

## General Certificate of Education

TWO AND A HALF HOURS

In the special answer-book provided answer Questions 1 and 2 and any THREE other questions.

All diagrams should be fully labelled.

1. } Questions 1 and 2 are compulsory. Question 1 is on pages 2—5 of the special answer-book.  
2. } Question 2 is on pages 6 and 7.

Answer THREE of the following questions.

3. (a) Explain carefully and concisely what is meant by transpiration.  
(b) (i) Describe an experiment which you would carry out to show that a green plant transpires. Draw the apparatus you would use.  
(ii) What is the importance of transpiration to the plant? Page 8
4. (a) Label the parts indicated by guide lines in the diagram of the alimentary canal of a mammal.  
(b) (i) Describe what happens to the constituents of the blood which enters the liver from the small intestine after a meal.  
(ii) Name four substances secreted by the pancreas and describe the actions of any two of them. Page 9
5. (a) Describe the structure and the main features of the life history of Mucor.  
(b) Explain how the method of nutrition of Mucor differs from that of a green plant. Page 10
6. (a) (i) Label the parts indicated by guide lines in the figure of either Amœba or Paramecium.  
(ii) State the nature of the food and give an account of the method of feeding of either Amœba or Paramecium.  
(b) (i) Describe a simple process of reproduction in either Amœba or Paramecium.  
(ii) What are the essential differences between the formation of new individuals by this process and by the process which is characteristic of mammals? Page 11
7. (a) Make drawings to show (i) the curvature of the root and shoot of a bean seedling in response to gravity, (ii) the bending of a limb in a mammal.  
(b) Describe how the movement in each case is brought about. Pages 12 and 13
8. (a) (i) Name four chemical elements other than carbon, hydrogen and oxygen which are essential for the full development of a flowering plant.  
(ii) Describe what happens if the flowering plant is deprived of one of the elements you mention.  
(b) How would you show experimentally that the four elements you have mentioned are necessary for the normal healthy life of the flowering plant? Page 14
9. EITHER  
(a) How would you set up an aquarium in which you could follow the development of the eggs in frog spawn up to the fully grown tadpole stage? What routine procedure would you adopt to maintain their healthy growth?  
OR  
(b) How would you set up a vivarium to accommodate a few animals, reproducing their natural environment as far as possible? What routine procedure would you adopt to maintain them in health during the summer months? Pages 15 and 16