

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

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

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**LEAVING CERTIFICATE EXAMINATION, 1938.**

**LOWER COURSE.**

**GENERAL SCIENCE.**

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

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Not more than *six* questions may be answered.

All questions are of equal value.

Illustrate your answers wherever possible.

1. A bubble of air rises from the bottom of a lake and its diameter has doubled when it reaches the surface. Find the depth of the lake?
2. Two simple barometers are set up side by side in the same vessel of mercury, and a little water is introduced into one. Explain why the height of the mercury is different in the two cases. How will change of temperature affect the height in each case?
3. Find the final temperature of a mixture of 100 grams alcohol at  $10^{\circ}\text{C}$ ., and 100 c.c. water at  $0^{\circ}\text{C}$ ., assuming that S.H. of alcohol is  $-6$ , and that the only heat change is an interchange between the alcohol and the water?
4. Describe the mode of growth in thickness of a tree such as the elm. Explain why it is easier to split a piece of wood in the direction of the grain than across it.
5. If a carrot and a potato are left in the ground during a mild winter, what happens to each in the spring? Describe with the aid of sketches the subsequent growth of each.
6. Explain how it is that Dandelions and Plantains are able to live so successfully as weeds on a lawn.

7. Write brief notes clearly indicating the difference between (a) a disinfectant; (b) an antiseptic; (c) a deodorant. Discuss the efficiency and suitability of gaseous disinfection and liquid disinfection naming three disinfectants in each case to support your statement.

8. Write a short account on the functions of blood in the body. Show by means of diagrams the structure of the heart and indicate by arrows the path of the blood through it.

9. Describe the form, position and general structure of the small intestine. State briefly the changes which the food undergoes, (1) in the small, (2) in the large intestine.

10. What is meant by the chemical equivalent of an element? One oxide of nitrogen contains 63.6% of nitrogen, another contains 30.4%. Show without using the atomic weights of the elements that the equivalents of nitrogen in these compounds bear a simple ratio to one another.

11. Water consists of the elements "oxygen and hydrogen". What experiments would you perform in order to test this statement? Name two metals that act on water. What are the products in each case, and what are the conditions required for each action?

12. How is chlorine obtained from common salt? Describe any experiment you have seen which showed that chlorine has a great affinity for hydrogen.