

AN ROINN OIDEACHAIS.
(Department of Education).

BRAINNSE AN MHEADHON-OIDEACHAIS
(Secondary Education Branch).

INTERMEDIATE CERTIFICATE EXAMINATION, 1938.

● FULL COURSE.
SCIENCE (Syllabus D).

MONDAY, 20th JUNE.—AFTERNOON, 4 to 6 P.M.

[Not more than six questions to be attempted. All the questions are of equal value. Illustrate your answers wherever possible.]

1. How would you show that when hydrogen is burned in air, water is formed? Explain the presence of water vapour in your breath.
2. Describe two distinct methods by which you could find the volume of a stone. If you were told that its density is 2.5 gms. per c.c., and were given a spring balance, how would you proceed to find its volume?
3. Give in detail the work to be done in determining the weight of pure salt formed when 20 c.c. of a solution of caustic soda is neutralised by hydrochloric acid.
4. Explain why a lactometer can float, although the glass and the mercury of which it is made are substances that sink. Tell how you would prove by experiment that your statement is correct.
5. What do you understand by (a) specific heat, (b) latent heat? Illustrate your answer from your everyday experience.
6. What are the two principal gases in air? How would you show the presence of carbon dioxide in the air? State as fully as you can the physical and chemical changes in the air of a room that are brought about by (a) the presence of electric light, (b) a coal fire, (c) occupants.
7. Explain by aid of diagrams how the muscles enable you (a) to bend the elbow, (b) to stand on tip-toe. State also (a) where is the fulcrum of the lever used, and (b) what is the resistance overcome in each movement.

8. Explain the following :—
- Why a kettle “boils over”.
 - How, using your knowledge of chemistry, you could decide if soda has been added to flour being prepared for baking.
 - Why, on a cold day, people may feel colder for a few minutes after a coal fire has been lighted in a room where they have been sitting for some time.
9. What first-aid treatment would you give
- a girl who has fallen off a bicycle and has apparently a broken arm;
 - a person who has sprained an ankle;
 - a person who is bleeding from the nose;
 - a child who has fallen, cut its forehead and is unconscious.
10. Given (a) a powdered mixture of alum and copper sulphate, or (b) a mixture of alcohol and water, how would you obtain pure samples of each constituent?
- N.B.—Either (a) or (b) is to be attempted, but not both.
11. Why do the feet feel warmer on a mat than on a stone floor? Describe an experiment to support your answer.
12. Tell in what parts of the body any five of the following are found, and give the work done by each one you choose—pancreas, lungs, antibodies, villi, amylopsin, glycogen, capillaries.