

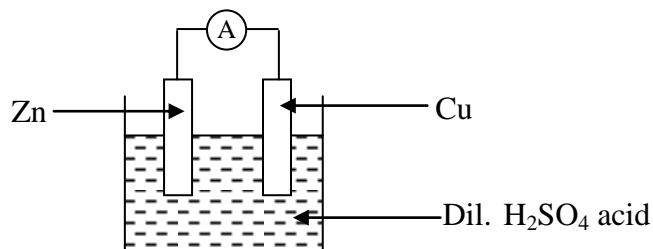


Grade 11

SCIENCE

**Unit : 12 -
 Electrochemistry**

01) The following diagram shows a set up of a simple cell.



Which of the following is the true statement about this set up,

- Copper plate is the positive terminal and oxidation occurs at it.
- Copper plate is the negative terminal and reduction occurs at it.
- Zinc plate is the positive terminal and reduction occurs at it.
- Zinc plate is the negative terminal and oxidation occurs at it.

02) During the electrolysis of acidulated water using carbon electrodes.

- Hydrogen gas is evolved at the anode.
- Oxygen gas is evolved at the cathode.
- Hydroxide ions are generated at the anode
- anode dissolves.

03) Which of the following is not a conductor of electricity.

- | | |
|-----------------------------|-----------------------------|
| i) Aqueous sodium hydroxide | ii) Aqueous sodium chloride |
| iii) Acidified water | iv) Solid sodium chloride. |

04) An example for sacrificial protection.

- | | |
|--------------------------|-------------------------------|
| i) Mixing water and salt | ii) Galvanizing iron |
| iii) Bubbling a gas | iv) Removal of harmful gases. |

05) What is the apparatus we use in the preparation of sodium metal,

- | | |
|------------------------|--------------------|
| i) Downs cell | ii) Diaphragm cell |
| iii) Electrolysis cell | iv) Electric cell |

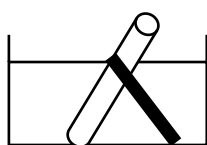
06) In the Electrolysis of aqueous sodium chloride the anode reaction is,

- i) $2\text{H}^+(\text{aq}) + 2\text{e}^- \rightarrow \text{H}_2(\text{g})$ ii) $2\text{Cl}^-(\text{aq}) \rightarrow \text{Cl}_2(\text{g}) + 2\text{e}^-$
 iii) $\text{Na}(\text{l}) + \text{e}^- \rightarrow \text{Na}(\text{l})$ iv) $2\text{H}^+(\text{aq}) + 2\text{e}^- \rightarrow \text{H}_2(\text{g})$

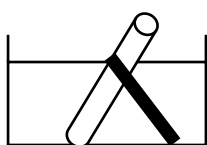
07) Which of the following is an essential factor for corrosion of iron,

- i) Water ii) atmospheric carbon dioxide gas
 iii) acids iv) Bases

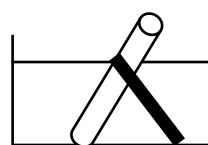
08)



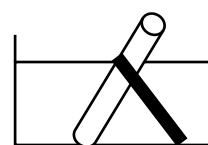
A
Fe / Cu



B
Fe / Zn



C
Fe / Sn



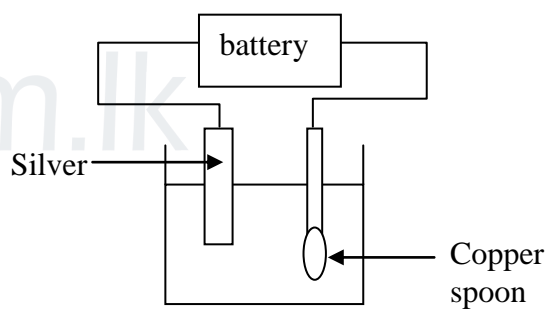
D
Fe / Mg

Which nails cause corrosion,

- i) A & B ii) A & C iii) B & C iv) B & D

09) Which one of the following can be used to apply the metal on spoon.

