PRINT

Qn No. 1 *Chapter Name:Reactivity series and Electrochemistry*

Qn.
Experiments related to displacement reaction are given below

.1) A Silver rod is dipped in $CuSO_4$.

2) A Zinc rod is dipped in $CuSO_4$

In which case does displacement reaction occur .why?

Hint.
Experiment- 2

Reactivity of Zn is greater than Cu.

Marks :(2)

Hide Answer

Qn No. 2 *Chapter Name:Reactivity series and Electrochemistry*

Qn.
On electrolysis of fused sodiumchloride sodium is formed at the cathode and chlorine at the anode

a) Write the equation of reactions occuring at the anode and cathode

b) If aqueous solution of sodium chloride is electrolysed,what will be the product formed at the cathode?

Hint.
a) Cathode - $Na^+ + 1\ \bar{e} \rightarrow Na$

Anode $2Cl^- \rightarrow Cl_2 + 2\ \bar{e}$

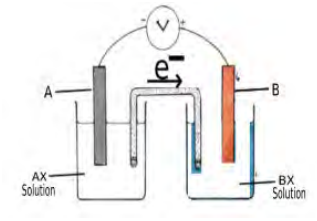
b) H_2

Marks :(3)

Hide Answer

Qn No. 3 *Chapter Name:Reactivity series and Electrochemistry*

Qn.
Diagram of Galvanic cell is given



a) Which is the anode of thts cell ?

b) Write the equation of the cathode reaction

(Valecy of metals : 2)

Hint.
a) A

b) $B^{2+} + 2\bar{e} \rightarrow B$

Marks :(2)

Hide Answer

Qn No. 4 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
Analyse the given equation and answer the questions.

$Zn^{O} + Cu^{2+}SO_4^{2-} \rightarrow Zn^{2+}SO_4^{2-} + Cu^{O}$

a) Which metal is oxidised?

b) Is the above reaction a redox one. Why?

Hint.
a) Zn

b) yes,

In this reaction Zn is oxidised and Cu^{2+} is reduced.

Marks :(3)

Hide Answer

Qn No. 5 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
Some observations of the reaction of metals Al, Na ,Fe, Cu with water are given

1. One metal reacted with cold water to form an alkali and a gas

2. Another metal reacted only with steam to form a gas.

a) Which is the gas formed when metals react with water?

b) Which of the above metals give the observations 1 and 2?

c) Write the equation of the reaction which gave the first observation.

Hint.
a) H_2

b) Observation (1) Na

Observation (2) Fe

c) $2Na + 2H_2O \rightarrow 2NaOH + H_2$

Marks :(4)

Hide Answer

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Qn No. 6 *Chapter Name:Reactivity series and Electrochemistry*

Qn.
The decreasing order of reactivity of some metals are given

Mg>Al>Zn>Fe>Cu>Au

a) Name any one metal that cannot displace hydrogen from dil. HCl?

b) Which metal reacts only with steam to displace hydrogen from water?

c) Which metal can displace all other metals from their salt solutions?

Hint.
a) Cu (or) Au

b) Fe

c) Mg

Marks :(3)

Hide Answer

Qn No. 7 *Chapter Name:Reactivity series and Electrochemistry*

Qn.

- **A newly cut surface of sodium and a rubbed surface of zinc appears shiny**

  a) Which of the above loses its lustre easily?

  b) Write the equation of any one reaction which causes loosing of its lustre

  c) Compare the the reactivity of the two metals?

Hint.
a) Na

b) $4Na + O_2 \rightarrow 2Na_2O$ **(or)**

$2Na + 2H_2O \rightarrow 2NaOH + H_2$ **(or)**

$2NaOH + CO_2 \rightarrow Na_2CO_3 + H_2O$

c) Reactivity of sodium is greater than zinc

Marks :(3)

Hide Answer

Qn No. 8 *Chapter Name:Reactivity series and Electrochemistry*

Qn.

cell	Positive electrode	Negative electrode
Galvanic cell	Cathode	(a) .....
Electrolytic cell	(b)	(c) .....

.

Hint.

a) anode

b) anode

c) cathode

Marks :(3)

Hide Answer

Qn No. 9 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.

- **$Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$**

  a)Write down the equation of oxidation reaction

  b) Is it a redox reaction? why?

