**Life Science -June Exam**

**Grade 10 Memorandum**

**Examiner:** Ms A Sinclair **Time:2 ½**hours

**Marks:** 150

Section A

Question1

1.1

1.1.1 D √√ (2)

1.1.2 A√√ (2)

1.1.3 B (2)

1.1.4 B (2)

1.1.5 C (2)

1.1.6 D (2)

1.1.7 D (2)

1.1.8 C (2)

1.1.9 D (2)

1.1.10 A (2)

[20]

1.2

1.2.1 Diaphragm√ (1)

1.2.2 Selectively / semi permeable(1)

1.2.3 Striated muscle / skeletal muscle (1)

1.2.4 Cuticle (1)

1.2.5 Rickets (1)

1.2.6 Osmosis (1)

1.2.7 Micro elements (1) [7]

1.3

1.3.1 A only √√ (2)

1.3.2 Both A and B (2)

1.3.3 A only (2)

1.3.4 Both A and B (2)

1.3.5 B only (2)

1.3.6 B only (2)

1.3.7 A only (2) [14]

1.4.1 Yes√ (1)

1.4.2 Yes (1)

1.4.3 No (1)

1.4.4 Thin (1)

1.4.5 Thick (1)

1.4.6 Thick (1)

1.4.7 Photosynthesis/starch making (1)

1.4.8 Open/close transpiration (1)

1.4.9 Strength (1) [9]

**Section A Total: 50**

**Section B**

**Question 2**

2.1

2.1.1 Palisade Parenchyma√ (1)

2.1.2 Vessels

Tracheids (2)

2.1.3 Companion cells

Sieve tubes (2)

2.1.4 Guard Cells (1)

[6]

2.2

2.2.1 Epidermis (1)

2.2.2 Thin walled

No chloroplast

Closely packed / no air spaces

Single layer of cells

Larger vacuole (any 3) (3)

**Mark first three only**

2.2.3 7 √- chloroplast√ (2)

2.2.4 Plant cell has chloroplasts, animal cell has no chloroplast

Plant cell has a large vacuole, animal cell has no vacuole

Plant cell has no centriole, centrioles present in an animal cell any (4)

**Mark first two only**

**[10]**

2.3

2.3.1

1. He is still growing so his body needs protein for building blocks √ of his cells and enzymes for functioning. √ (2)
2. He is probably very active so fats produce energy (2)

2.3.2 Glycerol and fatty acids (2)

2.3.3 Cholesterol may lead to the deposit of fatty acids in the artery which might led to heart attack. (2)

2.3.4 Protein (1)

2.3.5 Mitochondrion

Cellular respiration (2)

**[11]**

2.4

2.4.1 Dependent variable : enzyme activity

Independent variable: Temperature (2)

2.4.2 40 ͦ C (1)

2.4.3 As the temperature increases from 35- 40 ͦ C, the enzyme will work at its best since optimum level is reached. As temperature keeps increasing from 40-45 ͦC, the enzyme will lose its shape or structure, it will denature and become inactive. (5)

2.4.4 The substrate no longer ‘fits’ into the enzyme; the chemical reaction slows down/ stops all together. (2)

2.4.5 pH level (acidic)

The effect of pH on the activity of enzyme will also determine its effectiveness

(2)

**[12]**

**TOTAL QUESTION 2 = 40**

**Question** **3**

3.1

3.1.1 A- sclerenchyma

B- collenchyma

C- Parenchyma (3)

3.1.2 A- gives mechanical support

B- gives mechanical support

C- Stores food and water (3)

3.1.3

a. A

b. C

c. B (3)

**[9]**

3.2

3.2.1 Metaphase, the chromosome are arranged on the equator. (2)

3.2.2 Anaphase (1)

3.2.3 1- Cell membrane

2- Cytoplasm

3- Spindle fibres

4-Centromere

5- Chromatid (5)

3.2.4 Growth

Repair and replace dead cells

Asexual reproduction (3)

**[11]**

3.3

3.3.1 Plant cell; Chloroplast present; Large vacuole present; cell has a fixed shape; cell wall present. (Mark first two correct only) (Any 2)

3.3.2 Chlorophyll (2)

3.3.3 Provides turgidity to the cell

Regulates water content of the cell

Stores water and mineral salts

(Mark first three correct only) (Any 3)

3.3.4 Proteins

Phospholipids (2)

3.3.5 C – Cytoplasm

D – Nucleoplasm (2)

[11]

3.4

3.4.1 A - large surface area

D – Nervous tissue

I – Skeletal muscle/ voluntary muscle / striated muscle (3)

3.4.2 Tissue F (Cardiac Muscle) Tissue H (Smooth Muscle)

Branched Fibres Unbranched Fibres

Slight striations No striations

Responsible for heart Responsible for movement of

contractions/beat substances around the body

(Mark first two only) (2x2)=4

3.4.3 Digestive tract Respiratory tract (2)

[9]

**TOTAL QUESTION 3 = 40**

**TOTAL SECTION B = 80**

**Section C**

**Question4**

**Definitions**

Mitosis is when a parent cell divides forming two genetically identical daughter cells that have the exact number of chromosomes as the parent cell.

**Importance of mitosis**

Produces new cells, with the same genetic material content as the mother cell.

Allows for growth of the organism

Facilitates repair of damaged tissues

Allows for sexual reproduction

**How cancer begins**

Cells divide rapidly by mitosis to form many cell/ tumour

Which differentiate/ become specialised to take on different functions

Sometimes cells behave abnormally

They do not differentiate

But continue to divide uncontrollably

Resulting in the formation of malignant, tumour

**Reducing chances of cancer**

Decreasing stress

Avoiding carcinogenic foods

Stop smoking

**Treatment through surgery not always successful**

Often by the time the cancer is detected, cells break off the original tumour and spread the disease to other tissues

Which may be far away from the original site of the cancer

Therefore while surgery might remove the original tumour

Cancer might still exist in other parts of the body

Synthesis:

|  |  |  |  |
| --- | --- | --- | --- |
| Assessing the presentation of the essay criterion | Relevance® | Logical Sequence (L) | Comprehensive(C) |
| Generally | All information provided is relevant to the topic | Ideas are arranged in a logically/ cause-effect sequence | All aspects required by the essay have been sufficiently addressed |
| In this essay | Only information relevant to mitosis and cancer are given (there is no irrelevant information) | Generally mitosis and cancer is discussed linked to the importance of mitosis and the formation of cancer is discussed | The importance of mitosis is discussed and linked to the formation of cancer. Evidence is given to reduce the start of cancer and non-successful surgery for cancer is discussed |
| Mark | 1 | 1 | 1 |

**TOTAL SECTION C = 20**

**SYNTHESIS = 3**

**FACTS = 17**

**GRAND TOTAL = 150**