BIOLOGY

ORDINARY LEVEL

PAPER I

(Two hours and a half)

Answer five questions.

Large labelled diagrams should be given where they make the answer clearer.

1. Draw labelled diagrams, one in each case, to show the structure of (a) the shoulder joint, and (b) the elbow joint, of a mammal. Explain how the muscles act on the bones to bring about movement at the elbow.
2. (a) What part does the skin play in regulating the temperature of a mammal?

(b) Give a brief account of the functions of any one named hormone and any one named enzyme in a mammal.

3. Give an account of the life-history and economic importance of either the mosquito or the house fly.

4. What are the distinguishing characteristic features (a) in summer, (b) in winter, of any two named deciduous trees?

Describe how the following changes are brought about: (i) secondary thickening, (ii) the formation of bark.

5. Give an account of the pollination of one, named, wind-pollinated flower.

What are (a) the methods of dispersal of the seeds of this flower, and (b) the conditions the seeds must have before they will germinate?

6. Describe experiments, one in each case, that you would do to find out whether a green plant (a) manufactures starch, (b) evolves oxygen, in sunlight.

State three differences between photosynthesis and respiration.

7. Describe the constituents and the physical properties of a sandy soil and a clay soil.

What is the value in agriculture of (a) manuring the soil, (b) the rotation of crops?

8. What is meant by a habitat? Name five animals (excluding Amoeba, Paramecium, Hydra and frog) and five plants (excluding Spirogyra and Mucor) which live together in any one named natural habitat. Explain any relation they have to their environment and to each other.
BIOLOGY II

ORDINARY LEVEL

JULY, 1957

SECTION A

INDEX NUMBER............................. NAME

Your answers are to be written in ink.

1. Name two different organs found in the thorax of a mammal.
   (a) ........................................ (b) ........................................

2. State three differences between a molar tooth of a herbivore and a molar tooth of a carnivore.
   (a) ........................................ (b) ........................................ (c) ........................................

3. Write down two functions of the liver of a mammal.
   (a) ........................................ (b) ........................................

4. (a) List three differences between arteries and veins. (b) Name the blood vessels that carry the blood to the kidneys.
   (a) (i) ........................................ (ii) ........................................ (iii) ........................................
   (b) ........................................

5. Give three differences in structure between a red blood corpuscle and a white blood corpuscle.
   (a) ........................................ (b) ........................................ (c) ........................................

6. Write down an equation to represent respiration.

7. (a) State one function of the iris of the eye. (b) Name the type of lens used to correct short sight.
   (a) ........................................ (b) ........................................

8. Where does the placenta develop in a mammal? Write down two functions of the placenta.
   (a) ........................................ (b) ........................................
9. Write down three ways in which a primary wing feather is adapted for flight.
   (a) ..............................................................................................................
   (b) ..............................................................................................................
   (c) ..............................................................................................................

10. State one function of the contractile vacuole in Amoeba (or Paramecium).

11. Write down three ways in which fishes are adapted to life in water.
   (a) ..............................................................................................................
   (b) ..............................................................................................................
   (c) ..............................................................................................................

12. Name one animal on which Hydra feeds.

13. Define osmosis.

14. Name two metallic elements required by green plants for chlorophyll production.
   (a) ..............................................................................................................  (b) ..............................................................................................................

15. Name three conditions that favour a high rate of transpiration.
   (a) ..............................................................................................................
   (b) ..............................................................................................................
   (c) ..............................................................................................................

16. Name the growth response made by plant organs, when illuminated from one side.

17. Where would you expect to find Spirogyra in nature?

18. Name a saprophyte. Where would you expect to find it growing?

19. Name two chemical compounds which are used to supply crops with nitrogen.

20. Name the reagents you would use to test for (a) a reducing sugar, (b) a protein.
   (a) ..............................................................................................................  (b) ..............................................................................................................
BIOLOGY

ORDINARY LEVEL

PAPER II

(Two hours)

Answer all the questions.

Candidates are advised not to spend more than half an hour in answering Section A.

SECTION A

Answer this section on the sheet attached and hand it in with the rest of your answers.

SECTION B

PRACTICAL BIOLOGY

(One hour and a half)

Answer all questions.

Candidates are expected to use a hand lens.

1. Cut open specimen D1 vertically, starting from the base of the flower, to show as much of the structure as possible. Make one large, labelled drawing of one half of the specimen after it has been cut. By what method do you consider this flower to be pollinated? [A descriptive account of pollination is not required.] Make a list of the features of specimen D1 which suggest the method of pollination you have stated.

2. (a) Examine specimens D2 and D3 externally and internally. Make a list of the differences in structure that you observe between the specimens. [Drawings not required.]

(b) Make a careful examination of the ventral surface of specimen D4. Describe any features you observe. Indicate the position of the segment (or segments) on which each feature you describe is to be found by referring to the number of the segment, starting from the anterior end. [Drawings not required.]

3. Make a large, labelled drawing of the left side of specimen D5. What features of this specimen suggest that it was an animal that lived in water and not on land?
ORDINARY LEVEL

PRACTICAL BIOLOGY INSTRUCTIONS

Paper II

July 1957

Each candidate taking the examination, which may be done in an ordinary examination room, is to be provided with a hand lens, a scalpel (or sharp pen knife), two mounted needles, and the following specimens, labelled as shown.

The following specimens are to be provided locally.

For Question B 1. A sweet-pea flower or other large leguminous flower, to be labelled D 1.

For Question B 2. (a) A crocus corm, to be labelled D 2 and a small bulb, to be labelled D 3.

(b) A large preserved earthworm with a well defined clitellum and sperm grooves, to be labelled D 4.

For Question B 3. A large preserved frog tadpole with well defined hind limbs but without fore limbs, to be labelled D 5.

In cases of difficulty, specimens D 2, D 3, D 4 and D 5 need only be provided in quantities sufficient to allow each candidate the sole use of the group of specimens required for each question for at least 30 minutes. It will be necessary for the Supervisor to arrange for the specimens to be interchanged during the examination.

In order to minimize the disadvantages of a practical examination at which the Examiner is not present, the teacher responsible for the practical examination is asked to complete the attached report form and return it with the scripts.

It is recognized that it may sometimes be impossible to provide certain specimens. If substitutions are necessary the specimen selected must be as near as possible to the one that is displaced. No substitution may be made without first consulting the General Secretary at Syndicate Buildings.