEST PROVINCE

PROVINCIAL ASSESSMENT

GRADE 10

LIFE SCIENCES P1

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MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 9 pages.

SECTION A**QUESTION 1****1.1**

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

(9 x 2)

(18)**1.2**

- 1.2.1 Optimum temperature✓
- 1.2.2 Epidermis✓
- 1.2.3 Mirror✓
- 1.2.4 Secondary growth✓/secondary thickening
- 1.2.5 Stoma / stomata✓
- 1.2.6 Synovial fluid✓
- 1.2.7 Permanent tissue✓
- 1.2.8 Femur✓
- 1.2.9 Immunity✓
- 1.2.10 Meristematic tissue✓

(10)**1.3**

- 1.3.1 A only✓✓
- 1.3.2 B only✓✓
- 1.3.3 None✓✓
- 1.3.4 B only✓✓
- 1.3.5 A only✓✓
- 1.3.6 Both A and B✓✓
- 1.3.7 A only✓✓

(7 x 2)

(14)**1.4**

- 1.4.1 (a) Johan✓ (1)
- (b) He has the lowest number of erythrocytes✓/red blood cells with haemoglobin (1)
- 1.4.2 (a) Peter✓ (1)
- (b) The number of thrombocytes/platelets is low✓ (1)
- 1.4.3 (a) Suzan ✓ (1)
- (b) She has the highest number of erythrocytes ✓/ the body produces more erythrocytes at a high altitude (1)
- 1.4.4 (a) Suzan✓ (1)
- (b) The number of leucocytes is low✓ (1)

(8)**TOTAL SECTION A: 50**

SECTION B

QUESTION 2

2.1

2.1.1 B✓ (1)

2.1.2 - Chloroplast is present✓
 - Large vacuole present✓
 - Cell wall present✓
 - No centrosomes✓ Any 3 (3)

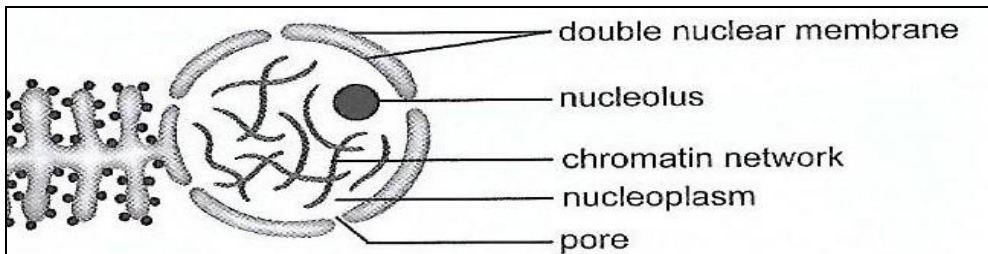
2.1.3 (a) 1✓ (1)

(b) 6✓ (1)

2.1.4 3 - Vacuole✓ (1)
 5 - Centrosome✓ (1)
 8 - Endoplasmic reticulum✓ / ER/nuclear membrane (1)

2.1.5 It is where the process of cellular respiration takes place✓ and energy is released✓ (2)

2.1.6 The structure of the nucleus



Rubric for assessing the nucleus diagram

CRITERIA	MARK
Caption	1
Correctness of diagram	1
Any two correct labels	2

(4)
(15)

2.2

2.2.1 (a) Milk✓ (1)

(b) There are no zero values in any column✓/milk contains all the nutrients mentioned in the table (1)

2.2.2 Butter✓ (1)

2.2.3 Milk✓ (1)

2.2.4 (a) Butter✓ (1)

(b) Bacon✓ (1)

2.2.5 $1,8/18 \checkmark \times 100 \checkmark$
 $= 10 \checkmark \%$ (3)
(9)

2.3

2.3.1 Potometer✓ (1)

2.3.2 To determine✓ /measure the rate of transpiration✓ of plants (2)

2.3.3 1 - Reservoir✓ /syringe (1)
 2 - Air bubble✓ (1)
 3 - Water✓ (1)

2.3.4 Lift the capillary tube out of the water✓ for a few seconds and put it back in water, transpiration pull will suck in some air✓ (2)

