

AN ROINN OIDEACHAIS

(Department of Education).

INTERMEDIATE CERTIFICATE EXAMINATION, 1948.

SCIENCE (Syllabus E).

WEDNESDAY, 23rd 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 is the Law of Flotation? How may it be demonstrated in the laboratory?

Explain how it is that an iron ship floats, although the density of iron is much greater than the density of water.

Explain why the depth a ship sinks changes as it sails (a) from fresh water into the sea, (b) from a cold sea to a warm one.

2. Explain the cause of :—(a) winds, (b) rain, (c) dew, (d) white frost, (e) hailstones, (f) fog.

3. What do you understand by conduction of heat? How may it be demonstrated in the laboratory that some substances conduct heat much better than others?

Mention and explain four everyday examples of bad conductors of heat, two to illustrate that they are very useful in certain cases and two to illustrate that in other cases they are a nuisance.

4. How may a piece of plane glass be converted into a mirror?

Explain, with the aid of a diagram, how a person sees the image of an object in a plane mirror, and prove that the image and object are (a) equal in magnitude, (b) equidistant from the mirror.

Explain why a person, viewing his image in a plane mirror situated a good distance from him, thinks that his image is smaller than himself although both are the same size.

5. Explain how sounds are produced. Why are some sounds not musical?

Explain how sound travels through the air and how its velocity may be measured.

How is the velocity of sound affected by atmospheric conditions?

6. What is a magnetic substance?

How may it be shown that some substances are magnetic while others are not?

Tell what you know of the earth's magnetism and explain how use may be made of it in navigation.

7. Mention the effects of passing an electric current through conductors and describe with diagrams how they may be demonstrated in the laboratory.

8. Describe the important parts of an electric motor and explain how it works.

9. Explain how an electric fire works. In what important respect does it differ from an electric bulb?

An electric fire is marked 500 W; 230 V. Explain the meaning of these markings and refer to their importance.

What would be the strength of the current passing through such a fire, and how much would it cost to keep it in use for 6 hours at 4d. per unit?

10. Give an account of the physical properties of water and explain how the climate of a region is influenced by its proximity to the sea.