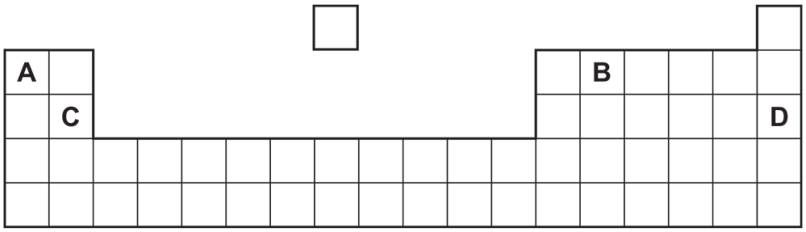
8.2 Types of oxides

01. 0620_m21_qp_22 Q: 19

Part of the Periodic Table is shown.

Which element forms an acidic oxide?



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02. 0620_s21_qp_21 Q: 18

Element X forms an oxide, XO, that neutralises sulfuric acid.

Which row describes X and XO?

	element X	nature of oxide, XO
A	metal	acidic
B	metal	basic
C	non-metal	acidic
D	non-metal	basic

---

03. 0620_w21_qp_21 Q: 18

Which element forms an amphoteric oxide?

A aluminium

B carbon

C magnesium

D silicon

---

04. 0620_w21_qp_22 Q: 18

Oxide 1 is a solid that reacts with dilute hydrochloric acid.

Oxide 2 is a gas that reacts with sodium hydroxide solution.

What are the formulae of the oxides?

	oxide 1	oxide 2
A	CaO	MgO
B	MgO	NO_2
C	NO_2	SO_2
D	SO_2	CaO

---

04. 0620_w21_qp_23 Q: 18

Basic oxides are neutralised by acidic oxides.

Which element forms an oxide that neutralises calcium oxide?

A hydrogen

B magnesium

C sodium

D sulfur

---

06. 0620_w21_qp_23 Q: 19

Four solid oxides are added to dilute hydrochloric acid and aqueous sodium hydroxide.

Which row describes an amphoteric oxide?

	hydrochloric acid	sodium hydroxide
A	✓	✓
B	✗	✓
C	✓	✗
D	✗	✗

key

✓ = reacts

✗ = does not react

---

07. 0620_m20_qp_22 Q: 18

X, Y and Z are oxides of elements in the same row of the Periodic Table.

Some information about each oxide is shown.

oxide	solubility in water	ability to neutralise an acid	ability to neutralise an alkali
X	soluble	✗	✓
Y	insoluble	✓	✓
Z	slightly soluble	✓	✗

key
✓ = able
✗ = not able

Which types of oxides are X, Y and Z?

	X	Y	Z
A	acidic	amphoteric	basic
B	amphoteric	basic	basic
C	basic	amphoteric	acidic
D	basic	acidic	amphoteric

---

08. 0620_p20_qp_20 Q: 23

The reactions of four different oxides W, X, Y and Z are shown.

W reacts with hydrochloric acid but not sodium hydroxide.

X reacts with both hydrochloric acid and sodium hydroxide.

Y does not react with either hydrochloric acid or sodium hydroxide.

Z reacts with sodium hydroxide but not hydrochloric acid.

Which row shows the correct types of oxide?

	acidic	basic	amphoteric	neutral
A	W	Z	X	Y
B	X	Y	W	Z
C	Z	X	Y	W
D	Z	W	X	Y

---

09. 0620_w20_qp_21 Q: 23

Zinc oxide is an amphoteric oxide.

Which row describes the reactions of zinc oxide?

	reaction with alkalis	reaction with acids
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

---

10. 0620_w20_qp_22 Q: 23

Zinc oxide is an amphoteric oxide.

Which row describes the reactions of zinc oxide?

	reaction with alkalis	reaction with acids
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

---

11. 0620_m19_qp_22 Q: 21

Which statement describes a chemical property of aluminium oxide, Al_2O_3?

A It reacts with acids but not with bases.

B It reacts with acids and bases.

C It reacts with bases but not with acids.

D It reacts with water.

---

12. 0620_s19_qp_21 Q: 17

Nitrogen(I) oxide, N_2O, nitrogen(II) oxide, NO, and carbon monoxide, CO, are all non-metal oxides.

They do not react with acids or bases.

Which statement is correct?

A They are acidic oxides.

B They are amphoteric oxides.

