

NAME..... DATE

INDEX NO. SIGNATURE

231/1
BIOLOGY
PAPER 1
(THEORY)
TIME: 2 HOURS

MBOONI EAST SUB - COUNTY FORM FOUR JOINT EVALUATION TEST, 2014

Kenya Certificate of Secondary Education

231/1
BIOLOGY
PAPER 1
(THEORY)
JULY /AUGUST 2014
TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES.

- Write your name and index number in spaces provided above.
- Sign and write the date.
- Answer **ALL** the questions in the spaces provided.
- Answers must be written in the spaces provided in the question paper. Additional pages must not be inserted.
- This paper consists of 8 printed pages. Candidates should check to ensure that all pages are printed as indicated and no questions are missing

FOR EXAMINER'S USE ONLY.

| Questions | Maximum score | Candidate's score |
|-----------|---------------|-------------------|
| 1 - 27 | 80 | |

1. Insects' blood is noted to lack a respiratory pigment. Explain

.....
.....

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

(i) Loop of Henle

(1 mark)

.....
.....

(ii) Distal convoluted tubule.

(1 mark)

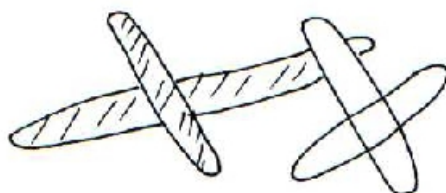
.....
.....

3. Most terrestrial plants do not grow well in water logged soils. Give a reason for this

(1 mark)

.....
.....

4. The diagrams below show a pair of homologous chromosomes. Study them and answer the questions that follow.



i) State the phenomenon shown above

(1 mark)

.....
.....

(ii) What is the genetic significance of the phenomenon above?

(2 marks)

.....
.....

5. Give two destinations of food translocated from the leaves of plants.

(2 marks)

.....
.....

6. Name the organelle that is likely to be found in abundance in:

(a) An enzyme secreting cell.

.....
.....

(b) Cells producing lipid related secretions.

.....
.....

(c) Areas where the cells have ruptured

.....
.....

7. A small boy remarked that his dog looks larger on cold days than on hot days. Give a biological explanation for this. (2 marks)

.....

.....

8. The table below shows the percentage composition of carbon (IV) oxide and oxygen in inhaled and exhaled air.

| Gases | Inhaled air | Exhaled air |
|-------------------|-------------|-------------|
| Oxygen | 20 % | 17% |
| Carbon (IV) oxide | 0.04% | 4.0% |

Explain the differences in percentage of the two gases in inhaled and exhaled air.

(a) Oxygen (2 marks)

.....

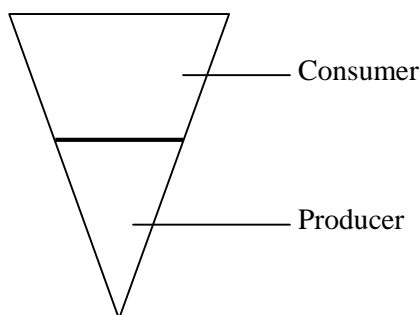
.....

(b) Carbon (IV) oxide (2 marks)

.....

.....

9. The diagram below represents a pyramid of biomass derived from a certain ecosystem.



(a) Suggest the type of ecosystem from which the pyramid was derived (1 mark)

.....

.....

(b) State the significance of short food chains in an ecosystem. (1 mark)

.....

.....

10. State two features of neurones that increase the rate of impulse transmission (2 marks)

.....

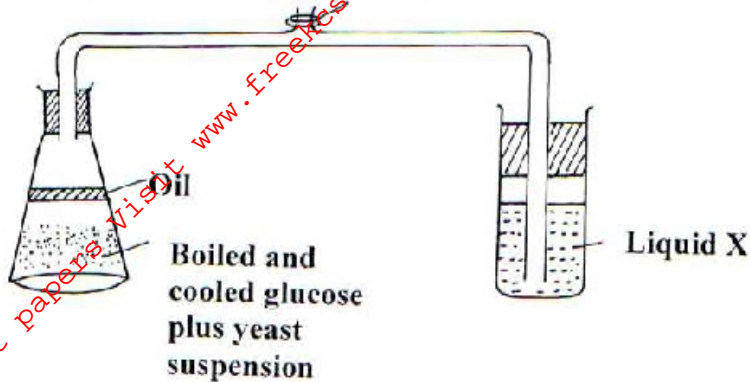
.....

11. Distinguish precisely between diabetes mellitus and diabetes insipidus (2 marks)

.....

.....

12. The set up below shows apparatus to demonstrate a certain biological process



(a) What biological process was being investigated in the experiment (1 mark)

.....

(b) Write down a word equation that represents the reaction above. (1 mark)

.....

(c) In the above set up, why was it important to boil and cool glucose before adding yeast? (1 mark)

.....

13. Explain how the following occur during gene mutation.

i) Substitution (2marks)

.....

ii) Insertion (2marks)

.....

14. (a) What are meristems? (1mark)

.....

(b) (i) what is the role of cork – cambium in secondary growth? (1mark)

.....

ii) Name the meristem that is responsible for increase in length of stems (1mark)

.....

