

# Chem!stry

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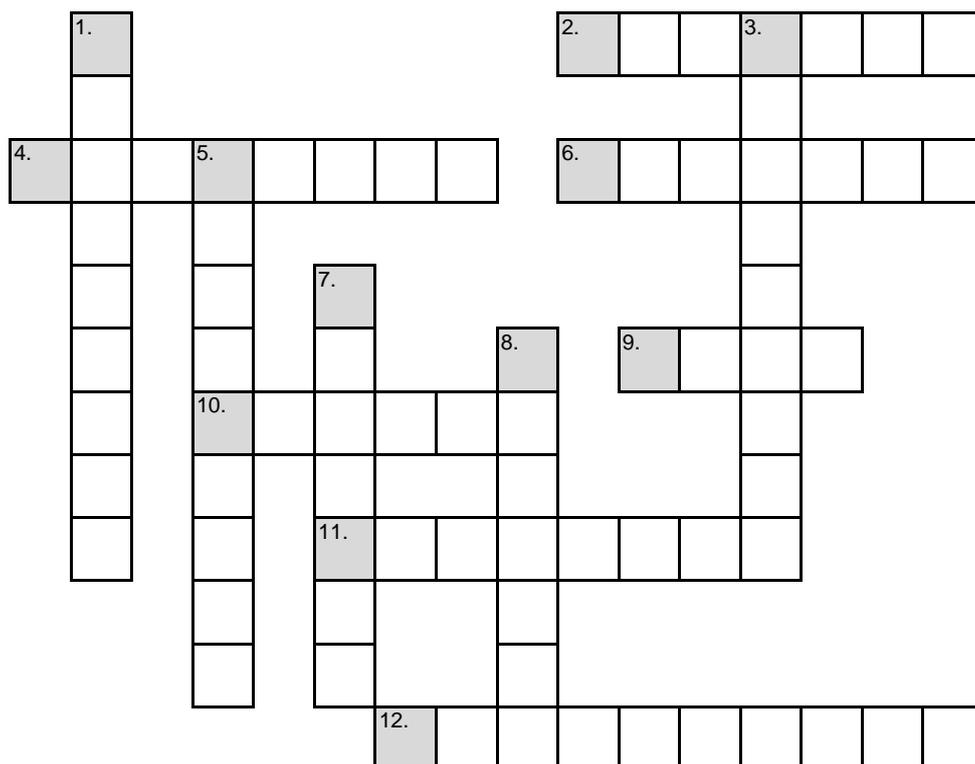
Class: .....

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## Questions on Qualitative Analysis – Assignment 4

### Question One:

Complete the crossword puzzle given below:



### Across

2. Cations of this metal produce a white precipitate with aqueous sodium hydroxide. The precipitate is insoluble in excess reagent (7).
4. This anion produces a white precipitate with aqueous barium nitrate. The precipitate is insoluble in nitric acid (8).
6. This anion is reduced to form an alkaline gas when warmed with sodium hydroxide and Devarda's alloy (7).
10. Compounds of this metallic element are all soluble in water (6).
11. This anion produces a white precipitate with aqueous silver nitrate. The precipitate is insoluble in nitric acid (8).
12. In general, cations of these metals form coloured aqueous solutions and coloured precipitates (10).

### Down

1. Cations of this metal produce a white precipitate with aqueous ammonia. The precipitate is insoluble in excess reagent (9).
3. When an acid is added to this anion, a colourless gas is produced which gives a white precipitate when bubbled through lime water (9).
5. Compounds of this Group I metal produce a characteristic lilac flame colour (9).
7. In the following ionic half-equation, the chromium is...? (7)  

$$\text{Cr}_2\text{O}_7^{2-}(\text{aq}) + 14\text{H}^+(\text{aq}) + 6\text{e}^- \rightarrow 2\text{Cr}^{3+}(\text{aq}) + 7\text{H}_2\text{O}(\text{l})$$
8. This colourless gas, which turns moist red litmus paper blue, is produced when an ammonium salt is warmed with a hydroxide (7).