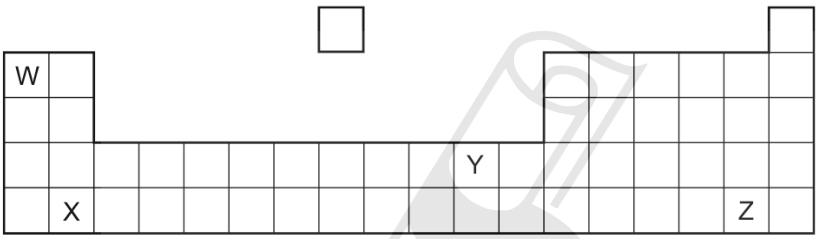
C They are basic oxides.

D They are neutral oxides.

---

13. 0620_s19_qp_21 Q: 18

The positions of elements W, X, Y and Z in the Periodic Table are shown.



Which elements form basic oxides?

A W, X and Y **B** W and X only **C** Y only **D** Z only

---

14. 0620_s19_qp_22 Q: 17

Which type of oxide are carbon monoxide and aluminium oxide?

	carbon monoxide	aluminium oxide
A	acidic	amphoteric
B	acidic	basic
C	neutral	amphoteric
D	neutral	basic

---

15. 0620_s19_qp_23 Q: 17

Which statement about carbon monoxide and aluminium oxide is correct?

A Carbon monoxide and aluminium oxide are both amphoteric.

B Carbon monoxide and aluminium oxide are both neutral.

C Carbon monoxide is amphoteric but aluminium oxide is neutral.

D Carbon monoxide is neutral but aluminium oxide is amphoteric.

---

16. 0620_w19_qp_21 Q: 19

Which statement about amphoteric oxides is correct?

A They are made by combining an acidic oxide with a basic oxide.

B They react with water to give a solution of pH 7.

C They react with both acids and bases.

D They do not react with acids or bases.

---

17. 0620_w19_qp_22 Q: 19

Which oxide is classified as an amphoteric oxide?

A aluminium oxide

B calcium oxide

C copper(II) oxide

D nitrogen oxide

---

18. 0620_w19_qp_23 Q: 19

Which substance is a neutral oxide?

A aluminium oxide

B carbon monoxide

C sulfur dioxide

D zinc oxide

---

19. 0620_m18_qp_22 Q: 19

Carbon, copper, magnesium, sodium and sulfur can all form oxides.

How many of these elements form acidic oxides?

A 1 **B** 2 **C** 3 **D** 4

---

20. 0620_s18_qp_21 Q: 17

Which statement about oxides is correct?

A A solution of magnesium oxide has a pH less than pH 7.

B A solution of sulfur dioxide has a pH greater than pH 7.

C Magnesium oxide reacts with nitric acid to make a salt.

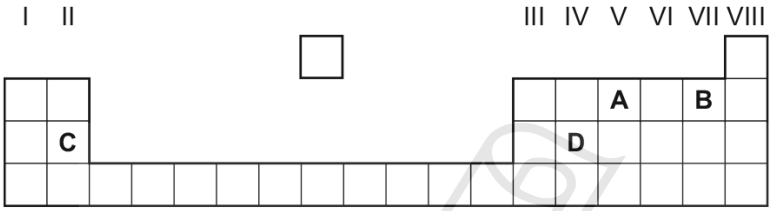
D Sulfur dioxide reacts with hydrochloric acid to make a salt.

---

21. 0620_w18_qp_21 Q: 17

Part of the Periodic Table is shown.

Which element forms an oxide that reacts with dilute acid to form a salt and water?



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22. 0620_w18_qp_22 Q: 17

In which row are the oxides correctly identified?

	acidic	basic
A	magnesium oxide, calcium oxide	sulfur dioxide, carbon dioxide
B	magnesium oxide, sulfur dioxide	carbon dioxide, calcium oxide
C	sulfur dioxide, carbon dioxide	calcium oxide, magnesium oxide
D	sulfur dioxide, magnesium oxide	calcium oxide, carbon dioxide

---

23. 0620_w18_qp_23 Q: 17

The results of some experiments with sulfur dioxide are shown.

experiment	description	result
1	mix with dilute hydrochloric acid	does not react
2	mix with concentrated sodium hydroxide	a salt forms
3	add Universal Indicator	Universal Indicator turns purple
4	add acidified aqueous potassium manganate(VII)	purple solution turns colourless

Which results are correct?

