

# AN ROINN OIDEACHAIS

(Department of Education).

## BRAINSE AN MHEÁN-OIDEACHAIS

(Secondary Education Branch).

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INTERMEDIATE CERTIFICATE EXAMINATION, 1932.

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### SCIENCE (Syllabus B).

FRIDAY, 3rd JUNE.—AFTERNOON, 4 TO 6 P.M.

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

Q. 1. How would you show (a) that air has weight, (b) that it exerts pressure? Explain briefly, with sketches, the working of a common pump.

Q. 2. Explain clearly the cause of convection currents. Describe an experiment to illustrate the production of such currents in (a) a liquid and in (b) a gas. What part do convection currents play in the ventilation of a room?

Q. 3. State what you understand by the "dew-point." How would you determine it experimentally? Explain why dew sometimes forms in the evening on the ground. Name two conditions favourable, and two conditions unfavourable, to its formation.

Q. 4. A solid brass cylinder 2 cm. in diameter and 3 cm. high is suspended in air from a spring balance graduated in grm. If the relative density of brass is 8.5, what would be the reading of the spring balance? What would the spring balance read if the cylinder were completely immersed (a) in water, (b) in brine of relative density 1.15? Explain clearly the principle involved.

Q. 5. State clearly the chemical changes that take place when a candle burns in air. What new compounds are formed? Describe experiments you would perform to prove

the truth of your statements. How would you determine experimentally the proportion of the air used up when a candle burns in a confined volume of air?

Q. 6. How would you ascertain experimentally whether a given liquid contains (a) dissolved air, (b) dissolved solid? How would you determine the weight of lime which a litre of water is capable of dissolving at the temperature of the laboratory?

Q. 7. How would you demonstrate the conditions necessary for germination? Illustrate and describe briefly the successive stages in the germination of (a) Broad Bean, (b) another dicotyledonous seed which does not germinate as the bean does.

Q. 8. Show, by means of a vertical longitudinal section of the flower of the Buttercup, the position of the different parts in relation to one another. Illustrate and describe the structure of the reproductive organs and state the function of each. How would you prove that pollen is essential for seed production?

Q. 9. Make a drawing showing the structure and position of the parts of a plant concerned with absorption. How would you demonstrate the course of (a) the raw materials, (b) the manufactured foods in a plant?

Q. 10. Describe the vertebral column. Name the regions into which it is divided. To what extent is movement in the vertebral column possible?

Q. 11. Give a brief account of the structure of the skin. What are its uses to the human body? When are certain glands of the skin most active and why?

Q. 12. Describe, with the help of a diagram, the circulation of blood in the human body. What changes does the blood undergo in the liver?