Hint.

a) $Zn^0 + \rightarrow Zn^{2+} + 2\,\bar{e}$ (Oxidation)

b) Yes.Because zinc undergoes oxidation and copper undergoes reduction.

Marks :(3)

Hide Answer

Qn No. 10 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.

A Zinc rod is dipped in $CuSO_4$ solution .What happens to the colour of the solution?Explain with the help of equation showing the reaction taking place in the test tube

Hint.

$Zn + CuSO_4 \rightarrow ZnSO_4 + Cu$

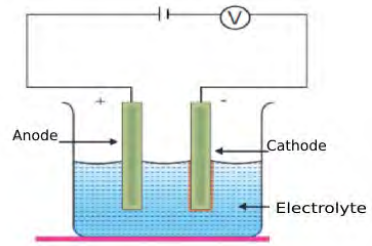
The blue colour of $CuSO_4$ solution is due to the presence of Cu^{2+} ions . As Zinc displaces Cu^{2+} ions from the solution,the concentration of Cu^{2+} ions decreases and the blue colour of the solution fades.

Marks :(3)

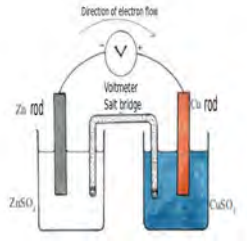
Hide Answer

Qn No. 11 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.



A



B

a)Two type of cells are represented in figure A and B.What are they?

b) What is the energy change taking place in the cell B ?

c) Which is the positive electrode in B ?

Hint.
a) Fig A -Electrolytic cell

Fig B - Galvanic cell

b) Chemical energy is converted to Electrical energy

c) Cu electrode

Marks :(4)

Hide Answer

Qn No. 12 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
NaCl crystals, sugar, moltenNaCl ,aqueous solution of NaCl are given.

Which of the above conduct electricity ?why?

Hint.
Molten NaCl and solution of NaCl

They conduct electricity because they contains ions which are free to move.

Marks :(3)

Hide Answer

Qn No. 13 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
Electricity is passed through molten sodiumchloride and sodiumchloride solution

a) Compare the reactions taking place at each electrodes and complete the table

Electrolyte	Positive electrode	Negative electrode
Molten sodiumchloride	Cl_2	(a) .....
sodiumchloride solution	(b)	H_2

b) Write equation of the reaction taking place at the positive electrode if molten KCl is used instead of molten NaCl?

Hint.
a) (a) Na (b) Cl_2

b) $2Cl^- \rightarrow Cl_2 + 2\,\bar{e}$

Marks :(3)

Hide Answer

Qn No. 14 *Chapter Name:Reactivity series and Electrochemistry*

Qn.

- Correct the given wrong statements, if any

  a) In a Gavanic cell electrical energy is converted to chemical energy

  b) The reactivity of cathode in a galvanic cell will be less than that of the anode

  c) In a Gavanic cell electrons flow from cathode to anode

  d) Oxidation take place at anode

Hint.
a and c are wrong statements

a)In a Gavanic cell chemical energy is converted to electrical energy

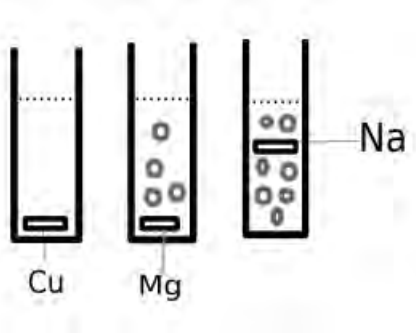
c)In a Gavanic cell electrons flow from anode to cthode

Marks :(3)

Hide Answer

Qn No. 15 *Chapter Name:Reactivity series and Electrochemistry*

Qn.
Three metal pieces are dipped in water taken in three test tubes .Adrop of phenolphthalein is added to each test tube



a) Which metal forms pink colour on reaction with cold water?

b) Which metal gives pink colour only on heating ?

c) Write the balanced equation for the reaction taking place in any one test tube.

Hint.
a) Na

b) Test tube B

c) $2Na + 2H_2O \rightarrow 2NaOH + H_2$

OR $Mg + 2H_2O \rightarrow Mg(OH)_2 + H_2$

Marks :(3)

Hide Answer

Qn No. 16 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
Name the product formed at the cathode on electrolysis of molten KCl ?

Hint.
K

Marks :(1)

Hide Answer

Qn No. 17 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.

