



Dr. Bbosa Science

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S4 CHEMISTRY

Exam 9

PAPER 1

DURATION: 1 hour 30 minutes

1. A dilute solution of sodium chloride was electrolyzed using carbon electrodes. Which of the following substances was formed at the anode?
A: chlorine B: carbon dioxide C: oxygen D: hydrogen chloride
2. Which one of the following metals is extracted by electrolysis?
A: zinc B: lead C: sodium D: copper
3. The solution that could be containing zinc ion is one that forms a
A: reddish brown precipitate with magnesium
B: green precipitate with aqueous ammonia
C: white precipitate that is soluble in excess sodium hydroxide solution
D: white precipitate with dilute sulphuric acid
4. Which of the following metals does not displace iron from a solution of iron (II) nitrate?
A: zinc B: copper C: magnesium D: aluminium
5. Zinc displaces copper from an aqueous solution of copper (II) sulphate according to the equation:
$$\text{CuSO}_4(\text{aq}) + \text{Zn}(\text{s}) \longrightarrow \text{Cu}(\text{s}) + \text{ZnSO}_4(\text{aq})$$

The mass of copper in g that is displaced by 13.10g of zinc is? [Cu = 63.5, Zn = 65.4]
A: 6.35 B: 12.72 C: 19.07 D: 25.82
6. Electrolysis is applied in
A: refining of crude oil B: vulcanization of rubber
C: synthesis of polythene D: manufacture of sodium hydroxide
7. During the electrolysis of sodium chloride the carbon anode decreases in size because carbon reacts with
A: chlorine B: oxygen C: sodium D: sodium hydroxide

18. Which one of the following cations would form a yellow precipitate when reacted with aqueous potassium iodide?
A: $\text{Ca}^{2+}(\text{aq})$ B: $\text{Zn}^{2+}(\text{aq})$ C: $\text{Fe}^{2+}(\text{aq})$ D: $\text{Pb}^{2+}(\text{aq})$
19. Which one of the following nitrates does not give off brown fumes when heated?
A: $\text{Mg}(\text{NO}_3)_2$ B: NaNO_3 C: $\text{Ca}(\text{NO}_3)_2$ D: $\text{Ba}(\text{NO}_3)_2$
20. Which one of the following salts is soluble in water?
A: lead carbonate B: sodium carbonate
C: Barium carbonate D: calcium carbonate

SECTION B

21. Acidified water was electrolyzed using platinum electrodes
(a) write an equation for the reaction that took place at the
(i) anode
.....
(ii) cathode
.....
- (b) Name one other substance that can be used as electrodes in the electrolysis of acidified water
.....
22. A current of 6A was passed through copper (II) sulphate solution between copper electrodes for 40 minutes and 12 seconds
(a) State what was observed
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.....
.....
- (b) Write the equation for the reaction that took place at
(i) anode
.....
(ii) cathode
.....
- (c) Calculate the change in mass at the anode
[Cu = 64, 1F = 96500c]
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.....

(d) State two industrial uses of electrolysis

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23. Molten lead (II) bromide was electrolyzed between two carbon electrodes

(a) Explain why lead (II) bromide was electrolyzed in the molten state and not in the solid state

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(b) State what was observed at the

(i) anode

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(ii) cathode

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(c) Write equation for the reaction that took place at the anode

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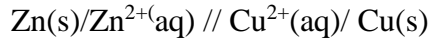
(d) Calculate the mass of the product formed at the cathode when a current of 2 amps is passed for 2 hours and 30 minutes.

[Pb = 207, Br = 80 , 1F = 96500 coulombs]

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24. The cell convention of an electrochemical cell is shown below



(a) Name two substances that could be used as electrolytes

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(b) State which one of the electrodes is the anode

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(c) Write equation for the reaction at

(i) the anode

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(ii) the cathode

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(d) Write equation for the overall reaction

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25. (a) Define the term electrolysis

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(b) A dilute solution dilute of sulphuric acid was electrolyzed using copper electrodes

(i) in the space below draw a labelled set up for the electrolysis process above

(ii) State what was observed after 5 minutes

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(iii) Explain your observation

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END