

# AN ROINN OIDEACHAIS

(Department of Education).

---

INTERMEDIATE CERTIFICATE EXAMINATION, 1955.

---

## SCIENCE (Syllabus B).

---

WEDNESDAY, 15th JUNE—EVENING, 3 TO 5.

---

[Not more than *six* questions are to be attempted. *Two* questions, at least, must be answered from each Section. Illustrate your answers wherever possible.]

### SECTION I.

1. Show clearly, with the aid of a diagram, how you would burn phosphorus in an enclosed volume of air and how you would compare the volume of the residual air with that of the original air.

What kind of change (physical change or chemical change) does (a) the phosphorus, (b) the air, undergo during the experiment? What information regarding the composition of air may be obtained from the results of that experiment?

[66 marks.]

2. Name an acid and an alkali which are commonly used in the laboratory and describe the properties of each. Give a full account of how you would use them to prepare a reasonably pure salt and name the salt.

[66 marks.]

3. Describe how you would construct and graduate a thermometer to measure temperature from  $-5^{\circ}\text{C}$ . to  $110^{\circ}\text{C}$ .

What is meant by the melting point of a solid and the boiling point of a liquid?

Describe, with the aid of a diagram, how you would measure (a) the melting point of wax, (b) the boiling point of alcohol.

[66 marks.]

4. What is a pendulum ?

Describe, with the aid of a diagram, how you would set up a simple pendulum and how you would find the time it takes to make one oscillation.

In the case of a pendulum clock which is going fast what adjustment would you make in the length of the pendulum in order to correct that fault ? Explain your answer.

[67 marks.]

5. Describe, with the aid of a diagram, how you would weigh a piece of iron in a liquid.

A piece of iron weighs 2.23 gm. less in water than it does in air. What is the explanation of that phenomenon and what is the volume of the piece of iron ?

If its specific gravity is 7, what will it weigh in a liquid of specific gravity 1.2 ?

[67 marks.]

## SECTION II.

6. Write a brief note on the importance of oxygen in plant and animal life.

Describe experiments to show the chief differences between fresh air and expired air. Explain the cause of the differences.

[66 marks.]

7. What are fruits and seeds ? What is the importance of seed dispersal ?

Name three different methods of seed dispersal in nature. In the case of each name a plant which uses that method and explain with the aid of a sketch how the dispersal is achieved.

[66 marks.]

8. Describe the structure of human skin and give an account of its functions.

Give an account of any points of resemblance between human skin and the skin of a green leaf.

[66 marks.]

9. Describe, with the aid of a diagram, how you would dissect a rabbit with a view to examining the relative positions of the following organs :—the heart, the diaphragm, the lungs.

Show, with the aid of a diagram, (a) how the heart operates in keeping the blood flowing in the lungs, (b) how the diaphragm assists in filling the lungs with air.

[67 marks.]

10. For what purposes do parts such as leaves, stems and roots of certain plants become modified ?

Name (a) a plant which has modified leaves, (b) a plant which has a modified stem, (c) a plant which has a modified root. In each case draw a diagram of the modified part, state its special function and show how it is suited to that function.

[67 marks.]