

KCSE 2024

BIOLOGY PAPER 1

MARKING SCHEME

- 1.** Knowledge on its cause; Knowledge on how the virus spreads; Increased knowledge on how to control the spread/containment measures; development of vaccines; global cooperation in research/fight against the virus; Mark 1st 2
- 2.** a) Formation of Spindle fibers; Formation of flagella/cilia;
b) Plantae; Monera;
- 3.** a) Melanin
b) Albinism;
c) Absorbs UV/Ultraviolet rays;
- 4.** a) Eutrophication/Enrichment of water by pollutants;
b) Higher concentration of Carbon (IV) Oxide; thus higher rate of photosynthesis; Conductive/Optimum temperatures; thus faster rate of metabolism\Activated enzymes;
- 5.** Exclude dust/contaminants; Prevent dehydration; Hold specimen in position; OWTTE
- 6.** a) Thicker muscular wall;
b) Mammalia; Aves;
c) Contract without nervous stimulation/Initiate contraction on their own;
- 7.** a) To prevent oxygen utilisation for efficient transport;
b) To Create conducive/optimum temperature for sperm formation/ spermatogenesis;
- 8.** a) Has endocrine and exocrine function/Forms both/ hormones and enzymes;
b) Islet of Langerhans;
- 9.** a) A;
b) Sucrose solution is hypertonic; thus it gains water molecules by osmosis;
Accept: Water is hypotonic; thus water molecules move into the dialysis tubing by osmosis;
- 10.** a) Poikilotherm; **Accept** Ectotherm/Ectothermic/Poikilothermic **Rej** cold blooded
b) Can live in any habitat; Is More active both day and night;
- 11.** a) Wind
b) Long filament; Anthers hanging outside; Feather/Net-like stigma; Smaller bracts to allow the stigma/anthers to be exposed to wind;
- 12.** a) Only X chromosomes are involved;
b) Non-disjunction;
c) i) Turner's Syndrome; ii) Klinefelter's Syndrome;
- 13.** a) Remove Oxygen;
b) % of CO₂ = $\frac{[(7\text{cm}^3 - 6.8\text{cm}^3) \times 100]}{8\text{cm}^3}$; Deny if Units Omitted
= $\frac{[0.2 \text{ cm}^3 \times 100]}{8\text{cm}^3}$
= 2.5%; Deny if % symbol missing



c) Exhaled air;

14. a) Cotyledon is found below the ground surface; elongated epicotyl;

b) Decreases; since stored nutrients are hydrolyzed to facilitate growth/germination/cell division;

15. 3cells measure 1.5mm

Therefore 1 cell will measure?

= (1cell X 1.5mm)/3cells;=0.5mm Deny if Units Omitted

Magnification = image length/actual length

Thus Actual length=image length/magnification

=0.5mm/ 1000; Deny if Units Omitted

=0.0005mm; Deny if Units Omitted

16. a) Release lytic enzymes; that Neutralize secretions/destroy/digest vitelline and cell membrane for entry of sperm head into the ovum;

b) Waft/push the ovum/zygote/blastula towards the uterus;

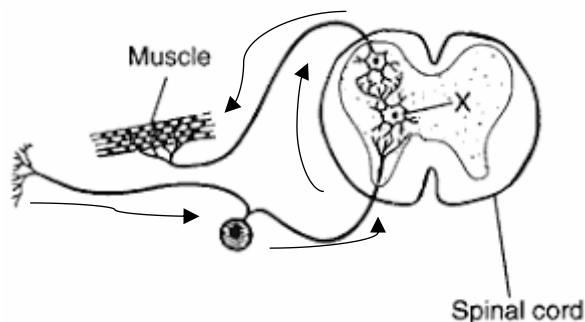
17. a) Structures that have lost function thus become smaller;

b) Development of necessary adaptations; to survive a give habitat/conquer different habitats;

18. ai) D-Telophase; ii) E-Anaphase

b) Laying of a Cell plate/Cellulose deposits to separate the daughter cells; Centrioles/Spindle fibers are not involved/seen;

19. a)



b) Differences

R	X
Unipolar	Multipolar/Bipolar;
Has Myelin Sheath	Lacks Myelin Sheath;
Has Nodes of Ranvier	Lacks Nodes of Ranvier;
Has Schwann cells	Lacks Schwann cells;
Long Axon	Shorter axon;

Award the 1st 2

20. i) **Cardiac sphincter muscles:** Relaxes to allow entry of food/food bolus into the stomach/Prevent exit of food from stomach to oesophagus/gullet;

ii) **Erector Pili Muscles:** Contracts and relaxes to make the body hairs straighten or lie flat on the body;

21. a) Low/dim; Accept darkness;

b) Etiolation;

c) Increase productivity of Dwarf plants;

22. a) Photosynthesis;



- b) Secretion of myelin sheath;
- c) Nourish young sperm cells; point of attachment of sperm cells as they develop;

23. a) Place 2ml of her urine in a boiling tube

Add Equal amount/2ml of Benedict' solution;

Boil;

Green/Yellow/Orange/Brown colour change would show a positive test/result;

- b) It may be digested (since it is protein in nature);

24. a) Innominate bone/Half pelvic girdle; **REJ** Pelvic girdle alone

b) Achieves movement in all planes; Achieves a 360° rotation thus greater flexibility;

c) Passage of blood vessels/nerve fibers to lower regions of the hind limbs; Reduces weight/density at the hip region;

25. a) Population is a group of organisms of same species found in the same place at the same time; while Community is different populations/group of animals and plants living in the same habitat; Award 0, 1 or 2 mrks

b) Population = $\frac{\text{First Marked} \times \text{Second Capture}}{\text{Marked Recaptured}}$

REJ Abbreviations

26. a) Mitosis;

b) Regulate Growth of pollen tube;

27. a) Mammalia; **REJ** Mammals/mammalia/Mammalian

b) Body fur/hair; Heterodont dentition/Different types of teeth; Presence of Ear pinna;
1st 2

28. a) Remained the same; all the stomata blocked by jelly thus no water uptake/loss/transpiration;

b) Act as a Control experiment;

