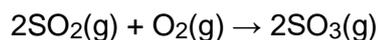


Chemistry High Level (test for 45 min)

Please read carefully all tasks. All tasks are in English, but they are composed considering the 9th grade program. Choose the only one correct answer in each task and fill in the final table.

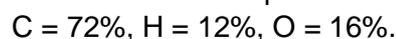
1. 3.0 dm³ of sulfur dioxide is reacted with 2.0 dm³ of oxygen according to the equation below.



What volume of sulfur trioxide (in dm³) is formed? (Assume the reaction goes to completion and all gases are measured at the same temperature and pressure.)

- A. 5.0 B. 4.0 C. 3.0 D. 2.0

2. The percentage by mass of the elements in a compound is



What is the mole ratio of C:H in the empirical formula of this compound?

- A. 1 : 1 B. 1 : 2 C. 1 : 6 D. 6 : 1

3. Calcium carbonate decomposes on heating as shown below.



When 50 g of calcium carbonate is decomposed, 7 g of calcium oxide is formed. What is the percentage yield of calcium oxide?

- A. 7% B. 25% C. 50% D. 75%

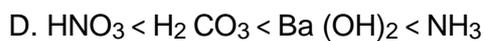
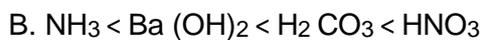
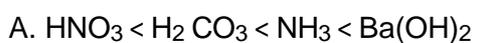
4. Consider the composition of the species. Which species is an anion?

Answer	Number of protons	Number of neutrons	Number of electrons
A.	9	10	10
B.	11	12	11
C.	12	12	12
D.	13	14	10

5. What is the correct number of each particle in a fluoride ion, $^{19}\text{F}^-$?

Answer	protons	neutrons	electrons
A.	9	10	8
B.	9	10	9
C.	9	10	10
D.	9	19	10

6. When the following 1.0 mol dm^{-3} solutions are listed in increasing order of pH (lowest first), what is the correct order?



7. What are the oxidation numbers of the elements in sulfuric acid, H_2SO_4 ?

Answer	o.n. Hydrogen	o.n. Sulfur	o.n. Oxygen
A.	+1	+6	-2
B.	+1	+4	-2
C.	+1	+1	+4
D.	+1	+6	-8

