

# MASTERCLASS

*Kenya Certificate of Secondary Education*

## FORM 4, PREDICTION II EXAMINATION- 2024

**231/1**

**BIOLOGY**

**Paper 1**

**TIME: 2 Hours**

---

Name: .....**MARKING SCHEME**.....Adm No: .....

Class: .....Candidate's Signature: ..... Date: ...../ /2024

---

1. Humans need to keep constant supply of O<sub>2</sub> to blood / remove CO<sub>2</sub> from blood/ Have a higher metabolic rate// Plants produce own oxygen through photosynthesis/
2. a     i)     Animalia/Plantae/Protoctista/Fungi;  
          ii)     Monera;  
      b)     Forms Ribosomes; that undertake protein synthesis (to bring about growth and development of organisms);
3. a) isotonic; thus, no change in mass of the potato strips;  
   b) Cells fully plasmolyzed;  
   c) Semi-permeable membrane; concentration gradient in the solutions;
4. a)     i)     Ptyalin/Amylase;  
          ii)     Benedict's solution; REJ Benedict/Benedicts/benedict's  
      b)     i)     Soluble in water/Sweet/Reducing sugar/  
          ii)  
      c)
5. a)     Granum;  
      b)     i)     Supply Oxygen for Respiration;

- ii) Supply Hydrogen ions; Supply ATP/Adenosine Triphosphate/Energy;
- 6. Humans have complex organs – brain / kidney/heart; Humans are active/ have a high metabolic rate. Temperature is constant in humans/ plants depend on external temp and stage of life cycle i.e germination etc.
- 7. a) Phagocytosis/Engulfing;  
b) Monocytes; Neutrophil; Mast cells; Dendritic Cells; Macrophages; Mark 1<sup>st</sup> 1  
c) Release of Antibodies;
- 8.

Feature	Smooth Endoplasmic Reticulum	Rough Endoplasmic Reticulum
Structure	Lack ribosomes	Has Ribosomes;
Function	Transport lipids	Manufacture; Transport Proteins;

- 9. a) Large to be conspicuous; some are brightly colored to be conspicuous/easily noticed/attract; Some have nectar guides to lead insects to nectar; Broad/Large to act as landing pads for insect pollinators; Mark 1st 2  
b) bisexual; anthers close/high above the stigma;
- 10. In testes/ovaries/Anthers; cell division occurs halving chromosome numbers / haploid; so that diploid numbers is restored on fertilisation
- 11. a) Formation of nitrogen/nitrogen compounds that cannot be absorbed/utilized by plants;  
b) i) Azotobacter sp; Rhizobium sp; Clostridium Sp Mark 1<sup>st</sup> 1  
ii) Nitrococcus sp; Nitrobacter sp; Nitrococcus sp Mark 1st 1
- 12. a) Photosynthesis/ Transpiration/Osmosis/ Diffusion/ Gaseous exchange  
b) Lack of water/ Transpiration/ water loss reduced;
- 13. a) Carbonic anhydrase;  
b) Biconcave/Sunken center to increase surface area for diffusion of respiratory gases; flexible membrane for it to easily change shape and squeeze through blood capillaries;
- 14. a) Exchange of respiratory gases;  
b) Gill filaments;  
c) i) R-prevent solid material from damaging the delicate filaments;  
ii) S-Hold the gill filaments in position;
- 15. Homozygote is a cell with like/identical alleles; Heterozygote is a cell with non-identical alleles;

16. a) Lacks antennae; Four pairs of walking legs; Mark 1<sup>st</sup> 1  
 b) 1a) Has wings ..... **W**  
 1b) Lack wings ..... Go to 2  
 2a) Has Antennae ..... **X**  
 2b) Lack antennae ..... **V**
17. a) Prevent detection by predator; Camouflage in order to help it hunt prey; adjust to changes in temperature/light; attract opposite sex for mating; Mark 1<sup>st</sup> 2  
 b) Scarce common resource; Close niches;
18. Water/ Salts /ions/ - Na<sup>+</sup>; Cl<sup>-</sup>; NH<sub>4</sub><sup>+</sup>, Ca<sup>2+</sup>, urea, Nitrogenous waste;
19. a) Islet of Langerhans;  
 b) Secretes insulin; which stimulate the liver cells to convert excess glucose into fats/glycogen/Breakdown into water, Carbon (IV) Oxide and Energy; Blocks gluconeogenesis;
20. a) Ecdysone;  
 b) Predation won't eliminate all; prevent competition for food/common resources;
21. a) = (35cm/60cm)\*100;  
 = 53.85%;  
 b) Rheotaxis;
22. Prehensile hands to grasp tools; front facing eyes; bipedal; upright posture; Large Brain Capacity; non-opposable toes; Well-developed speech; 1<sup>st</sup> 3
23. a) Masked by the dominant gene/Gene for Tallness;  
 b) Dd;
24. a) i) Q;  
 ii) R;  
 b) Q, P, R;
25. a) U;  
 b) Absorbs shock; Allows bending/Make vertebral flexible; Reduce friction;