

7.2 Oxides

Name: _____ Class: _____ Date: _____

Total: 8 marks

KEY WORDS basic • oxides • acidic • amphoteric • acid

Objective

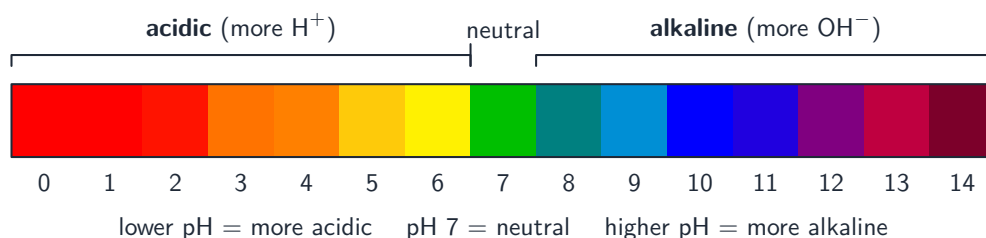
Build the skills to answer exam questions on **oxides** – classifying them as **acidic**, **basic** or **amphoteric**.

You must be able to:

- classify metal oxides as basic and non-metal oxides as acidic
- recognise amphoteric oxides (Al_2O_3 , ZnO)
- predict reactions with acids/bases

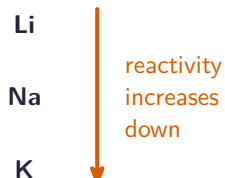
1 Key knowledge and worked examples

■ Classifying oxides

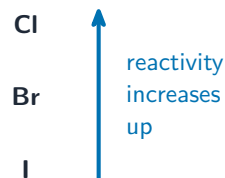


Acidic oxides (non-metals) lower the pH; basic oxides (metals) raise it

Group I



Group VII



Oxide character changes across a period

- **acidic oxides:** non-metal oxides (SO_2 , CO_2).

- **basic oxides:** metal oxides (CuO, CaO).
- **amphoteric:** react with both acids and bases (Al₂O₃, ZnO).

2 Practice

2.1 State whether copper(II) oxide is acidic or basic. [1]

2.2 Name one amphoteric oxide. [1]

3 Exam-style questions

3.1 Which oxide is acidic? [1]

☐

- A CaO
- B Na₂O
- C SO₂
- D CuO

3.2 Aluminium oxide is amphoteric.

(a) State what 'amphoteric' means. [1]

(b) State the type of substance you would react it with to show its acidic behaviour. [1]

3.3 Predict whether magnesium oxide is acidic or basic, and write the product when it reacts with hydrochloric acid. [3]

Solutions

Each answer shows the steps, then the **result**.

2.1

- copper(II) oxide is a metal oxide
- it is **basic**

2.2

- e.g. **aluminium oxide** Al_2O_3 or **zinc oxide** ZnO

3.1 C

- SO_2 is a **non-metal oxide**, so it is **acidic**
- A, B and D are metal oxides (basic)

3.2

(a)

- **amphoteric** means it reacts with **both acids and bases** (to form a salt and water)

(b)

- react it with a **base** (or alkali)

3.3

- magnesium oxide is a metal oxide, so it is **basic**
- it reacts with HCl to form **magnesium chloride and water**