

CENTRAL WEST EDUCATION DIVISION

2025 MALAWI SCHOOL CERTIFICATE OF EDUCATION

MOCK EXAMINATION

BIOLOGY Paper I (100 marks)

PROVISIONAL MARKING SCHEME

Section A (70 marks)

1. a. i) It forms the structure of chlorophyll.

It is involved in the formation of ribosomes.

It activates several enzymes. (Any 1X1) (1 mark)

ii) It activates enzymes.

It is involved in energy transfer during the process of photosynthesis. (Any 1X1) (1 mark)

b. It is a site for protein synthesis. (1 mark)

c. It is long and hollow¹ to conduct water and mineral salts from the roots to the leaves¹.

It is made of dead cells¹ in order not to use water that flows through them¹.

The walls are made up of lignin¹ to strengthen them¹.

They have no cell contents (no nucleus or cytoplasm)¹ to allow free passage of water and mineral salts¹.

It has pits¹ to allow water to flow sideways from one xylem to another¹.

It is narrow¹ to enhance movement of water by capillarity¹. (Any 2X2) (4 marks)

d. It is semi-permeable. (1 mark)

2. a. E Birds (1 mark) G Mammals (1 mark)

Vertebrate E	Vertebrate G
Lays eggs.	Does not lay eggs.
Has feathers covering the body.	Has fur/hair covering its body.
Has beak	Has no beak.
Has no mammary glands	Has mammary glands

b.

(Any 2X1) (2 marks)

c. Thyroxine¹ controls the rate of chemical reaction¹ in the body.

Adrenaline¹ stimulates high rate of respiration¹ to produce more energy.

Insulin¹ promotes conversion of excess glucose in the blood into glycogen¹ in the body.

Glucagon¹ stimulates the liver to convert glycogen into glucose¹ when the level of glucose is low in blood.

Antidiuretic hormone¹ stimulates the walls of the collecting duct and distal convoluted tubule to be more permeable¹ to water. (Any 1X2) (2 marks)



3. a. Contains iron in its structure.

It has high affinity for oxygen.

It is protein in nature.

(Any 2X1)

(2 marks)

b. Systole. (1 mark)

c. Haemoglobin in red blood cells combine with oxygen in the lungs to form a compound called oxyhaemoglobin¹. When the blood reaches a region (tissues) with low oxygen levels¹, oxyhaemoglobin breaks down to form haemoglobin¹, thereby releasing the oxygen for use by the respiring cells¹. The haemoglobin is free to be used again to carry more oxygen¹. (5X1) (5 marks)

4. a (i) P: Residual volume (1 mark)

R: Total lung capacity (1 mark)

(ii). -Its rate increases

-Its depth increase (Any 2 x 1) (2 marks)

b. -Severe headache

-Nausea

-Feeling of dizziness (Any 2 x 1) (2 marks)

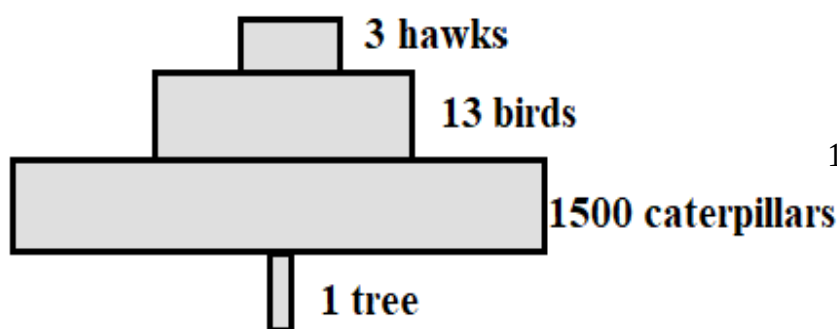
c. A very short distance between alveolar lining and the blood¹ increases the rate of diffusion for oxygen¹.

Replenishment of air in the passages by ventilation¹, raises oxygen concentration in the alveolar spaces¹.

