

NAME..... INDEX NO.....

CANDIDATE'S SIGNATURE.....

DATE.....

231/1
BIOLOGY (THEORY)
PAPER 1
JULY/AUGUST 2011
TIME: 2 HRS.

NANDI SOUTH, NANDI EAST AND TINDIRET
DISTRICTS JOINT EXAMINATION 2011

Kenya Certificate of Secondary Education
BIOLOGY PAPER 1 (THEORY)
TIME: 2 HRS.

INSTRUCTIONS TO CANDIDATES:

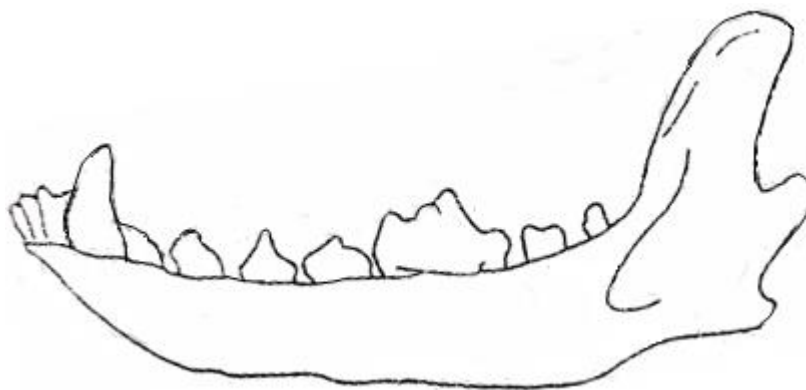
- (a) Write your **Name** and **Index Number** in the spaces provided above.
- (b) Sign and write the date of examination in the spaces provided above.
- (c) Answer **ALL** the questions in the spaces provided.
- (d) Candidates should check the question paper to ascertain that no questions are missing.
- (e) Do not remove any pages from this booklet.

FOR EXAMINER'S USE ONLY:

Question	Maximum Score	Candidate's Score
1- 30	80	

1. (a) Name the organelles that would be found in large numbers in cells of a:
- (i) rapidly respiring cells. (1mk)
-
- (ii) secretory gland (1mk)
-
- (b) In each case above, give a reason for your choice of the organelle. (2mks)
-
-
-
-
2. Excessive concentration of salts in the blood and tissue fluid can cause serious damage to cells. Explain the effect of a high concentration of salt on animal cells. (2mks)
-
-
-
-
-
-
3. Explain one way in which the skin is adapted for:
- (i) Facilitating heat loss. (2mks)
-
-
-
-
- (ii) Facilitating osmoregulation. (2mks)
-
-
-
-

4. The figure below shows the teeth and lower jaw of a mammal. Study it and answer the questions that follow:



- (a) Suggest the diet of the animal from which this jaw was obtained. (1mk)

- (b) Give **two** reasons for your answer in (a) above using observable features from the diagram. (2mks)

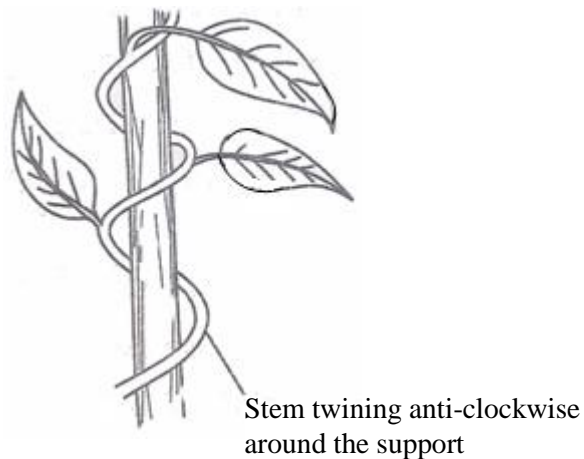
5. (a) State one role of each of the following structures of the leaf during photosynthesis.

- (i) Xylem vessels. (1mk)

- (ii) Guard cells. (1mk)

- (b) Name the part of the leaf where dark reaction occurs during photosynthesis. (1mk)

6. The figure below shows a stem of a plant growing round a tree trunk.

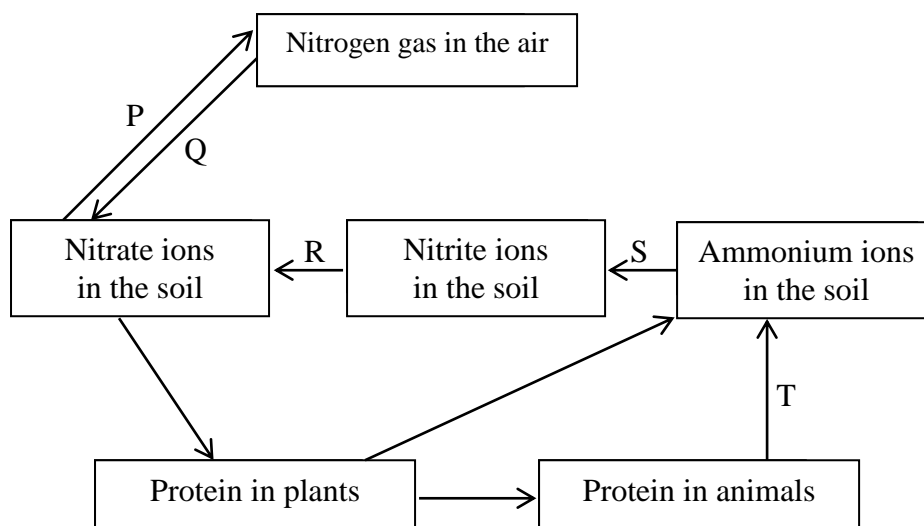


(i) What is the name of the response which causes such a twisted growth? (1mk)

