AN ROINN OIDEACHAIS M.52

INTERMEDIATE CERTIFICATE EXAMINATION, 1966

SCIENCE (Syllabus E)

WEDNESDAY, 15th JUNE - Morning, 10 to 12.30

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

1. Define density.
Describe fully how the density of (i) a liquid, (ii) a piece of cork, may be measured.

(66 marks)

2. What is meant by the pressure of the atmosphere ?
Give an account of a mercury barometer and describe how it is used to measure the pressure of the atmosphere.
What causes changes in atmospheric pressure ?

(66 marks)

3. Explain how each of the following occurs:
(i) rain, (ii) snow, (iii) frost, (iv) dew, (v) thunder and lightning.

(66 marks)

4. Describe an experiment to show that light travels in straight lines.
Explain, with the aid of diagrams, the formation of partial and total eclipses of (i) the sun, (ii) the moon.

(66 marks)

5. Explain what is meant by conduction, convection and radiation, of heat.
Describe experiments (one in each case) to show

(i) that water is a poor conductor of heat,
(ii) the formation of convection currents in a liquid which is being heated,
(iii) that a dark surface absorbs heat more readily than a bright surface.

(66 marks)

6. State the laws of refraction of light and describe an experiment to illustrate one of them.
Outline a method of measuring the refractive index of water.
If the depth of water in a pond is 8 ft., find the apparent depth of the water.
(refractive index of water is $\frac{4}{3}$.)

(66 marks)

7. Give an account of the production and propagation of sound.
How may the reflection of sound at a plane surface be demonstrated experimentally ?
Explain how echoes may be used to measure either the distance of an iceberg from a ship at sea or the depth of the sea.

(67 marks)

8. What are the properties of a magnet ?
Show, with the aid of a diagram, how a steel bar may be magnetised by means of (i) a magnet, (ii) an electric current.
Give an account of the construction and use of a ships compass or a dip circle.

(67 marks)

9. (a) Draw a sketch of a simple cell and describe what happens when current is being drawn from the cell. Mention the defects in this cell and indicate how the Leclanché cell overcomes these defects.

(b) Distinguish between a conductor and a non-conductor of electricity. How may a substance be tested in order that it may be classified as a conductor or a non-conductor.

(67 marks)

10. Describe, with the aid of a diagram, the construction of (i) an electric bell, (ii) a simple dynamo which produces alternating current. Explain the principle on which one or other of them is based.

(67 marks)