

AN ROINN OIDEACHAIS

(Department of Education.)

INTERMEDIATE CERTIFICATE EXAMINATION, 1943.

SCIENCE (Syllabus E).

WEDNESDAY, 16th JUNE.—MORNING, 10 TO 12.

[Not more than *six* questions to be attempted. Illustrate your answers wherever possible. All questions carry equal marks.]

1. What does a barometer measure ?

Describe with the aid of a diagram a mercury barometer made in the laboratory and explain how it works. Explain why the readings vary from time to time. If a mercury barometer shows a reading of 29 inches, what reading would a water barometer show ? (Sp. gr. of mercury = 13.6.)

2. Give a short account of (a) the motions of the moon, and (b) the motions of the earth. Mention any four phenomena associated with these motions and explain one of them fully.

3. Describe any experiment to show that a solid expands when heated. Give two everyday examples of expansion due to heat. A piece of ice at -10°C . is gradually heated to 30°C . Describe the nature of the changes in volume which take place during the heating and mention any importance associated with these changes in ordinary life.

4. Distinguish clearly between conduction, convection, and radiation of heat.

A room is heated by hot-water radiators. Describe fully how the heat from the fire in the furnace is conveyed to a person in the room. What is the most suitable kind of surface for (a) the pipes leading from the furnace to the radiators, (b) the radiators, so that the system may be as efficient as possible ?

5. An object is placed in front of a plane mirror. Explain with the aid of a diagram how the image is formed. Is a person's image in a plane mirror similar to himself in every way? Where should a mirror be placed in a room so that a person may best see his image? Explain your answers.

6. What is meant by refraction of light? Give two everyday examples of refraction and in each case draw a careful diagram to show the path of the rays of light.

7. Describe a simple experiment to show that sound is reflected in the same manner as light.

What is an echo?

Describe how an echo may be used to determine the velocity of sound in air. Is the velocity of sound in air constant?

8. How may a piece of soft iron be (a) distinguished from a magnet, (b) magnetised, (c) demagnetised? Write a brief account of the Earth's magnetism.

9. What is meant by electro-magnetic induction?

Describe simple experiments to demonstrate it. Mention the factors on which the direction and electromotive force of a current depend.

10. Describe in detail (a) a flash-lamp battery, (b) a flashlamp bulb. Show with the aid of a diagram how the lamp works.