

Biology III

002

02 Nov. 2007

8h30 -11h30

RWANDA NATIONAL EXAMINATIONS COUNCIL



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ORDINARY LEVEL NATIONAL EXAMINATION 2007

SUBJECT : BIOLOGY III

TIME : 3 HOURS

INSTRUCTIONS :

This paper consists of **THREE** Sections: A, B and C.

- Answer **ALL** questions in section A. (55 marks)
- Answer **THREE** questions in section B. (30 marks)
- Answer **ONE** question in section C. (15 marks)

Section A : Attempt all questions in this section. (55 marks)

1. a) What is a cell ?
b) What are the main requirements of a cell if it is to survive ?

(1mark)
(4marks)

2. a) Complete the classification of man below.

Kingdom : Animalia
Phylum : Chordata
Mammalia
Order : Primates
Family : _____
Genus : _____
Species : Homo sapiens

(3marks)

- b) Define the term species.

(1mark)

3. What is meant by each of the following ecological terms ?

- (i) a community
(ii) a population
(iii) a niche

(3marks)

4. a) Define the term pollination.
b) What are the characteristics of wind pollinated flowers ?

(1mark)
(3marks)

5. a) What is birth control ?
b) Name any 4 methods used in birth control.

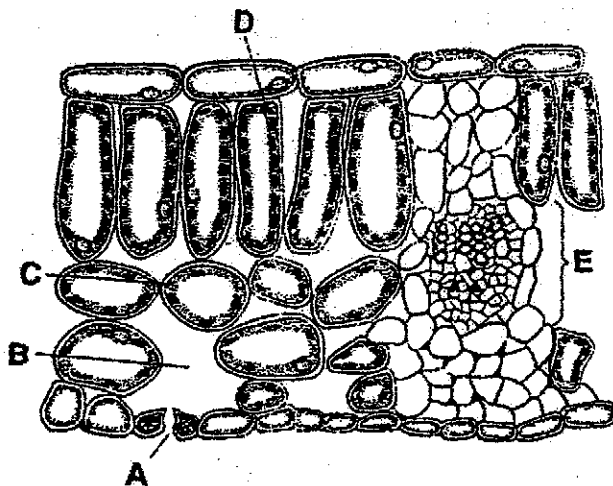
(1mark)
(4marks)

6. The table below refers to features of certain vitamins. Copy and complete the table with ✓ if the feature is correct and X if the feature is not correct.

Features	Vitamin A	Vitamin B
Fat soluble		
Present in wheat germ		
Present in green vegetables		
Promotes proper vision (right)		
Can be synthesized from Carotene in intestine		

(5marks)

7. a) The diagram below shows a cross section through a green leaf.



(i) Identify the structures labelled A, B, C and D.

A-----

B-----

C-----

D-----

(4marks)

(ii) What is the function of A and D ?

(2marks)

8. a) Distinguish clearly between complete dominance and codominance.

(2marks)

b) Explain how a man with blood group A and a woman with blood group B can have a child with blood group O.

(2marks)

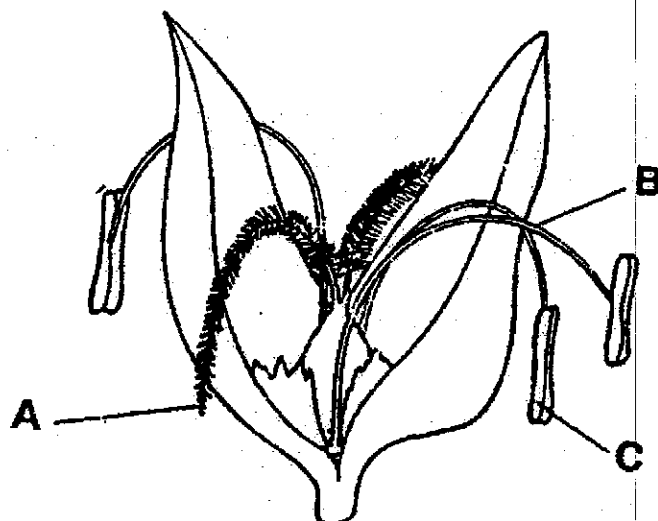
9. a) How does the skin of mammals help them to maintain a constant body temperature in cold conditions ?

