

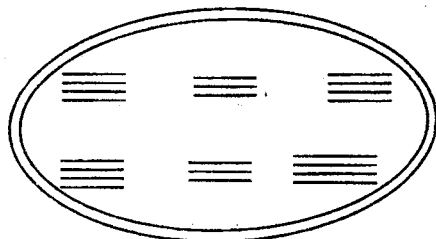
FORM FOUR BIOLOGY END OF TERM 1 EXAM.

BIOLOGY PAPER 1 TERM1 2015.

Time 2 Hours

1. List down **two** precautions during collection and observation of specimens. (2mks)

2. (a) The diagram **below** shows a fine structure of an organelle in plant cells.



Identify the organelle. (1mk)

- (b) Students examined a slide of onion epidermal cells under the light microscope. They were able to count 12 cells across the diameter of the field of view. They removed the slide and placed a transparent ruler on the stage, and counted three millimeter spaces across the diameter of the field of view. Show how they would arrive at the size of the cells. (2mks)

3. Explain the role of oxygen in active transport. (2mks)

4. (a) Explain the role of chlorophyll in photosynthesis. (1mk)

(b) What is the main product of the dark stage of photosynthesis? (1mk)

5. Explain the role of the following minerals in the human's body.

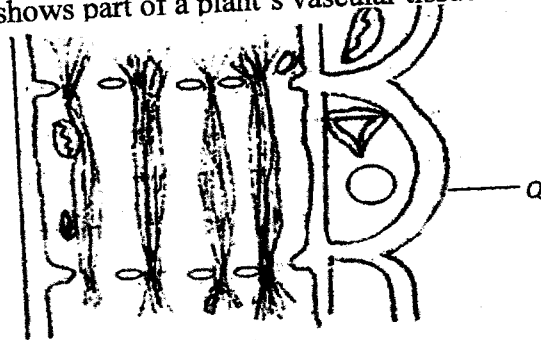
(1mk)

(a) Potassium.

(1mk)

(b) Sodium.

6. The diagram below shows part of a plant's vascular tissue.



(1mk)

(a) State the function of this tissue.

(b) (i) If the cell labeled Q is destroyed, state how this will affect the function of this tissue

(1mk)

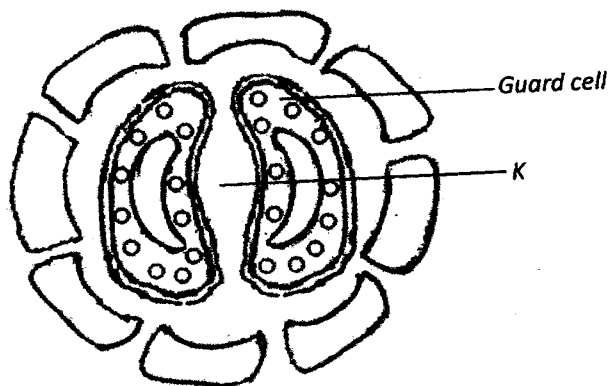
(ii) Give a reason for your answer in b(i) above.

(1mk)

7. Differentiate between natural immunity and artificial immunity.

(2mks)

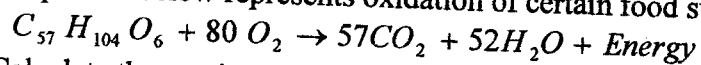
8. The following diagram shows the guard cell and its surrounding cells.



(a) Identify **two** features of the guard cell that adapt it to its function. (2mks)

(b) Explain what would happen to the structure **K** if the epidermis is immersed in a salt solution. (2mks)

9. The equation **below** represents oxidation of certain food substance.



(i) Calculate the respiratory quotient. (2mks)

(ii) What type of food substrate is being oxidized? (1mk)

10. Describe the deamination process. (3mks)

11. Name **two** liver diseases. (2mks)

12. To estimate the population of crabs in a lagoon, traps were laid at random. 400 crabs were caught, marked and released into the lagoon. Four days later traps were laid again and 374 crabs were caught out of which, 80 were found to have been marked.

(a) Calculate the population of crabs in the lagoon. (2mks)

(b) State **two** assumptions that were made during the investigations. (2mks)

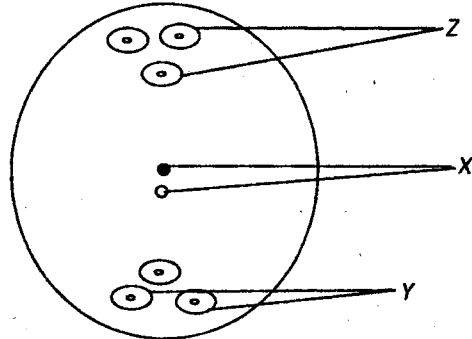
13. Name the causative agent in the following human diseases.

