

KIKUYU SUBCOUNTY MOCK TERM III 2017

BIOLOGY PAPER 1, 231/1

FORM 3 - 2017

TIME: 2HRS

INSTRUCTION: Answer all the questions in the space provided

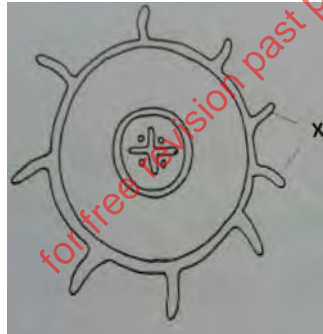
1. Distinguish between ecological niche and habitat. (2 mks)

2. Name the trophic level that is occupied by the following organisms. (2 mks)
 - a) Green plants

 - b) Zebra

3. Explain why unicellular organisms such as paramecium lack complex organs for gaseous exchange. (2 mks)

4. The diagram below represents a transverse section of a plant part. Study it and answer the questions that follow.



- a) Name the class in which the plant belongs. (1 mk)

 - b) Give a reason for answer (a) above. (1 mk)

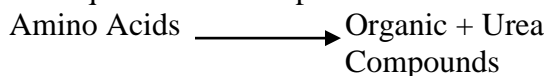
 - c) State one adaptation for the structures labeled X to their functions. (1 mk)

5. Under what conditions are the following hormones released in human beings. (2 mks)
 - a) Insulin

b) Anti-diuretic hormone

6. Explain what causes global warming (3 mks)

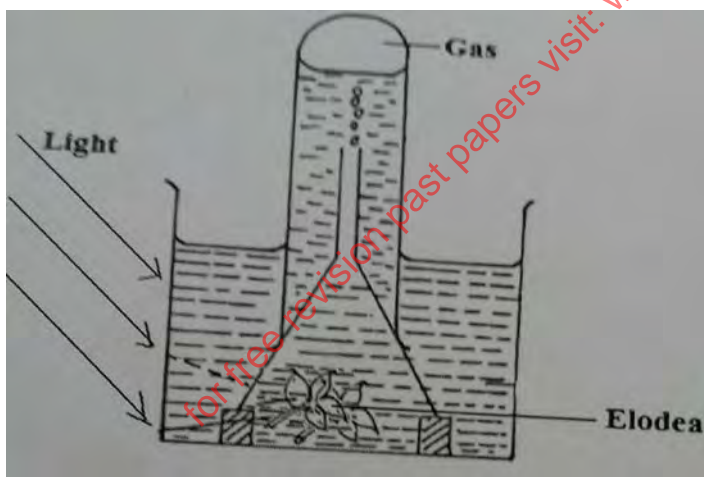
7. The equation below represents a metabolic process that occurs in the mammalian liver.



a) Name the process (1 mk)

b) What is the importance of the process to the mammal? (2 mks)

8. The diagram below represents a set up that was used to investigate a certain process in a plant.



a) State the process that was being investigated. (1 mk)

b) Other than the factors shown, state two factors that would affect the process named in (a) above. (2 mks)

9. a) What is mastication? (1 mk)

b) What is the significance of the above process? (1 mk)

- c) Name two enzymes present in pancreatic juice and in each case state their role in digestion. (2 mks)

10. Explain why a rat has a higher food intake compared to a lizard of the same body weight. (4 mks)

11. a) Maxwell and Jane used a light microscope to observe guard cells in a leaf surface. They indicated a magnification of $\times 450$. Given that the eye piece was marked $\times 10$, work out the objective lens magnification. (2 mks)

- a) State the function of fine adjustment knob. (1 mk)

12. Outline two roles of active transport in human beings. (2 mks)

13. State the function of the following parts of a nephron.

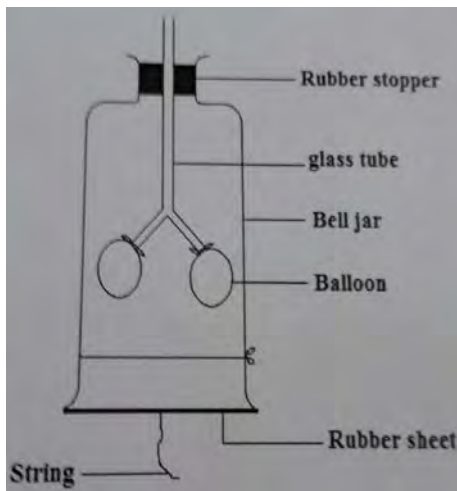
- i) Loop of Henle (1 mk)

- ii) Distal convoluted tubule (1 mk)

14. a) Name the causative agent for amoebic dysentery. (1 mk)

- b) State three preventive measures of schistosomiasis infection in human beings. (3 mks)