The combination of oxygen with haemoglobin¹ so removing oxygen from solution¹.

There is continuous flow of blood¹ which constantly replenishes oxygenated blood with de-oxygenated blood¹.

5. a. i)



1 mark for starting with a producer.

1 mark for correct labelling all the bars.

1 mark for all correct bars.

(Total 3 marks)

b. Size of the bars¹ does not correspond to the amount of energy¹ in the trophic levels. (2 marks)

c. There is very little energy available to support them¹ because much energy has been used¹ in the previous levels. (2 marks)

6. a. Follicle stimulating hormone.

Adrenocorticotrophic hormone.

Luteinising hormone.

Antidiuretic hormone.

Growth hormone.

Oxytocin.

Thyrotrophin.

Melanophore stimulating hormone.

Prolactin.

(Any 2X1)

(2 marks)

b. i. Washes away irritating chemicals/¹, to prevent damage to the eyes/¹.

(2 marks)

ii. For softening and lubricating food/¹ to make it easy to swallow/¹.

(2 marks)

c. Produce insulin/¹ which stimulate the conversion of excess glucose into glycogen/¹, thereby lowering the level of glucose in blood/¹.

Produces glucagon/¹ which stimulates conversion of glycogen to glucose/¹, thereby raising the level of glucose in blood/¹.

(Any 1X3) (3 marks)

7. a. i). Fertilisation.

(1 mark)

ii). Oviduct.

(1 mark)

iii). Mitosis.

(1 mark)

b. Colostrum in the milk provide passive natural immunity/¹ to the infant which ensures that the infant is able to resist infections/¹ in the early stages.

Contains nutrients/¹ that are required for the growth and development/¹ of the baby.

Milk contains calcium/¹ which enhances growth and development of strong bones and teeth/¹.

It is free from contamination/¹ thereby protecting the baby from infectious diseases/¹. (Any 1X2) (2 marks)

8. a.

	GROUP	A ⁻	AB ⁺
DONOR	O ⁻	No Agglutination/ ¹	No Agglutination/ ¹
	O ⁺	Agglutination/ ¹	No Agglutination/ ¹

(4

marks)

b. Rhesus factor.

(1 mark)

9. a. Treatment using fungicide creams and tablets.

Hygiene in caring for hair.

Avoid sharing combs, brushes and hats. (Any 1X1) (1 mark)

b. Folding of leaves of *Mimosa pudica* upon being touched.

Closing of leaves by *Venus flytrap* upon contact with insects.

Sleeping movements in plants. (Any 2X1) (2 marks)

