

MARKING SCHEME

SUNSHINE SECONDARY SCHOOL

FORM ONE

7 copies

BIOLOGY

END OF TERM II EXAM – JULY 2019

TIME: 1HR 45 MINUTES

NAME:.....ADMIN NO:.....CLASS:.....

1. Identify the discipline of biology that deals with the following.

- i) The relationship between organisms and their environment. (1 mark)

Ecology.....

- ii) Study of development of living organisms. (1 mark)

Embryology.....

- iii) Study of body functions of living organisms. (1 mark)

Physiology.....

- iv) Specialization in the study of chemical changes in an organism. (1 mark)

Biochemistry.....

- v) Study of microscopic organisms. (1 mark)

Microbiology.....

2. Name the organelles that are in abundance in:-

- i) White blood cells. (1 mark)

Lysosome.....

- ii) Skeletal muscles. (1 mark)

Mitochondria.....

- iii) Involved in osmoregulation in amoeba. (1mark)

Contractile vacuole.....

3.(a) Distinguish between diffusion and active transport.

(2marks)

Diffusion is the movement molecules from a high concentrated region to a low concentrated region while active transport movement of ions from low concentrated region to high concentrated region by use of energy.

(b) State one role that is played by osmosis in:

i) Plants.

(1mark)

Absorption of water from the soil by root hairs; support;

ii) Animals

Osmoregulation, Excretion, absorption of water in the colon

4. Classify the following organisms into their kingdoms

(4mks)

Organisms

Kingdom

a) Maize, Beans

Plantae,

b) Mushrooms, Yeast

Fungi;

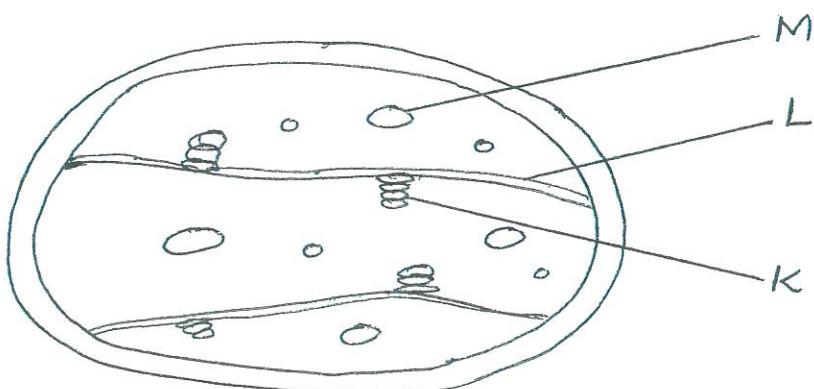
c) Protozoa, algae

protista,

d) Bacteria

Monera;

5. The diagram below represents a chloroplast.



i. Name the parts labeled M and L.

(2marks)

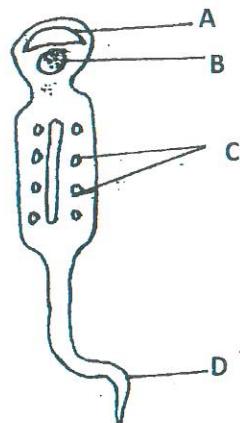
M: Starch granule.

L: Lamella;

- ii. List **two** processes that take place in the structure labeled K. (2 marks)

Photosynthesis;

6. The diagram below shows a specialized cell from a human being.



- i. Identify the cell. (1 mark)

Sperm Cell;

- ii. Name the parts labelled A,B, and C. (3 marks)

A: Acrosome;

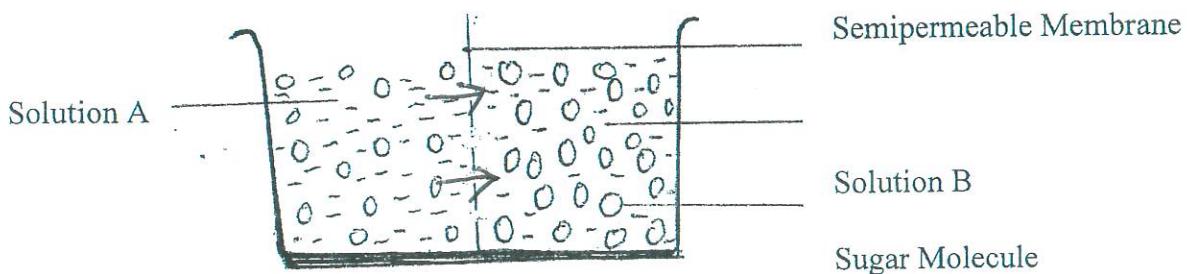
B: Nucleus;

C: Mitochondria;

- iii State the functions of the part labeled D. (1 mark)

Propel the sperm / propulsing;

13. Study the figure below and answer the questions that follow.



i. What physiological process was being investigated (1 mark)

.....Osmosis.....

ii. Which solution has higher concentration of free water molecules? (1 mark)

.....Solution A.....

iii. Which solution is more concentrated? (1 mark)

.....Solution B.....

iv. In which direction will osmosis take place? Indicate using the arrow. (1 mark)

.....

v. What does semi-permeable membrane represent in an animal cell (1 mark)

.....Cell Membrane.....

vi. Name three processes in living organisms that depend on osmosis. (3 marks)

(1) Excretion / (4) Gaseous exchange
(2) photosynthesis / (3) Nutrition
(3) Homeostasis

