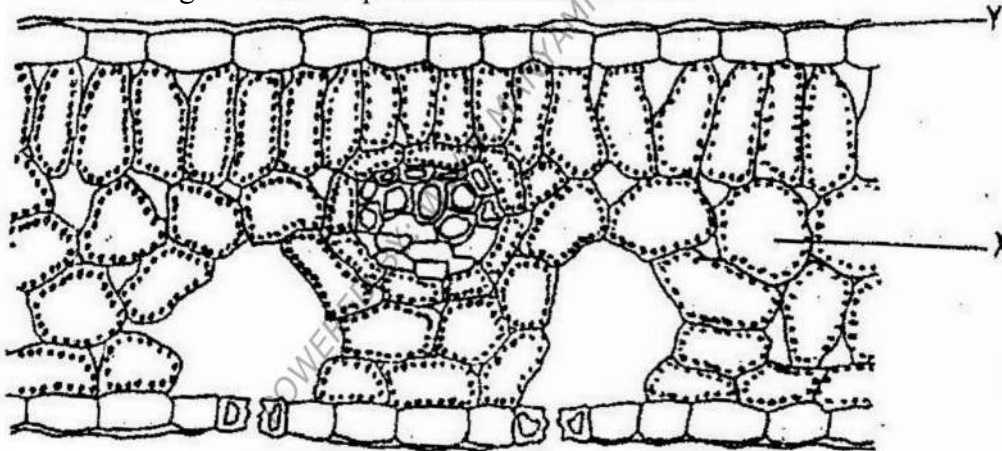


**BIOLOGY PAPER 231/1 K.C.S.E 2000
QUESTIONS**

1. What is the function of the following cells in the retina of human eye ? Cones
2. Give a reason why two species in ecosystems cannot occupy the same niche.
3. State two ways in which some fungi are beneficial to humans
4. State two ways in which some fungi are beneficial to humans.
5. State the importance of osmo-regulation in organisms
6. Give a reason why lumbar vertebrae have long and broad transverse process
7. Give reason why each of the following is important in the study of evolution:
 - a) Fossils records
 - b) Comparative anatomy.
8. Why is oxygen important in the process of active transport in cells?
9. State two advantages of metamorphosis to the life of insects.
10. Explain how birds of prey are adapted to obtaining their food.

SECTION B

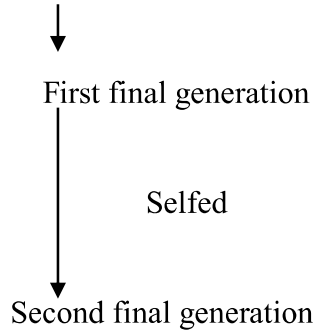
11. The diagram below represents a section of a leaf.



- (b) Name the parts labeled X, and Y
- (c) Using arrows indicate on the diagram the direction of flow of water during the transpiration stream
- (d) State two ways in which the leaf is suited to gaseous exchange

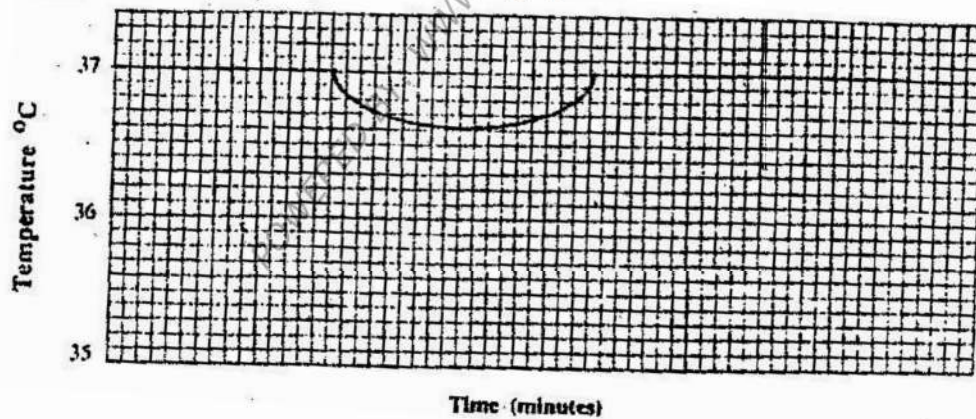
12. The chart below represents the result of successive crosses, starting with red-flowered plants and white flowered plants and in which both plants are pure breeding.

