



## TO COMBINE THE CHEMICAL TASKS ON THE BASIS OF SYSTEMATIC ANALYSIS

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**ABSTRACT:** - The paper involves the construction of chemical tasks in chemistry in the general secondary education system and the use of systematic methods of analysis in their solution. Approaching combined tasks on the basis of systematic analysis and interpreting them on the basis of illustrative tools has a significant impact on increasing the level of mastery and interest of students.

**KEYWORDS:** Combined tasks, illustration, system analysis, competence.

### INTRODUCTION

To solve the complex problems in chemistry (combination), it will be required not only in-depth knowledge, but also it involves the ability to quickly connect information, logical thinking. Combined problems can be formed as a result of different chemical formulas, reactions, mixing of chemical laws, based on complex mathematical calculations. From the simplest issue, it is based on systematic complication with step-by-step changes. Students need to understand that complex problems are a collection of a number of simple problems, and develop practical skills.

The main results and findings

Tasks of type I

1) How many moles of hydrogen are formed when 6.5 g of Zn is reacted with hydrochloric acid? A) 0.5. B) 0.1. C) 0.2. D) 0.3.

2) How many grams of copper are obtained when copper (II) oxide is returned with the gas formed when 6.5 g of Zn is reacted with hydrochloric acid? A) 6.4. B) 3.2. C) 9.6. D) 1.6.

3) Copper (II) oxide was completely recovered using a gas formed when 6.5 g of Zn was

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reacted with hydrochloric acid. How many liters of gas are formed under normal conditions when the obtained copper is exposed to concentrated nitric acid? A) 2.24. B) 3.36. C) 4.48. D) 6.72.

4) Copper (II) oxide was completely recovered using a gas formed when 6.5 g of Zn was reacted with hydrochloric acid. The resulting copper was exposed to concentrated nitric acid. Determine the percentage

concentration of the solution formed when the released brown gas is absorbed by 187.8 g of water in the presence of oxygen. A) 12.6. B) 3.15. C) 6.4. D) 9.45.

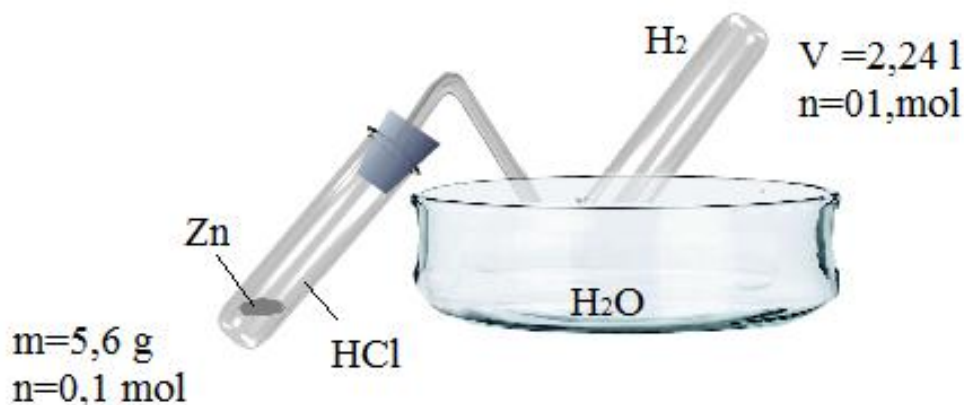
An illustration method can also be used to clearly explain the content of the task.

