

NAME.....

INDEX NO:.....

CANDIDATE'S SIGN.....

DATE.....

231/1
BIOLOGY
PAPER 1
FORM FOUR
TIME: 2 HOURS

Instructions to Candidates

- ❖ Write your name and index number in the spaces provided above.
- ❖ Sign and write the date of examination in the spaces provided above.
- ❖ Answer all the questions in the spaces provided.
- ❖ This paper consists of 8 printed pages
- ❖ Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

FOR EXAMINER'S USE ONLY

Questions 1- 24	Maximum score	Candidates score
	80	

1. Name the cell organelles which are abundant in Muscle cells- (2 mks)

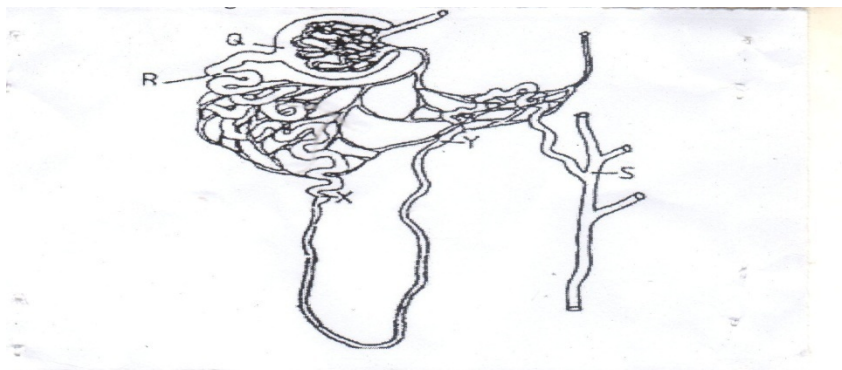
Pancreas –

2. Explain why the fine adjustment knob is used only when using high power objective lens. (1 mk)

3. Distinguish between osmotic pressure and osmotic potential. (2mks)

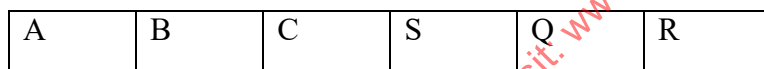
4. Describe two adaptations of a leaf to the process of photosynthesis. (2mks)

The diagram below illustrates part of a nephron from a mammalian kidney.



- (a) Name the fluid in the part labelled Q. (1mk)
- (b) Identify the process responsible for the formation of the fluid named in (a) above. (1mk)
- (c) Which **two** hormones exert their effect in the nephron? (1mk)

6.a) The figure below illustrates a portion of a chromosome with genes named A, B, C, S, Q and R.



Use the diagrams similar to the ones above to illustrate the changes if the above chromosome undergoes the following mutations affecting only gene C and S.

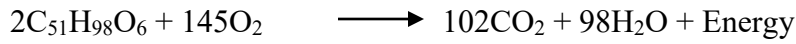
Deletion. (1mk)

Inversion. (1mk)

b) Human-inherited features can be grouped under two headings as follows.

Group A	Group B
Weight, intelligence, height	tongue rolling, blood group, eye Color.

- (c) What is the genetic explanation for the difference between the two groups? (2mks)
8. a) Calculate the respiratory quotient of the oxidation reaction below. (2mks)



b) Name the possible food being oxidised. (1 mk)

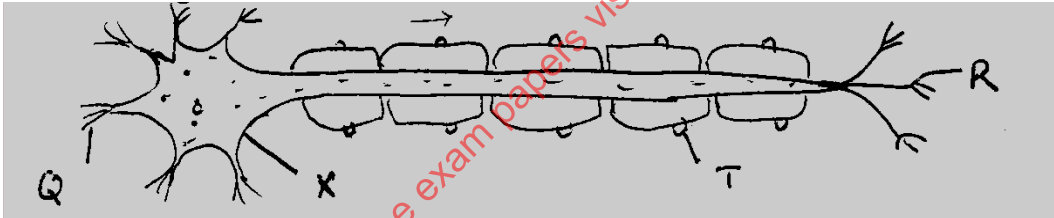
9. The wings of a bird and that of insects are analogous structures.

