PAVEMENT FORM 4 TRIAL 1 EXAMINATION 2021/2022

Kenya Certificate of Secondary Education (K.C.S.E)

BIOLOGY PAPER ONE MARKING SCHEME

1. (a) What is meant by the term binomial nomenclature? **(1mark)**

   Double naming system of living organisms.

   (b) Give **two** reasons why classification is important **(2 marks)**

   Bring together living organisms with similar characteristics; separate those with different features.

   Places organisms into their groups for reference

   To avoid and confusion

2. (a) What is the formula for calculating linear magnification of a specimen when using a hand lens**?(1mark)**

   Magnification= length of the drawing

   ——————————

   Actual length

   (b) Give a reason why staining is necessary when preparing specimens for observation under the microscope

   (1 mark)

   For easy visibility/ for clarity/increases clarity

3. Plant cells do not burst when immersed in distilled water. Explain **(2marks)**

   Cell wall cellulose; its firm

4. State **three** functions of Golgi apparatus**.** **(3 marks)**

   Package and transport glycoprotein as secretions.

   Transport synthesized materials out of the cell

   Forms enzymes and secretion of synthesized proteins and carbohydrates

5. Distinguish between diffusion and osmosis. **(2 marks)**

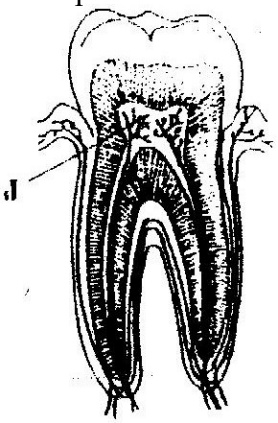
   Diffusion; movement of molecules from a region of high concentration to a region of low concentration

   Osmosis; movement of water molecules from a high water potential to a low water potential across a semi permeable membrane

6. Describe what happens during the light stage of photosynthesis. **(3 marks)**

Water molecule is split into hydrogen atoms and oxygen atoms; a process called photolysis; hydrogen ions goes to the dark stage; oxygen gets out as a by product

7. The diagram below represents a section though a human tooth



(a) (i) Name the type of tooth shown **(1 mark)**
Molar/premolar

(ii) Give a reason for your answer in (a) (i) above **(1 mark)**

Presence of multiple roots

Presence of cusps

(b) State the functions of the structures found in part labeled J **(2 marks)**

Detect heat, cold and pain

8. (a) Name a fat soluble vitamin manufactured by the human body. **(1 mark)**

Vitamin D

(b) State **two** functions of potassium in the human body **. (2 marks)**

Transmission of nerve impulses

9. State **two** ways in which the root hairs are adapted to their function**. (2 marks)**

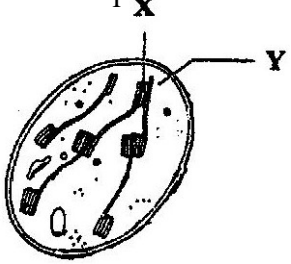
Small in size; to increase surface area for absorption of water and mineral salts

Presence of sap; to increase the osmotic pressure

10. a) State the functions of cristae in mitochondria**.(1mark)**

Increase surface area for the attachment of respiratory enzymes

b) The diagram below represents a cell organelle.



(i) Name the part labeled Y. **(1mk)**

Stoma

(ii) State the functions of the part labeled X. **(1mk)**

Light stage of photosynthesis occurs here

11. Name the part of the flower that develops into**(2mks)**

a) Seed **ovules**

b) Fruit **ovary**

12. a) Name the fluid that is produced by sebaceous glands. **(1mk)**

Sebum

b) What is the role of sweat in human skin? **(2mks)**

Excretion

Temperature regulation

13. State **two** ways in which floating leaves of aquatic plants are adapted to gaseous exchange.**(2mks)**

numerous stomata on the upper leaf surface

Thin cuticle

14. a) State **three** characteristics of Monera that are not found in other kingdoms. **(3mks)**

b) Name the class to which a termite belongs **(1mk)**

insecta

15. a) Name **one** defect of circulatory system in humans. **(1mk)**

Arteriosclerosis; varicose vein

b) State **three** functions of blood other than transport. **(3mks)**

Regulation of pH

Regulation of body temperature

Blood clotting

16. State the role of vitamin C in humans. **(1mk)**

Protection against infection

Collagen synthesis for bone cartilage and gums

An antioxidant and aids in detoxification

17. a) State **two** processes which occur during anaphase of mitosis**. (2mks)**

