

FORM ONE EXAMINATION
Kenya Certificate of Secondary Education (KCSE)

MARKING SCHEME

BIOLOGY (231)
OCTOBER 2016

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| <p>1. a) Cytology;
b) Microbiology;
c) Genetics;</p> <p>2. a) Sucking small organism from rock surfaces and barks of trees
b) Catching crawling organisms</p> <p>3. Plants manufacture their own food; while animals consume already manufactured food;</p> <p>4. -Medicine;
- Teaching biology;
- Animals husbandry;
- Agriculture;
- Food science;
- Public health;
- Dentistry;</p> <p>5. -Helping in solving problems such as food shortage, pollution, poor health, misuse of natural resources;
OWTTE
- Necessary for entry into careers; (Give examples)
- Applied in every day life eg measuring, observation, recording, classifying, analysing and evaluation;
- Promotes international co-operation;</p> <p>6. Zoology - involves study of animals;
Botany - involves study of plants;</p> <p>7. Mycology;</p> <p>8. i) Ribosome;
ii) Golgi body;
iii) Lysosome;
iv) Mitochondrion; NB (reject plurals)</p> <p>9. Chloroplasts;
Cell wall;
Large centralised vacuole; (Rej vacuole alone)</p> <p>10. Has a higher magnifying power; and resolving power;</p> | <p>11. i) A - Protein layer;
B - Phosphate group;
C - Lipid layer;</p> <p>ii) Cell membrane;/Plasma membrane;</p> <p>iii)
-Semi permeable;/ selectively permeable;
- Affected by changes in temperature and pH;
- Possess electric charges;</p> <p>iv) -Allows selective movement of materials in and out of the cells;
- Encloses and protects cell contents;</p> <p>12. i) Resolving power - degree to which a microscope can make two objects that are very close appear as separate entities;
Magnifying power - degree to which a microscope can enlarge a specimen;
(Mark as a whole)</p> <p>ii) They used different magnification;
The first used lower magnification hence a smaller field of view that enabled her see less bacteria while the second used a higher magnification hence a wider field of view in order to see more bacteria;</p> <p>iii)
X200;
X12;
X600; (multiplication sign MUST be shown)</p> <p>iv) a) Brings an image into sharp focus;
b) Forms a plat form for placing slides containing specimen;</p> <p>13. It involves movement of water molecules from their region of high concentration; to a region of low concentration;</p> <p>14. Water in the beaker was hypotonic (lowly concentrated); making water molecules to move inside the potato cavity; by osmosis; making the water molecules to rise;</p> |
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15. i) Loose water through osmosis; and shrink and then crenates;
 ii) Gain water through osmosis; and eventually burst through haemolysis;
16. i) C;
 ii) B;
 iii) C;
 iv) B;
 v) C;
17. a) Movement of molecules/particles/ substances from a region of high concentration to a region of low concentration;
- b) -Concentration gradient;
 - Temperature;
 - Surface area to volume ratio;
 - Size of the molecule;
 - Thickness of the membrane;
- c) -Reabsorption of glucose and salts back into the blood stream in kidney tubules;
 - Excretion of waste products from body cells;
 - Absorption of digested food from the gut into the blood stream;
 - Transmission of nerve impulses within the nerve cell;
 - Reabsorption of useful material into the blood stream from tissue fluid;
18. a) i) Diffusion; ions are moving from a region of high concentration to a region of low concentration;
- ii) Active transport; ions are moving from a low concentration to high concentration (against concentration gradient) and would thus require energy;
- b) Diffusion - Optimum temperature;
 - Diffusion gradient;
- Active transport
 - Protein carriers
 - Energy
- c) i) Potassium;
 i) Its uptake is by active transport which is energy dependent; Energy for active transport is produced by respiration which is inhibited by metabolic poison;
19. a) Grouping; of organisms according to similarities in their structure, origin and way of life;

- b) i) familiaris; (must start with small letters)
 Canis; (must start with capital letter)
- c) - Monera;
 - Protoctista;
 - Fungi;
 - Plantae;
 - Animalia;
- NB:** (Must start with capital letter and correct spelling)
20. a) Heterotropism is a type of nutrition where organism take in complex food materials (such as carbohydrate proteins and fats) from bodies of plants and animals, while autotropism is a type of nutrition where organisms manufacture their own food. (Mark as a whole)
- b) i) Process by which plants make their own food from simple substances such as carbon (IV) oxide and water using energy from sunlight
- ii) Organ - leaf
 Cell organelle - chloroplast
21. Stage I - Light stage
 - Granum
- Stage II - Dark stage
 - Stroma
22. a) Fatty acids and glycerol
 b) Amino acids
23. Carbon (IV) oxide (Rej Carbon dioxide)
 Water
24. i) Homodont dentition is where animals have teeth of the same size and shape while heterodont dentition have teeth of different shape and size (Mark as a whole)
- ii) A - Enamel; Forms a surface for biting and grinding food
 B - Dentine; Make the tooth strong;
 C - Pulp cavity; - contains blood capillaries that provide nutrients and oxygen to tissues they also remove waste materials from tissues;
 - Contains nerve endings which are sensitive to heat cold and pain