

AN ROINN OIDEACHAIS
(Department of Education.)

INTERMEDIATE CERTIFICATE EXAMINATION, 1942.

SCIENCE (Syllabus E).

FRIDAY, 12th JUNE.—AFTERNOON, 4 TO 6.

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

1. Describe (a) a simple spring balance, (b) an ordinary laboratory balance. Explain how each works, referring especially to the principle on which it is based.

If a sensitive spring balance were used to weigh a stone at the bottom of a deep mine and then at the top of a high mountain would you expect any difference between the two weighings? Would you expect the same result if a laboratory balance were used instead of a spring balance? Explain your answer in each case.

2. Describe, with the aid of a diagram, the phases of the moon and explain how they occur. At what phase does (a) an eclipse of the sun, (b) an eclipse of the moon take place? Do eclipses always occur at these phases? Explain your answer.

3. Write brief notes on each of the following:—(a) glacier, (b) ice-berg, (c) earthquake, (d) volcano. What evidence of glacial and volcanic action is to be found in Ireland?

4. Explain each of the following:—

(a) when a glass of cold water is placed in a warm room moisture is often noticed on its surface;

(b) the air in a room may feel colder for a little while after the fire has been lighted;

(c) the difficulty of making a snowball when the temperature is much below freezing point;

(d) water pumps at railway stations are often covered with a layer of straw;

(e) the air often feels warmer after a heavy downpour.

5. What is meant by refraction of light? Illustrate your answer by means of diagrams. Explain why a person sometimes seems distorted when viewed through a window pane. Describe, with the aid of a diagram, how an image is formed by the lens of a simple camera. Why is a small aperture used to admit the light?

6. State the laws of reflection of light.

Draw a diagram showing how a plane mirror may be used to form an image of the sun on the walls of a room. Explain why a small rotation of the mirror may cause considerable displacement of the position of the image thus formed.

Show with the aid of a diagram how the periscope of a submarine works.

7. What is a musical note? Describe two different ways in which a musical note may be produced. On what does (a) the loudness, (b) the pitch of a note depend? Describe the violin and explain carefully how notes of different pitches are produced.

8. How are electromagnets made? Describe, with the aid of a diagram, a simple telephone circuit and explain how the telephone works.

9. An electric lamp is marked 400 W; 220 V. Explain these terms and state approximately the strength of the current required to operate it. Show, with diagram, how two electric lamps and their switches would be arranged in an electric lighting circuit.

10. Describe the most important features of a machine for producing alternating electric current and explain its working. What determines the direction of the current?