

Thursday, May 9.—Morning, 10 to 1.

CHEMISTRY.

Examiners: PROFESSOR G. LAWSON, LL. D., PH. D., and H. A. BAYNE, Esq., M. A., PH. D.

1. What is the composition of water as regards kind, weight, and volume of its constituent elements? What is its specific gravity? What is meant by specific gravity? What gases and salts are commonly found in natural waters, and what tests are employed to detect them? How would you ascertain whether a given sample of water acted upon lead?
2. Describe the process of manufacture of Phosphorus from bones, with the special view of illustrating the chemical characters of Phosphoric Acid.
3. Give an account of the preparation, purification, constitution, chemical properties, and solubility in water, and alcohol, of Potassium Hydrate.
4. What is the strict chemical constitution of the substance commonly called Chloride of Lime? How is it prepared? What is evolved from it by exposure to air, and when acted on by H. Cl.?
5. Describe Mercury, its properties as a metal, its principal salts, their chemical characters, solubility, etc., and give tests for them.
6. The equivalent weight of a polygenic element is the smallest quantity of it that can unite with an equivalent of a monogenic element, and the atomic weight, or atom, is the smallest quantity of an element that can unite with others without introducing fractions of equivalents. In the case of a monogenic element, the atomic and equivalent weights are identical, but the atomic weight of a polygenic element is always greater than the equivalent weight in the ratio of 2 to 1, 3 to 1, 4 to 1, etc. Explain and illustrate the meaning of the preceding definitions and statement by a comparison of the possible decompositions of Water, Hydrochloric Acid, Sodium Hydrate, Ammonia, Methane, and the Chloromethanes.
7. Describe the process for preparing Chloroform; explain what is its chemical constitution; what impurities are apt to be present, why they exist, and the methods of detecting them.
8. Explain the meanings of the following terms:—(1) Eremacausis or Decay. (2) Putrefaction. (3) Fermentation. (4) Distillation. (5) Fractional Distillation. (6) Destructive Distillation.
9. Give some account of the principal forms of Albuminoid and Gelatinous substances contained in or obtained from animal tissues.