- i) CuSO_4 ii) AgNO_3
 iii) AuCN iv) H_2SO_4

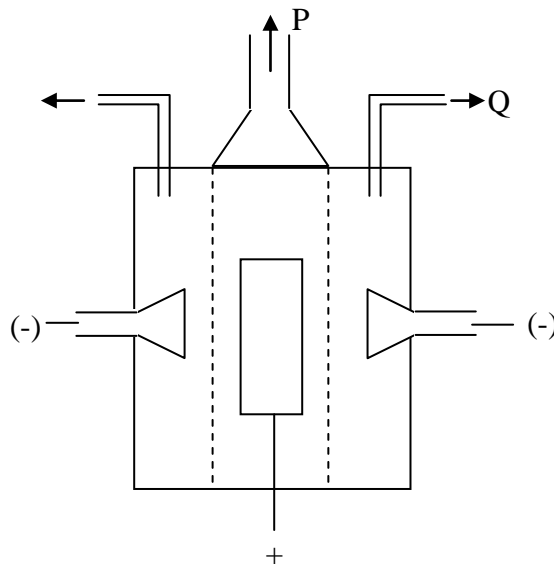


10) Select the correct statement about the above figure,

- i) The spoon should connect as the cathode.
 ii) Cathode is the oxidation terminal.
 iii) The piece of metal should be used as the electrolyte.
 iv) The spoon should connect as the anode.

STRUCTURED ESSAY QUESTIONS

01) Given below is the diagram of the apparatus used in extraction of metal sodium.

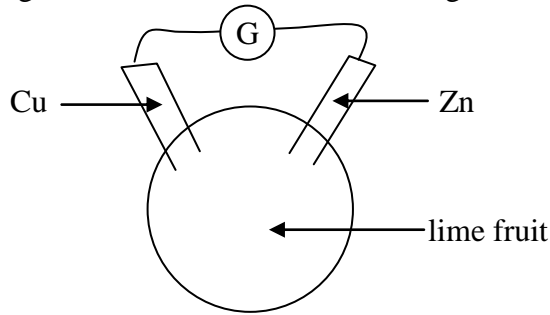


- i) What is the name given for above apparatus?
.....
- ii) Which method is used in this for the extraction of Na?
.....
- iii) What are the materials used as,
 - a) Anode :
 - b) Cathode :
- iv) State the main products released from P and Q.
.....
- v) State the reason for mixing Calcium Chloride with fused sodium chloride.
.....
- vi) One product of the above extraction, rapidly react with cold water.
 - a) What is the gas released in above.
.....
 - b) State the word equation for that reaction.
.....

Agaram.LK - Keep your dreams alive!

Agaram.LK - Keep your dreams alive!

02) A) Two plate of Zn and Cu were pushed into a lime fruit without touching each other and connected to a galvanometer as shown in the diagram.



i) State the observation which confirms that electricity is produced by the interactions of metals with the content of the lime.

.....

ii) The above set up demonstrates a simple cell, in this cell, name the items that function as the following components.

Cathode →
 Anode →
 Electrolyte →

iii) From which to which metal plate does the electron current flow in the simple cell demonstrated above.

.....

B) The rusting of iron can be regulated by fixing another metal with the iron.

i) Name a metal which increase the rate of rusting.

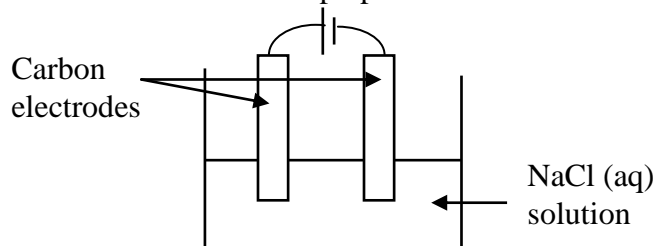
.....

ii) Name a metal which decrease the rate of rusting.

.....

ESSAY

01) The diagram drawn in related to the preparation of a certain basic compound.



- i) Write the cathodic reaction of the above process.
- ii) Write down the anodic reaction of the above process.
- iii) Write down the overall reaction.
- iv) Write down the observations related to the process.
- v) What is the basic compound formed in this reaction.
- vi) What are the by – products formed here mention one use of each by product.

02) Assume that you are required to plate copper on to an iron spoon.

- i) Draw the relevant apparatus for the above mentioned process and name them.
- ii) What you we use as the cathode here.
- iii) What can be used as the electrolyte in this process.
- iv) Write down the anodic and cathodic reactions of the above process.