Chromatids separate at the centromere and migrate to the opposite poles

Spindle apparatus begin to disappear

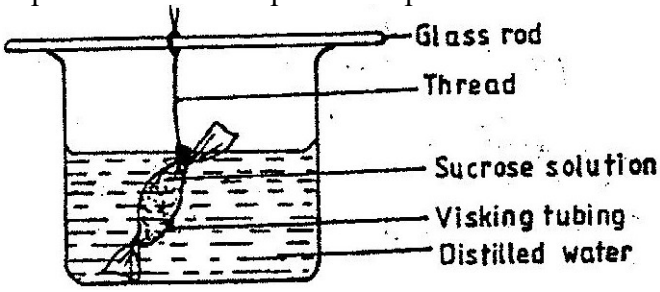
b) What is significance of meiosis? **(2mks)**

leads to variation; formation of gametes

18. State the role of insulin in human body. **(1mks)**

Stimulate liver cells to convert excess glucose to glycogen for storage

19. An experiment was set up in the experiment as show below.



The set up was left for 30 minutes.

a) State the expected results. **(1mk)**

visking tubing increased in size;

b) Explain your answer in (a) above **(3mks)**

Sucrose in the visking tubing was hypertonic; water from the beaker entered the visking tubing by osmosis; increasing in size

20. a) In what form is energy stored in muscles **(1mk)**

Glycogen

b) State the economic importance of anaerobic respiration in plants**. (2mks)**

Bread making; brewing of beer; making of silage

21. a) Distinguish between epigeal and hypogeal germination. **(2mks**

Epigeal; cotyledons come out of the soil

Hypogeal; cotyledons remain underground

b) Why is oxygen necessary in the germination of seeds? **(2mks)**

For respiration

22. (a) What prevents blood in veins from flowing backwards? **(1 mark)**

Valves

(b) State **two** ways in which the red blood cells are adapted to their function **(2 marks)**

Presence of haemoglobin that have high affinity for oxygen and carbon (IV) oxide;

Thin membrane for easy diffusion of respiratory gases

Biconcave to increase SA for transportation of oxygen and carbon (IV) oxide

Small in size to squeeze in the small capillary wall

23. What is the importance of the following in an ecosystem? **(2mks)**

a)Decomposers **recycling of nutrients**

b)Predation

Check on the population of preys and predators

24.a) Distinguish between the terms homodont and heterodont. **(1mk)**

Homodont; teeth uniform in size and shape

Heterodont;teeth different in size and shape

b) What is the function of carnassials teeth? **(1mk)**

Breaking bones and tearing through flesh

c) A certain animal has no incisors, no canines, 6 premolars and 6 Molars in its upper jaw. In the lower jaw there are 6 incisors, 2 canines, 6Premolars and six molars. Write its dental formula.**(2mks)**

i0/3;c0/1;pm3/3;m3/3=32

25. a) State **two** functions of bile juice in the digestion of food. **(2mks)**

Emulsification

Neutralizes chyme

b) How does substrate concentration affect the rate of enzyme action?**(1mk)**

Increase in substrate concentration increases rate of enzyme concentration

26. a) Explain how the following prevent self-pollination. **(2mks)**

(i) Protandry **stamen mature earlier than pistil and falls off**

(ii) Self – sterility. **When the male and female gametes of the of the same flower are not compatible**

b) Give **three** advantages of cross pollination. **(3mks)**

l**eads to hybrid vigour**

27. State **four** ways in which respiratory surfaces are suited to their function**. (4mks)**

They are moist

Thin membrane

Highly vascularized

Numerous