

3. Describe a process for extracting iodine from sea-weeds.
4. State what you know about the manufacture of sulphuric acid on the large scale.
5. A gas may be one of the following: *Oxygen, nitrogen, ammonia, sulphur-dioxide, carbon-dioxide, nitrous oxide*: how would you determine which of them it is?
6. In what respects do chlorine and bromine resemble each other? Give equations to show this similarity.
7. Describe as many processes as you know for making chlorine gas, giving equations and sketching apparatus.
8. Show by equations the effect of heat on the following: (1) manganese-dioxide, (2) nitrate of ammonium, (3) carbonate of calcium, (4) chlorate of potassium, (5) sulphur with access of air, (6) sulphur without access of air.
9. State what useful products can be got from fresh bones; and explain how each of these products may be obtained (equations to be given and apparatus to be sketched).

Biology.—For Class D, and for Senior and Junior Civil Service. Time allowed: 3 hours.

[N.B.—Candidates must answer questions in one subject only. All answers should be illustrated, as far as possible, by diagrams.]

ANIMAL PHYSIOLOGY.

1. Explain how the hair grows, and describe its minute structure.
2. State what you know concerning the structure and functions of the kidneys.
3. What is respiration? Explain how it is performed in man.
4. Write a short account of the functions of the nervous system.
5. Describe the structure of the skeleton of the human hand and wrist.
6. What is an epithelium? Describe the different kinds of epithelium found in the human body.
7. State what you know of the arrangement and functions of the lymphatic system.
8. Describe the structure of the human heart.

BOTANY.

1. Describe the structure and mode of growth of the stem in Monocotyledons and Dicotyledons respectively.
2. What are stomata? Describe their mode of occurrence, their structure, and their functions.
3. State what you know of the manner in which plants make use of food-materials occurring in the soil. Enumerate these materials.
4. State what you know of the relations existing between flowers and insects, and of the modifications of flowers in accordance therewith.
5. Write an account of the Scrophularineæ, with special reference to New Zealand members of the order.
6. What is meant by phyllotaxis? Explain how you would determine the phyllotaxis of a leafy shoot.
7. State what you know concerning the composition, the mode of formation, and the occurrence of starch.
8. Describe the structure of an apple, a gooseberry, a plum, a raspberry, a strawberry, and a fig.

Shorthand.—For Senior Civil Service. Time allowed: 3 hours.

INSTRUCTIONS TO SUPERVISORS.

1. Inform candidates before the time for taking up this subject that they may use pen or pencil as they please for taking notes, which should be written on ruled paper, but that they must transcribe those notes into longhand with pen and ink.
2. Inform candidates that when once you have commenced to dictate you cannot stop until the passage is finished.
3. Dictate the passages at the following rates of speed:—
 - (a.) 80 words per minute.
 - (b.) 120 " "
 - (c.) 150 " "

N.B.—It will be well to practise reading these passages aloud some time beforehand, looking at a watch or clock, so as to accustom yourself to reading at the exact rate indicated. The matter to be read is marked off into sections, each of which is to occupy a minute. The Supervisor will perhaps find it advisable to mark it off into smaller sections, each containing the number of words to be read in fifteen seconds, and to read one section in every quarter of a minute. As the candidates hear the passage read only once, the reader's articulation ought to be very clear, and the candidates ought to be so placed as to be able to hear well.

4. Candidates are at liberty to take down one, two, or three passages, as they choose. All the passages required by candidates are to be dictated before any one begins to transcribe; and there should be as little delay as possible between the readings.

5. Inform candidates that rapidity in transcribing notes into longhand is essential, and note carefully on the transcribed copy the exact time taken in transcription. Candidates must not look at their notes while a passage that does not concern them is being read.

6. Inform them also that the clearness and accuracy of the shorthand notes (which must in every case be sent in attached to the transcript) will be taken account of by the examiner; and that they must not alter the shorthand notes after the dictation is finished.