MWAKICAN JOINT EXAMINATION TEAM(MJET)

FORM THREE

BIOLOGY PAPER 1 MARCH/APRIL 2015.

MARKING SCHEME

1(a) Enzymes are organic catalysts which are protein in nature.

(b)(i) Denaturation is the destruction of an enzyme leading ti a complete loss of enzymatic activity. It is brought about by exposure to high temperature or extremes of pH. Inactivation is a temporary loss of enzymatic activity. It is brought about by exposure to low temperatures.

(ii) - High temperatures

* Extremes of Ph

2(a) A genus is composed of several related species

(b) - Bryophyta

 -Pteridophyta

 - Spermatophyta

(c) Kingdom: Plantae

 Division: Spermatophyta

 Sub-division Angio-Spermaphyta

 Class: Dicotyledonae

3(a) - Schlerenchyma

* Xylem tissue

(b) (i) Phloem tissue

 (ii) Schlerenchyma tissue

 Collenchyma tissue

 Xylem vessels and tracheids

4(a) 1000 x 3 = 3000

 $\frac{3000μm }{12}$ = 250$μm$

 1 cell = $μm$

(b) Kidney cells

 Muscle cells

 Sperm cells

(c) it is a glandular organ involved in the processing and release of secretions.

5(a) Plasmolysis is the process by which plant cells loose water through osmosis and become flaccid

(b) No cells were plasmolysed at 0.55 molar sucrose solution. This is because the solution was (of the same concentration) isotonic to the plant cell sap.

(c) Hypertonic solution

6(a) Wilting result to dropping of leaves. This in turn reduced the total surface area of the leaf exposed to environmental factors that enhances water loss in plants.

(b) Osmosis is the movement of water(solvent) molecules from hypotonic solution to hypertonic solution through a semi-permeable membrane.

7(a) Fatty acids and glycerol.

(b) This leads to lack of bile salts, which emulsify fats.

8(a) (i) It lubricate food

 (ii) it prevents digestion of the gut wall by proteolytic enzymes

 (iii) It make food particles to adhere to one another during swallowing and during egestion.

(b) Digestion and absorption of food

9(a) Thick waxy cuticle

 Having needle like leaves

 Sunken stomata

 Having more stomata on the lower leaf surface.

(b) Potometer

10(a) (i) Coronary artery

 (ii) Capilaries

 (iii) Vena cava

(b) Semilunar valves close the pulmonary artery and the aorta to prevent back flow of blood when the ventricles relax.

(c) This is because the left ventricle pumps blood for a longer distance that is to the body tissues. While the right ventricle pumps blood for a shorter distance ie to the lungs

11(a) - Skin

* Buccal cavity

(b) - The diaphragm flattens

 - Volume in the thoracic cavity increases

* Pressure decreases compared to atmospheric pressure
* Air rushes into the lungs through the nostrils.

12(a) Ratio of carbon(IV) oxide produced to oxygen used up during breakdown of a food substance

(b) RQ = $\frac{Carbon \left(IV\right)oxide produced}{Oxygen used up}$

 = $\frac{102}{145}$

 = 0.7

(c) Aerobic respiration

(d) - Ethanol

 -Energy/ATP)

13(a) A- Afferent arterioles

 B-Efferent arterioles

 C=Glomerulus

 D-Bowmans capsule

(b) Ultrafiltration

(c) Regulation of the concentration of water and salts in the body or Regulation of the osmotic pressure of the body fluids.

14 The diffusion gradient is of water molecules low between the substomata air spaces and the air. Water molecules are therefore are not easily lost hence reducing the rate of transpiration.

15(a) - Segmented bodies

* Jointed appendages
* Exoskeleton
* Body divided into parts

(b) - Number of body parts

 - Number of legs

 - Number of wings

 - Number of antennae

16(a) -Prevents excessive loss of blood

 -prevents entry of microorganisms through the cut skin

 -Give time for the cells underneath the cut skin to heal

(b) Red blood cells and their haemoglobin content increase in areas of high altitude in response to increase the oxygen carrying capacity of the red blood cells Areas of High altitude have low atmospheric pressure hence less oxygen.

17(a)(i) Population a group of organisms of same species occupying the same habitat at the same time.

(ii) A community is a group of living organisms of different species occupying the same habitat at the same time.

(iii) A natural assemblage consisting of both living and non living factors that interact together to form a self regulating perpetuating system.

(b)(i) Seechi disc

 (ii) Anemometer

 (iii) Barometer

18 Sorus