

FORM THREE

BIOLOGY PAPER 1 MARCH/APRIL.

MARKING SCHEME

- 1(a) Enzymes are organic catalysts which are protein in nature.
- (b)(i) Denaturation is the destruction of an enzyme leading to 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) $1000 \times 3 = 3000$
 $= 250$
1 cell =

- (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 lose 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 results to dropping of leaves. This in turn reduces the total surface area of the leaf exposed to environmental factors that enhance 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 lubricates food

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

(iii) It makes food particles 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) Capillaries

(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) $RQ =$

$=$

$= 0.7$

(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 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