AN ROINN OIDEACHAIS M.52.

INTERMEDIATE CERTIFICATE EXAMINATION, 1965

SCIENCE (Syllabus E)

THURSDAY, 24th June - Evening 3 to 5.30

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

1. State the law of flotation and give a full account of an experiment in support of it.
Draw a sketch of a direct-reading hydrometer and describe how the hydrometer may be used to measure the density of a given liquid.
A block of wood floats in water with two-thirds of its volume beneath the surface. Find the density of the block of wood.

(66 marks)

2. State what you understand by the earth's atmosphere and give an account of its composition.
Describe briefly the chief properties of any two important constituents of the atmosphere.
Give an account of any experiment which shows that the atmosphere exerts pressure.

(66 marks)

3. State the relative sizes of the earth, the sun and the moon and, also, the approximate distance between (i) the earth and the sun, (ii) the earth and the moon.
Show, with the aid of diagrams, the motions of the earth and of the moon.
Explain how the tides occur.

(66 marks)

4. What do you understand by climate ?
Describe the factors which influence climate and discuss them with particular reference to the climate of Ireland.

(66 marks)

5. Describe the construction and graduation of a mercury thermometer which reads from -5°C. to 105°C.
Describe and discuss the advantages and disadvantages of using mercury in thermometers.
What reading on the centigrade scale corresponds to (a) 203°F., (b) 14°F.?

(66 marks)

6. State (i) the laws of reflection of light, (ii) the laws of refraction of light.
Describe how the refractive index of the glass in a given rectangular glass block may be measured.
Explain one of the following: (a) the formation of a mirage, (b) the sun is still visible a few minutes after it has gone below the horizon, (c) the brilliant appearance of a diamond.

(66 marks)

7. Describe and explain how a musical note may be produced by means of (i) a tuning fork, (ii) a siren.
Give an account of a laboratory experiment to measure the velocity of sound in air. Mention the effect, if any, of (i) increase of temperature, (ii) increase of pressure, on the velocity of sound in air.

(67 marks)

8. Give an account, with the aid of a diagram, of the earth's magnetism.
Describe (i) a compass, (ii) a dip-needle, and mention how they help us to examine the earth's magnetism.

(67 marks)

9. Name three important effects of an electric current and describe how each effect may be demonstrated in the laboratory. Mention two applications of each effect.

(67 marks)

10. Describe how it may be shown experimentally that when glass is rubbed with silk (i) both the glass and the silk become charged electrically, (ii) that the charge on the glass is of opposite sign to that on the silk.
Describe, with the aid of a sketch, an apparatus which produces electricity by friction.

(67 marks)