

AN ROINN OIDEACHAIS

(Department of Education).

BRAINSE AN MHEÁN-OIDEACHAIS

(Secondary Education Branch).

INTERMEDIATE CERTIFICATE EXAMINATION, 1927.

SCIENCE (Syllabus B).

WEDNESDAY, 22nd JUNE.—MORNING 10 A.M. TO 12 NOON.

[Not more than *six* questions to be attempted.]

1. Show how you would measure by means of a chain the acreage of a four-sided field, three sides of which are straight and the fourth irregular. Illustrate your answer by means of a sketch.

2. State what you understand by the "Principle of Work." What work is done in lifting a crate of eggs weighing 150lbs. from a platform to a truck through a vertical height of 3 feet? If a force of 100lbs. is required to raise the crate from the platform to the truck up an inclined plane, 7 feet long, find the friction between the crate and the plane.

3. What do you understand by the Latent Heat of Steam? How may it be determined? In this country in winter a rise of temperature is often followed by rain, after which the temperature falls; explain these phenomena.

4. Describe the construction and use of some form of maximum and minimum thermometer. Explain the conditions favourable to the formation of dew. How may the dew-point be determined?

5. What is meant by (a) weathering of rocks, and (b) an alluvial soil? Describe how you would find the percentage of soluble and insoluble constituents in a given sample of soil.

6. State the conditions favourable for the germination of healthy seeds. Describe simple experiments to show that these conditions are necessary.

7. What influence has sunlight on the growth of plants? Explain the difference between potato tubers sprouted in the light and in the dark, respectively. Is there any advantage in sprouting potatoes before sowing?

8. What is the effect of nitrogenous manures on the growth of plants? To what crops would a dressing of nitrogenous manure be of greatest benefit? Explain the difference in the action of Sulphate of Ammonia and of Nitrate of Soda when applied directly to growing plants.

9. Describe the preparation of carbon dioxide from its constituents. What are its properties? How would you show the presence of this gas in the atmosphere? Give reasons for assuming that plants make use of carbon dioxide.

10. How would you determine experimentally the percentage of water and ash in a sample of milk? What causes the "souring" of milk, and how may it be retarded?