

AN ROINN OIDEACHAIS

(Department of Education).

INTERMEDIATE CERTIFICATE EXAMINATION, 1949.

SCIENCE (Syllabus E).

FRIDAY, 17th JUNE.—MORNING, 10 TO 12.

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

1. Describe how a simple mercury barometer may be constructed in the laboratory and explain how it works.

Write a short note on the use of the barometer in preparing a forecast of the weather.

2. Describe, with the aid of a diagram, a simple experiment to find out (a) the time of true noon at your school, (b) the altitude of the sun at that time.

On any particular day the time of true noon at a certain place B is one hour later than at another place A, but the noon-day altitude of the sun is the same at A and B.

Tell what you know about the positions on the surface of the earth of A and B with respect to one another and explain your answer.

3. Describe the type of thermometer you would use and explain how you would use it to record the maximum and minimum temperatures during twenty-four hours.

Explain why the difference between the maximum and minimum temperatures during twenty-four hours is usually greater in a sandy desert than in Ireland.

4. Explain what is meant by saying that a substance is (a) opaque, (b) transparent, (c) translucent and give an example in each case to illustrate your answer.

What is the meaning of the intensity of illumination on a surface and how may it be used to find out which of two electric lamps gives the better light?

5. Explain, by means of a diagram, how an image is formed in a plane mirror.

If a person walks towards a vertical plane mirror at 2 mls. per hour, at what speed is he approaching his image in the mirror? Explain your answer.

A man is 6 feet in height and his eye is 5 feet 6 inches from the floor. Find, using a diagram, the length of the shortest plane mirror supported perpendicularly in which he will be able to see the whole of his image.

6. Explain how a tuning fork produces a musical note.

Explain, also, how (a) a piece of wire, (b) a glass tube open at both ends, may be used to produce a musical note of the same pitch as that produced by the tuning fork.

How may the intensity of the notes produced by the tuning fork and the piece of wire be increased?

7. Describe two methods by means of which an iron bar AB may be magnetised so that a north pole may be situated at the end A.

Explain what may be observed

(a) when the magnetised bar is suspended at its centre of gravity by means of a silk thread,

(b) when the bar is cut into two pieces AC and CB and each of the pieces is suspended at its centre of gravity by means of a silk thread,

(c) when a piece of soft iron is brought near the suspended bar,

(d) when iron filings are sprinkled on a piece of white paper placed on top of the bar.

8. Describe the type of cell used in a flash lamp and explain the functions of its various parts.

Show with the aid of a diagram the electric circuit in a flash lamp.

9. Describe how positive and negative charges of electricity may be produced by friction.

A small paper ball is suspended by means of a light thread and a positively charged body is moved slowly towards the ball until it touches it. A negatively charged body is then moved slowly in the direction of the ball until contact is made. State and explain what may be noticed in each case (a) before, (b) after, the charged body touches the ball.

10. Describe the various parts of a simple telephone circuit and explain how the telephone works.