15. State two functions of the spleen (2 marks)

.....

16. Name the excretory products eliminated by the following animals.

(i) Tilapia. (1 mark)

.....
.....

(ii) Chicken. (1mark)

.....
.....

17. State the functions of the following parts of the human ear. (1mark)

(a) Ossicles (1mark)

.....
.....

(b) Pinna (1mark)

.....
.....

18. Name the causative organism of the following diseases.

(i) Malaria (1mark)

.....
.....

(ii) Bilharzia (1mark)

.....
.....

19. Identify the part of light microscope which serve each of the functions described below

(i) Making rough focus (1mark)

.....
.....

(ii) Reflecting light from the source (1 mark)

.....
.....

20. State two characteristics of aerenchyma tissue. (2marks)

.....
.....

21. What is the significance of transpiration in plants? (3marks)

.....
.....
.....
.....

22. State two ways in which xylem vessels are adapted to their functions. (2marks)

.....
.....

.....

 23. Distinguish between convergent and divergent evolution (1 mark)

.....

 24. State the characteristics that distinguish the following organisms into their respective classes (3 marks)
 Millipedes, spider and tsetse fly.

.....

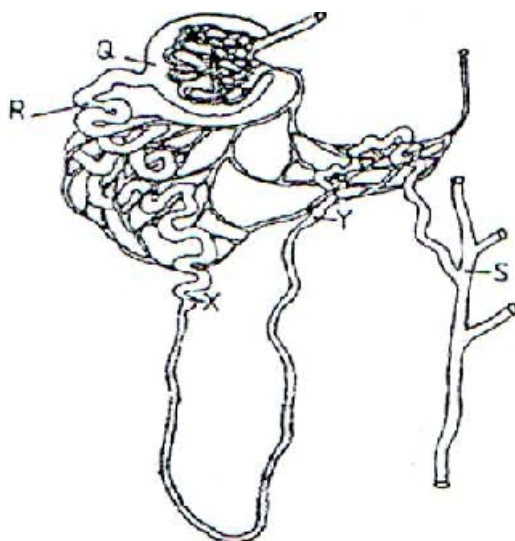
 25. How do identical twins and fraternal twins arise? (i) Identical twins (2 marks)

.....

 (ii) Fraternal twins. (2 marks)

.....

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



(a) Name the fluid found in the part labeled Q. (1 mark)

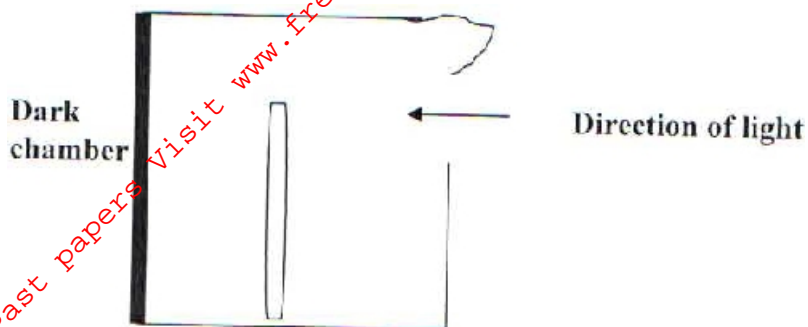
.....

 (b) Identify the process responsible for the formation of the fluid named in (a) above (1 mark)

.....

 (c) Which two hormones exert their effect in the nephron? (2 marks)

27. The diagram below shows a tip of a plant coleoptiles with light coming towards it from one side.

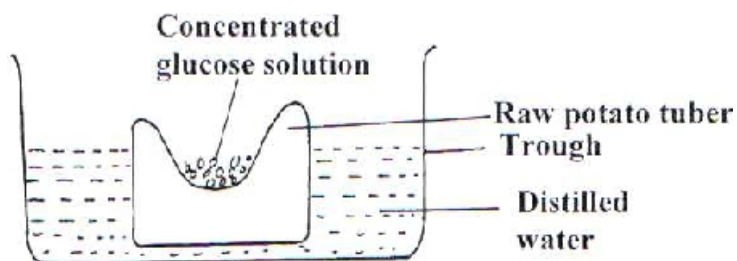


(a) How would the plant respond to light? (1 mark)

(b) Give the name of such a response (1 mark)

(c) What is the advantage of plants responding in this way? (2marks)

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



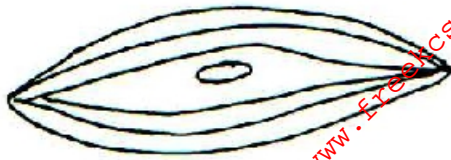
(a) Suggest a possible physiological process that was being investigated. (1 mark)

(b) Explain the results obtained in the above experiment after a few hours (2 marks)

(c) State the observations that would have been made if the experiment was repeated using boiled potato.

29. (a) Give two functions of blood as a tissue. (2 marks)

(c) The figures below illustrate specialized cells in an animal body.



(i) Identify the cells M and N

(2 marks)

M

.....

N

.....

(ii) State the structural differences between M and N

(2marks)

.....

.....

(iii) Which of the above specialized cells is found in the gut?

(1mark)

.....

.....