



# Chemical Analysis

## Multiple Choice Questions

### Set 5 (Chemistry Only)

You may use a periodic table to help you answer these questions.

Tick **one** box.

1. In a flame test, what colour flame would you expect to observe for a compound containing lithium ions?
- A. crimson ☐
  - B. lilac ☐
  - C. orange-red ☐
  - D. yellow ☐
2. A student carried out a flame test on a substance labelled as W. A green flame was observed. What can the student conclude?
- A. W contains  $\text{Cu}^{2+}$  ions ☐
  - B. W contains  $\text{Fe}^{2+}$  ions ☐
  - C. W contains  $\text{Na}^+$  ions ☐
  - D. W contains  $\text{SO}_4^{2-}$  ions ☐
3. When a small amount of sodium hydroxide is added to a colourless solution, a white precipitate forms. When excess sodium hydroxide is added, the precipitate dissolves. Which of the following cations could be present in the solution?
- A.  $\text{Al}^{3+}$  ☐
  - B.  $\text{Ca}^{2+}$  ☐
  - C.  $\text{Fe}^{3+}$  ☐
  - D.  $\text{Na}^+$  ☐
4. Which statement about flame emission spectroscopy is **not** true?
- A. the concentration of the sample can be measured ☐
  - B. the line spectrum produced can be used to identify metal ions in the sample ☐
  - C. the sample is placed into a flame ☐
  - D. the sample needs to be solid ☐
5. That is one advantage of using instrumental methods to identify elements and compounds?
- A. they are accurate ☐
  - B. they are expensive ☐
  - C. they are insensitive ☐
  - D. they take longer than simple chemical tests ☐



6. What is the correct balanced equation for the reaction between magnesium chloride solution and sodium hydroxide solution?
- A.  $\text{MgCl}_2 (\text{aq}) + \text{NaOH} (\text{aq}) \longrightarrow \text{Mg}(\text{OH})_2 (\text{s}) + \text{NaCl} (\text{aq})$  ☐
- B.  $\text{MgCl}_2 (\text{aq}) + 2\text{NaOH} (\text{aq}) \longrightarrow \text{Mg}(\text{OH})_2 (\text{s}) + 2\text{NaCl} (\text{aq})$  ☐
- C.  $\text{MgCl} (\text{aq}) + \text{NaOH} (\text{aq}) \longrightarrow \text{MgOH} (\text{s}) + \text{NaCl} (\text{aq})$  ☐
- D.  $2\text{MgCl} (\text{aq}) + \text{NaOH} (\text{aq}) \longrightarrow 2\text{MgOH} (\text{s}) + \text{NaCl} (\text{aq})$  ☐
7. A student has made sodium chloride crystals in the laboratory. How could they test the purity of their product?
- A. analyse its flame emission spectrum ☐
- B. carry out a flame test ☐
- C. determine the melting point of the crystals ☐
- D. observe the crystals under a microscope ☐
8. Which of the following indicates a positive result when testing for carbon dioxide gas?
- A. a burning splint produces a squeaky pop ☐
- B. a glowing splint relights ☐
- C. damp litmus paper is bleached ☐
- D. limewater turns milky (cloudy) ☐
9. Which compound forms a yellow precipitate when silver nitrate and nitric acid are added to it in solution and produces a yellow flame in a flame test?
- A. calcium bromide ☐
- B. calcium iodide ☐
- C. sodium bromide ☐
- D. sodium iodide ☐
10. Which method could be used to determine the number of compounds in a mixture?
- A. chromatography ☐
- B. flame test ☐
- C. melting point analysis ☐
- D. titration ☐