

NAME INDEX NO
SCHOOL DATE
CANDIDATE'S SIGNATURE
BIOLOGY

231/1
PAPER 1
FORM 4
2018
TIME: 2 HOURS

Kenya Certificate of Secondary Education

INSTRUCTIONS
ATTEMPT ALL THE QUESTIONS

1. Write three major differences between plants and animals. (3mks)

2. Explain how water in the soil enters the root hairs of a plant. (2mks)

3. Distinguish between diffusion and osmosis. (2mks)

4. (i) What biological knowledge or study is required in dealing with locusts that infest a maize crop. (1 mk)

(ii) State the functions of the following cell structures. (2 marks)

(a) Sap vacuole.

(b) Nucleolus.

5. Name **three** properties of the cell membrane. (3 marks)

6. List the changes that takes place during inhalation in the breathing cycle of mammal in the following.

(4 marks)

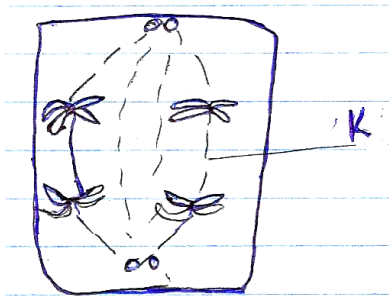
(a) Ribcage and thoracic cavity.

(b) Diaphragm

(c) External intercostal muscles.

(d) Internal intercostal muscles.

7. The diagram below represents a stage during cell division.



- i) Identify the stage of cell division. (1 mark)
- ii) Give two reasons for your answer (a) above. (2 marks)
- iii) Name the structures labeled K. (1 mark)

8. State one function of each of the following parts of a mammalian ear.

- a) Pinna (1 mark)
- b) Tympanic membrane (1 mark)
- c) Vestibule (1 mark)

9.a) Explain why Lamarck's theory of evolution is not accepted by biologists today. (2 marks)

- b) State two pieces of evidence that support the theory of evolution. (2 marks)

10. a) What is the importance of heartbeat in blood circulation? (2 mark)

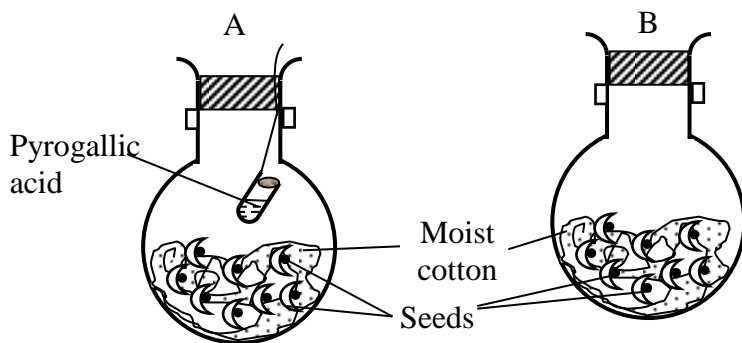
b) If the nerve supply to the heart of a mammal is severed, the rhythmic heart movement will still go on and the heart continues to beat. Explain this observation.(1 mark)

11.) Name the causative agent for the following diseases;

a) Typhoid (1 mark)

b) Syphilis (1 mark)

12. A student set up an experiment as shown in the diagram below. The set up was kept at room temperature for one week.



a) What was the aim of the experiment? (1 mark)

b) State the expected observation at the end of the experiment. (2 marks)

c) Account for the observation made in set up A. (1 mark)

13(a) Explain **three** ways in which a red blood cell is adapted to its functions. (3mks)

(b) In which form is carbon (IV) oxide transported in the blood. (2mks)

14.(a) Name **three** supportive tissues in plants. (3mks)

(b) Name the type of muscles found in the gut. (1mk)

15(a) Define the term 'parthenocarpy'. (1mk)

(b) Name **two** plant growth hormones that promote parthenocarpy. (2mks)

16. (a) What causes the following diseases?

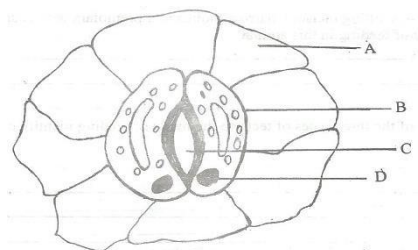
(i) Diabetes mellitus. (1mk)

(ii) Diabetes insipidus. (1mk)

b) An individual shows the symptoms for diabetes mellitus, how would you determine in the school laboratory whether they are positive for the condition? (3mks)

17. A student drew a 3cm long diagram of a plant flower. If the actual length of the flower was 6cm, calculate the magnification of drawing made by the student. Show your working. (2marks)

18. The diagram below represents a specialized plant structure



(a) Name the cells labelled A and B (2marks)

(b) state the adaptations of cell B to its functions (2marks)

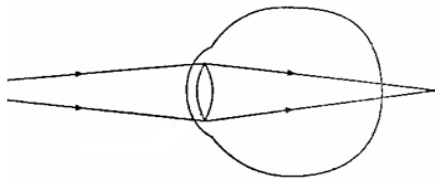
19. State the economic importance of the following excretory products in plants (2marks)

Nicotine

Quinine

20. Give **three** distinguishing features of class Aves (3marks)

21. The diagram below shows the position of an image formed in a defective eye.

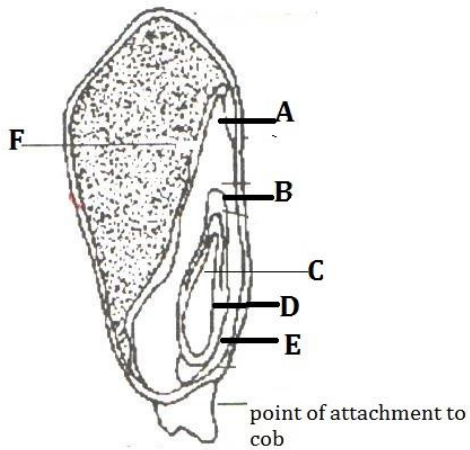


- (a) Name the defect. (1 mark)
- (b) Explain how the defect named in (c) above can be corrected. (2 marks)

22 (a) Name two causes of water pollution (2marks)

- (b) For each cause named in 23(a) above state a control measure. (2marks)

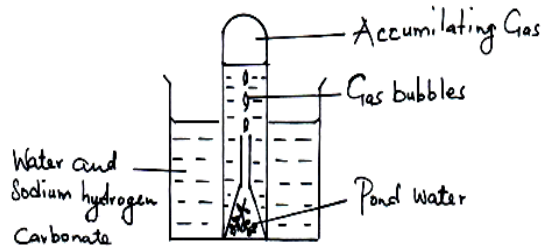
23. The diagram below shows the structure of a monocotyledonous seed



(a) Name the parts B and D (2marks)

(b) Name the parts that would stain blue black with iodine solution. (2marks)

24. The apparatus below are used to investigate an aspect of photosynthesis.



(a) Name the aspect of photosynthesis being investigated. (1 mark)

(b) How can one verify the identity of the gas that accumulates in test tube? (1 mark)

(c) State the role of sodium hydrogen carbonate. (1 mark)

(d) What environmental factor are required in order to give positive results? (1 mark)