

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

**BRAINNSE AN MHEADHON-OIDEACHAIS**  
(Secondary Education Branch).

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INTERMEDIATE CERTIFICATE EXAMINATION, 1936.

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LOWER COURSE.

**SCIENCE (Syllabus A).**

FRIDAY, 19th JUNE.—AFTERNOON, 4 TO 6 P.M.

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[Not more than six questions to be attempted. All questions carry equal marks. Illustrate your answers wherever possible.]

1. State the Principle of Archimedes. Explain clearly how you would employ it to determine the volume of a stone.

2. What do you understand by "density"?

The lower portion of a U-tube contains mercury (density 13.6 gm. per c.c.). A liquid is poured into one limb until it occupies a length of 33 cm. If the difference of level of the mercury in the two limbs is 3 cm., determine the density of the liquid.

3. What is a lever? Describe two classes of lever, and give one example of each class.

4. How would you determine if the fixed points of a given Centigrade thermometer are correct?

5. What do you understand by "Coefficient of Linear Expansion"?

A rod 100 cm. long at 15° C has a length of 100.133 cm. at 85° C. Determine its coefficient of expansion.

Mention two examples of the practical effects of expansion.

6. A piece of metal weighing 20 gm. is heated to 100° C, and then introduced into 30 gm. of water at 15° C. The temperature of the mixture is 20° C.

Ignoring the effect of the calorimeter, determine the specific heat of the metal.

7. What do you understand by "Centre of Gravity"?  
How would you determine the centre of gravity of a piece of cardboard of irregular shape?

8. Name the solid and the gas obtained when limestone is strongly heated.

Describe any other method of obtaining the gas. Give two tests by which the gas is identified.

9. If provided with a number of jars all containing the same gas, give the tests by which you could determine whether the gas is (a) oxygen, (b) hydrogen, (c) hydrochloric acid gas.

Sketch the apparatus required for the preparation of one of these gases.

10. What is an oxide? How are oxides classified? Classify the following:—(a) Magnesium oxide, (b) carbon dioxide, (c) sulphur dioxide, (d) sodium oxide.

11. State (a) Boyle's Law, (b) Charles' Law.

How may Boyle's Law be verified experimentally?

12. What is meant by "the moment of a force about a point."

A metre stick is suspended horizontally by thread, and balances exactly at the 50 cm. mark. A mass of 5 gm. is suspended at the 20 cm. mark, and a mass of 15 gm. is suspended at the 35 cm. mark.

At what mark must a 10 gm. mass be suspended so that the stick may remain horizontal?