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(Department of Education).

LEAVING CERTIFICATE EXAMINATION, 1948.

CHEMISTRY.—PASS.

WEDNESDAY, 23rd JUNE.—MORNING, 10 to 12.

Not more than *six* questions to be answered. All the questions have the same value.

Chemical changes should be expressed by equations as well as in words.

[Atomic weights: O=16; S=32. The Gram-molecular Volume =22.4 litres.]

1. State the differences between physical and chemical change, and give two examples of each.
2. Define (a) equivalent weight, (b) valency. Describe a method for the determination of the equivalent weight of copper.
3. Describe in detail the preparation of:—
 - (a) crystalline zinc sulphate from zinc.
 - (b) crystalline sodium sulphate from sodium hydroxide solution.
4. State Dulong and Petit's Law.
An oxide of a metal contains 7.39% oxygen. If the specific heat of the metal is 0.0324, calculate the exact atomic weight.
5. Write an equation to illustrate the reaction between hydrochloric acid and calcium carbonate. What information does the equation give concerning the reaction? What else do you know about this reaction besides the information given by the equation?
6. What are the physical and chemical properties which enable you to decide that sodium is a metal and that phosphorus is a non-metal?
7. Name the principle constituents of the atmosphere, and show how the weight of oxygen in a given volume of air may be determined.
8. Name (a) two metals which decompose cold water, and (b) two others which do not decompose cold water but which decompose heated steam.
Write an equation to illustrate the reaction in each case, and name the products.

9. Describe experiments to show that:—
- (a) hydrochloric acid contains chlorine,
 - (b) calcium carbonate contains carbon,
 - (c) red lead contains lead.
10. Describe the action of heat on (a) lead nitrate, (b) sodium nitrate, (c) ammonium nitrate, (d) potassium chlorate.
11. Describe (with sketch of apparatus) a method for the preparation of nitrogen in the laboratory, and discuss the properties of nitrogen.
12. Describe (with sketch of apparatus) a method for the preparation of sulphur dioxide in the laboratory.
- What volume of sulphur dioxide, measured at 13° C. and 720 mm. could be obtained from 8 grams of sulphur?