KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

ALLIANCE BOYS HIGH SCHOOL

BIOLOGY THEORY

PAPER 1

MARKING SCHEME

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ALLIANCE BOYS HIGH SCHOOL KCSE TRIAL AND PRACTICE EXAM 2016
BIOLOGY
PAPER 1 / 231/1
MARKING SCHEME

1. a) - Its cells (vessels) have no transverse walls thereby forming a long hollow tube running from roots to leaves (through which water and mineral salts can easily be transported);
- Have dead cells lacking nucleus and other cell contents (organelles) which might have otherwise retarded / restricted the movement of mineral salts and water from the soil through the roots and up the plant;
- The cells are longitudinally joined to each other to enhance easy movement of water and mineral salts up the plant;
- The cells have side walls coated with light deposits which prevent leakage of water and also strengthen the walls preventing them from collapsing;
- The xylem vessels are narrow to facilitate capillarity; ***OWWTTE***

b) - The epidermis is one cell thick for faster movement of water and mineral salts into the plants body;
- They are thin and flexible to easily penetrate through the soil particles.
- The root hairs are many to increase the surface area for diffusion of material into the plant;
- Have semi-permeable membrane for selective movement of materials into the plant;

2. a) - Glucose is highly soluble in water/ (blood) hence is faster and easily transported to the respiratory sites;
- Glucose is very simple in structure than sucrose hence easy to oxidize to yield energy to the body cells;

b) It is oxidized to release energy ✓ (1mk)

3. a) It is a sudden change in the structure of a gene;

b) - Albinism;
- Haemophilia;
- Colour blindness;
- Sickle cell anaemia;
- Chordrodystrophic dwarfism; (Achondroplasic)

c) Mutagens/ mutagenic agents;

4. i) Formation of cell wall/ component of the cell wall;
ii) It is a component of chlorophyll/ form chlorophyll;
iii) Used for protein synthesis;

5. Light intensity;
Temperature;
Wind;
Humidity;
Atmospheric pressure;
Water availability;
} Any first 3

6. i) Long and coiled for storage of sperms;
ii) Provides an alkaline fluid to nourish the spermatozoa;
iii) Produce testosterone which control secondary sexual characteristics;

PART	IDENTITY	FUNCTION
A	Acrosome;	Contains alytic agent/ enzyme that breaks/ dissolves the egg membrane during fertilization;

B	Mitochondrion	Provides chemical/ respiratory energy required for the propulsion / movement of the sperm cell;
C	Tail	Propels the sperm in the fluidy female reproductive system;

7. a) i) A group of organisms that can naturally/ freely interbreed to produce viable fertile young ones; (offspring) (1mk)
   ii) (A scientific system of double haming) naming organisms using the generic/ genus and specific/ species names; OWWTTE (1mk)
   b) Mammalia;
8. - For trapping (optimum) of light energy;
   - To absorb maximum CO_2 from the air;
   Rej;. More higher maximum
   Acc. Adequate, optimum, sufficient
9. a) Medulla oblongata
   b) - Lack of beard;
   - High pitch/ vocal cords undeveloped;
   - No spermatogenesis / no production of sperms;
   - Lack of muscularity/ more feminine/ less muscular;
10. Convergent Evolution – is a case where structuring/ organs of different embryonic origin have evolved / modified to perform similar functions due to exploitation of similar environments eg.
    Birds and insects wings, eyes of octopus and mass / analogous structures;
    Divergent evolution refers to a case where different forms of structures in organisms seem to have resemblance that suggest common ancestry but have been adapted to perform different functions (i.e adaptive radiation of homologous structures)/ eg. pentadactyl digits of forelimbs of animals, beaks of birds, feet of birds;
11. a) Sweating/ secretion of sweat; Rj release of sweat
    Vasodilation/ redirection of blood to the skin
    Relaxation of erector (pill) muscle/ hair lies low/ flat;
    b) - Moistens the skin/ makes the skin supple; Rj. Lubricates the skin
    - It is antiseptic/ kills pathogens (bacteria);
12. a) Maintenance of a relatively stable internal body environment (1 tissue fluid)
    b) - Distributes heat throughout the body;
    - Regulation of PH of the body fluids;
    - Transport metabolic wastes away from the cell and nutrients to the cells;
    c.

Nervous communication	**Endocrine communication**
- Nerve impulse to evoke a response	- Chemical substance/ hormone to evoke Response
- High speed of transmission	- Low speed of transmission;
- Rapid response	- Response delayed
- Impulse transmitted through neurone	- Hormones transmitted in blood
- Responses specific and localized to one Target organ	- Responses affects several parts of the body;

    Note: Comparison should come out clearly to award.
13. a) Intervertebral disc;
    b) Acts as cushion/ absorb shock; Reduce friction/ flexibility of the vertebral column;
14. a) Lysosomes
    - Stores (hydro) lytic enzymes/ destruction of worn-out organelles/ cells/ tissues;
    - Digestion of pathogens/ bacteria;
    - Digestion of food materials;

Acc. Autolysis

b) Golgi apparatus:-
- Processing/ packaging synthesized materials/ and transporting of cell materials;
- Production of lysosomes / secretion of packaged materials.
- Transport of packaged cell materials/ glycoprotein;
Rj. Assembly of materials

15. This is fruit formation without fertilization;

16. - It is a prolific breeder / (it breeds so fast);
- It produces many offspring's hence different features can be observed in each offspring;
- It has many observable features (eg body colour, wing shape etc);
- It is small insect and hence easy to handle;
- It's life cycle is short (10 -14 days) hence quick growth can be obtained over a short time period;
- Somatic cells contain few chromosomes (8) hence easy to recognize;
- The flies are safe to handle since they are not known to transmit any human diseases;

17. - Sodium pump mechanism in nervous system;
- Reabsorption of useful materials in blood stream from tissue fluid;
- Excretion of waste products from body cells;
- Absorption of digested food/ mineral salts/ vitamins from alimentary canal;
- Reabsorption of glucose / (some) salts in the kidney/ by kidney tubules;

18. a) Biological control:

b) - Non-target organisms are never killed;
- There are less or no chances of water pollution;

19. a) Vibrio cholerae;

b) - Diarrhoea;
- Vomiting;

20. a) 24

b) i) Form spindle fibres (which will attach to the centromere of the chromosomes to facilitate their division);
ii) Attach to the centromere of the chromosomes to facilitate their division;

21. a) Hypocotyl;

b) Epigeal germination;

22. a) Juvenile hormone;
Trophic hormone;
Ecdysone/ moulting hormone;

b) i) Traumatin;
ii) Abscisic Acid (ABBA);
iii) Ethylene;

23. a) Gullation;
Diffusion;
Exudation;
Transpiration (evapo-transpiration;
Deposition

b) i) Used as a meat tenderizer
ii) Used as a narcotic; used as an insecticide;
iii) Used in treatment of malaria;

24. - Hydrostatic skeleton; Rej; hydroskeleton
- Exoskeleton;
- Endoskeleton;