

MARKING SCHEME
BIOLOGY FORM TWO

Question 1

- a) i) Photosynthesis
ii) Oxygen
- b) - Presence of light ;
- Presence of chlorophyll;
- Presence of suitable temperature ;
- c) - Palisade cells;
- Guard cells;
- Spongy mesophyl ;
- Palisade mesophyl;

Question 2

In plants- Guard cells; root hair cells; palisade cells

In animals- sperm cell; white blood cells; Red blood cells; nerve cells.

Question 3

- (i) pair of forceps’;
- (ii) picking up small stinging crawling animals;

Question 4

$$\text{Mag.} = \frac{\text{image size}}{\text{Actual size}} ; \quad 1\text{mm} = 100\mu\text{m}$$
$$40000 = \frac{1 \times 1000\mu\text{m}}{\text{Actual size}}$$
$$\text{Actual size} = \frac{1000}{40,000} \mu\text{m} ; = \frac{1}{40} = 0.015\mu\text{m}$$

Question 5

- i) Hypertonic solution; *acc.* Highly concentrated solution (1mk)
- (ii) Hypotonic solution; *acc.* More dilute solution;

Question 6

- (i) Cellulose; (ii) Glycogen;

Question 7

- a) A – Condensation; B – Hydrolysis;
b) Sucrose;

c) . Glycosidic; (1mk)

Question 8

a) Villus

b) Increases the surface area for absorption of digested food substances/materials

c) A-microvilli

B – Lacteal

D-Arteriole

Question 9

i. Succus entericus/intestinal juice

ii. Polypeptidase, sucrose, lactase, lipase,

Question 10

<i>Arteries</i>	<i>Veins</i>
<ul style="list-style-type: none">• <i>Narrow lumen</i>• <i>Thicker muscle layer</i>• <i>No valves along length</i>• <i>More elastic</i>	<ul style="list-style-type: none">• <i>Wide lumen</i>• <i>Thinner muscle layer</i>• <i>Have valves along length</i>• <i>Less elastic.</i>

Question 11

<i>Aerobic</i>	<i>Anaerobic</i>
<ul style="list-style-type: none">• <i>Oxygen is used.</i>• <i>Breakdown is complete to CO₂ and water.</i>• <i>More energy released.</i>• <i>Water molecules produced.</i>• <i>Occurs in the cytoplasm and mitochondria.</i>• <i>End products the same in plants and animals. (water, CO₂)</i>	<ul style="list-style-type: none">• <i>Oxygen not used</i>• <i>Breakdown incomplete to ethanol or lactic acid.</i>• <i>Less energy released</i>• <i>Water molecules are not produced.</i>• <i>Occurs in the cytoplasm.</i>• <i>End products not the same in plants – ethanol in animals – lactic acid</i>

Question 12

i. Artificial immunity

ii. A, O

iii. Activates the conversion of fibrinogen to fibrin

Question 13

a) Respiration is the process by which food substances are chemically broken down in all living cells to release energy, carbon (IV) Oxide and water.

b) Anaerobic respiration

c) Plants

d) Lipids

Question 14

- a) Increases the permeability of tubule and blood capillaries to water; regulates the reabsorption of water
- b) Stimulates liver cells to convert glycogen into glucose

Question 15

- Gill rakers act as a screen preventing entry of food and other particles that might damage the delicate gill lamella;
- Gill bar for attachment of gill rakers and gill filament
- Gill filaments – the surface on which gaseous exchange take place

Question 16

a) $RQ = \frac{\text{Vol of CO}_2 \text{ produced}}{\text{Vol. of O}_2 \text{ used}} = \frac{102}{145} = 0.70;$

b) Lipids;

Question 17

- a) Amount of oxygen required to get rid of lactic acid that accumulates in the body tissues when oxygen available is lower than the demand
- b) Energy/A.T.P/ Lactic acid

Question 18

- .a) i) Cytoplasm
ii) Pyruvic acid
- b) Pyruvic acid is broken down; into ethanol and CO₂

Question 19

- b) -baking of bread
-brewing industry

Question 20

A rat has a large surface area to volume ratio thus loses a lot of energy on form of heat therefore eats a lot to replace the lost energy;

Question 21

- .- cells must be provided with glucose or food
- oxygen must be taken in to react with glucose
- favorable temperature should be maintained for efficient enzyme functioning
- end products must be continuously be eliminated from the mitochondrion

Question 22

asthma;bronchitis;whooping cough; tuberculosis

Question 23

Externalintercostals muscles contract; internal intercostals muscle relax; Rib cage move outwards; and upwards; Diaphragm muscles contract; diaphragm flatten; Volume in thoracic cavity increases; pressure reduces; Atmospheric air enters the lungs; lungs inflate;