KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

FRIENDS SCHOOL KAMUSINGA

BIOLOGY

PAPER 2

MARKING SCHEME

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FRIENDS SCHOOL KAMUSINGA KCSE TRIAL AND PRACTICE EXAM 2016
BIOLOGY 233/2
MARKING SCHEME

1. (a) Fatty acids and glycerols are re- assembled into fats and coated with proteins (to stop them sticking together) to form tiny chylomicrons inside intestinal cells: From there the chylomicrons are transported by pinocytosis into lacteals of the villi which eventually empty into circulation;

(b) (i) Lipase;
Accept any named lipase.

(ii) To provide a suitable optimum temperature for the activity of lipase;

(c) Fatty acids ; and Glycerols;

(d) Under the optimum conditions the lipase breaks down the fat emulsion into fatty acids and glycerols; Fatty acids and glycerols diffuses from the visking tubing through the semi – permeable visking tubing membrane; into the indicator – water mixture; the fatty acids results into acid conditions / low PH that turns indicator red;

2. (a) Cervix;

(b) – Where fertilization occurs;
- Passage of ovum from the ovary to the uterus;

(c) (i) E;
(ii) D;

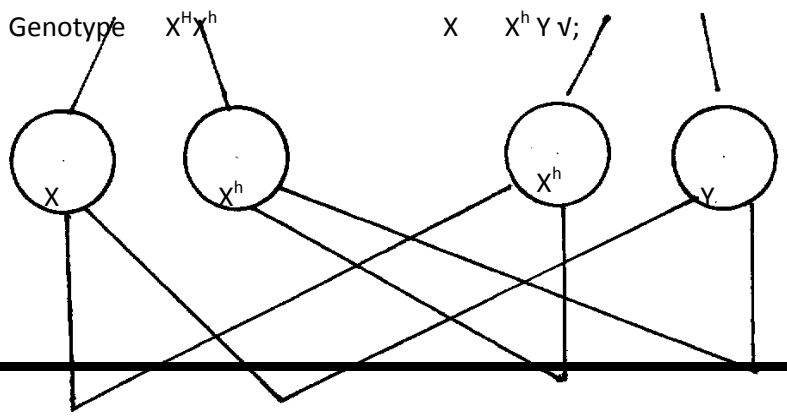
(d) meiosis;

(e) Spermatogenesis;
Der of secondary sexual characteristics or specify.

3. (a) A - $X^{H}X^{h}$
B – $X^{H}Y$

(b) $X^{h}Y$

(c) Phenotype: Carrier woman x haemophilia man



50% √ tied to the correct working.

√

(d) Down's syndrome / Turner's syndrome / klinfelter's syndrome.

(a)

	Darkness	Bright light
Radial muscule	contract	relax
Circular muscle	relax	contract
Size of pupil	increase	Reduce

(b) Biconcave / concave lens;
Which diverges the light rays;

5. (a) This is blood coming from other body parts where most oxygen in it has been utilized;

(b) It will decrease since a lot of it will have diffused into the body;

(c) Because as blood moves to R, before it reaches R, some oxygen diffuses to other tissues and combine with haemoglobin hence diseases in oxygen concentrated at R compared to Q;

(d) There would be a low diffusion gradient hence low rate of diffusion and gaseous exchange; which will finally stop a long some point in the respiratory surface;

(e) – Kidney nephorons:
- Placenta

(f) – stomata;
- Cuticle;

6. Scale – 1
Axes labeling – 1
Plotting – 2
Curves (smooth - 1)
Labelling of curves – $\frac{1}{6}$

(b) Active transport;
Reasons
Oxygen is necessary for respiration and when it is low; the rate of uptake of potassium ion is very low; since active transport need energy;

(c) (i) Potassium ion intake is low when oxygen is 0%
Because there is no energy for the process. Sugar as substance not broken down to release energy for active transport due to lack of oxygen.

(ii) Potassium ion uptake is increasing to the max due to optimum amount of energy
- Sugar loss is also increasing because it is used as substrate. Due to oxygen concentration.

