

AN ROINN OIDEACHAIS  
(Department of Education).

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INTERMEDIATE CERTIFICATE EXAMINATION, 1954.

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SCIENCE (Syllabus E).

WEDNESDAY, 16th JUNE.—EVENING, 3 TO 5.

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

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1. Name the three states of matter and tell how they differ from one another.

Name a common substance which can exist in all three states under certain conditions and describe how it may be transformed from one state to another. Give an account of the changes which take place during the transformations.

[66 marks.]

2. State the law of flotation and give an account of how it may be verified in the laboratory in the case of any liquid other than water.

Describe, with the aid of a diagram, a direct-reading hydrometer. Explain how it works and give two examples of its use in every-day life.

[66 marks.]

3. What are clouds and how are they formed ?

Describe the different atmospheric conditions under which (a) rain, (b) hail, (c) dew, occur.

[66 marks.]

4. Explain what is meant by (a) a translucent substance, (b) a transparent substance, (c) an opaque substance, and give one example in each case.

Describe (i) the nature of the image formed in a plane mirror, (ii) how it may be shown that the object and its image are equidistant from the mirror.

A mirror, three feet high, stands vertically on a horizontal floor. A man, whose eyes are 5 ft. 4 in. from the floor stands erect in front of the mirror. How much of his image can he see ?

[66 marks.]

5. Describe, with the aid of a diagram, a mercury thermometer. What properties of mercury make it suitable for use in a thermometer ?

How do Fahrenheit and centigrade scales differ from each other ? What reading on a centigrade scale would correspond to a reading of (a) 50°F., (b) 20°F. ?

[66 marks.]

6. Describe experiments, one in each case, which show that (a) a solid, (b) a liquid, (c) a gas, expands when heated. In each case give an example from every-day life to illustrate the expansion.

[66 marks.]

7. Describe any method for measuring the velocity of sound in air. How may it be shown in the laboratory that sound cannot be transmitted in a vacuum?

Given the velocity of sound in water, describe how the depth of the sea may be measured.

[67 marks.]

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

Show, with the aid of a diagram, how the flash-lamp works.

[67 marks.]

9. What is an electric fuse? Why and where is it used?

Draw a diagram of an electric kettle, and also, of an electric light bulb, and explain how they work.

[67 marks.]

10. Describe, with the aid of diagrams, an electric motor and explain how it works.

[67 marks.]