2.3.5 - Use a leafy twig from an active growing plant✓
 - Cut the leafy twig under water✓
 - Apparatus must be airtight✓
 - Allow some time for the plant to adapt to the new environment✓ (1)
(Mark first ONE only)

2.3.6 - High✓ light intensity✓/direct✓ sunlight✓
 - High✓ temperature✓
 - Low✓ humidity✓/ dry✓ atmosphere✓ (2)
 Any1 x 2
(11)

2.4

2.4.1 Jacob ✓ (1)

2.4.2 (a) Yes ✓ (1)

(b) The perfume molecules will eventually spread and fill the entire room ✓ by the process of diffusion ✓ (2)

OR

The perfume molecules will move from a region of high ✓ concentration to a region of lower concentration ✓ to fill the room

2.4.3 Passive ✓ process (1)

(5)
[40]

QUESTION 3**3.1**

3.1.1 The cuticle ✓ is a waxy layer ✓ that is waterproof ✓ /keeps water in and out. (3)

3.1.2 (a) Xylem ✓ (1)

(b) - Cross walls are perforated ✓ /have openings or absent, to form continuous tubes for movement of water ✓

- Xylem vessels have no cell contents ✓ /dead /hollow, to allow the water to flow freely ✓

- Walls are strengthened with lignin ✓, to prevent the walls of collapsing ✓ /withstand sucking force of transpiration / to allow water to move freely.

- Walls have pits ✓, to allow lateral movement of water ✓

- They are long and cylindrical ✓, to allow continuous movement of water ✓

(Mark first TWO only) (2 x 2) (4)

3.1.3 Photosynthesis ✓ (1)

3.1.4 Osmosis ✓ /root pressure /suction force of transpiration (1)

(10)

3.2

Tabulation✓

Dicotyledonous root	Dicotyledonous stem
Xylem and phloem occur in a central stele✓	Xylem and phloem occur in vascular bundles✓
Xylem alternates with phloem✓ / xylem is arranged in a cross with phloem between the arms of the cross	Xylem and phloem are arranged along the same radius✓ /vascular bundles are arranged in a circle
Clearly defined endodermis is present✓	Endodermis is absent or not clearly visible✓
Root hairs present✓	Root hairs absent✓
Pith absent✓	Pith present✓

Tabulation (1)

Any TWO correct differences (2 x 2) (4)

(5)**3.3**

3.3.1 A - Pivot joint✓ (1)

B - Hinge joint✓ (1)

C - Gliding joint and hinge joint✓ (1)

D - Ball-and-socket joint✓ (1)