15. Cheptoo, a Form two student set-up the apparatus shown below to demonstrate the breathing mechanism in a mammal



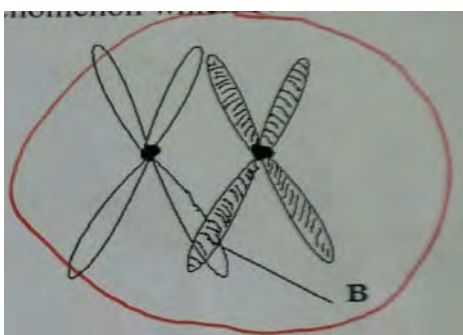
- a) What structure in a mammal is represented by each of the following? (2 mks)
- i) Glass tube
- _____
- _____
- ii) Rubber sheet
- _____
- _____
- b) State and explain what will happen to the balloons if the rubber is pulled downwards. (2 mks)
- _____
- _____
16. Name the organelle that is likely to be found in abundance in; (3 mks)
- a) An enzyme secreting cell
- _____
- b) Cells producing lipid related secretions
- _____
- c) Area where the cells have ruptured
- _____
17. a) State the most suitable biological tool for collecting the following organisms: (1 mk)
- i) A moth from a coffee farm
- _____
- ii) Ants from a tree trunk
- _____
- b) State two distinguishing characteristics of the kingdom Protocista. (2 mks)
- _____
- _____

18. a) Name the hormone that stimulate the maturation of the graafian follicles to release a mature ovum in female reproductive cycle. (1 mk)

b) Explain why menstruation does not take place after fertilization in human beings. (2 mks)

19. How does sunken stomata help in lowering transpiration? (3 mks)

20. The diagram below shows a phenomemon which occurs during cell division.



a) Identify the stage of cell division in which this phenomenon occurs. (1 mk)

b) State the importance of the phenomenon taking place in the part labeled B. (2 mks)

21. a) An organisms was found to have a dental formula

$$\begin{array}{cccc} i & 0 & c & 0 \\ 3 & 1 & 2 & 3 \end{array}$$

i) State the mode of feeding of the organism. (1 mk)

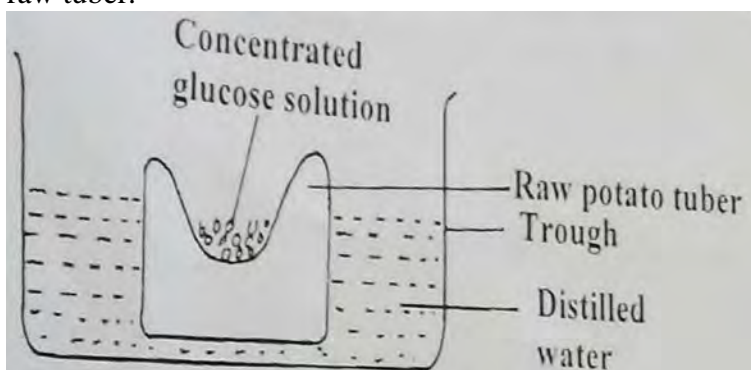
ii) Give a reason for your answer in (i) above. (2 mks)

c) Name the vitamin which plays an important role in blood clotting. (1 mk)

22. a) State **two** advantages of double circulation over single circulation. (2 mks)

- b) State **three** adaptations of blood capillaries to their functions (3 mks)

23. The experiment illustrated below was set-up to investigate a certain physiological process using a raw tuber.



- a) Suggest a possible physiological process that was being investigated. (1 mk)
- b) Explain the results obtained in the above experiment after a few hours. (2 mks)
- c) State the observations that would have been made if the experiment was repeated using boiled potato. (1 mk)

24. An experiment was carried out to investigate the rate of reaction shown below.



For the products; Fructose and Glucose to be formed, it was found that substance K was to be added and the temperature maintained at 37°C. When another substance L was added, the reaction slowed down and eventually stopped.

- a) Suggest the identity of the substances K and L (2 mks)

- b) Explain how substance L slowed down the reaction. (1 mk)

25. a) State the role of light energy in the process of photosynthesis. (2 mks)

- b) Name one product of light independent state of photosynthesis. (1 mk)

- c) Name where the light independent stage occurs in chloroplasts. (1 mk)

26. A solution of sugarcane was boiled with hydrochloric acid; sodium carbonate was added; cooled and Benedict's solution was added then boiled. An orange precipitate was formed.

a) Why was the solution boiled with hydrochloric acid? (1 mk)

b) Why was sodium carbonate added? (1 mk)

c) Name the type of reaction that takes place when monosaccharides combine to form disaccharides. (1 mk)

27. a) The action of ptyalin stops at the stomach. Explain (1 mk)

b) State a factor that denatures enzymes. (1 mk)

c) Name the features that increase the surface area of small intestines. (2 mks)

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