AN ROINN OIDEACHAIS

(Department of Education).

INTERMEDIATE CERTIFICATE EXAMINATION, 1953.

SCIENCE (Syllabus E).

TUESDAY, 16th JUNE.—EVENING, 3 TO 5.

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

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1. Describe an instrument for measuring the pressure of the atmosphere and explain how it works.

Explain why the pressure of the atmosphere varies from time to time.

[66 marks.]

2. A beaker containing water and a thermometer is cooled slowly at a uniform rate from 15° C to −10° C. Describe all the changes which take place within the beaker.

Explain why the fall in temperature shown by the thermometer is not uniform.

[66 marks.]

3. Describe fully, with the aid of diagrams, how the following occur : (*a*) the seasons, (*b*) an eclipse of the sun.

Mention the different kinds of eclipse of the sun and explain how each of them occurs.

[66 marks.]

4. What is understood by (*a*) conduction, (*b*) convection, (*c*) radiation, of heat ? In each case give two examples and explain how these examples illustrate the phenomenon.

[66 marks.]

5. Write down the laws of reflection and of refraction of light.

Describe, with the aid of a diagram, how the path of a ray of light through a rectangular block of glass may be traced and how the refractive index of the glass may be measured.

Give, with the aid of a diagram, an example from everyday life of refraction of light.

[66 marks.]

6. Explain how an echo occurs, and give two everyday examples to illustrate your answer.

What is the approximate value for the speed of sound in air and how may it be measured ? In what way is the speed of sound affected by changes in atmospheric conditions ?

[66 marks.]

7. What is a magnet ?

Explain, giving one example of each, what is meant by (*a*) temporary magnetism, (*b*) permanent magnetism.

Describe how the nature of the magnetic field surrounding a bar-magnet may be investigated.

If a bar-magnet were moved along a table so that (*a*) one of its poles, (*b*) its middle point, approached some small pieces of iron and of copper resting on the table, explain what would be noticed.

[67 marks.]

8. Describe, using a clearly labelled diagram, any form of cell which produces electricity.

How may (*a*) the heating effect, (*b*) the magnetic effect, of passing an electric current through a conductor be demonstrated ? In the case of each of these effects, give an example of its application in everyday life.

[67 marks.]

9. Describe a simple form of dynamo, and explain how it works.

What sources of power are used to generate electricity in Ireland and how are they used ?

Give a brief account of how electricity is transmitted from the generating stations to the places where it is required. Why is alternating current used ?

[67 marks.]

10. Explain what is meant by (*a*) a conductor, (*b*) an insulator, in connection with electricity, and give two examples of the use of each.

Describe, with the aid of a diagram, the lighting circuit of an ordinary house, showing clearly the position of lamps, switches, fuses and meter, and also how these are connected in the circuit. Describe (*a*) the type of switch, (*b*) the type of fuse, generally used in such a circuit.

[67 marks.]