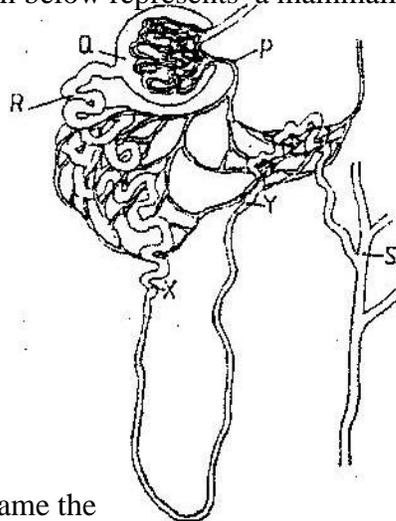


BIOLOGY PAPER 231 / 1 K.C.S.E 2001
QUESTIONS

1. Other than having many features in common, state the other characteristics of a species
2. Why are green plants referred to as primary producers in an ecosystem?
3. A person whose blood groups is AB requires a blood transfusion. Name the blood groups of the donors.
4. Name the parts of the flower that are responsible the production of gametes
5. State two functions of muscles found in the alimentary canal of mammals.
6. Adult elephants flap their ears twice as much as their calves in order to cool their bodies when it is hot. Explain.
7. Name the organelle in which protein synthesis takes place
8. (a) The type of circulatory system found in members of the class insecta is
(b) Name the blood vessel that transports blood from:
 - (i) Small intestines to the liver
 - (ii) Lungs to the heart
9. Name three types of chromosomal mutations
10. Name three sites where gaseous exchange takes place in terrestrial plants.

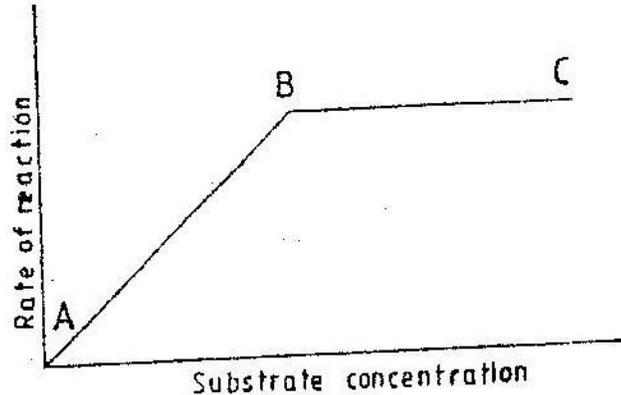
SECTION B

11. The diagram below represents a mammalian nephron

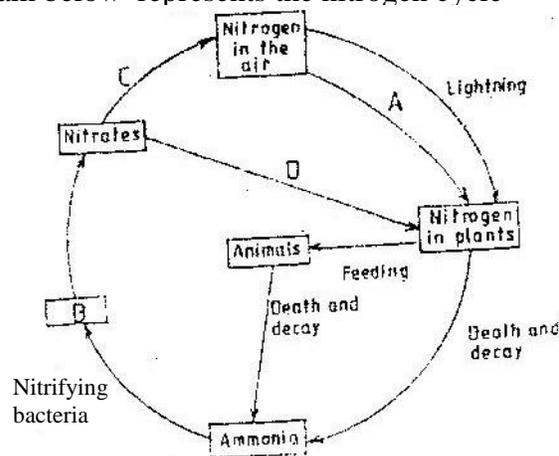


- (a) Name the
 - (i) Structure labeled P
 - (ii) Portion of the nephron between point X and Y
- (b) Name the process that takes place at point Q
- (c) Name one substance present at point R but absent at point S in a healthy mammal
- (d) The appearance of the substance you have mentioned in (c) above is a symptom of a certain disease caused by a hormone deficiency. Name the
 - (i) Disease
 - (ii) Hormone
- (e) State the structural modifications of nephrons found in the desert mammals

