

AN ROINN OIDEACHAIS.

(Department of Education)

INTERMEDIATE CERTIFICATE EXAMINATION, 1961.

SCIENCE (Syllabus E).

WEDNESDAY, 14th JUNE.—EVENING, 3 TO 5.30.

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

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

Describe the three states in which water may exist and, also, how it may be transformed from one state to another, giving an account of what happens during the transformations.

[66 marks.]

2. What is meant by (i) force, (ii) mass, (iii) weight, (iv) density ? Describe fully how the density of cork may be found.

[66 marks.]

3. Give an account of the composition of the atmosphere and describe briefly its chief constituents.

Describe two simple experiments which show that the atmosphere exerts pressure.

How does the pressure of the atmosphere vary according to height above sea-level ?

[66 marks.]

4. Indicate the relative sizes of the earth, the sun and the moon.

Describe, with the aid of diagrams, the relative motions of the earth, the sun and the moon.

Knowing the distance of the sun from the earth, describe a method of measuring approximately the diameter of the sun.

Give an account of *any two* of the following : (i) the phases of the moon, (ii) the tides, (iii) the seasons.

[66 marks.]

5. Write an account of clouds.

Describe the atmospheric conditions under which (i) rain, (ii) hail, (iii) lightning, occurs.

[66 marks.]

6. What do you understand by (i) convection of heat, (ii) radiation of heat ?

Describe an experiment to demonstrate (a) convection currents in liquids, (b) convection currents in gases.

Describe, with the aid of a diagram, the thermos flask and explain the theory on which it is based.

[66 marks.]

7. (a) Explain the terms (i) umbra, (ii) penumbra.

Give an account of an experiment in which the intensities of two light sources are compared.

(b) Describe, with the aid of a diagram, an electric light bulb and explain how it works.

[67 marks.]

8. Describe how a musical sound may be produced and how it is propagated. Refer, in your answer, to a tuning fork and also to a stringed instrument.

What is the approximate value of the velocity of sound in air and how may it be measured ?

What is the effect of increased temperature on the velocity of sound in air ?

[67 marks.]

9. Give an account of a ship's compass.

State what you understand by (i) declination, (ii) angle of dip, and describe how they may be measured.

Describe how it may be shown that an electric current has a magnetic effect.

[67 marks.]

10. In the case of electricity, what do you understand by (i) a conductor, (ii) a non-conductor ? Give two examples in each case and refer to the use and importance of conductors and non-conductors.

Give an account of a transformer and explain how it works.

[67 marks.]