**Question Two:**

When aqueous barium nitrate is added to an aqueous solution of compound **T**, a white precipitate is formed.

a) What information about compound **T** can be deduced from this information? Support your answer by writing relevant ionic equation(s):

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b) What further test(s) would need to be performed in order to clarify the answer given in part a)? What would be observed? Support your answer by writing relevant ionic equation(s):

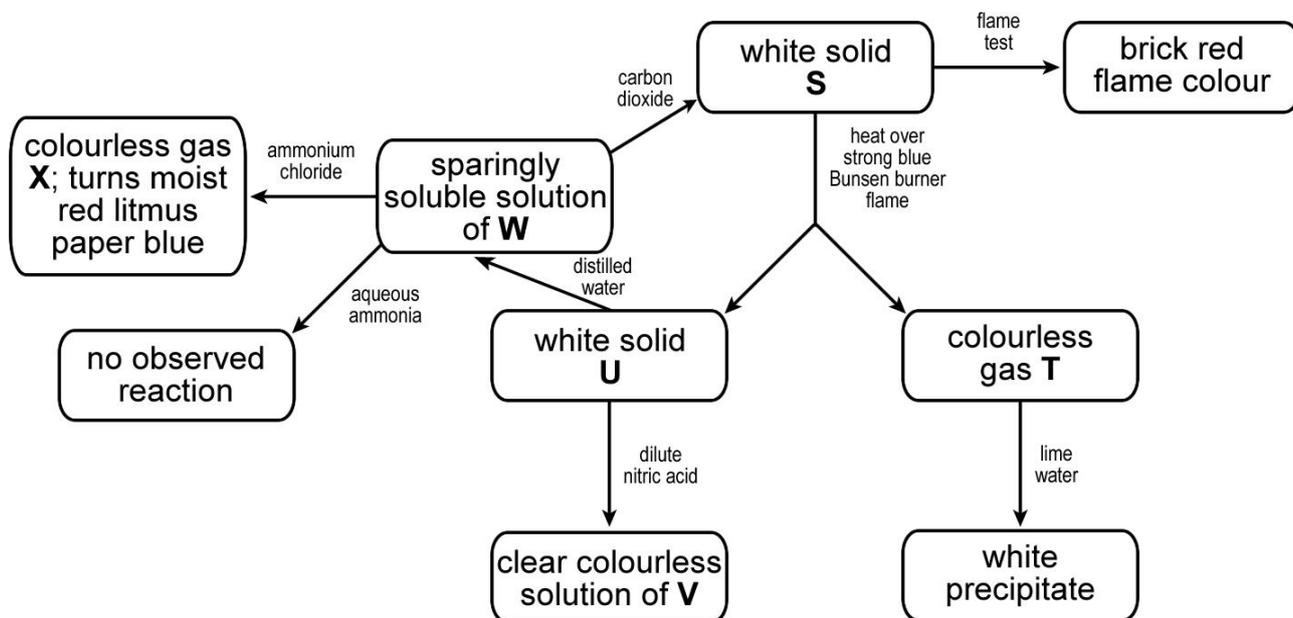
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**Question Three:**

Study the reaction sequence shown below:



a) Give the name and formula of the element, compound or ion:

**S** ..... **T** .....

**U** ..... **V** .....

**W** ..... **X** .....

b) Write the balanced chemical equation for the formation of **V**:

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c) Write the balanced chemical equation for the formation of **W**:

.....

d) Write the balanced chemical equation for the formation of **X**:

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e) Write the ionic equation for the formation of **X**:

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- Scan the QR code below for the answers to this assignment.



[http://www.chemist.sg/qualitative\\_analysis/qa\\_assignment\\_4\\_ans.pdf](http://www.chemist.sg/qualitative_analysis/qa_assignment_4_ans.pdf)