FORM FOUR CLUSTER KCSE MODEL1

BIOLOGY PAPER 3 ANSWER

1. (a) (i) Photosynthesis. (1mk)

(ii)-Broad (and flat) to offer large surface area for absorption of carbon (IV) oxide/light;

- (Rich supply of) veins to transport water/ to photosynthetic cells)/mineral salts/manufactured food substances;

-Presence of chlorophyll to absorb light (energy)/Green due to chlorophyll to absorb light (energy);

-Presence of leaf stalk/petiole for holding the leaf in position/expose/spread out the leaf to absorb (maximum) light; (1mk) max first one)

(iii) Dicotyledonae; (1mk)

(iv)- Net/reticulate venation; - Broad leaf; - Presence of petiole;

(v) –The (rigid) midrib holds leaf (out away) from the stem;

- (Profuse network of veins) has lignified xylem (cells) which support leaf to stay spread out);
- Turgidity in spongy mesophyll/palisade cells (support the leaf to remain open); (1mark) mark first one.

(b) (i) Osmosis; (1mk)

(ii) L1 –curves outwards/bulges inwards; (1mk) L2-Curves inwards/bulges outwards; (1mk)

(iii) L1 (Hypotonic solution) - Inner cells gained water by osmosis;(becoming turgid) hence increased in length; the epidermal cells did not gain water because they are covered by a water proof cuticle; leading to curvature;
Total =4 marks Max =2mks

L2-(Hypertonic solution)

- Inner cells lost water by osmosis; leading to decrease in length; the epidermal cells did not lose water due to waterproof cuticle; leading to curvature; Total =4 marks Max =2mks

(c) (i) Root; (1mk)

(ii)

Section J		Section K
(i)	A centrally placed star shaped xylem with phloem alternating with arms of xylem;	(i) Vascular bundles are arranged in a ring with phloem and xylem alternating;
(ii)	No pith;	(ii) Has pith;
(iii)	Has vascular cambium;	(iii) No vascular cambium;

2. (a)(i) Pelvic fin; (1mk)
(ii) -Maintaining balance; (1mk)

- Braking;

- Charging direction;

- Steering; (mark first one)

(iii) –Scale overlapping backwards; (1mk)

-Streamlined body;

(iv) Length of tail (anus to the tip of tail) x100%; (1mk)

Length of fish (tip of mouth to tip of tail)
(b) (i) Water snail Ref: snail alone (1mk) Acc: Biomphalana spp Bulinus spp

(ii) Schistosomiasis/Bilharzia; (1mk)

(iii) - The eggs have a hook-like structure which raptures walls of intestines or bladder;

- Lays large number of eggs to ensuresurvival;

- The larva has sucker for attachment on human skin which is digests;

- Larva has a tail for swimming in search of a host in water;

- It has a prolonged association between male and female to ensure that fertilization takes place;

- It has two hosts (snail and man) to increases chances of survival;

- The adult can tolerate low oxygen concentration in animal tissues;

- The adult worms secretes chemicals against antibodies produced by the host;

- Larva/eggs have glands that secret lytic enzymes that soften the tissues to ease penetration;

- Larvae are encysted to survive adverse conditions; max first one (1mk)

(c) (i) S –Humerus; (1mk)

W- Scapula; (1mk)

(ii) Pectoral girdle; (1mk)

(iii) Ball and socket; (1mk)

(iv) Allow passage of blood vessels/nerves/blood vessels;

(v)- Has head for articulation with (acetabulum of pelvic girdle);

-Has trochanters (on proximal end) for muscles attachment;

-Has condyles (on distal end) for articulation with patella/tibia; (1mk) mark first one

3. (a) (i) Berry; (1mk)

(ii) Fleshy/succulent pericarp; (1mk)

Food substance	Procedure	Observation	Conclusion
Vitamin C/Ascorbic acid √½	Add juice to DCPIP√½	DCPIP decolourised√½	Vitamin C present √½
Reducing sugar√½	Add equal volume of Benedict's solution to juice. Heat.	Orange/Red/Brown colour√½	Reducing sugar present. √½

(b)(i) Rhizopus; Acc Bread mold; (1mk)

(ii) Fungi; (1mk)

(iii) Recycling nutrients; (1mk)

(iv) Fungal spores (in the air)land on moist bread; germinate and develop into (grey)mycelia/hyphae; when mycelia/hyphae mature, they form black sporangia;