(2marks)

b) Outline the advantages to a mammal of having a constant body temperature.

(2marks)

10. The diagram below shows the structure of a flower.



- (i) Identify structures A, B and C.
(ii)

A-----

B-----

C-----

(3marks)

- (iii) Describe the process of pollination that is most likely to take place. **(2marks)**

11. The blood of a normal person contains between 80-90mg of glucose per 100cm³. However, glucose level will rise. Where are the sources of glucose in the body?

(3marks)

12. The table below shows the number of organisms obtained at each trophic level in a sampling study of an acacia tree.

Trophic level	Number of organisms
Producer	1
Primary consumer	260.000
Secondary consumer	40
Tertiary consumer	3

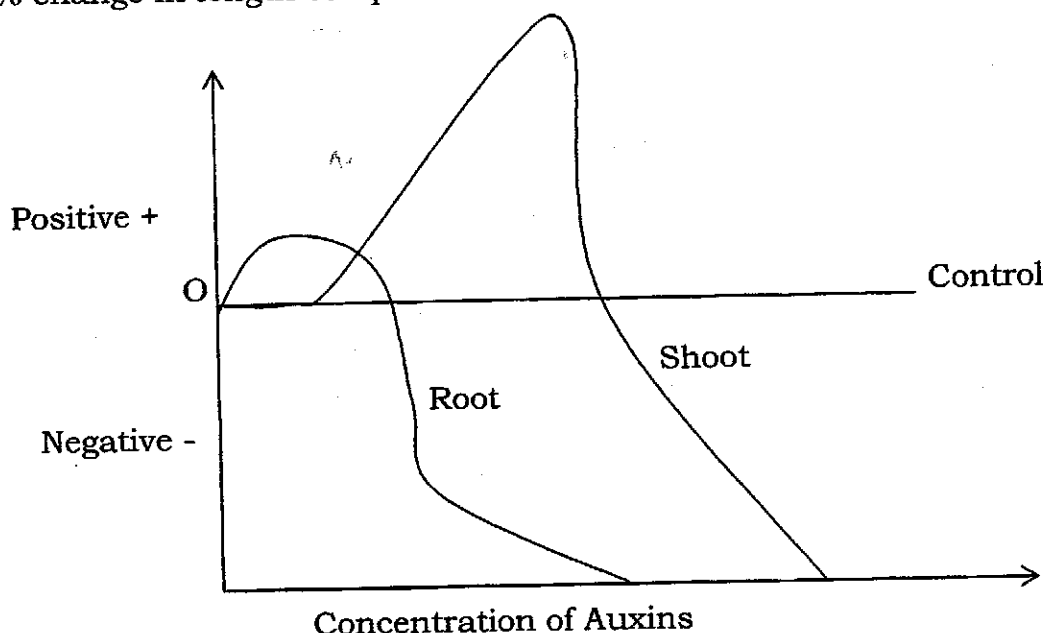
- a) Draw a pyramid of Biomass to represent this food chain.
b) Suggest reasons why there is such a large difference between the numbers of primary and secondary consumers.

(2marks)

(2marks)

13. The graph shows the effect of applying different concentrations of auxin to roots and shoot of a plant. Use the graph to describe ways in which the responses of the root to auxin differs from the responses of the shoot.

% change in length compared with untreated control.



(2marks)

14. The table below refers to features of arteries, veins and capillaries. Copy the table. If the statement is correct, place a tick ✓ in the appropriate box and if the statement is not correct place a cross ✗ in the appropriate box.

