

AN ROINN OIDEACHAIS  
(Department of Education).

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INTERMEDIATE CERTIFICATE EXAMINATION, 1953.

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SCIENCE (Syllabus B).

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TUESDAY, 16th JUNE.—EVENING, 3 TO 5.

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[Not more than *six* questions are to be attempted, of which *three* must be taken from Section I and *three* from Section II. Illustrate your answers wherever possible.]

SECTION I.

1. Describe fully how you would measure the weight of a litre of atmospheric air at the temperature of the room and at atmospheric pressure.

Why is the pressure of the atmosphere less at the top of a mountain than it is at sea level?

[66 marks.]

2. State the law of the lever and, also, the law of the spiral spring. If you had only one weight, describe how you would weigh a given object using (a) a lever, (b) a spiral spring.

Describe, with the aid of a diagram showing the fulcrum and the forces, how the forearm acts as a lever when a person is bending his arm at the elbow.

[66 marks.]

3. Describe, with a sketch of the apparatus, how you would prepare and collect oxygen in the laboratory and give an account of its properties.

Describe, also, how you would measure the percentage volume of oxygen in a sample of atmospheric air.

[66 marks.]

4. Describe, with a sketch of the apparatus, how you would examine the effect of heat on coal or turf (peat) in the absence of air.

Describe two of the products obtained and mention any use which is made of one of them.

[67 marks.]

5. Mention the three common states of matter. What are the essential differences between them? Describe how matter may be converted from one state into another and give one everyday example to illustrate your answer.

Describe, with a sketch of the apparatus, how you would obtain a sample of pure water from sea water.

[67 marks.]

## SECTION II.

6. What is the function of flowers in plant life?

Name a complete flower which you have examined, sketch its various parts, and tell what you know of their functions.

[66 marks.]

7. Sketch the alimentary canal, name the various parts of it shown in your sketch and outline their functions.

[66 marks.]

8. What is respiration?

Describe experiments, one in each case, (a) to show that breathed air contains more carbon dioxide than fresh air, (b) to show that a green plant respire.

The percentages of oxygen and carbon dioxide in the atmosphere vary very little. How do you explain that fact?

[66 marks.]

9. Describe, with sketches, the following: (a) bulb, (b) corm, (c) tendril, (d) bud, and give one named example of each of them. Mention their functions and show how each is suited to its function.

[67 marks.]

10. What is a seed and what are its most important parts?

Describe, with sketch, a seed of each of the following: (a) the broad-bean plant, (b) the wheat plant.

Describe an experiment by means of which you could observe the germination of those seeds and, also, the growth of the seedlings produced. Give an account, with sketches, of what would be observed in each case.

[67 marks.]