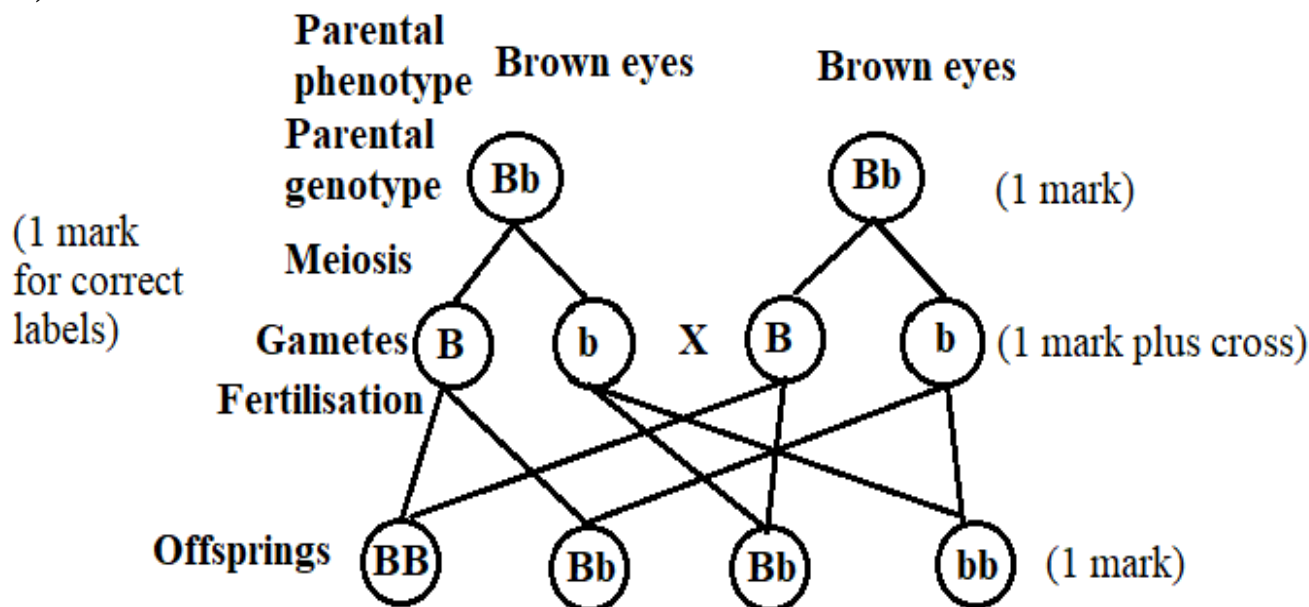


10. a. i). There are more light-coloured moth in natural setting than in polluted setting.

There are fewer melanic moths in natural setting than in polluted setting. (Any 1X1) (1 mark)

ii). Soot covered tree trunks/¹. Melanic variety became well camouflaged on sooty trunks/¹. Very few were eaten by the birds/¹. The light-coloured moths were easily seen by the birds/¹, as such more were eaten by the birds/¹. (Any 1X5) (5 marks)

b. i).



Total 4 marks

ii). Genotypic ratio = 1:2:1 Total ratio = 1+2+1 = 4

$$\text{Ratio of homozygous offspring} = \frac{2}{4}$$

$$\begin{aligned} \text{Number of children who were homozygous} &= \frac{2}{4} \times \frac{8}{1} /^1 \\ &= 4 \text{ children}/^1 \quad (2 \text{ marks}) \end{aligned}$$

SECTION B (30 MARKS)

11. Ulcers (1)/ whereby the alimentary canal develops some small wounds or parts of the wall are broken (1).

Constipation (1)/which is a disorder where an individual take too long before emptying the bowels (1).

Diarrhoea (1) which is a disorder where an individual passes loose or watery stools (1).

Heartburn (1) which is a burning feeling on the lower part of the chest followed by a sour or bitter taste in the throat (1)

Nausea (1) is the uncomfortable feeling that comes before vomiting (1).

Vomiting (1) whereby food in the stomach is forced violently back to the mouth (1).

Indigestion (1) which is a disorder whereby food eaten takes too long to be digested thereby making the abdomen overly full (1). **(Any 5x2) (10 marks)**

12. Practising reafforestation (1) to reduce the amount of carbon dioxide or emissions (1).

Use of renewable energy (1) which reduces dependence on use of fuels which release greenhouse gases (1).

Practicing proper waste management (1) to reduce emissions of greenhouse gases (1).

Use of public transport or cycling (1) to reduce emissions from burnt fuel (1).

Use of improved crop varieties (1) to have food even when the rains are erratic (1).

Practising recycling and reuse of materials (1) to reduce pollution on land (1). **(Any 5x2) (10 marks)**

13. Too little water level is detected by the osmoreceptor cells in the brain (1). A signal is sent to the pituitary gland that responds by increasing secretion of ADH into blood (1). ADH reaches the nephron in the kidney in the kidney which increases permeability of walls of collecting ducts and distal convoluted tubule to water (1). Nephron increases reabsorption of water from glomerular filtrate into blood (1).

Little water is lost through urine (1). Too much water in blood is detected by the osmoreceptor cells (1).

Signals are sent to the pituitary gland to secrete less ADH (1). The nephron becomes less permeable to water (1). Reabsorption of water from the glomerular filtrate into bloodstream reduces (1). This leads to production of large quantities of urine (1) **(10X1) (10 marks)**

END OF MARKING KEY

