3. Give an account of the structure of an albuminous seed, and also of an exalbuminous seed. Describe what happens when a seed is placed in conditions suitable for its germination, and state what those conditions are.

4. Describe carefully the following fruits: Orange, apple, strawberry, gooseberry. State exactly what parts of the original flower are concerned in the formation of each of the above fruits.

5. What are the functions of stomata, phloem, xylem, root?

6. Write an account of any composite plant with which you are familiar. Mention some New Zealand representatives of this order.

No. 54.—Elementary Botany.—For Class D.

Time allowed: Three hours. [*Illustrate your answers with careful and fully labelled diagrams.*]

1. What are the functions of leaf, root, and stem, so far as the process of nutrition is concerned?

2. Describe the structure, internal as well as external, of a leaf. How would you ascertain whether starch is present? In what part of the leaf would you expect to find it?

3. Describe the series of events which occur when a pollen grain falls upon the stigma of a flower.

4. Describe briefly any flower you are acquainted with which presents some special adaptations to ensure pollination by an insect, and another in which some special arrangement exists for the dispersal of seeds.

5. What do you understand by cambium, tracheide, epipetalous flower, gamopetalous flower, and hypogynous flower?

6. Describe carefully the following fruits: Currant, grape, bean, walnut. Show exactly what parts of the original flower are concerned in the formation of each of these fruits.

No. 55.—Botany.—For Class C and for Civil Service Senior.

Time allowed: Three hours. [*Illustrate your answers with careful and fully labelled diagrams.*]

1. Give a general account of the mode of nutrition of a green vascular plant.

2. Describe the method of conjugation in *Mucor*, *Spirogyra*, and *Marchantia*. Point out carefully the resemblances and the differences in the process, and state what is the result of the process in each case.

3. Describe an ovule of *Pinus*, and the corresponding phase in the life-history of a liverwort.

4. Describe in detail the methods by which you would prepare a leaf and a piece of the stem of a plant for the study of their internal structure.

Briefly describe this structure in the case of any plant that you have examined. Name the plant.

5. If you place (*a*) yeast and (*b*) *Haematococcus* separately in vessels of ordinary water, and expose them to sunlight, what will happen in each case? Explain this.

6. Give an account of the structure of the flower of a member of each of the orders *Violaceae*, *Myrtaceae*, *Leguminosae*, *Rosaceae*. Mention New Zealand representatives of each of these orders.

No. 56.—Zoology.—For Civil Service Junior.

Time allowed: Three hours. [*Illustrate your answers, wherever it tends to shorten or to elucidate them, by means of fully labelled drawings. N.B.—These sketches should be neatly and carefully done, and of fair size; do not squeeze them into the text of your answer. The use of coloured pencils is recommended.*]

1. Write an account of (*a*) the structure and (*b*) the physiology of nutrition of *Amoeba*.

2. What characters have plants and animals in common, and what are the important differences between them? Take some simple animal and plant in illustration.

3. Write a brief description of the external features of a beetle, and describe its life-history.

4. Describe the organs of locomotion, and their arrangement on the body, of a sea-urchin and of a worm (preferably a marine worm).

5. What do you understand by "respiration"? Describe the organ of respiration of a fish and of a frog, pointing out the differences in the manner in which respiration is effected in the two animals.

6. Draw a fully labelled sketch of a vertebra of a frog *or* of a rabbit. Indicate as far as you can the use of the various parts.

7. Write a brief account of the general characters of the *Mollusca;* and refer to New Zealand representatives in illustration, giving sketches, if possible, of the forms mentioned.

8. State precisely and in detail the procedure that you would follow in dissecting a rabbit so as to exhibit the kidneys and their ducts. Make a sketch of these organs.

No. 57.—Zoology.—For Class D.

Time allowed: Three hours. [*Illustrate your answers, wherever it tends to shorten or to elucidate them, by means of fully labelled sketches. N.B.—These sketches should be neatly and carefully done, and of fair size; do not squeeze them into the text of your answers. The use of coloured pencils is recommended.*]

1. Describe the external and internal structure of a sea-anemone. Where would you seek for such an animal?

Give a brief account of its mode of nutrition.

2. Write a description of a simple egg-cell, and describe what part this cell plays in the animal's economy.