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(Department of Education).

LEAVING CERTIFICATE EXAMINATION, 1956.

PHYSICS AND CHEMISTRY—PASS.

TUESDAY, 12th JUNE.—EVENING, 3 to 5.30.

Not more than *six* questions may be attempted, *three* from Section I and *three* from Section II.

SECTION I.

1. State Boyle's Law. Describe how you would test the truth of the law for a pressure greater than atmospheric pressure and for a pressure less than atmospheric pressure.

The volume of a given mass of a gas at a pressure of 760 mm. of mercury is one litre. Calculate its volume at a pressure of 800 mm. of mercury, the temperature remaining constant.

[66 marks.]

2. Describe an experiment to show that in the case of a plane mirror the incident and reflected rays make equal angles with the normal at the point of incidence.

Describe an experiment to measure the refractive index of glass.

[66 marks.]

3. Write a brief note on the propagation of sound.

In the case of a vibrating stretched string (as in a violin), discuss the factors on which the pitch and the loudness of the note produced depend.

[66 marks.]

4. A bar-magnet lies in a horizontal plane with its North-seeking pole pointing south. Describe how the resultant magnetic field in its neighbourhood may be plotted and show by means of a sketch the nature of the field.

Describe any method for measuring the horizontal component of the earth's magnetic field.

[67 marks.]

5. Describe in detail the various parts of a simple dynamo and explain how the dynamo works.

[67 marks.]

SECTION II.

6. State (i) the Law of Constant Proportions, (ii) the Law of Multiple Proportions. Give a brief account of how the truth of the law might be demonstrated in each case.

[66 marks.]

7. Describe the action of heat on (i) potassium nitrate, (ii) lead nitrate, (iii) ammonium nitrate. Use chemical equations to illustrate the action in each case.

[66 marks.]

8. Describe the action of (i) hydrochloric acid on zinc, (ii) concentrated nitric acid on copper, (iii) sulphuric acid on cupric oxide. Name the products formed and illustrate the reactions by means of equations.

[66 marks.]

9. Describe the preparation and properties of carbon monoxide.

[67 marks.]

10. Describe the preparation of ethyl alcohol.

Compare and contrast the properties of ethyl alcohol and methyl alcohol.

[67 marks.]