

## O Level Pure Chemistry MCQs

### Electrolysis Test 3.0

Q1

The following three solutions were electrolyzed using inert electrodes.

- solution 1    concentrated sodium chloride
- solution 2    dilute sulfuric acid
- solution 3    silver nitrate

Which of the solution(s) produce oxygen gas at the anode?

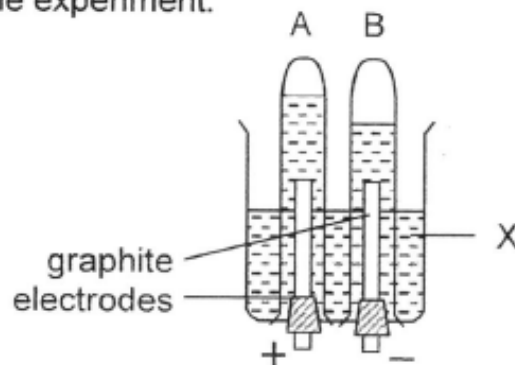
- A    1 only
- B    1 and 2 only
- C    1, 2 and 3
- D    2 and 3

Q2

The diagram shows the results of an electrolysis experiment using graphite electrodes. Tubes A and B were filled with water at the start of the experiment.

Which could be substance X?

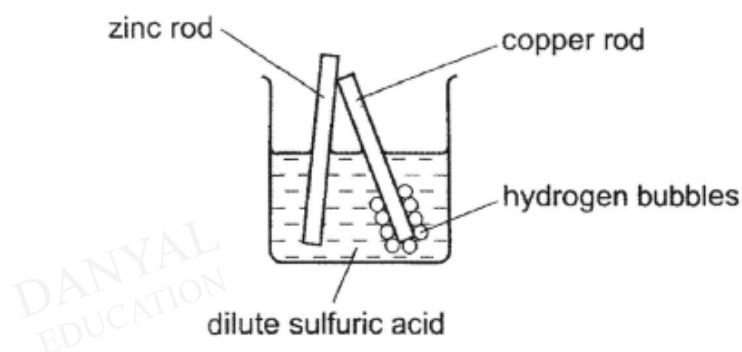
- A    aqueous silver nitrate
- B    concentrated sodium chloride solution
- C    deionised water
- D    dilute sulfuric acid



Q3

In an experiment, rods of copper and zinc are dipped into dilute sulfuric acid, with their top ends touching.

Hydrogen bubbles collect around the copper rod.

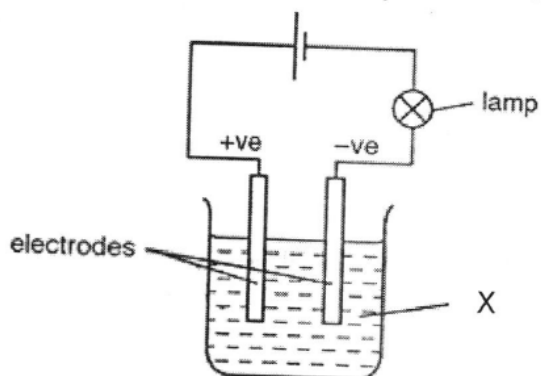


Which statement about the experiment is correct?

- A Copper reacts with the acid.
- B Electrons flow from zinc to copper.
- C The zinc becomes coated with copper.
- D The zinc is less reactive than copper.

Q4

When the circuit in the set-up below is closed, the bulb is lighted up, but X is not decomposed.



X is likely to be

- A mercury
- B lead(II) iodide
- C aqueous silver nitrate
- D concentrated potassium nitrate solution

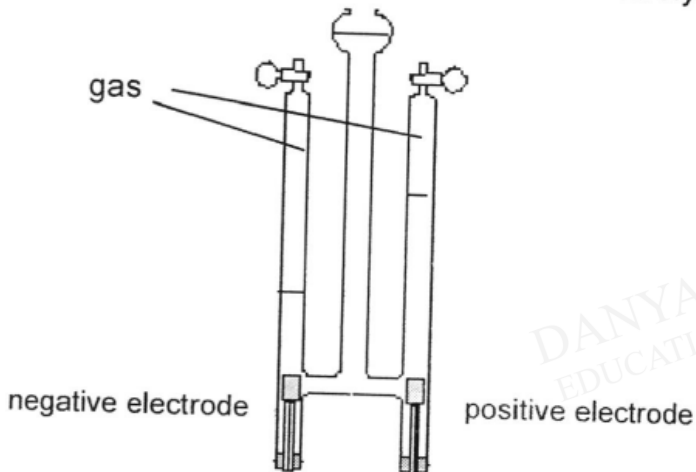
Q5

An article to be gold plated is made the cathode (negative electrode) of a cell. What would be suitable materials for the anode and the electrolyte?

	anode	electrolyte
A	carbon	aqueous gold(II) chloride
B	carbon	dilute hydrochloric acid
C	gold	aqueous gold(II) chloride
D	gold	dilute hydrochloric acid

Q6

The diagram below shows the electrolysis of a substance after a few hours.



