O Level Pure Chemistry MCQs

Electrolysis Test 1.0

Q1

Which pair of statements correctly describes the differences between the conduction of electricity by electrolytes and the conduction of electricity by metals during electrolysis?

	conduction by electrolytes	conduction by metals
1	the current is due to the movement of ions	the current is due to the movement of electrons
2	charged particles move towards both electrodes	charged particles move in one direction only
3	it always results in a chemical change	it never results in a chemical change

A only 1 is correct
B only 1 and 2 are correct
C only 2 and 3 are correct
D 1, 2 and 3 are correct

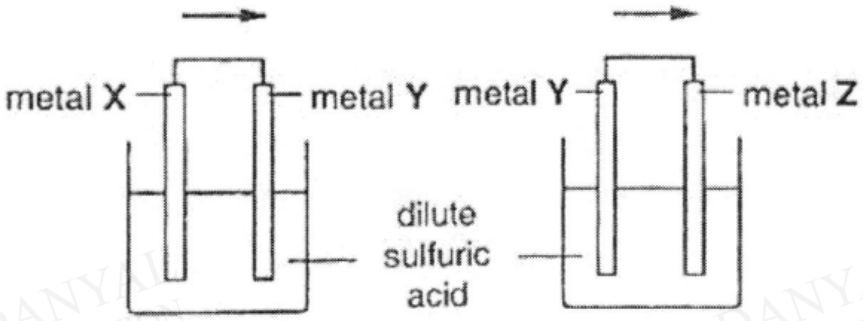
Q2

In electroplating a chromium bracelet with silver, which combination of anode, cathode and electrolyte is most suitable?

	anode	cathode	electrolyte
A	bracelet	silver	chromium(III) nitrate
B	bracelet	silver	silver nitrate
C	silver	bracelet	chromium(III) nitrate
D	silver	bracelet	silver nitrate

Q3

Two cells were set up as shown below. The arrows show the direction of electron flow in the external circuit.

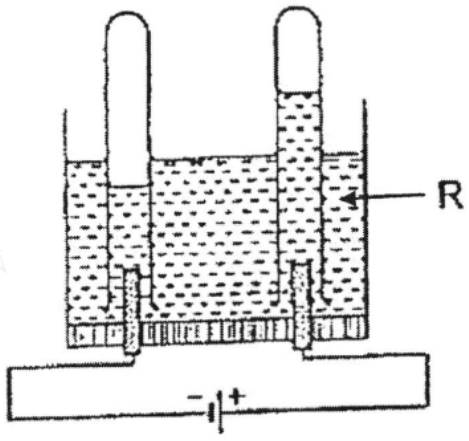


Which set of metals would cause electron flow in the directions shown?

	metal **X**	metal **Y**	metal **Z**
A	Ag	Zn	Cu
B	Cu	Ag	Zn
C	Zn	Ag	Cu
D	Zn	Cu	Ag

Q4

The diagram shows the results of an electrolysis using inert electrodes.

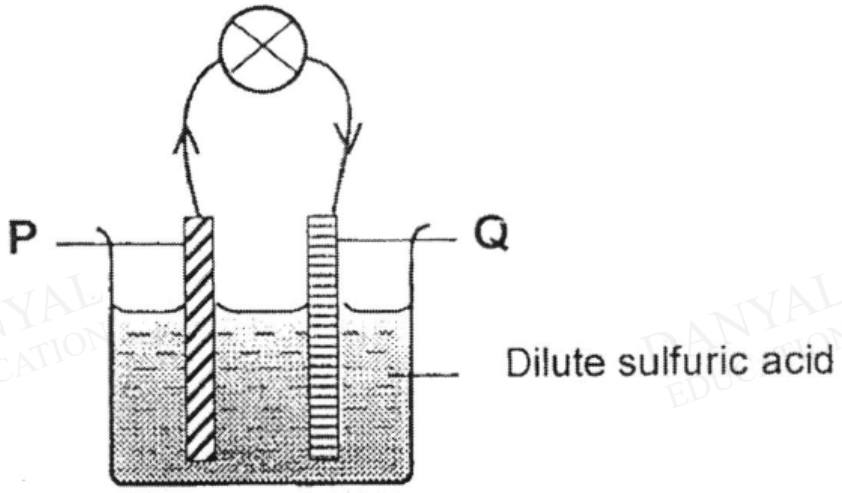


Which of the following could be liquid R?

