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Molecular formula practice key

1 message

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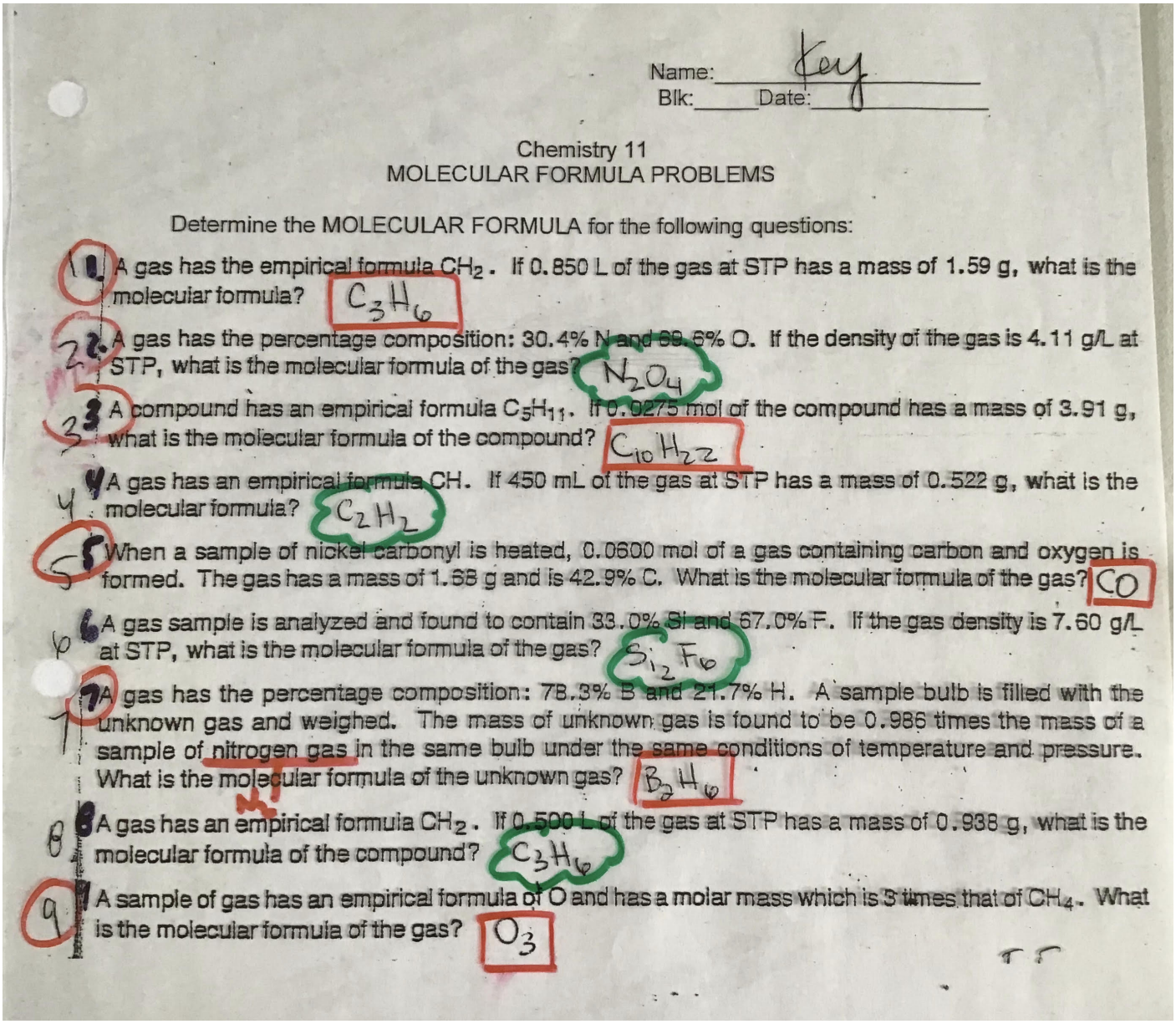

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Chemistry 11
MOLECULAR FORMULA PROBLEMS

Determine the MOLECULAR FORMULA for the following questions:

1. A gas has the empirical formula CH_2. If 0.850 L of the gas at STP has a mass of 1.59 g, what is the molecular formula? C_3H_6

2. A gas has the percentage composition: 30.4% N and 69.6% O. If the density of the gas is 4.11 g/L at STP, what is the molecular formula of the gas? N_2O_4

3. A compound has an empirical formula C_5H_{11}. If 0.0275 mol of the compound has a mass of 3.91 g, what is the molecular formula of the compound? $C_{10}H_{22}$

4. A gas has an empirical formula CH. If 450 mL of the gas at STP has a mass of 0.522 g, what is the molecular formula? C_2H_2

5. When a sample of nickel carbonyl is heated, 0.0600 mol of a gas containing carbon and oxygen is formed. The gas has a mass of 1.68 g and is 42.9% C. What is the molecular formula of the gas? CO

6. A gas sample is analyzed and found to contain 33.0% Si and 67.0% F. If the gas density is 7.60 g/L at STP, what is the molecular formula of the gas? Si_2F_6

7. A gas has the percentage composition: 78.3% B and 21.7% H. A sample bulb is filled with the unknown gas and weighed. The mass of unknown gas is found to be 0.986 times the mass of a sample of nitrogen gas in the same bulb under the same conditions of temperature and pressure. What is the molecular formula of the unknown gas? B_2H_6

8. A gas has an empirical formula CH_2. If 0.500 L of the gas at STP has a mass of 0.938 g, what is the molecular formula of the compound? C_3H_6

9. A sample of gas has an empirical formula of O and has a molar mass which is 3 times that of CH_4. What is the molecular formula of the gas? O_3