

AN ROINN OIDEACHAIS.
(Department of Education).

BRAINNSE AN MHEADHON-OIDEACHAIS
(Secondary Education Branch).

LEAVING CERTIFICATE EXAMINATION, 1938.

FULL COURSE.

GENERAL SCIENCE.

THURSDAY, 23rd JUNE.—AFTERNOON, 4 TO 6 P.M.

Not more than six questions may be answered.

All questions are of equal value.

Illustrate your answers wherever possible.

1. State the laws connecting the volume, temperature and pressure of a given mass of gas. Describe an experiment by which you could investigate the relation between the volume and temperature when the pressure remains constant.
2. In order to determine the temperature of a furnace, a platinum ball weighing 80 gm. is introduced into it. When it has acquired the temperature of the furnace it is transferred to a vessel of water at 15°C. The temperature rises to 20°C. If the weight of water, together with the water equivalent of the calorimeter be 400 gm., what was the temperature of the furnace? What precautions must be taken against the loss of heat in this experiment. (S.H. of platinum = 0.0365).
3. Describe two distinct methods by which you could find the melting point of a solid substance. What external condition can cause a variation in this temperature?
4. Describe and sketch the hip and elbow joints. What joints are most easily dislocated and why? Name and exemplify the different types of joint between the bones of the body.
5. Where and how is the diaphragm placed in the body? What organs lie immediately above and what immediately below it? What structures pass through it? How does the diaphragm work in breathing?

6. What are the chief constituents of a mixed diet? Describe briefly the changes which these constituents undergo in the process of digestion. What are the chief differences between the diet of a growing child and a working man?

7. What do you understand by "alternation of generations" in the life history of a plant? Show by the aid of sketches the structure of the prothallus of the fern and give its function.

8. State how you would proceed to identify a wild plant by means of a flora. Name any three plants (of different orders) you have thus identified and give their distinguishing characters.

9. How does the nutrition of a fungus differ from that of a green plant? Give specific examples.

10. What is an oxide? Describe in detail how you would prepare in the laboratory (a) a liquid oxide, (b) a solid oxide and (c) a gaseous oxide. Name the oxides you select.

11. Describe an experiment by means of which you could determine the volume of gas which would be evolved by acting upon one gram of marble with excess of dilute nitric acid. What will a litre of this gas weigh at S.T.P. if a litre of hydrogen weighs 0.0899 grams at the same temperature and pressure?

[C.=12; O=16; H=1.]

12. What do you understand by standard solutions of acids and alkalis? 21.5 c.c. of a solution of hydrochloric acid was neutralised by 25 c.c. of a solution containing 20 grams of sodium hydroxide per litre. What weight of hydrochloric acid was present in a litre of its solution? [H=1; Cl=35.5; O=16; Na=23.]