1. Given assignment:



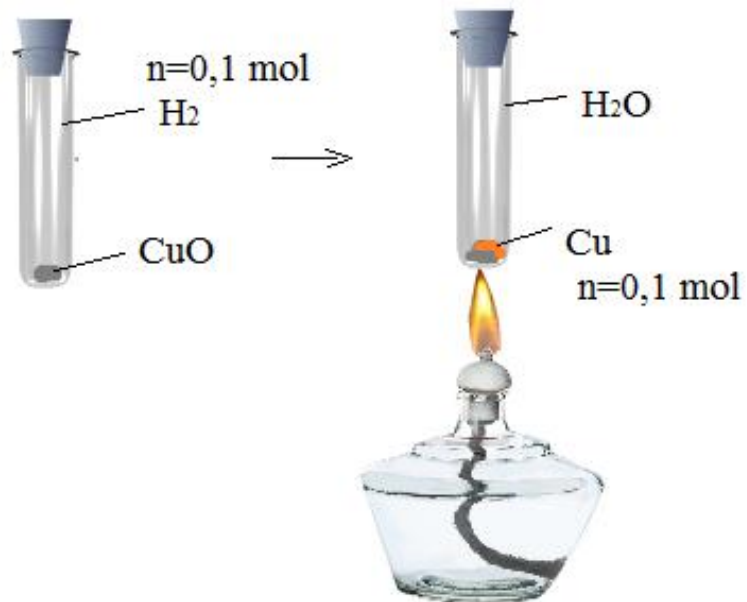
2. Data collection:

1)



2)

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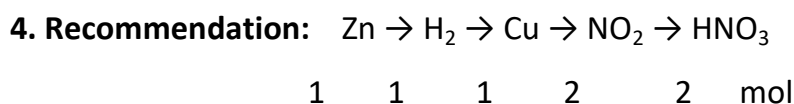
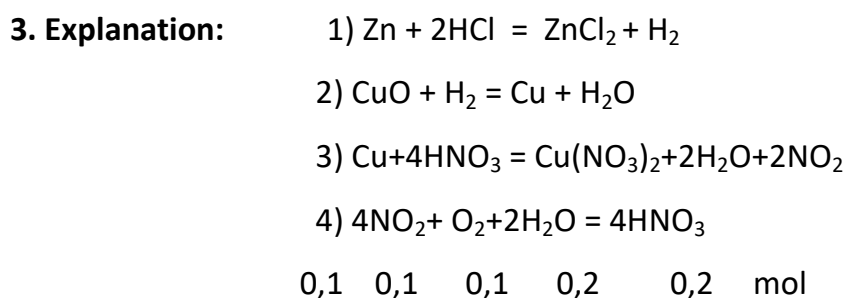
3)



4)



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$$m_1(\text{HNO}_3) = n \cdot M = 0,2 \cdot 63 = 12,6 \text{ g} \quad m(\text{NO}_2) = 0,2 \cdot 46 = 9,2 \text{ g}$$

$$m(\text{solution}) = m(\text{NO}_2) + m(\text{H}_2\text{O}) = 9,2 + 187,8 = 197$$

$$C\% = \frac{m_1 \cdot 100}{m} = \frac{12,6 \cdot 100}{197} = 6,4 \%$$

### 5. Confirmation:

Using the hydrogen with the treated of 6.5 g zinc to hydrochloric acid, that nitric oxide ( $\text{NO}_2$ ) obtained when copper is returned and exposed to nitric acid, so the  $\text{NO}_2$  is dissolved in 187.8 g of water in the presence of oxygen and 6.4% nitric acid solution is formed.

Combining chemical tasks on the basis of systematic analysis, in accordance with the principles of systematic, integrated education, and with the facilitating the learning process of students, as well as the analysis of existing knowledge, comparison, generalization, critical thinking, quick and accurate analysis of the situation are formed. Understanding the settings helps to form important features such as arranging complex

situations, defining the sequence of problem solving.

### CONCLUSION

Applying the knowledge acquired by students to solve familiar problems on the topic means that they have developed skills, while solving unfamiliar problems created with a modified new approach means that they have developed skills. In order to bring students' knowledge, skills and abilities to the level of competence, the problem is solved first through illustrations based on pictures or videos, and then through the organization of experiments, in which they can process, select the necessary conditions and devices, it is recommended to develop the skills to apply in daily activities.

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