- **The element A generally show +1 oxidation state If we electrolyse molten chloride of this element**

  a) What is the energy change taking place in an electrolytic cell?
- **c) Name the product formed at the positive electrode?**
- **b) Write down the equation showing the oxidation reaction**

Hint.
a) Electrical energy is converted in to chemical energy

b) Cl_2

b) $Na^+ + 2e \rightarrow Na$

Marks :(4)

Hide Answer

Qn No. 18 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
A piece of magnesium ribbon is dipped in $CuSO_4$ solution. After some time Cu is found to get deposited on the ribbon

a) Write oxidation reaction taking place here?

b)Write the equation showing the redox reaction taking place in the test tube?

c)If a Ag rod is dipped instead of Mg ribbon,does any change in colour occur to the solution.why?

Hint.
a) $Mg \rightarrow Mg^{2+} + 2\,\bar{e}$

b) $Mg + Cu^{2+} \rightarrow Mg^{2+} + Cu$

c) No colour change. Ag is less reactive than Cu

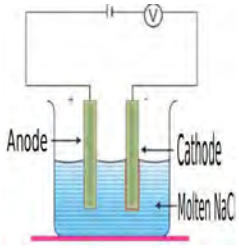
Marks :(4)

Hide Answer

Qn No. 19 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.

Figure of an electrolytic cell is given



a) Which is the product obtained at the cathode?

b) Write the equation of the chemical reaction taking place at anode

c) Write any two instances where electrolysis is made use of.

Hint.
a) Na

b) $2Cl^- \rightarrow Cl_2 + 2\,\bar{e}$

c) Electroplating, Refining of metals,.....

Marks :(4)

Hide Answer

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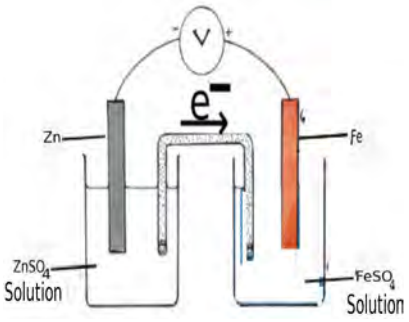
Qn No. 20 *Chapter Name:Reactivity series and Electrochemistry*

Qn.

Figure of an electrolytic cell is given



a) Write the equation of the reduction reacion take place in the cell

b) If the flow of electrons in Mg-Zn cell is in opposite direction as that of Zn-Fe cell shown above, arrange the metals Zn,Mg,Fe in the ascending order of their reactivity

Hint.

a) $Fe^{2+} + 2\,\bar{e} \rightarrow Fe$

b) Fe<Zn<Mg

Marks :(2)

Hide Answer

Qn No. 21 *Chapter Name:Reactivity series and Electrochemistry*

Qn.

Equation of the reaction of iron rod and $CuSO_4$ solution is given below.

$CuSO_4 + Fe \rightarrow FeSO_4 + Cu$

a) Write the eqation showing the reduction reaction taking place here.

b) Will displacement reaction take place by using $ZnSO_4$ instead of $CuSO_4$?Give reason

Hint.

a) $Cu^{2+} + 2\,\bar{e} \rightarrow Cu$

b) No , Zn is more reactive than Fe

Marks :(3)

Hide Answer

Qn No. 22 *Chapter Name:Reactivity series and Electrochemistry*

Qn.

- **Some metals are aranged in the decreasing order of their reactivity.**
  - **Mg>Zn>Pb>Cu>Ag**

a) Which will be the anode of Zn- Cu Galvanic cell ?

b) Write the equation of the redox reaction taking place in the above cell?

.

Hint.
a) Zn

b) $Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$

Marks :(2)

Hide Answer

Qn No. 23 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
Which is the product formed at cathode on electrolysis of molten NaCl?

Hint.
Sodium (Na)

Marks :(1)

Hide Answer

Qn No. 24 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.

- **Analysis the following reactions and answer the following questions.**

  (Hint : Oder of reactivity Mg>Zn>Fe>Cu)

  Activity1 : A copper rod is dipped in $FeSO_4$ solution

  Activity 2 : A Zinc rod is dipped in $FeSO_4$ solution

a) In which test tube does displacement reaction take place ?

b) Write the redox reaction taking place here

Hint.
a) Activity 2

b) $Zn + Fe^{2+} \longrightarrow Zn^{2+} + Fe$

Marks :(2)

Hide Answer

Qn No. 25 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
The equation of the redox reaction taking place in a Galvanic cell is given below.

