

231/3

BIOLOGY

Paper 3

Practicals

Time: 2 Hours

Marking scheme.

Kenya Certificate of Secondary Education (K.C.S.E)

1. a) Kingdom plantae. (1mk)
(Rej. wrong spelling)

Reasons;

- Contains photosynthetic pigments i.e. chlorophyll.
- Indefinite growth.
- Store lipids in form of oils.
- Store carbohydrates in form of starch.
- Contains cell wall.
- Autotrophic.

- b) (i) Phylum Arthropoda. (2mks) (rej wrong spelling)
 (ii) J-class Arachnida. (1mk)
 F-class insect (1mk)
 (rej. Wrong spelling)
 (iii) -2 body parts. (Max 3mks)
 -Four pairs of legs/eight walking leg
 -Cephalothoraxes and abdomen.
 -Simple eyes. (1mk)

- c) (i) Angiospermatophyta. (1mk)
 (ii)

Dicotyledonous	monocotyledonous
-Network venation	-Parallel venation
-Has petiole	-Has sheath-like petiole
-narrow leaf	-Broad leaf

(Max 2mks)

2.

- a) X.....Humerus ✓ 1
 Y.....Radius ✓ 1
 Z.....Ulna ✓ 1 (rej spellings)
- b) (i) A and C.....Analogous structures. ✓ 1
 (ii) B and C.....Homologous structures ✓ 1

c) Reasons for b (i) and (ii) above.

B and C-have common embryonic origin but have been modified to perform different functions. ✓ 1

A and C-Have different embryonic origin but have been modified to perform same functions. ✓ 1

- d) A and C-convergent evolutions✓1
 B and C-Divergent evolution✓1
- e) -Wings of A originate from an exoskeleton while those of C originate from an endoskeleton✓1

-Wing of A has no pentadactyl/structure while the wing of C has pentadactyl/structure✓ 1

- f) Organs that are reduced in size and function in organism✓1

3.

Food substance	Procedure	Observation	conclusion
Starch	-To solution W add (2drops of) iodine solution✓1	-Brown/yellow color persists/remains✓1 aCc.no color change observed.	-starch absent✓1
Reducing sugars	-to solution W, add Benedict's solution and heat✓1/boil/warm.	-color/brown changes from blue to green to yellow to orange✓1 Acc.final color. Rej-red color	-Reducing sugars present✓1
Non-reducing sugars	-To solution W add dilute hydrochloric acid, heat and cool. Add sodium hydrogen carbonate solution until fizzing stops, then add Benedict's solution and heat/boil/warm✓1	-Color changes from blue to green to yellow to orange✓1/brown. Acc.final color. Rej.red color	Non-reducing sugars present✓1
Protein	-To solution W add sodium hydroxide then copper (ii) sulphate✓1 -Rej. Heat.	-Color changes from blue to purple✓1 (purple color observed)	-Protein present✓1

(12mks)