(a) Typhoid. (1mk)

(b) Amoebic dysentery.

(1mk)

14. The diagram below shows a mature embryo sac.



Name parts labeled

(3mks)

15. State the plant hormone that performs each of the following functions in plants.

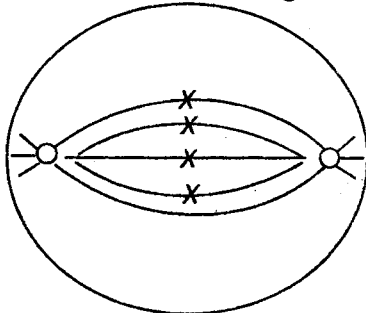
(i) Ripening of fruits.

(1mk)

(ii) Flowering.

(1mk)

16. The diagram below shows a stage in mitosis.



(a) Identify the phase.

(1mk)

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

(1mk)

17. The diagram below shows the base sequence of part of a nucleic acid strand.

T - T - A - G - C - T - G - A

(a) Giving a reason state whether it is part of a DNA or an RNA strand. (2mks)

(b) Show the complementary RNA strand. (1mk)

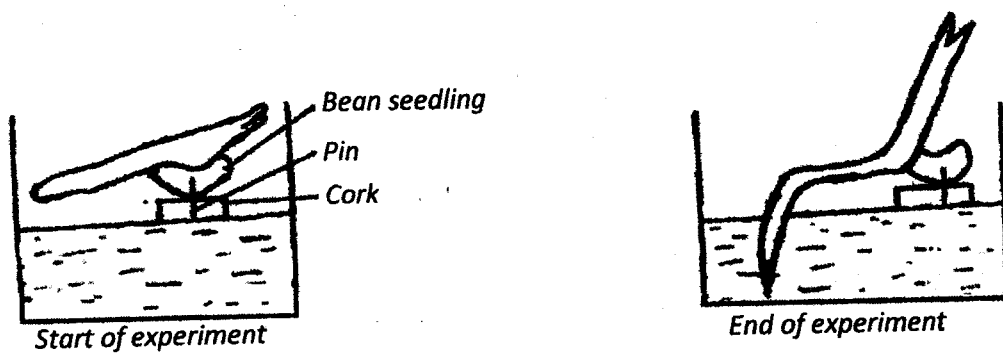
18. (a) Define the term metamorphosis. (1mk)

(b) Name **one** animal that undergoes complete metamorphosis during its life cycle. (1mk)

(c) Suggest **one** biological advantage to the animal having this type of life cycle. (1mk)

19. (a) Define cell specialization. (1mk)
(b) state two functions of centrioles. (2mk)

20. An experiment was carried out to investigate a growth response in a bean seedling as illustrated in the diagrams below.



(a) What type of response was being investigated? (1mk)

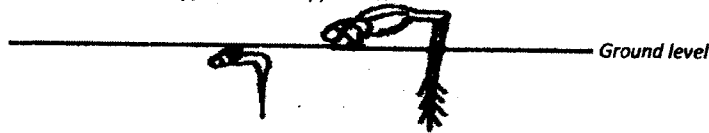
(b) Explain the response exhibited by the root. (2mks)

21. State **two** functions of smooth muscle along alimentary canal in mammals. (2mks)

22. (a) What is the difference between an O positive blood and O negative blood group? (1mk)

(b) State two functions of blood in mammals other than transport of substances (2mk)

23. The diagram below shows a germinating seed.



(i) Identify the type of germination represented by the diagram above. (1mk)

(ii) Explain how the type of germination named in 24(i) above takes place. (2mks)

24. State two adaptations of seeds and fruits to dispersal by wind. (2mks)

25. State the three different types of blood cells. (3mks)

26. What is the role of water in germination? (2mks)

27. State two phenotypic characteristics for Y-chromosome. (2mks)

28. Plasmodium ovale and plasmodium falciparum are transmitted by a mosquito.

(a) Identify one mistake made in writing the scientific name.

(b) Name the diseases caused by the above organisms (2mks)

(c) Can the above organisms interbreed? Give reasons

(2mks)

29. State **three** adaptations of the human spermatozoon (sperm) that enhance the process of fertilization.

(3mks)

30. Members of the same species of organisms tend to differ due to variation. State **three** causes of variation in organisms.

(3mks)