



231/2 MS
BIOLOGY
Paper 2
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MARKING SCHEME

THE SHOOTING STARS EDUCATIONAL CONSULTANCY
Kenya Certificate of Secondary Education

BIOLOGY
PAPER 2

MARKING SCHEME
(CONFIDENTIAL)

This marking scheme consists of 4 printed pages

1. a) K - pleural membrane ;
L – intercostal muscles; acc external and internal muscles
rej interco~~ast~~al muscle 2mks
- b) R (diaphragm) muscles contract; causing it lie flat / flatten; This increases volume of the thoracic cavity / lungs; (hence lowering the pressure inside) and air is forced in; 4mks
- c) Bordetella pertussis scientific rule to be followed 1mk
- d) Thoracic (vertebra) rej vertebrae 1mk

2. a) A.....ovary
B.....cervix acc uterine wall 2mks
- b) FSH (Follicle Stimulating Hormone) rej F.S . H 1 mk
- c)
 - i) Ovary --- oestrogen / progesterone
Placenta – progesterone 2 mks
 - ii) Oestrogen – causes repair and healing of endometrium 1mk
Progesterone----- causes thickening of endometrium
- Causes increased blood flow any 1 = 1mk
- (vascularisation) to the endomentatrimon

- d) Angiospermaphyta 1mk
3. a) i) Description of type , arrangement and specialisation of teeth 1mk
ii) Homodont | Heterodont
Same size, shape and function. | different size, shape and function;
N/B each score independently 2mks

- b) Site for digestion ;
site for absorption; 2 mks
- c) i) Traps / absorbs sunlight for photosynthesis; 1 mk
ii) Splits water molecules to hydrogen and oxygen gas; 1 mk
- d) Transmission of nerve impulse 1 mk

4.

	♀	♂
a) $X^H X^h$;, $X^h Y$;	carrier woman X	Haemophilac male
Parental phenotype		
Parental genotype	$X^H X^h$	$X^X Y \checkmark$ (X sign must be indicated)
b) Parental gametes		;√
	$X^H X^h$ $X^H Y$ <u>$X^h X^h$</u> $X^h Y$;√ Jane	

N/B The crest sign (x) must be indicated at the parental phenotype and genotype. Ref x

- ii) $X^h X^h$; 1 mk
- d) A condition / phenomenon where an organism has an extra set of chromosome; 1 mk
5. a) K – suspensory ligaments
L – Retina
- b) Circular muscles (of the iris) contract, while radial muscles relax ; thus reducing the diameter (size) of the pupil ; hence less light enters the eye; 3 mks

- c) Has choroid layer ; with dense network of blood capillaries ; when nutrients diffuse out into the eye structures; 3 mks
- d) Higher blood glucose – increase the osmotic pressure by tissue fluid ; hence loss of water from cells by osmosis ; this disrupts normal cellular function 3mks
- e) - can occupy most ecological zones; even active due to maintenance of optimum temperature throughout 2mks

6a)

- b) Y..... $120\text{mg}/100\text{cm}^3 \pm 1$; 1mk
Z.... $178\text{mg}/100\text{cm}^3 \pm 1$; 1mk

c) i) Blood glucose level increased ;to ($130\text{mg}/100\text{cm}^3$) as more glucose is being absorbed from gut/ileum; (2marks)

ii) Glucose concentration declined to normal $90\text{mg}/100\text{cm}^3$; increase in glucose level stimulated pancreas to release insulin ; which stimulates the liver cells to convert excess glucose to glycogen (for storage) ;. Increased respiration of glucose 4mks

d) Higher blood glucose – increase the osmotic pressure of tissue fluid; hence loss of water from cells by osmosis; This disrupts normal cellular functions; (3mks)

e) - Can occupy most ecological zones;

-Ever active due to maintenance of optimum body temperature throughout; (2mks)

7a)

- To expose the leaves to sunlight for photosynthesis;
- Expose flowers to agents of pollination;
- Expose fruits and seeds to agents of dispersal (3mks)

b) The stem has several strengthening tissue; that provide support i.e. collenchyma and sclerenchyma;

;

These tissue; are strengened by lignin;

-Xylem tissue; made up of xylem vessels and tracheids. The xylem tissues have thickened walls by lignin; to prevent walls from collapsing during transpiration;

- Xylem vessels are narrower; to facilitate upward movement of water by capillarity;

-Xylem vessels have boardened pits; lateral movement of water and mineral salt;

- Phloem tissue contain contractile cytoplasmic strands ; to push organic food substance from one sieve tube to the next;

- Phloem tissue contain plasmodesmata; that joins companion cells to sieve elements; allowing for passage of protein and ATP to be used in translocation of substances;

- Cambium tissue for secondary growth within the vascular bundles;

Parenchyma tissue /cells stores water and food hence support through turgidly;

-Suberin in the stem prevents excess loss of water and entry to pathogens;

-Lenticels that facilitate gaseous exchange ;

-Some stems have parenchyma cells with chlorophyll for photosynthesis;

a)

Have sharp pointed incisors ; for tearing and stripping flesh from bones

Have canines that are long / curved / pointed; for piercing , grasping and holding the prey;

Have got the carnassial teeth (upper fourth premolar and lower first molar) with smooth sides; sharp edges to shear and slice flesh from tendons and crush the bones;.

Have powerful jaw bones for powerful muscle attached ; This prevents dislocation of jaws for cutting and shearing of flesh;

Have sharp and curved claws ; for holding and grasping prey; (10mks)

b) Chromosomal mutation change involves number or structure chromosome i.e.

Deletion; Part of chromosome break away and does not rejoin to the original chromosome. Leads to loss of some genes;

- Duplication; chromosome replicate itself either in whole as a portion of itself. This causes extra chromosomes i.e. polyploidy;.

Translocation; A part of the chromosome detaches itself from one chromosome and attaches to another non – homologous chromosome;

Inversion; a part of chromosome gets detached, rotates at 180^0 then rejoins to the original chromosome;

- Non disjunction; this is failure to segregate in a pair of homologous chromosome during meiosis ; leading to some cells having extra set of chromosome and others without chromosome; (11mks, max – 10mks)