

7.2 Oxides

Name: _____ Class: _____ Date: _____

Total: 8 marks

KEY WORDS basic 碱性 • oxides 氧化物 • acidic 酸性 • amphoteric 两性 • acid 酸

Objective

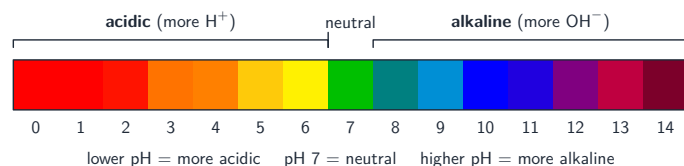
Build the skills to answer exam questions on **oxides** 氧化物 — classifying them as **acidic** 酸性, **basic** 碱性 or **amphoteric** 两性.

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 Worked examples

■ Classifying oxides



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

Group I		Group VII
Li	 reactivity increases down	Cl
Na		Br
K		I
		 reactivity increases up

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 (Al_2O_3 , 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 Na_2O
- C SO_2
- 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

2.1 basic.

2.2 aluminium oxide (Al_2O_3) or zinc oxide (ZnO).

3.1 C. SO_2 is a non-metal oxide — acidic.

3.2 (a) it reacts with both acids and bases (to form a salt and water).
(b) a base (or alkali).

3.3 magnesium oxide is basic (it is a metal oxide); it reacts with HCl to form magnesium chloride and water.