

O Level Combined Chemistry MCQs

Metals Test 2.0

Q1

Steel is an alloy of iron containing a small percentage of carbon.
Which statements are correct?

- 1 Carbon disrupts the metallic structure of iron.
- 2 Carbon prevents the iron from rusting.
- 3 Increasing the percentage of carbon makes the steel softer.
- 4 Increasing the percentage of carbon makes the steel less malleable.

- | | | | |
|---|---------|---|---------|
| A | 1 and 3 | B | 1 and 4 |
| C | 2 and 3 | D | 2 and 4 |

Q2

Metal X forms a carbonate that decomposes readily when heated while metal Y forms a carbonate that does not.

When iron filings are added to separate salt solutions of X and Y; X is displaced but Y is not.

Which of the following statement is true about X and Y?

- A Y can be coated on iron to offer sacrificial protection.
- B X is more reactive than iron.
- C X is more reactive than Y.
- D X can be coated on Y to offer sacrificial protection.

Q3

Iron is extracted from its ore, haematite, by a reduction process using coke.
Which reaction in the blast furnace causes the removal of impurities from the product?

- | | | | |
|---|--|---|--|
| A | $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$ | C | $\text{CaO} + \text{SiO}_2 \rightarrow \text{CaSiO}_3$ |
| B | $\text{CO}_2 + \text{C} \rightarrow 2\text{CO}$ | D | $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$ |

Q4

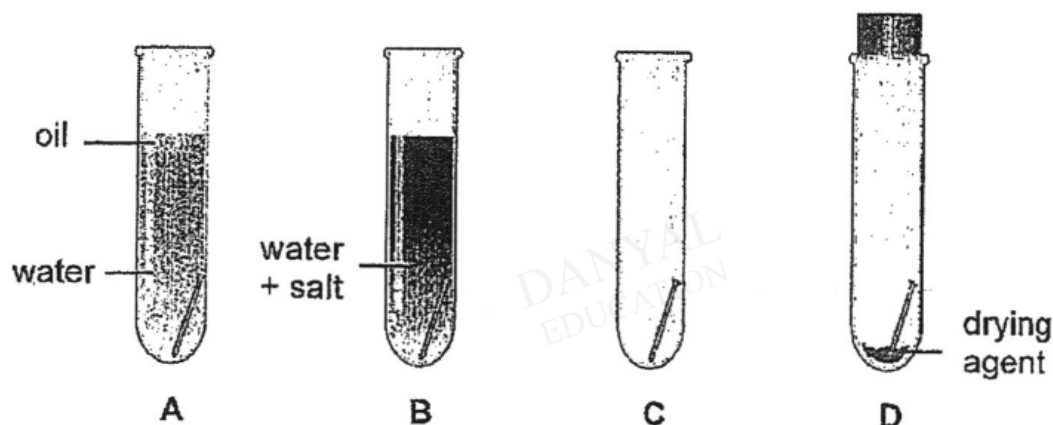
A storage tank is made of a metal. It is ideal for storing cold water but dissolves away rapidly if used to store dilute acid.

What is the metal likely to be?

- A calcium
- B copper
- C lead
- D zinc

Q5

A student set up an experiment using iron nails, as shown.



In which tube does the iron nail undergo the most rusting after one week?

Q6

W, X, Y and Z are four metals.

Some properties of these metals are listed below.

- 1 Only X and Y can be extracted by electrolysis.
- 2 X reacts more vigorously with cold water than Y.
- 3 Only Z can be found free in nature.

What are metals W, X, Y and Z?

	W	X	Y	Z
A	calcium	aluminium	silver	iron
B	iron	potassium	aluminium	silver
C	silver	calcium	potassium	gold
D	aluminium	silver	iron	potassium

Q7

W, X, Y and Z are four metals.
 Some properties of these metals are listed below.

- 1 Only X and Y can be extracted by electrolysis.
- 2 X reacts more vigorously with cold water than Y.
- 3 Only Z can be found free in nature.

What are metals W, X, Y and Z?

	W	X	Y	Z
A	calcium	aluminium	silver	iron
B	iron	potassium	aluminium	silver
C	silver	calcium	potassium	gold
D	aluminium	silver	iron	potassium

Q8

Experiments were carried out to construct a reactivity series for metals W, X and Y.

The table shows the results.

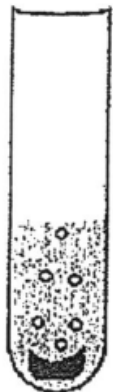
experiment	W	X	Y
Does the metal liberate hydrogen from dilute hydrochloric acid?	yes	no	yes
Is the metal oxide reduced by heating with carbon?	no	yes	yes

What is the order of reactivity of the metals?

	most reactive	→	least reactive
A	W	Y	X
B	Y	W	X
C	X	W	Y
D	Y	X	W

Q9

Metal cubes of the same size are made of three different metals, X, Y and Z. They were placed in test tubes containing dilute sulfuric acid.



metal X



metal Y



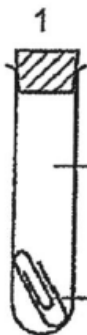
metal Z

What are the possible identities of X, Y and Z?

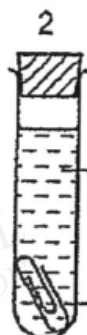
	X	Y	Z
A	magnesium	sodium	silver
B	copper	zinc	iron
C	zinc	potassium	calcium
D	iron	magnesium	copper

Q10

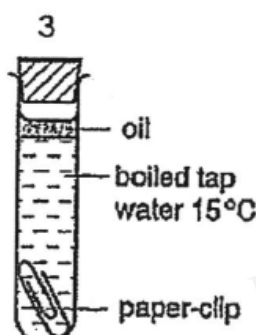
Four experiments on rusting are shown below.



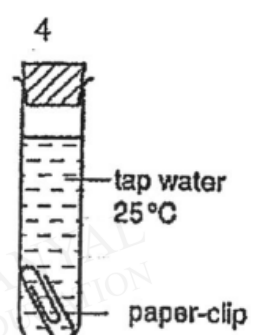
not rusty
after 1 week



rusts
after 1 week



not rusty
after 1 week



rusts
after 1 week

Which two experiments can be used to show that air is needed for rusting?

- A 1 and 2
- B 1 and 3

- C 2 and 3
- D 3 and 4

Answers

Metals Test 2.0

Q1 B

Q2 A

Q3 C

Q4 D

Q5 B

Q6 B

Q7 B

Q8 A

Q9 A

Q10 C

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