Parental genotypes: Red flowers x white flowers



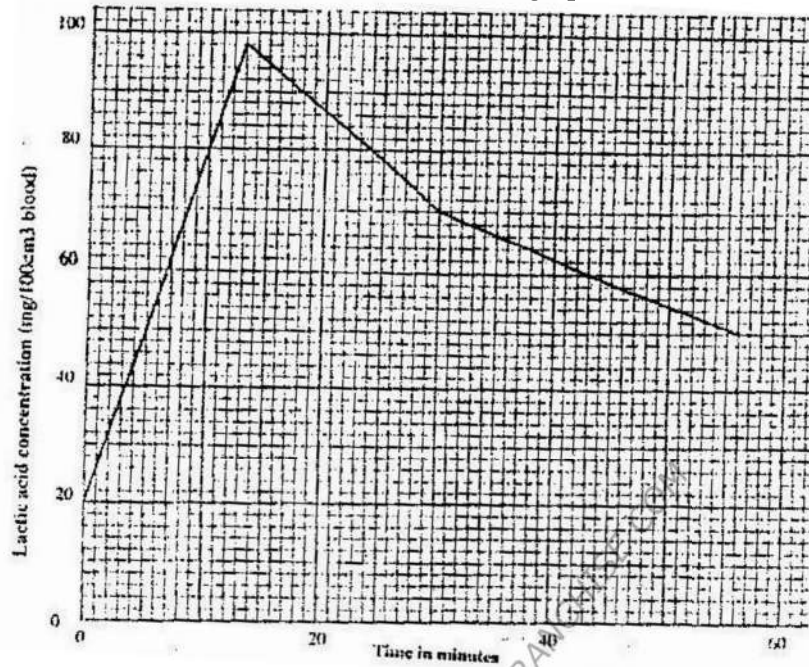
3 red flowers: 1 white flower
3: 1

- (a) What were parental genotype? Use letter R to represent the gene for red colour and r for white colour
- (b) (i) What was the colour of the flowers in the first filial generation?
(ii) Give a reason for your answer in b (i) above
- (c) If 480 red flowered plants were obtained in the second filial generation, how many F₂ plants and white flowers? Show your working.
13. The temperature of a person was taken before, during and after taking a cold bath. The results are shown in the graph below



- (a) Explain why the temperature fell during bath
- (b) What changes occurred in the skin that enabled the body temperature to return to normal?
14. (a) Name the crop infested by phytophthora infestans and the disease it causes
Crop / Disease
- (b) State four control measures against the disease

15. The concentration of the lactic acid in blood during and after an exercise was determined. The results are shown in the graph below



- (a) (i) By how much did the lactic acid increase at the end of 13 minutes?
(ii) After how many minutes was the lactic acid concentration 71mg/100cm³?
(iii) What would be the concentration of lactic acid at the 60th minute?
- (b) Give a reason for the high rate of production of lactic acid during the Exercise
- (c) Give a reason for the decrease in the concentration of lactic acid after the exercise
16. (a) What is the significance of sexual reproduction?
(b) State three advantages of asexual reproduction

17. The numbers of different types of animals supported by a square kilometer in two terrestrial ecosystems are shown in the table below

| Type of ecosystem | Type of animal | Number of animals supported per sq. km |
|-------------------|-------------------------|--|
| Acacia savannah | Domestic animals | |
| | Cattle | 7 |
| | Goat | 30 |
| | Sheep | 10 |
| Bush land | Wild games | |
| | Thomsons's gazelles | 450 |
| | Eland | 20 |
| | Wildebeest | 60 |
| | Domestic animals | |
| | Cattle | 2 |
| | Goats | 15 |
| | Sheep | 5 |
| | Wild game | |
| | Thomson's gazelles | 200 |
| Eland | 12 | |
| Wildebeest | 10 | |

- (a) (i) Which domestic animal is better adapted to both ecosystems?
(ii) Give a reason why the animal named in (a) (i) above is better adapted to the two ecosystems.
- (b) Why are cattle and sheep fewer in the bush land than in the savannah?
- (c) (i) Name suitable methods that were used to estimate the population of:
Domestic animals
Wild animals
(ii) Give a reason why the method named for wild animals in (c) (i) above is suitable
- (d) state three methods which could be used to determine the diet of wild animals in an ecosystem
- (e) Name four biotic factors that could have regulated the animal population in both ecosystems
- (f) State four human activities that affect population of animals in game parks
- (g) What is the importance of national park to a nation?
18. describe the role of hormones in the human menstrual cycle
19. how are leaves of mesophytes suited to their functions