A 1, 2 and 4 **B** 2, 3 and 4 **C** 1 and 2 only **D** 3 and 4 only

---

24. 0620_m17_qp_22 Q: 18

Beryllium oxide reacts with both sulfuric acid and aqueous sodium hydroxide.

Which type of oxide is beryllium oxide?

A acidic

B amphoteric

C basic

D neutral

---

25. 0620_s17_qp_21 Q: 18

Zinc oxide is amphoteric.

Which row describes the reactions of zinc oxide?

	reaction with hydrochloric acid	reaction with aqueous sodium hydroxide
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

key

✓ = reaction occurs

✗ = reaction does not occur

---

26. 0620_s17_qp_22 Q: 18

Which type of oxide is aluminium oxide?

A acidic

B amphoteric

C basic

D neutral

---

27. 0620_s17_qp_23 Q: 18

Which oxide is amphoteric?

A Al_2O_3 **B** CaO **C** Na_2O **D** SO_2

---

28. 0620_w17_qp_21 Q: 17

Some properties of four oxides are listed.

Oxide 1 reacts with both acids and alkalis to form salts.

Oxide 2 reacts with acids to form salts but does not react with alkalis.

Oxide 3 reacts with alkalis to form salts but does not react with acids.

Oxide 4 does not react with acids or alkalis.

Which row describes the oxides?

	oxide 1	oxide 2	oxide 3	oxide 4
A	amphoteric	acidic	basic	neutral
B	amphoteric	basic	acidic	neutral
C	neutral	acidic	basic	amphoteric
D	neutral	basic	acidic	amphoteric

---

29. 0620_m16_qp_22 Q: 19

Which oxide is amphoteric?

A aluminium oxide

B calcium oxide

C carbon monoxide

D sodium oxide

---

30. 0620_p16_qp_20 Q: 23

The reactions of four different oxides W, X, Y and Z are shown.

W reacts with hydrochloric acid but not sodium hydroxide.

X reacts with both hydrochloric acid and sodium hydroxide.

Y does not react with either hydrochloric acid or sodium hydroxide.

Z reacts with sodium hydroxide but not hydrochloric acid.

Which row shows the correct types of oxide?

	acidic	basic	amphoteric	neutral
A	W	Z	X	Y
B	X	Y	W	Z
C	Z	X	Y	W
D	Z	W	X	Y

---

31. 0620_s16_qp_21 Q: 19

Which row describes whether an amphoteric oxide reacts with acids and bases?

	reacts with acids	reacts with bases
A	no	no
B	no	yes
C	yes	no
D	yes	yes

---

32. 0620_w16_qp_21 Q: 18

Germanium oxide is a white powder.

Germanium oxide reacts with concentrated hydrochloric acid.

Germanium oxide reacts with concentrated aqueous sodium hydroxide.

Germanium oxide does not dissolve when added to water.

Which type of oxide is germanium oxide?

A acidic

B amphoteric

C basic

D neutral

SN	Paper	Q. No.	Answer
01	0620_m21_qp_22	19	B
02	0620_s21_qp_21	18	B
03	0620_w21_qp_21	18	A
04	0620_w21_qp_22	18	B
05	0620_w21_qp_23	18	D
06	0620_w21_qp_23	19	A
07	0620_m20_qp_22	18	A
08	0620_p20_qp_20	23	D
09	0620_w20_qp_21	23	A
10	0620_w20_qp_22	23	A
11	0620_m19_qp_22	21	B
12	0620_s19_qp_21	17	D
13	0620_s19_qp_21	18	A
14	0620_s19_qp_22	17	C
15	0620_s19_qp_23	17	D
16	0620_w19_qp_21	19	C
17	0620_w19_qp_22	19	A
18	0620_w19_qp_23	19	B
19	0620_m18_qp_22	19	B
20	0620_s18_qp_21	17	C
21	0620_w18_qp_21	17	C
22	0620_w18_qp_22	17	C
23	0620_w18_qp_23	17	A
24	0620_m17_qp_22	18	B
25	0620_s17_qp_21	18	A
26	0620_s17_qp_22	18	B
27	0620_s17_qp_23	18	A
28	0620_w17_qp_21	17	B
29	0620_m16_qp_22	19	A
30	0620_p16_qp_20	23	D
31	0620_s16_qp_21	19	D
32	0620_w16_qp_21	18	B