12. The graph below shows the effect of substance concentration of the rate of enzyme reaction.

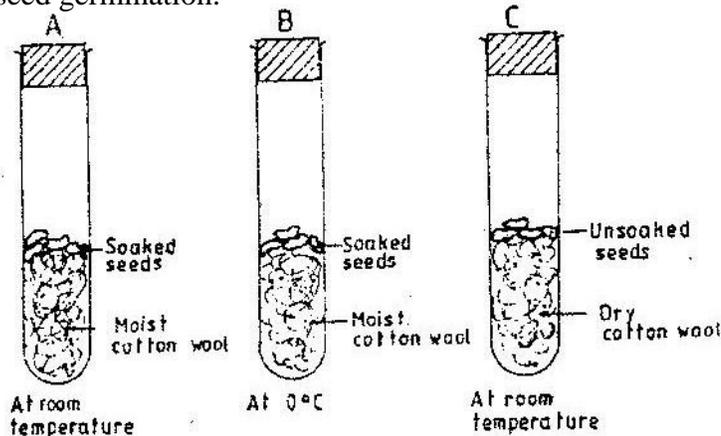


- (a) (i) Account for the shape of the graph between A and B
(ii) B and C
- (b) How can the rate of reaction be increased after point B?
- (c) State two other factors that effect the rate of reaction of enzyme reaction
13. The diagram below represents the nitrogen cycle



- (a) State the process labeled
A
D
- (b) Name the compound represented by B
- (c) Name the group of organisms labeled C
- (d) (i) name the group of plants which promote process A
(ii) State the part of the plant where process A takes place
- (e) How would excess pesticides in the soil interfere with process A
14. Tallness in pea plants is due to a dominant gene
Two tall pea plants were crossed and their F1 generation were in the ratio of 3 tall:
1 short. Using letter T to represents the gene for tallness and t for shortness give the
- (a) (i) genotype of the parents
(ii) Gamete of the parents
(iii) Genotype ratio of the F1 generation
- (b) What is meant by the term testcross in genetic studies?

15. The diagram below represents a set up to investigate the conditions necessary for seed germination.



The set up was left for 7 days

- What conditions were being investigated in the experiment?
- State three reasons for soaking seeds in set ups A and B
- What were the expected results after seven days?

SECTION C

16. An experiment was carried out to investigate the nutritional value of two dry powder animal feeds X and Y over a period of six months. Twenty 5 month's old castrated goats were used. The goats were divided into two equal groups A and B.

The animals in group A were fed on feed X throughout the experiment while those of group B were fed on feed Y.

The feeds were supplemented with dry hay and water. The average body weight of each group of goats and the weight of the dry powder feeds were determined and recorded each month. The faeces produced by each group was dried and weighed and the average dry faecal output per month was also recorded. The results are as shown below.

	GROUP A			GROUP B		
Months since commencement of the experiment	Average total weight of goats (kg)	Average weight of total feed.(kg)	Average monthly dry faecal output (kg)	Average total weight of goats(kg)	Average weight of total feed (kg)	Average monthly dry faecal output (kg)
0	20.4	26.7	10.5	20.5	35.4	16.5
1	22.5	27.5	10.7	19.5	34.3	17.7
2	24.5	25.8	10.3	19.0	35.2	17.2
3	26.3	18.5	8.8	18.5	36.1	17.5
4	28.0	16.6	7.2	17.1	36.0	16.9
5	29.4	16.3	6.0	16.3	35.8	16.8
6	29.5	16.1	5.6	15.6	35.5	16.6

- What is the relationship between the amount of feed and the faecal

- output
- (ii) Work out the average increase in weight for the animal's in group A during
The first four months
The last two months
 - (iii) Account for the average increase weight in goats in group A during the
first four months
The last two months
 - (iv) Which of the two feeds is more nutritious?
Give reason for your answer
- (b) State four uses of digested food in the bodies of animals
- (c) State four uses of water in the bodies of animals
17. (a) State the functions of the following parts of the mammalian ear;
- (i) Tympanic membrane
 - (ii) Eustachian tube
 - (iii) Ear ossicles
- (b) Describe how semicircular canals perform their functions
18. (a) Describe the process of fertilization in a flowering plant
- (b) State the change that take place in a flower after fertilization