

**AN ROINN OIDEACHAIS**  
(Department of Education).

**BRAINSE AN MHEÁN-OIDEACHAIS**  
(Secondary Education Branch).

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INTERMEDIATE CERTIFICATE EXAMINATION, 1929.

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**SCIENCE (Syllabus D).**

WEDNESDAY, 19th JUNE.—MORNING, 10 A.M. TO 12 NOON.

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*Six questions may be attempted.*

1. Describe carefully the method of using a laboratory balance. A 12-inch ruler is balanced at its middle point: a hen's egg weighing 2 ozs. hung at 4 inches from the fulcrum balances a duck's egg hung at 3 inches from the fulcrum. What is the weight of the duck's egg?

(35 marks.)

2. Describe an experiment to show convection currents in air. Explain how a fire burning in a grate aids the ventilation of a room.

(35 marks.)

3. Describe the preparation and properties of two oxides. Give your reasons for believing that the substances you describe are oxides.

(35 marks.)

4. Explain how the lungs are altered in size and shape during breathing. Mention experiments which show that air is changed by breathing.

(35 marks.)

5. A brick hung from a spring balance is gradually lowered into water until completely immersed; describe the changes in the reading of the spring balance. Do these changes depend upon the material of which the brick is made? If the vessel of water were weighed before the brick was immersed, and when the brick is hanging in it would there be any change in weight?

(50 marks.)

6. Describe an experiment to measure the pressure of the atmosphere. Explain with sketches the action of a syphon in emptying a tank of water.

(50 marks.)

7. Describe carefully all the changes that may be noticed when cold water in a glass flask is slowly heated until it boils vigorously.

Explain why a weight of steam passed into a much greater weight of cold water will cause it to boil.

(50 marks.)

8. Explain why (1) water pipes sometimes burst during a severe frost, (2) butter may be kept hard in wet muslin during the summer months, (3) a saucepan which has been filled to the brim overflows when placed on the fire.

(50 marks.)

9. Sketch the apparatus you would use to collect the products formed when flour is strongly heated in a hard glass test tube. What tests would you use when examining these products?

(50 marks.)

10. Mention some sources of carbon-dioxide. Carbon-dioxide is passed into lime water until there is no further change. Explain the changes that occur.

(50 marks.)

11. State the chief uses of food. Give two examples in each case of foods containing relatively large amounts of the following food substances:—Proteins, fats, carbohydrates. What part do these substances play in the nutrition of the body?

(50 marks.)

12. Briefly outline the central nervous system. Why does a person flinch when the finger is unexpectedly pricked or burnt?

(50 marks.)