

INTERMEDIATE EXAMINATIONS, JULY, 1879.

CHEMISTRY.

Values.	QUESTIONS.	Values.	QUESTIONS.
4	1. What is understood in chemistry by the expression an "element" or an "elementary body?"	4	How could you distinguish between Marsh Gas and Hydrogen?
4	How could you show that air is not an element?	4	Between Olefiant Gas and Carbon Monoxide?
4	What is the difference between a mechanical mixture and a chemical compound?	4	5. In what respects does Sulphur resemble Oxygen?
4	How could you show that Nitrogen Monoxide is a chemical compound?	4	By what other means, besides burning Sulphur, can Sulphur Dioxide be prepared?
4	2. Describe any method of preparing Oxygen.	2 x 4	Explain its action with solutions (1) of Potash, (2) of Chlorine.
4	Write in symbols the reaction that occurs when Oxygen is prepared from Potassium Chlorate.	6	6. How much Phosphorus is contained in 120 lbs. of bone-ash consisting of 88.4 per cent. of $\text{Ca}_3(\text{PO}_4)_2$ and 11.5 per cent. of CaCO_3 ? ($\text{Ca} = 40$.)
4	You are given three vessels, and are told that one contains Oxygen; one, Nitrogen Monoxide; and one common Air; how would you determine which vessel contains the Oxygen?	6	What volume of Hydrogen is contained in one ounce of Microcosmic Salt $\text{NaNH}_4\text{HPO}_4 \cdot 4\text{H}_2\text{O}$? (37 grains of Hydrogen to the cubic foot; $\text{Na} = 23$.)
4	What volume of Oxygen will 8 ounces of Potassium Chlorate yield; a cubic foot of Hydrogen at 60°F . and 30 ins. Bar. weighing 37 grains. ($\text{K} = 39.1$.)	8	7. What is the simplest formula that can be assigned to a substance containing Carbon, 54.5 } Hydrogen, 9.2 } per cent? Oxygen, 36.3 }
4 x 4	3. How may Nitrogen, Nitric Oxide (NO), Nitrous Anhydride (N_2O_3), and Nitrogen Peroxide (NO_2) be severally obtained from Nitric Acid or a Nitrate?	5	8. The chimney-glass increases the brightness of the flame of the common coal-oil lamp; why does it do so?
4	4. How could you distinguish Carbon Dioxide from Nitrogen?	5	If you drive a current of air into the flame of an ordinary candle, the flame appears less bright than it did before the introduction of the air. Explain why this is the case.
4	The gas that sometimes collects at the bottom of deep wells is said to be Carbon Dioxide. By what experiments could you test the correctness of this statement?		