MARKING SCHEME
FORM I BIOLOGY

1. Biology ✓ 1mk
b) i. Botany ✓ 1mk
ii. Zoology ✓ 1mk

Plants	Animals
2. - Plants have localized movements	- most animals move from one point to another (locomotion)
- Plants respond slowly to changes in their Environment	- responds quickly to environmental changes
- Plants do not have specialized excretory organs	- animals have highly developed excretory organs
- Have chlorophyll hence are able to make their own food	- lack chlorophyll hence do not make their own food but feed on readymade food
- Plant cell have only a thin lining of cytoplasm with large central vacuole	- consist almost entirely of cytoplasm and if Any vacuoles are present they are temporary And small
- Presence of cell wall made up of cellulose	- No cell walls

(Any three correct each 1mk)

3. a) taxonomy – a branch of Biology that is deals with naming and classifying organisms
Taxon – is a unit of classification
b) it is the smallest unit of classification whose members can naturally interbreed ✓ to produce viable/ fertile offspring ✓ (2mks

c) Species, Genus, Family, Order, class, phylum and Kingdom (7mks
(Order must be followed)
d) Binomial nomenclature ✓ (1mk
e) i. The first name should be the generic name and the second name is the specific name ✓(1mk
ii. The genoric name should start with a capital letter while the specific name should start with a small letter ✓ (1mk
iii. The names should be printed in italics or underlined separately when handwritten ✓(1mk
iv. The names should be in Latin Language or Latinized ✓

4. Animalia - (any correct)
Plantae – (Any correct)
Fungi – Mushroom, rhizopus
Protoctista – Amoeba, plasmodium spp
Monera – Bacteria (Any correct) = (5 x1 mks)

5. a) i. Form sites for respiratory activities ✓ (1mk
ii. Form sites protein synthesis ✓ (1mk
iii. –osmoregulation
-Stires sugars and salts (Any correct)
- Food vacuoles store and digest food (1 x 1)
- Contractile vacuoles excrete unwanted materials from the cell

b) 1mm = 1000µm ✓(1mk
3mm = 3 x 1000 = 3000µm

Cell size = $\frac{\text{Diameter of the field of view in micrometer}}{\text{No of cells}}$ ✓(1mk

$= \frac{3000\mu m}{11}$

= 273 µm ✓(1mk

c) i. Allow penetration of light (1 mk) ✓

ii. making parts distinct. (1 mk)

iii. Maintain turgidity of cells. (1 mk)

7. i. Process by which molecules/particles move ✓(1mk) from where they are highly concentrated to where they are lowly concentrated

ii) Movement of molecules against a concentration gradient by use of energy ✓(1mk

ii. The process by which plant cells lose water, shrink and become flaccid ✓ (1mk

8. a) osmosis ✓ (1mk

b) Salt crystals are highly concentrated✓ (1mk (Hypertonic) – water molecules from the beaker moves from the beaker where they are more through the potato cells to salt crystals by osmosis ✓(1mk

c) No osmosis would take place since boiling kills the cells ✓(1mk

d) - opening and closing of stomata ✓(1mk

- support ✓ (1mk
- Absorption of water ✓ (1mk
- Osmoregulation ✓ (1mk (any three correct)
-Feeding insectivorous ✓ (1mk
-Movement of water from one cell to another ✓(1mk

9. Palisade cells
- Spongy mesophyll cell
-Guard cell

10. a) Necessity of carbon (iv) oxide in photosynthesis ✓(1mk

b) For destarching/ removing starch ✓ (1mk

c) To absorb carbon (iv) oxide ✓ (1mk

d) i. To kill the leaf cells so as to stop cellular reactions ✓ (1mk

- To break the starch granules so as the releases starch ✓(1mk (any correct) (1 x 1) = 1mk

ii. to decolurise the leaf ✓ (1mk

iii. Methylated spirit is highly flammable and this is a precautionary measure ✓(1mk

e) Iodine solution✓ (1mk) reject iodine alone

f) A – The brown colour of iodine solution is retained

B – The part that was exposed to sunlight when tested turned blue – black ✓(1mk

g) A – Sodium hydroxide pellets absorbs carbon (iv) oxide gas in the flask thus no photosynthesis took place ✓ (1mk

B- Leaf B obtained all conditions necessary for photosynthesis hence positive results for starch test ✓ (1mk

11. a) As temperature increases, the rate of reaction increases ✓1mk

Increase in temperature increases the kinetic energy in the enzyme molecules. This increases the rate of collisions hence the increase in the rate of reaction (1mk

b) Optimum temperature for enzymes (1mk

c) The rate of reaction decreases (1mk). This is because the enzymes got denatured (1mk) due to high temperature

a) Carbon, Hydrogen and oxygen (3mks

b) i. Glucose

ii. Glycogen

Starch

13. a) form site for photosynthesis (1mk

b) A - granum (1mk C) stroma (1mk

c) Photolysis of water to hydrogen and oxygen (1mk

Formation of Adenosine triphosphate molecules (ATP) (1mk

d) Carbon (iv) oxide fixation (1mk

e) Chlorophyll - Absorbs light (1mk

(Total 2mks)

14. Transparentt cuticle and epidermal layer to allow maximum light to penetrate and reach the palisade mesophyll and spongy mesophyll cells where photosynthesis occur cells

- The leaves have a broad lamina to increase the surface area for absorption of light and diffusion of carbon (iv) oxide

- Thin to reduce the distance taken by the diffusing gases and penetration of light

- Presence of stomata that allows diffusion of carbon (iv) oxide into the leaf

- Numerous vascular bundles for transportation of mineral salts, water and synthesized food

- Many chloroplasts in the palisade which are located close to the upper epidermis to maximize the amount of light trapped

- Large air spaces in between the spongy mesophyll cells to allow gaseous exchange

- Leaf mosaic arrangement to prevent overshadowing and over lapping for maximum trapping of light

- Guard cells that regulates opening and closing of stomata **(Any three correct)(1 x 3 = 3mks)**

15. Diffusion gradient

Surface area to volume ratio (1mk

Temperature (1mk

Size of molecule (1mk

Thickness of a membrane (1mk

Each = 1mk Total 1 x 5 = 5mks

16. i. Concentrates light to the specimen in the stage.

ii. Bring to image into sharp focus.

iii. To magnify.

Light	Electron
Uses light to illuminate	Uses beam of electrons for illumination
Low resolving power	High
View live and dead cells	View dead cells only