(a) What are analogous structures? (1 mark)

(b) Name this type of evolution. (1 mark)

(c) Name two vestigial structures found in man. (2 marks)

10. (a) The diagram below represent the structure of a nerve cells.



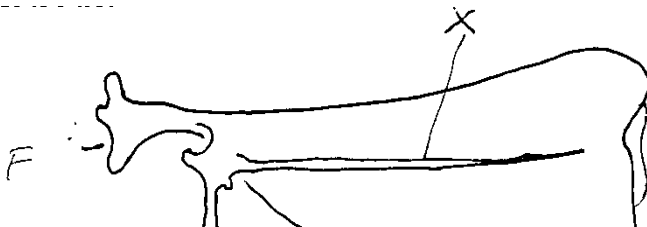
(i) Identify the nerve cell. (1 mark)

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

(b) State the function of part labelled T. (1 mark)

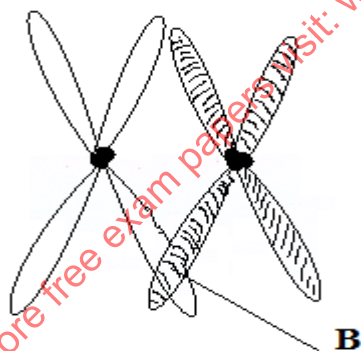
(c) Using an arrow show the direction of an impulse on the diagram. (1 mark)

11. The diagram below represents a bone of a mammal.



- (a) Identify the bone? (1 mark)
- (b) Name the part marked X. (1 mark)
- (c) Name the bone that articulates at the part labelled F. (1 mark)
- (d) State two adaptations of the bone to its function. (2 marks)

12. The diagram below shows a phenomenon which occurs during cell division.



- (a) Identify the stage of cell division in which this phenomenon occurs. (1 mark)
- (b) State the importance of the phenomenon taking place in the part labeled B. (2 marks)

13. Mutiso is unable to read history textbook held at arm's length but read clearly at normal length.

- a) Identify the defect he is suffering from. (1 mark)
- b) Why was he unable to read the book clearly at arm length? (1 mark)

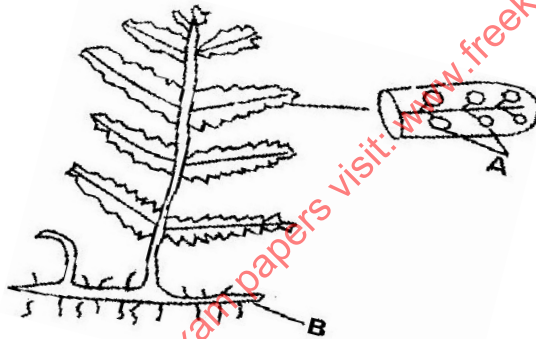
c) How can the defect be corrected? (1 mark)

14. State two functions of blood in a human body. (2 marks)

15. State 3 significance of water in seed germination. (3 marks)

16. State two differences between complete and incomplete metamorphosis. (2 marks)

17. The diagram below represents a fern.



(a) Name Parts labeled A and B. (2mk)

A –

B –

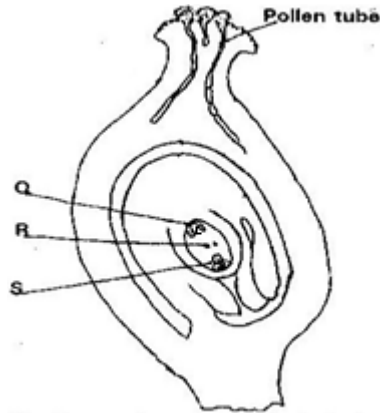
(b) To which division does the plant belong? (1mk)