(d) Presence of carriers; optimum PH for respiratory availability of glucose ; optimum temperature .for respiratory enzyme; presence of coenzymes or cofactors;

(e) Treating the roots with metabolic poiso;
Subjecting the roots to extremely low temperature or extremely high temperature.

(f) Selective re absorption of glucose mineral ions in the kidneys;
Transmission of nervous impulses;

7. Adaptation of mammalian skin;
The skin is made up of the following structures that adapts it to its functions.
The cornified layer is made up of dead cells; that prevents entry of bacteria, physical damage and desiccation;
- The granular layer consists of granulated living cells; which gives rise to the outermost cornified layer;
- Presence of melanin (in the malpighian layer); to protect the body against ultraviolet radiation.
- Sebaceous glands produce an oily chemical substance , sebum . which is antiseptic (to bacteria) is water repellant and makes the skin supple.
- Presence of blood vessels (in the dermis) ; which dilates when the body temperature is high to facilitate heat loss (by radiation) and constricts when temperatures are low to reduce heat loss.
- The blood vessels also supply nutrients and oxygen to the skin tissues; remove wastes products and carbon (iv) oxide from the skin tissue and cells:
- Presence of hairs; which stand erect when its cold , Trapping air between them to retain heat; or the flat on the skin surface when it is hot so as not to trap much air to enhance heat loss.
- The skin has sweat gland; which produce sweat (Through pores on the skin surface) ; Evaporation of water in the sweat cools the body;
- Presence of sensory cells / nerve ending; which are sensitive to environmental changes;
- Presence of subcutaneous fat / adipose tissue; Which acts as heat insulating layers
- The hair follicles are lined with sensory nerves; hence increasing sensation by the skin.
- The lymphatic vessels drain away excessive fluids from the dermis.

8. The main plant harmones includes;
- Auxins (Indole acetic acid) / IAA.
- Gibberellins / Gibberellic acid
- Cytokinins
-Ethylene/ Ethyne.
- Abscisic Acid
- Traumatin
- Florigens

Auxins:
- Promote cell division/ influences tropic responces e.g phototropism, geotropism;
- Promote formation of abscission layer hence brings about leaf fall;
- Promotes Parthenocapy (ie. Fruit formation without fertilization;)
- Promotes differentiation of vascular tissues.
- Cause apical dominance / inhibit growth and development of lateral buds;
- Promote growth of adventifious roots and stems
- Indole Acetic Acid + cytokinins induces formation of callus tissues leading to healing of wounds.

<u>Gibberellins:</u>
- Promotes cell division / elongation in dwarf plant varieties.
- Initiates parthenocarpy by initiating formation of IAA:
- Stimulates the formation of side branches of stems and dormancy in buds.
- Induce the ovary wall to form a fruit after fertilization
- Inhibit growth of adventitious roots
- Activates hydrolytic enzymes during germination; / Promotes germination of seeds / breaks seed dormancy.
- Affects leaf expansion and shapes
- inhibits formation of abscission layer;

Cytokinins / e.g kimetins / zeafin.
- Breaks dormancy in some species while promoting flowering in some others.
- In presence of IAA, cytokinins promotes cell division;

- Stabilizes proleious and chlorophyll.
- Promotes root formation on shoots
- Low concentration leads to leaf senescence; high concentration promotes increased cell enlargements in leaves.
- Promotes flowering in some species.

  Ethylene/ Ethyne
  - Stimulate lateral bud developement
  - Encourages ripening of bananas and fruits
  - Induces thickening of stem / inhibits stem elongation
  - Promotes germination of certain seeds.
  - Cause abscission of leaves / fruits/ leaf fall.
  - Promotes flowering in pineapples;

    Abscisic Acid (ABBA)
    - High concentration cause stomata closure interfering with uptake of K^+ions.
    - Inhibits seed germination / growth of embryos/ cause seed dormancy.
    - Cause abscission of leaves / fruits / leaf fall.
    - Inhibits atem elongation / growth.
    - Inhibits sprouting of buds / induces dormancy in buds promotes flowering in pineapples.

      Traumatin
  - Heals wounds by callis tissue formation.

    Florigens.
  - Promote flowering in plants.