The substance is

- A copper(II) sulfate solution
- B concentrated hydrochloric acid
- C silver nitrate solution
- D sodium chloride solution

Q7

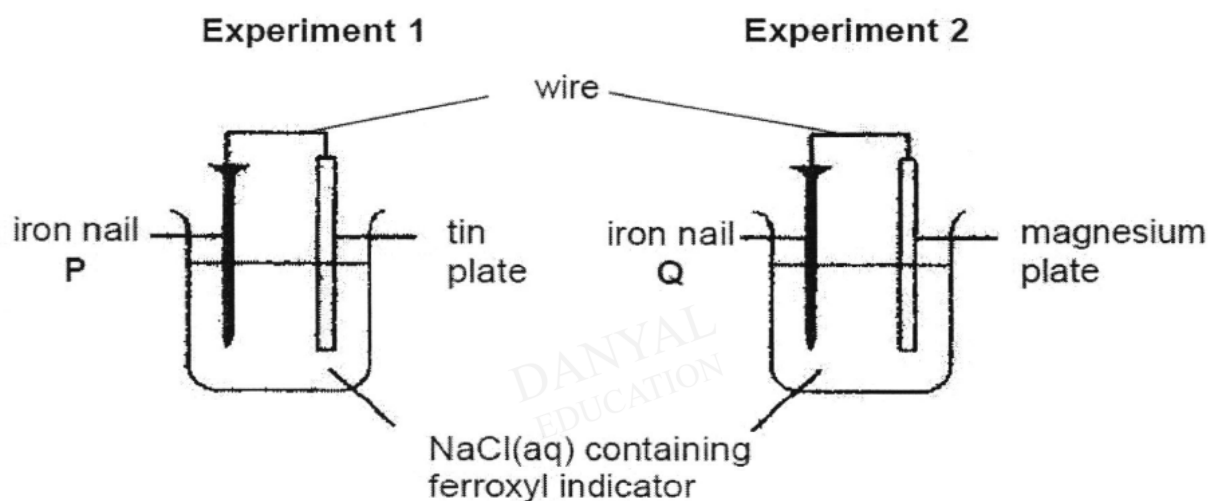
In an experiment, 2 moles of aluminium ions,  $Al^{3+}$  were discharged in the electrolysis of molten aluminium oxide.

Which amount of metal ions would be discharged by an equal amount of electricity in the following experiments?

- A 2 mol of  $Cu^{2+}$ , in the electrolysis of aqueous copper(II) nitrate
- B 3 mol of  $Pb^{2+}$ , in the electrolysis of molten lead(II) bromide
- C 3 mol of  $Ag^+$ , in the electrolysis of aqueous silver nitrate
- D 6 mol of  $Zn^{2+}$ , in the electrolysis of aqueous zinc sulfate

Q8

A student carried out two experiments to investigate the rusting of iron. Ferroxyll indicator turns blue when  $Fe^{2+}$  ions are present.



After a short while, what would be observed?

- A Blue colour does not appear at both **P** and **Q**.
- B Blue colour appears around **Q** but not around **P**.
- C Blue colour appears at both **P** and **Q**.
- D Blue colour appears around **P** but not around **Q**.

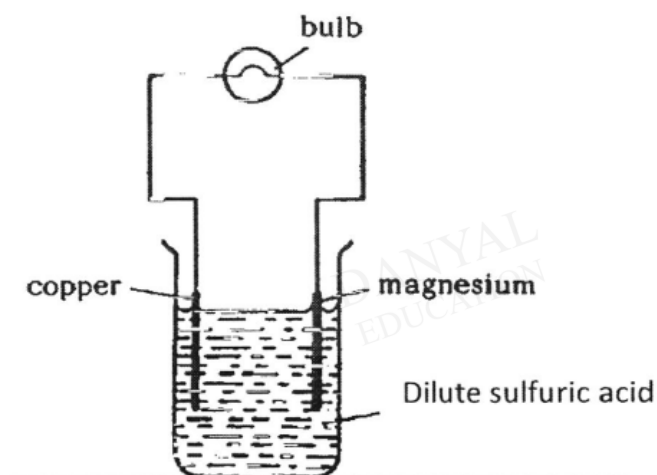
Q9

When dilute aqueous sodium chloride is electrolysed between platinum electrodes,

- A sodium is produced at the cathode.
- B the mass of the anode decreases.
- C the concentration of sodium chloride increases.
- D the pH of the electrolyte decreases.

Q10

The apparatus shown in the diagram below was set up.



Which one of the following represents the correct half equation taking place at the positive and negative electrode respectively for the above set up?

- | <b>Positive Electrode</b>   | <b>Negative Electrode</b>                            |
|---|--|
| A $2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$                        | $\text{Mg} \rightarrow \text{Mg}^{2+} + 2\text{e}^-$ |
| B $\text{Cu}^{2+} + 2\text{e}^- \rightarrow \text{Cu}$                      | $\text{Mg} \rightarrow \text{Mg}^{2+} + 2\text{e}^-$ |
| C $4\text{OH}^- \rightarrow 2\text{H}_2\text{O} + \text{O}_2 + 4\text{e}^-$ | $\text{Mg}^{2+} + 2\text{e}^- \rightarrow \text{Mg}$ |
| D $\text{Cu} \rightarrow \text{Cu}^{2+} + 2\text{e}^-$                      | $2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$   |

**Answers**

**Electrolysis Test 3.0**

Q1 D

Q2 D

Q3 B

Q4 A

Q5 C

Q6 D

Q7 B

Q8 D

Q9 C

Q10 A

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