Features	Arteries	Vein	Capillaries
Walls permeable			
Collagen fibres present in walls			
Series of valves present			

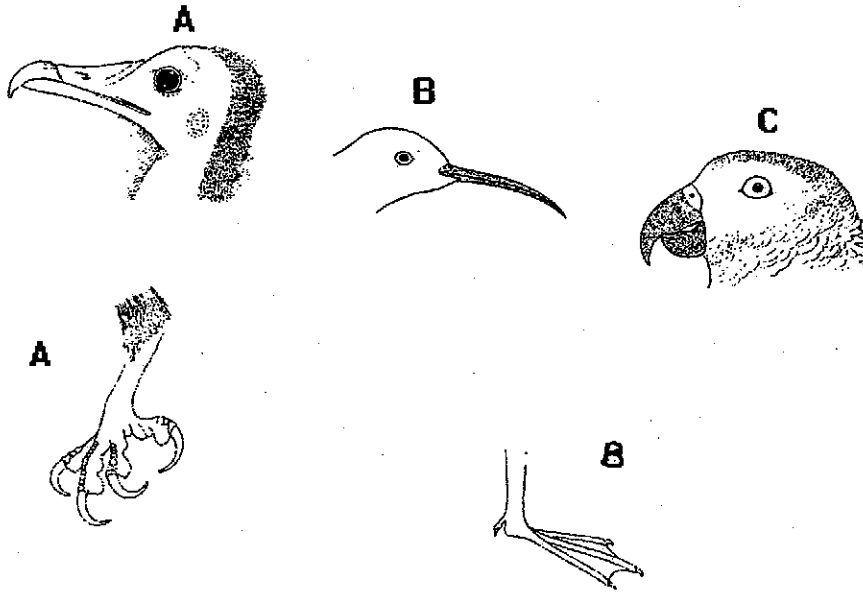
(3marks)

Section B : Attempt any THREE questions in this section. (30 marks)

15. Describe how water transport in a flowering plant takes place:
- a) From its uptake from soil by root hairs.
 - b) Its transport up the stem to the leaves
 - c) Its evaporation from leaves into the atmosphere.
16. Xerophytic plants are adapted to live dry conditions. What features do these plants possess to enable them survive in such conditions ?
Explain the role of each feature.
17. a) What are AIDS and HIV in full ?
- b) What are differences between AIDS and HIV ?
- c) (i) Describe how AIDS is spread from one person to another.
- ii) Suggest any 2 methods of how the disease can be reduced.
18. a) (i) What are the main excretory organs ?
- (ii) What are their respective excretory products in animals ?
- b) Plants do not have excretory system as in animals. Explain.
19. a) What are the differences between vegetative and sexual reproduction in plants ?
- b) What advantage does each type have over the other ?

Section C : Answer only one question. (15 marks)

20. a) For each of the bird's beak and feet describe their adaptation to the methods of feeding and locomotion of foot B.

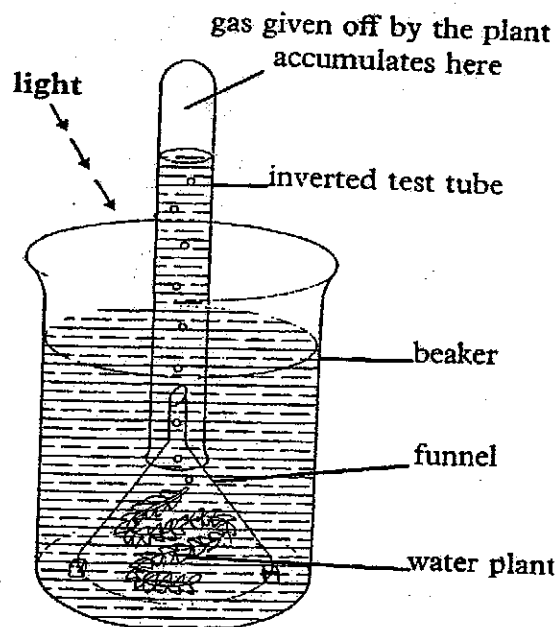


(5marks)

b) Which features adapt birds for flying ?

(10marks)

21. A group of students carried out the experiment below to investigate that oxygen is given by plants during a biological process.



(i) Name the biological process being investigated.

(2marks)

(ii) What conditions are necessary for that process you have named in (i) above.

(5marks)

(iii) Describe in detail how the process works until its final products are formed.

(8marks)