

BIOLOGY PAPER 231/1 K.C.S.E 1999

QUESTIONS

SECTION A

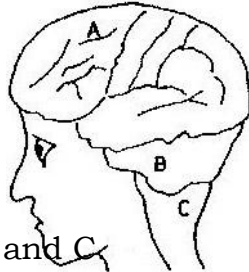
1. Name two processes that bring about the translocation of manufactured food
2. Give two reasons why accumulation of lactic acid during vigorous exercise leads to an increase in heartbeat.
3. Explain why sexual reproduction is important in organisms
4. State two advantages of natural selection to organisms
5. Suggest three reasons why green plants are included in a fish aquarium.
6. State three ways by which plants compensate for lack of ability to move from one place to another.
7. An investigation plants with red flowers were crossed with plants with white flowers.

All the plants in the F1 generation had pink flowers.

- a) Give a reason for the appearance of pink flowers in the F1 generation.
- b) If the plants the F1 generation were selfed, state the phenotypic ratio of the F2 generation.
8. State two disadvantages of self-pollination.

SECTION B (40 MKS)

9. The diagram below shows surface view of a human brain.



Name the parts labeled B and C

- b) State three functions of the part labelled A
- c) State what would happen if the part labeled B was damaged.

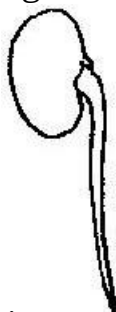
10. Below is a list of organisms, which belong to classes Insecta, Myriapoda and Archnida: Tick, centipede, praying mantis, tsetse fly, millipede and spider. Place the organisms in their respective classes in the table below. Give reason in each case.

Classes	Organisms	Reasons
Insecta		
Myriapoda		
Arachnida		

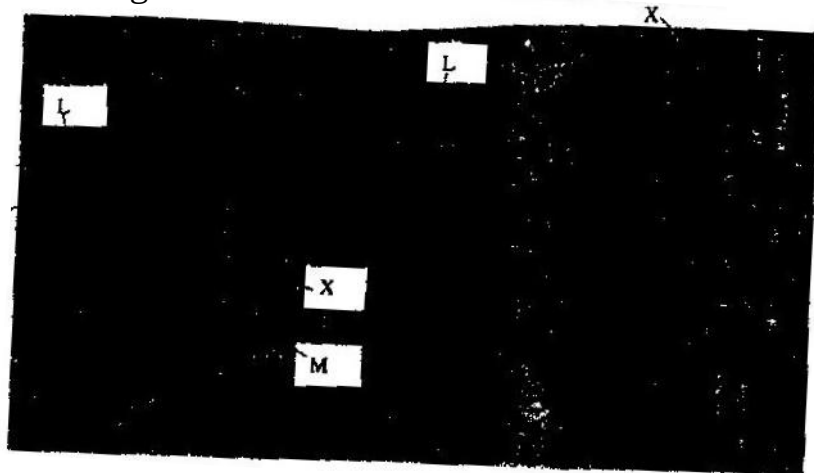
11. Give reasons for each of the following:
 - a) Constant body temperature is maintained in mammals.
 - b) Low blood sugar level is harmful to the body.
12. A student set up an experiment as shown in the diagram below.



- a) i) What is being investigated in the experiment?
ii) On the diagram below indicate the expected results after three days.



- iii) Why was it necessary to have wet cotton wool in the container?
b) What is the role of the following to a germinating seed/
i) Oxygen
ii) Cotyledons.
13. a) Distinguish between a community and population.
b) Describe how population of grasshoppers in a given area can be estimated.
14. The photograph below represents a blood smear obtained from a person suffering from a certain disease.



- a) Name the structure labeled X.
b) i) Name the structure labeled L
ii) State the function of the source labeled M
c) What disease was the person suffering from?
d) List three ways by which micro-organisms enter the human body.

SECTION C (40 MARKS)

15. An experiment was carried out to investigate haemolysis of human red blood cells. The red blood cells were placed in different concentrations of sodium

chloride solution. The percentage of haemolysed cells was determined. The results were as shown in the table below.

Salt concentration g/100cm ³ (%)	0.33	0.36	0.38	0.39	0.42	0.44	0.48
Red blood cells Haemolysed (%)	100	91	82	69	30	15	0

- a) i) On the grid provided, plot a graph of haemolysed red blood cells against salt concentration.
ii) at what concentration of salt solution was the proportion of haemolysed cells equal to non-haemolysed cells?
iii) State the percentage of cells haemolysed at salt concentration of 0.45%
- b) Account for the results obtained at:
i) 0.33 percent salt concentration.
ii) 0.48 percent salt concentration.
- c) What would happen to the red blood cells if they were placed in 0.50 percent salt solution?
- d) Explain what would happen to onion epidermal cells if they were placed in distilled water.
16. Describe the:
a) Process of inhalation in mammals.
b) Mechanisms of opening and closing of stomata in plants.
17. Explain how the various activities of man have caused pollution of air.