(ii) Explain how twisting process is accomplished. (3mks)

7. State Mendel's first law of inheritance. (1mk)

8. The figure below represents part of the nitrogen cycle in an ecosystem.



(a) State the name of the process **P**. (1mk)

(b) State which type of organism carries out process **P**. (1mk)

(c) State a natural process represented by **Q**. (1mk)

(d) Name the organisms which carry out process **R** and **S**. (1mk)

(e) How would excess pesticides in the soil interfere with process **Q**. (1mk)

9. Cells in the lining of the stomach secrete pepsinogen, an inactive form of the enzyme pepsin. Pepsinogen is a longer molecule than pepsin.

(a) Explain why cells in the stomach secrete pepsinogen rather than pepsin. (1mk)

(b) Suggest how pepsinogen is converted into pepsin. (2mks)

10. State **two** characteristics of active transport. (2mks)

11. State **two** ways in which respiratory surfaces are suited to their function. (2mks)

12. (a) What is meant by the term binomial nomenclature? (1mk)

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

13. (a) Explain how the following occur during gene mutation:

(i) Deletion. (1mk)

(ii) Inversion. (1mk)

(b) What is a test-cross? (1mk)

14. (a) State a characteristic that is common to all cervical vertebrae. (1mk)

(b) Name **two** tissues in plants that provide mechanical support. (2mks)

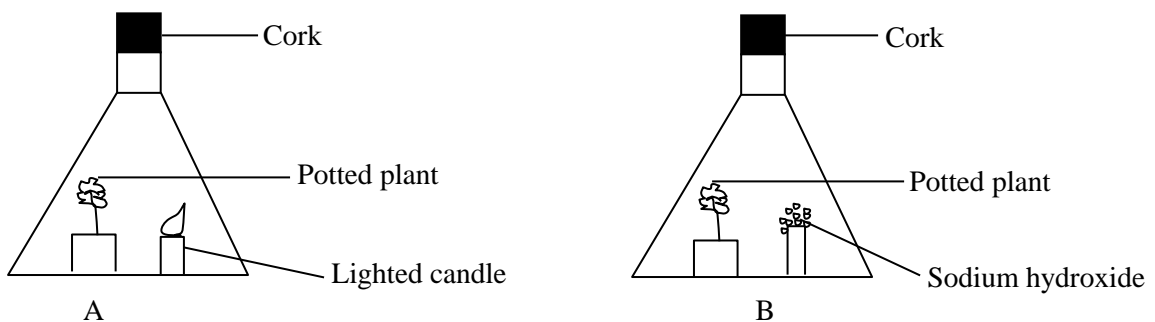
15. (a) Give a reason why each of the following is important in the study of evolution:

(i) Fossils records. (1mk)

(ii) Comparative anatomy. (1mk)

(b) What is adaptive radiation? (1mk)

16. Two potted plants A and B were placed in the dark for two days. Each was then placed in an air tight conical flask as follows then transferred to light for four hours. Each plant was then tested for starch



(a) Why were the plants put in a dark place for two days? (1mk)

(b) What was the result of the starch test in plant B? Explain your answer. (2mks)

17. (a) Name the type of circulatory system found in members of the class insecta. (1mk)

(b) Name the blood vessel that transports blood from

(i) Small intestines to the liver. (1mk)

(ii) Lungs to the heart. (1mk)

18. Name **two** sites where gaseous exchange takes place in terrestrial plants. (2mks)

19. (a) Give the differences between the following structures in wind and insect pollinated flowers:

(i) Anther. (1mk)

(ii) Pollen grains. (1mk)

(iii) Stigma. (1mk)

(b) What is the importance of cross pollination? (1mk)

(c) Explain how a seed is formed after an ovule is fertilized. (3mks)

20. To which class does an animal with two body parts and four pairs of legs belong? (1mk)

21. Give **two** reasons why accumulation of lactic acid during vigorous exercise leads to an increase in heartbeat. (2mks)

22. (a) State the function of co-factors in cell metabolism. (1mk)

(b) Give **one** example of a metabolic co-factor. (1mk)

23. How is aerenchyma tissue adapted to its function? (1mk)

24. Why would carboxyhaemoglobin lead to death? (1mk)

25. Why are people with blood group 0 universal donors? (1mk)

26. State **two** applications of plant hormones in agriculture. (2mks)

27. State **two** uses of energy obtained from the process of respiration. (2mks)

28. What is the effect of contraction of the diaphragm muscles during breathing in mammal? (3mks)

29. Name any **two** processes that occur in the liver to bring about differences in composition of blood in hepatic vein and portal vein. (2mks)

30. State **three** biological importance of tropisms in plants. (3mks)