18. a) Define the term immunity. (1mk)

b) Distinguish between natural immunity and acquired immunity. (2mks)

c) Identify one immunizable disease in Kenya. (1mk)

19. The diagram below shows a stage during fertilization in flowering plant.



a) Name the parts labeled Q, R, and S. (3 mks)

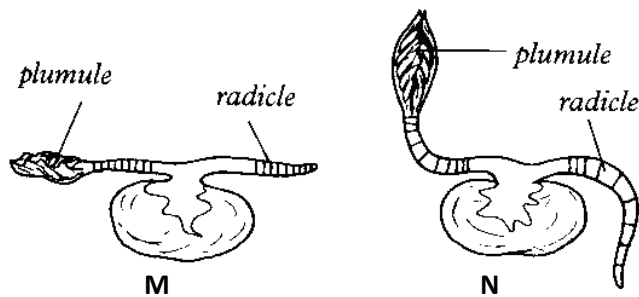
- Q –
- R –
- S –

b) State the function of the pollen tube. (1mk)

20. a) State the major cause of the ‘Global warming’ experienced in the world today.(1mk)

b) Suggest two ways of reducing the Global warming. (2mks)

21. An experiment was set to investigate a certain aspect of response. A seedling was put on a horizontal position as shown in figure M below. After 24 hours, the set up was as shown in figure N.

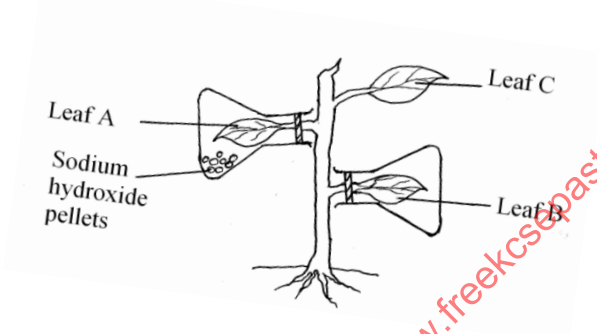


a) Name the response exhibited. (1mk)

b) Explain the curvature of the shoot upwards.

(3mk)

22. The diagram below represents an experimental set up to investigate a certain scientific concept. The potted plant was first de-starched by keeping it in dark for four days.



The set up was then placed in sunlight for five hours and leaves were tested for starch.

a) What scientific concept was being investigated? (1mk)

b) i) Give the results likely to be obtained after starch test for A and B.
A and B.

A – (1mk)

B – (1mk)

ii) Account for the results in leaf A in b (i) above. (1mk)

c) Why was leaf C included in the set-up? (1mk)

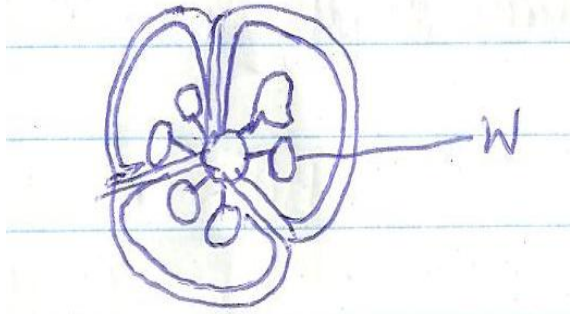
23. Give **two** reasons why primary productivity decreases with increase in depth in an aquatic ecosystem. (2 mks)

24. Explain why certain drugs become ineffective in curing disease after many years of use. (2mks)

25. Name two kidney diseases.

(2mks)

26. The diagram below represents a transverse section of an ovary from a certain flower.



(i) Name the structure labelled W. (1mk)

Name the type of placentation illustrated in this diagram

(1mk)

27. Liver damage leads to impaired digestion of fats. Explain.

(2marks)

28. A person who is blood group AB has an advantage over a person who is blood group O. Explain. (2marks)

b) Give **two** reasons for screening blood before transfusion.

(2marks)