KAPSABET HIGH SCHOOL

231/1 (***Kenya Certificate of Secondary Education***)

INTERNAL MOCK EXAM

BIOLOGY

Dec. 2020– 2 Hours

MARKING SCHEME

Instructions to candidates

a) *Write your Name, Index, Admission number and stream in the spaces provided above.*
b) *Sign and write the examination date on the spaces provided above.*
c) *Answer **all** questions in the spaces provided in the question paper.*
d) *All workings must be clearly shown where necessary.*
e) Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
f) Candidates must answer the questions in English.

1. It is a vector disease; Parasites are transmitted from a sick individual to a healthy one through the bite of a female *Anopheles* mosquito;(2 marks)

2. No; (1 mark)

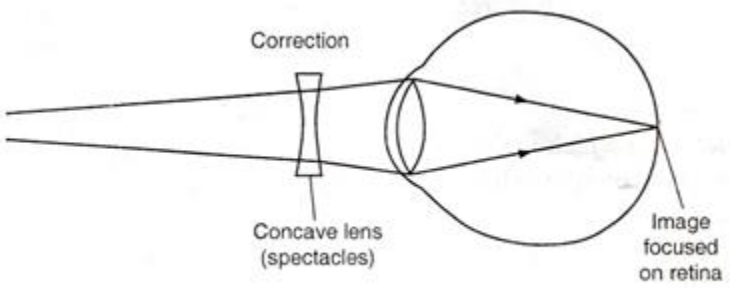
   The spiracles are found only on the sides of the thorax and abdomen; and the insect will continue with ventilation since there are no spiracles on the head; (2 marks)

3.

- (a) Myopia (1 mark)

- (b) Wearing concave or diverging lens; lenses diverges light rays before reaching the eye lens which then focuses the light rays on the retina.

(c)



4. - The **scales overlap and are pointed backwards**-To allow water to pass over the fish easily without any obstructions; - lie close to the body; thus enhancing the streamlined shape to reduce water resistance during movement (2 marks)

5. (a) Occipital condyles; (1 mark)

   (b) - Hinge joint; (1 mark)

   - Nodding/ up and down movement of the head;

6. – (i) break down of fats into tiny droplets to increase surface area for digestion; (1 mark)

   (ii) sodium glycocholate; sodium taurocholate;

7. (i) Villus (of Ileum); (1 mark)

(ii) Lacteal; (1 mark)

(iii) Brunner's gland; reject small b...brunner's (1 mark)

8. Maltase, Sucrase, Peptidase and Lipase; (at least two correct)

9. - This occurs during prophase 1 of the first meiotic division; where the non-sister chromatids of homologous chromosomes are attached at chiasmata; chromatid segments break and join leading to genetic exchanges; as a result, gametes with a wide range of gene combinations are formed;

9. The diagram below shows the part of gaseous exchange structures in human.

(3 marks)

10. The mucus and hair filter and trap dust and pathogens from the air, so particles are prevented from entering the lungs.

Air is warmed and moistened in the nasal cavity;

Has sense organs for detecting and distinguish different types of smell; (3 marks)

11. (a) - This is a characteristic of monohybrid inheritance in which one gene completely dominates the other while incomplete dominance a phenomenon where there is no complete dominance but phenotypes are **intermediate** between the two parents; (2 marks)

(b) - snap dragon plant flower colour/ *Mirabilis jalapa*;(1 mark)

12. (a) Chemical evolution theory; (1 mark)

(b) - are those structures that have ceased to be functional over a long period of time and have become reduced in size;

(c) - coccyx/appendix/caecum/nictating membrane (semilunar folds in the corner of the eye)/ ear muscles/ body hair;

13 (a) **-** the skeleton is found on the outer surface of the body; (1 mark)

(b) - bones; cartilage; (2 marks)

(c) – Phylu-m Arthropoda;

14. (a) Yawing; (1 mark)

(b) - Pectoral; and pelvic fins; (2 marks)

15. (a) - Mycology; (1 mark)

(b) - Mitosis; (1 mark)

(c) - V – Rhizoids; (1 mark)

– it absrbs nutrients; (1 mark)

16. - These are organisms that respire in the absence of O_2 and die in the presence of O_2. They lack the enzyme catalase which breaks down hydrogen peroxide. (H_2O_2) e.g. *Escherichia coli, Bacillus subtilis, Clostridium botulinum*,*Clostridium tettani*.

- These are organisms that respire in the presence or absence of O_2 e.g. yeast, most bacteria, parasites or fungi. (2 marks)

17. - Symbiotic bacteria; eg *Rhizobium*
- Free-living bacteria; *Azatobacter/Clostridium*; (2 marks)

18. (a) Quadrat method; (1 mark)

(b) $$\text{Approx. beetle population} = \frac{7 \times 10}{2} = 35$$

19. - Height; Weight; Volume; Length; Surface area; (3 marks)

20. - these are nerves that arise from the brain; eg - Optic nerve; -Auditory nerve; Olfactory nerve; Facial nerves; (3 marks)

21. They have beaks; They have hollow bones; The hind limbs are for walking or swimming/The fore limbs are modified into wings for flight; The hind limbs have scaly skin; (2 marks)

22. (a) This is a symbiotic association between (blue-green) algae and a fungus; The (blue-green) algae carries out photosynthesis and provides the fungus with carbohydrates.(2 marks)

(b) Mycorrhiza; (1 mark)

23. (a) - Vital capacity; (1 mark)

(b) - 500 cm^3; (1 mark)

(c) - Relax; (1 mark)

(d) -Medulla oblongata; (1 mark)

24. - are numerous, long and slender to provide a large surface area through which absorption of water and mineral salts take place;

- have numerous mitochondria to supply energy for active transport;
- have a thin cell wall which ensures rapid movement of materials;
- Cell vacuole has high solute concentration to maintain a high osmotic pressure to absorb water;
- Cell vacuole is large to store absorbed water and salts;
- Have short life span but are continuously replaced by new ones that develop nearer to the tip; (3 marks)

25. (a) - Homoeothermic; (1 mark)

- (b) Hibernation ; crowding; coiling; (3 marks)

26.

Phloem	Xylem
1. made of living cells **2. have companion cells** **3. have cytoplasmic strands** **4. lack lignin deposits**	**1. made up of dead cells;** **2. lack companion cells;** **3. lack cytoplasmic strands;** **4. have lignin deposits;**

(3 marks)

27. (a) - process by which water molecules move from the region of their high conc. to low con across semipermeable membrane; / - process by which solvent molecules move from the region of low conc. to high con across semipermeable membrane; /process by which solvent molecules move from hypotonic to hypertonic solution across semipermeable membrane;

(b) - insect pollinated flowers are scented; for attraction of the insects, when the scent diffuse;