14. The table below shows the concentration of some ions in pond water and in the cells sap of an aquatic plant growing in the pond.

| Ions | Concentration in pond water (parts per million) | Concentration in cell sap (parts per million) |
|-----------|---|---|
| Sodium | 50 | 30 |
| Potassium | 2 | 150 |
| Calcium | 1.5 | 1 |
| Chloride | 180 | 200 |

a) Name the processes by which the following ions could have been taken up by this plant. (2mks)

i) Sodium ions

.....Diffusion.....

ii) Potassium ions

.....Active transport.....

b) For each processes named in (a) (i) and (ii) above, state one condition necessary for the process to take place. (2mks)

(i) Concentration / diffusion gradient

(ii) Energy

15. a) What is meant by the term binomial nomenclature? (1mk)

.....Double naming of living organisms where both genus and species are used......

→ b) Give two reasons why classification is important (2mks)

→ Understand evolutionary history of organisms
→ Arranges information in an orderly manner to avoid confusion
→ Groups organism with similar traits and separates those with diff

16. The diameter field of view of a light microscopic is 3.5mm. Plant cells lying of the diameter

are 10. Determine the size of one cell microns (1mm = 1000μm) (2mks)

$$1\text{mm} = 1000\mu\text{m}$$

$$3.5 = \frac{3.5 \times 1000}{1}$$

$$\text{Diameter} = 3500\mu\text{m}$$

10 cells occupy 3500μm

1 cell

$$\frac{1 \times 350}{10} = 350\mu\text{m};$$

17. Define the following terms in relation to a cell (3mks)

a) Isotonic solution

.....Solutions with same concentration.....

b) Hypotonic solution

.....Solution with more solvent molecules than solutes.....

c) Hypertonic solution

.....Solution with more solutes molecules than solvent.....

18. Explain why plant cells do not burst when immersed in distilled water. (1mk)

.....Plants have a cellulose cell wall.....

19. State the role of light in the process of photosynthesis. (2mks)

Provides light energy which splits water, into hydrogen ions and oxygen.

20. Name one product of dark reaction in Photosynthesis (1mk)

Simple sugars | glucose | amino acids | fatty acid |

21. Explain why the following procedures are important when testing a leaf for starch. (3marks)

(a) Boiling the leaf in the water

To kill the protoplasm / kill the leaf cells;

(b) Boiling the leaf in methylated spirit

To remove the chlorophyll;

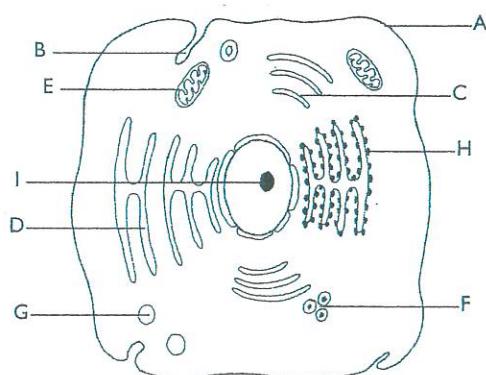
(c) Dipping the leaf in hot water after boiling it in alcohol or methylated spirit

To soften the leaf;

22. State three importance of nutrition in living organisms. (3marks)

— repair worn out cells
— enables organism carry out metabolic activities
Like growth | respiration | sustain life processes

23. The diagram below show a generalized cell as seen under the electron microscope.



a) Name the parts A, C, D and F (4mks)

- A Cell Membrane
C Golgi bodies / apparatus
D Smooth Endoplasmic reticulum;
F Secretory vesicle

b) State the function of parts labeled G, H and I (3mks)

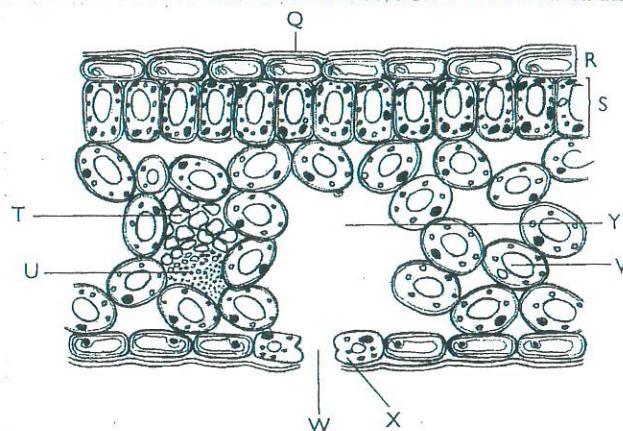
- G - Contributes to the osmotic properties of the cell
H - site for protein synthesis
I - Synthesise ~~pro~~ ribosome

24. A drawing of 5cm in length, was made of a beetle whose actual length was one

centimeter. Calculate the magnification of the drawing. (2mks)

$$\text{Magnification} = \frac{\text{Drawing length}}{\text{Actual length}} = \frac{5\text{cm}}{1\text{cm}} = 5;$$

25. The diagram below shows the internal structures of an organ of a plant.



a) Name the parts labeled Q, S, W, X (4mks)

- Q Cuticle
S Palisade mesophyll
W Stoma
X Guard cell

b) State the functions of the parts labeled Q, W, Y and S (4mks)

- Q - allows light penetration / protect inner layer of cells
W - gaseous exchange
Y - Storage of gases
S - photosynthesis

