

INTERMEDIATE CERTIFICATE EXAMINATION, 1963.

SCIENCE (Syllabus E).

FRIDAY, 14th 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 describe an experiment in support of it.
Name and describe an instrument which is based on this law.
A uniform stick, 30 cms. in length, floats vertically in water so that one third of its length is above the surface. Find (i) the density of the stick, (ii) what length of the stick would be above the surface when the stick floats in a liquid of specific gravity 1.2.

(66 marks.)
2. Describe two experiments to show that the atmosphere exerts pressure.
Describe, with the aid of a diagram, an apparatus which measures the pressure of the atmosphere and explain how it works.
Write a note on the composition of the atmosphere.

(66 marks.)
3. Outline the climatic conditions under which the following occur:-
(a) hail, (b) rain, (c) snow, (d) frost, (e) dew.

(66 marks.)
4. Explain how thunder and lightning occur.
Describe how buildings may be protected against lightning.
Why is it inadvisable to seek shelter under a tree during a lightning storm?

(66 marks.)
5. Explain the terms (i) conduction, (ii) convection and (iii) radiation of heat and give two examples in each case to illustrate your answer.
Give an account of the thermos flask and the theory on which it is based.

(66 marks.)
6. What do you understand by (a) magnetic meridian, (b) declination, (c) dip?
Describe fully how the (i) declination, (ii) angle of dip, may be measured.

(66 marks.)
7. State the approximate speed of sound in air and describe how it may be measured in the laboratory.
Explain why sound travels further (a) over a lake than over the open countryside, (b) with the wind than against the wind.

(67 marks.)
8. Write the laws of refraction of light.
Show how these laws may be demonstrated experimentally.
Explain why the apparent depth of a pond is less than the true depth.

(67 marks.)
9. Mention the principal effects of an electric current and describe, with the aid of diagrams, how they may be demonstrated in the laboratory.
Give one application of each effect.

(67 marks.)
10. Describe, with the aid of a diagram, each of the following and explain how it works:-
(a) electric light switch,
(b) electric fuse,
(c) electric light bulb,
(d) electric fire.
Illustrate, by means of a simple circuit, how (a), (b) and (c) are connected in the ordinary house.

(67 marks.)