3.3.2 A joint is a place at which one or more bones meet✓✓ (2)

(6)**3.4**

3.4.1 B✓ (1)

3.4.2 D✓ (1)

3.4.3 A✓ (1)

3.4.4 C✓ (1)

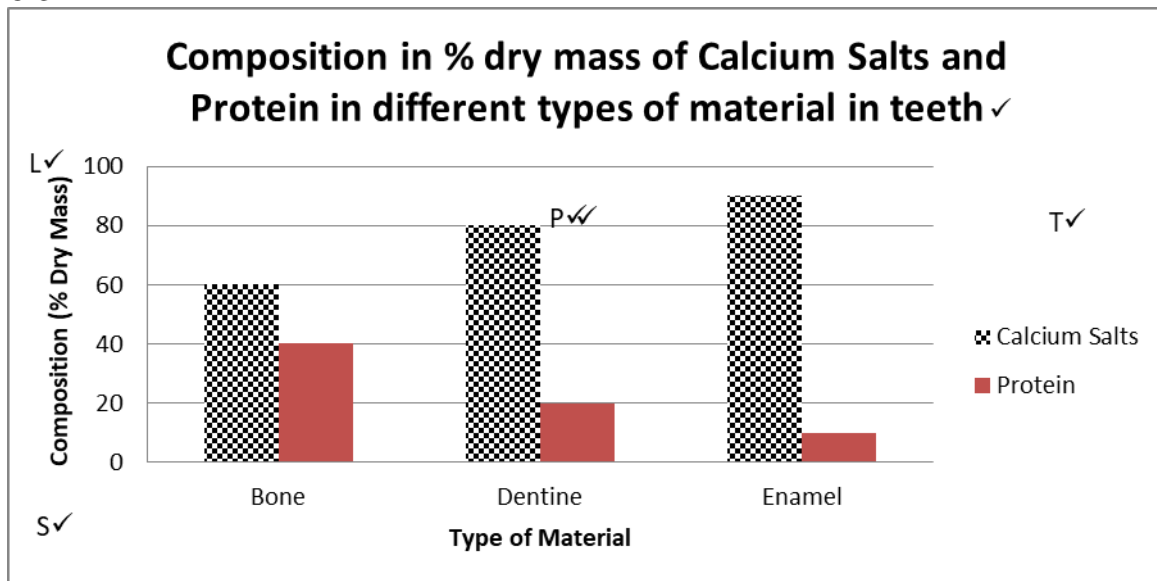
(4)**3.5**

3.5.1 Enamel is the hardest part of the tooth✓ because it has the highest amount of calcium salts✓ (2)

3.5.2 (a) Type of material✓ (1)

(b) Composition✓ (% dry mass) (1)

3.5.3

**Rubric for assessing the graph**

CRITERIA	MARK
Correct type of graph, bar graph (not histogram) (T)	1
Caption including both variables (C)	1
Labels for X and Y – axes including units (L)	1
Appropriate scale for X (width of bars and intervals) and Y – axes (S)	1
Plotting of points on the graph (P)	1: correctly plotted one to five points 2: correctly plotted all six points

- NB: - If the wrong type of graph is drawn, marks will be lost for correct type and plotting.
- If axes are transposed, marks will be lost for labelling and scale.

(6)

(10)**3.6**

3.6.1 - They contain enzymes ✓ (1)

3.6.2 Approximately 37 ✓ °C (1)

3.6.3 - High temperature cause the enzymes to denature ✓/change shape and can not function ✓ effectively (2)

3.6.4 - Less washing powder ✓/less electricity is needed (1)

(5)**[40]****TOTAL SECTION B: 80**

SECTION C**QUESTION 4****What is cancer?**

Cancer is a result of uncontrolled cell division✓ of body cells/mitosis leading to abnormal tissue growth✓. This develops into tumours✓ /lumps/swellings (3)

Two types of tumours:

Benign✓ tumours and malignant✓ tumours.

In a benign tumour, the cells do not spread to the other parts of the body✓

Therefore, they are not cancerous✓

In a malignant tumour, cells do not stop growing ✓

they spread and invade important organs✓

Malignant tumours are therefore cancerous✓

Some cancer cells may break off✓ and enter the blood✓ and lymphatic system✓

Which therefore carry the cancer cells to all parts of the body✓

(4)

Causes of cancer:

Smoking of cigarettes✓ effects the lungs

Radiation✓ from the sun, X – rays effects the skin

Certain processed foods✓ for example junk food, fatty – fried foods/
preservatives/colourants / synthetic sugar/ flavourants

(any other relevant example)

Asbestos✓

Pesticides✓

Pollutants✓ for example industrial wastes, mining, car exhaust fumes

(any other relevant example)

(Any 4) (4)

Treatment of Cancer:

Biopsy✓ – Is when a piece of tissue is removed✓ and examined if the cells are cancerous✓

Surgery✓ – An operation is done to remove the tumour before it begins to spread✓

Radiotherapy✓ – Involves the use of radiation / high energy X – rays to destroy the cancer cells✓

Chemotherapy✓ – Involves using various chemicals and drugs to destroy the cancer cells✓

Sutherlandia✓ / cancer bush plant – Is a type of indigenous plant which can also be used for treatment of cancer✓

(Any 3 x 2) (6)

Content : (17)

Synthesis : (3)

(20)

ASSESSING THE PRESENTATION OF THE ESSAY

Criterion	Elaboration	Mark
Relevance (R)	Only information regarding cancer formation, types of tumours, causes and treatment is provided. (no irrelevant information is mentioned)	1
Logical sequence (L)	The information given; formation, types, causes and treatment are discussed in the correct logical sequence.	1
Comprehensive (C)	All required aspects on cancer are mentioned. At least the following marks is obtained: - 5/7 for cancer, formation and types of tumours - 3/4 for the causes of cancer - 4/6 for the treatment of cancer	1

TOTAL SECTION C: 20
GRAND TOTAL: 150