Kenya Certificate of Secondary Education

BIOLOGY

PAPER 3

MARKING SCHEME

1.

Test for	Procedure	Observation	Conclusion
Non – reducing sugar; (1mk)	- Take ($2cm^3$) R into a test tube. - Add a few drops of dilute hydrochloric acid; - Heat to boil; - Cool; - Add sodium hydrogen carbonate drop wise till fixing disappears - Heat to boil; (3mks)	Changes from blue to green the yellow and finally to orange or brown; Acc. Final colour alone rej. If sequence of colours is wrong (1mk)	- Presence of non-reducing sugars; (1mk)
Proteins; (1mk)	- Take ($2cm^3$) R into a test tube - Add an equal volume of sodium hydroxide add one drop of copper (ii) sulphate solution; (1mk)	- No colour change; (1mk)	- Proteins absent; (1mk)
Vitamin C/ Ascorbic acid; (1mk)	- Take ($2cm^3$) DCPIP into a test tube - Add solution R drop by drop; (1mk)	- Blue colour of DCPIP remains; (1mk)	- Ascorbic acid present;(1mk)

(Total 14mks)

2. (a) (i) Tendril (s); (1mk)

(ii) Thigmotropism/haptotropism; Auxins/IAA migrate to the side away from the contact of support; faster growth/faster cell elongation/expansion on that side; leading to coiling/tuining; (3mks)

(iii) L – Medullary rays; (1mk)

(iv) - Transport nutrients/substances between phloem and xylem to other parts of the plant;

- Prevent cracking of the wood hence offer support;

- Essential for healing of wounds by forming callus tussues; (Mark first 2, 2mks)

NB: (iv) is tied to (iii)

(b) (i) Collenchyma (tissue); (1mk)

(ii) – Consists of living cells;

- Have deposition of extra cellulose at the corners of the cells;

- Cells are elongated in shape; (Any 2, 2mks)

(iii) – Provides support and elasticity;

- Provides easy bending in various parts of a plant without actually breaking it;

- In some, the photosynthetic cells carry out photosynthesis; (First 2, 2mks)

(c) – Number of cells across the field of view = 11 (eleven)

- Diameter of field of view = 13cm = 130mm = 13,000 microns

- Size of cell = $\frac{\text{Diameter of field of view in microns}}{\text{Number of cells across the field of view}}$;

$= \frac{130,000 \text{ microns}}{11}$;

= 11, 818 microns (µm); (3mks)

3. (a) (i) Divergent evolution; (1mk)

(ii) Small variations occurred in the feet of birds within the population; competition for limited food occurred in the environment; predation as a mode of feeding favored birds whose feet had long, sharp and curved claws/talons; to kill prey/tear flesh of prey; OWTTE (3mks)

(iii) All birds had same length of feet; the (aquatic) environment favoured longer feet /talons; leading to continuous natural use of the feet; which kept on increasing in length; the longer feet trait was then passed on to offspring along the generations; OWTTE (3mks)

(b) (i) E – Radius; (1mk)

F – Humerus; (1mk)

(ii)

Figure 1	Figure 3
- Have pentadactyl/limb structure	- Have no pentadactyl limb structure;
- Originate from endoskeleton	- Originate from exoskeleton;
	(Mark first one only) (1mk)

(iii) – Ball and socket joint; (1mk)

Total marks for the question (11mks)