A aqueous silver nitrate
B aqueous sodium carbonate
C concentrated hydrochloric acid
D molten magnesium iodide

Q5

The diagram below shows a simple electrochemical cell.



An electric current flows from P to Q. Suggest the identity of P and Q.

	P	Q
A	copper	magnesium
B	zinc	magnesium
C	zinc	iron
D	copper	iron

Q6

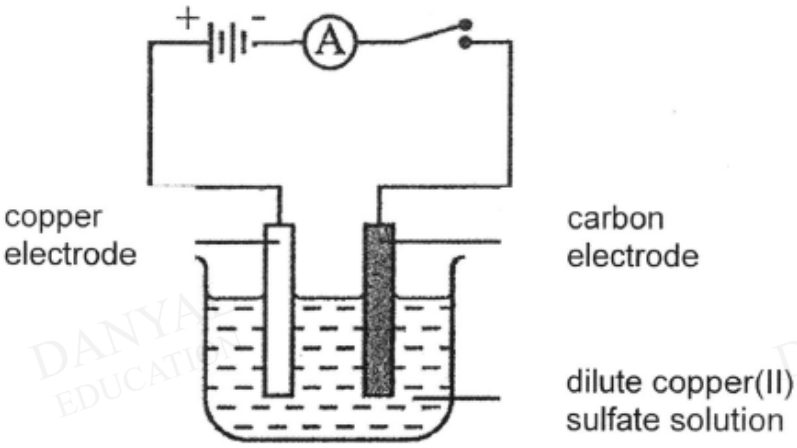
When an aqueous solution containing Fe^{2+} and V^{n+} ions is electrolysed, the same amount of charge produces 16.8 g of iron and 10.2 g of vanadium.

What is the value of n in V^{n+} ion?

A 1
B 2
C 3
D 4

Q7

The figure below shows the set-up of an electrolytic process.

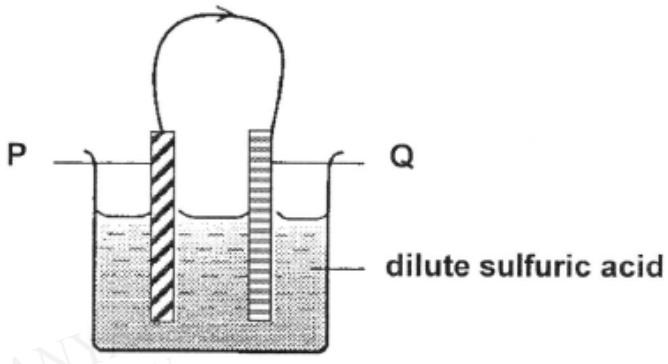


What is the half-equation for the reaction at the anode?

A $4OH^-(aq) \rightarrow O_2(g) + 2H_2O(l) + 4e$
B $2H^+(aq) + 2e \rightarrow H_2(g)$
C $Cu^{2+}(aq) + 2e \rightarrow Cu(s)$
D $Cu(s) \rightarrow Cu^{2+}(aq) + 2e$

Q8

The diagram below shows a simple electrochemical cell.



Which of the following electrodes will give the smallest potential difference (voltage) for this electric cell?

	P	Q
A	magnesium	copper
B	zinc	silver
C	zinc	copper
D	lead	silver

Q9

When concentrated sodium chloride solution is electrolysed, gas **X** is formed at the anode followed by gas **Y**. Identify gas **X** and gas **Y**.

	gas **X**	gas **Y**
A	chlorine	oxygen
B	oxygen	chlorine
C	hydrogen	oxygen
D	oxygen	hydrogen

Q10

Metal X forms a chloride XCl_2. X is between copper and silver in the reactivity series. If a concentrated aqueous solution of XCl_2 is electrolysed, which reactions will occur at the cathode and anode?

	cathode	anode
A	$X^+ + e \rightarrow X$	$2Cl^- - 2e \rightarrow Cl_2$
B	$X^+ + e \rightarrow X$	$4OH^- - 4e^- \rightarrow 2H_2O + O_2$
C	$X^{2+} + 2e \rightarrow X$	$2Cl^- - 2e \rightarrow Cl_2$
D	$X^{2+} + 2e \rightarrow X$	$4OH^- - 4e^- \rightarrow 2H_2O + O_2$

Answers

Electrolysis Test 1.0

Q1 B

Q2 D

Q3 D

Q4 B

Q5 C

Q6 C

Q7 D

Q8 D

Q9 A

Q10 C