

Past-paper walk-through

Oxides ■ 7.2

eXercise

Questions in this set

- 0620/21 N25 Q22 ■ 1 mark
- 0620/22 N25 Q21 ■ 1 mark
- 0620/23 N25 Q25 ■ 1 mark
- 0620/22 J25 Q20 ■ 1 mark
- 0620/23 J25 Q20 ■ 1 mark
- 0620/22 M25 Q23 ■ 1 mark

Question 22

0620/21 N25 ■ Q22 ■ 1 mark

22 Four metal oxides are listed.



Which metal oxides are amphoteric?

A 1 and 4

B 1 only

C 2, 3 and 4

D 2 and 3 only

Solution 22

Answer: **A**

Why

- An amphoteric oxide reacts with both acids and alkalis.
- Aluminium oxide and zinc oxide are the two common amphoteric oxides.
- Calcium oxide and copper(II) oxide are simply basic.

Question 21

0620/22 N25 ■ Q21 ■ 1 mark

21 Phosphorus is an element in Group V of the Periodic Table.

It burns in air to form an oxide that dissolves in water to form a solution with a pH of 1.

Which row describes this oxide of phosphorus?

	metal oxide	non-metal oxide	acidic oxide	basic oxide
A	✓	✗	✓	✗
B	✓	✗	✗	✓
C	✗	✓	✓	✗
D	✗	✓	✗	✓

key

✓ = yes

✗ = no

Question 21

Solution 21

Answer: **C**

Why

- Phosphorus is a non-metal, so its oxide is a non-metal oxide.
- A solution of pH 1 is strongly acidic.
- So it is a non-metal oxide and acidic – metal oxides are basic.

Question 25

0620/23 N25 ▪ Q25 ▪ 1 mark

25 Which metal oxide reacts with aqueous sodium hydroxide to form a salt and water?

- A** calcium oxide
- B** copper(II) oxide
- C** sodium oxide
- D** aluminium oxide

Solution 25

Answer: **D**

Why

- Reacting with an alkali to give a salt and water is acidic behaviour.
- A metal oxide that does that as well as reacting with acids is amphoteric.
- Aluminium oxide is the amphoteric one; calcium and sodium oxides are purely basic.

Question 20

0620/22 J25 ■ Q20 ■ 1 mark

20 Which three oxides are **all** acidic?

A CaO, NO₂, SO₂

B CaO, CO₂, Na₂O

C CO_2 , NO_2 , SO_2

D CO_2 , Na_2O , SO_2

Solution 20

Answer: **C**

Why

- Non-metal oxides are acidic; metal oxides are basic.
- CO_2 , NO_2 and SO_2 are all oxides of non-metals.
- CaO and Na_2O are metal oxides, so any set containing them is not all acidic.

Question 20

0620/23 J25 ■ Q20 ■ 1 mark

20 Which row identifies an acidic oxide, a basic oxide and an amphoteric oxide?

	acidic	basic	amphoteric
A	ZnO	SO ₂	Al ₂ O ₃
B	SO ₂	Al ₂ O ₃	Na ₂ O
C	ZnO	Al ₂ O ₃	SO ₂
D	SO ₂	Na ₂ O	Al ₂ O ₃

Solution 20

Answer: **D**

Why

- A non-metal oxide is acidic, so SO_2 is the acidic one.
- A Group I metal oxide is basic, so Na_2O is basic.
- Al_2O_3 reacts with both acids and alkalis, which makes it amphoteric.

Question 23

0620/22 M25 ■ Q23 ■ 1 mark

- 23** Element E is a metal in Group I of the Periodic Table and element G is a non-metal in Group VII. Both of these elements form oxides.

Which statement about their oxides is correct?

- A** Both oxides are acidic.
- B** Both oxides are basic.
- C** The oxide of E is acidic and the oxide of G is basic.
- D** The oxide of G is acidic and the oxide of E is basic.

Solution 23

Answer: **D**

Why

- A metal oxide is basic and a non-metal oxide is acidic.
- E is in Group I, so its oxide is basic; G is in Group VII, so its oxide is acidic.
- So one is basic and the other acidic – they cannot both be the same.