$Cu + 2Ag^{+} \rightarrow Cu^{2+} + 2Ag$

a) Write the equation showing the reduction reaction

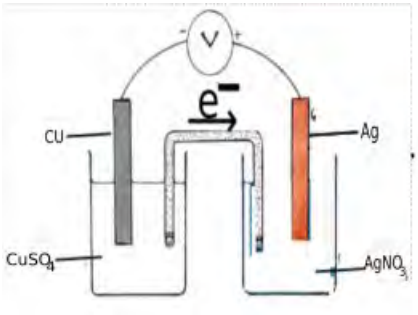
b)Draw the figure of the Galvanic cell

.

Hint.

a) $2Ag^{+} + 2e^{-} \rightarrow 2Ag$

b)



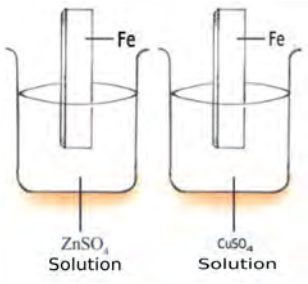
Marks :(4)

Hide Answer

Qn No. 26 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.

Observe the figure



(A) **(B)**

(Hint:Order of reactivity Na>Mg>Zn>Fe>Cu)

a) The Fe rod dipped in which beaker shows a change in colour?

b) Write the equation for the oxidation reaction taking place

Hint.

a) Beaker B

b) $Fe \rightarrow Fe^{2+} + 2\,e$

Marks :(2)

Hide Answer

Qn No. 27 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.

Zn, Cu,Ag rods and solutions of $AgNO_3$, $CuSO_4$ $ZnSO_4$ and $MgSO_4$ are given . How many Galvanic cells can be constructed from this? Complete the table.

(Mg>Zn>Fe>Cu)

സെൽ	ആനോഡ്	
cell	Anode	Cathode
Zn-Cu	Zn	Cu

Hint.

Three types

cell	anode	cathode
Zn-Cu	Zn	Cu
Zn-Ag	Zn	Ag
Cu-Ag	Cu	Ag

Marks :(3)

Hide Answer

Qn No. 28 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.

Rods of Zn, Cu,Ag and solutions of $AgNO_3$, $CuSO_4$ $ZnSO_4$ and $MgSO_4$ are given . How many Galvanic cells can be constructed from this?

Mg>Zn>Fe>Cu)

cell	Anode	Cathode
Zn-Cu	Zn	Cu

Hint.

Two types

cell	anode	cthode
Zn-Cu	Zn	Cu
Zn-Ag	Zn	Ag
Cu-Ag	Cu	Ag

Marks :(3)

Hide Answer

Qn No. 29 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.

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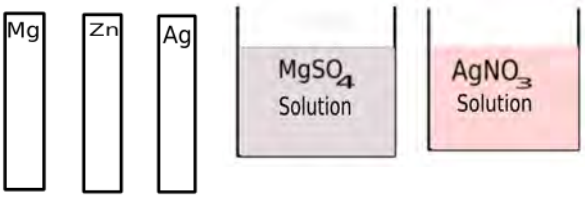
Some electrodes and salt solutions are shown.



a) Which is the Galvanic cell that can be constructed from the above?

b) What are the anode and cathode of the cell?

c) Write equaton of the reaction that takes place at anode ?

Hint.
a) Mg – Ag cell

b) Anode Mg, Cathode Ag

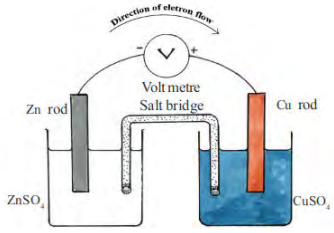
c) $Mg \rightarrow Mg^{2+} + 2e$

Marks :(3)

Hide Answer

Qn No. 30 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
The diagram of a galvanic cell is given



a) What are the anode and cathode of the cell

b) Write the equation of the cathodic reaction

c) Write the eqation of the redox reaction taking place in the cell

Hint.
a) Anode Zn , Cathode Cu

b) $Cu^{2+} + 2\bar{e} \rightarrow Cu$

c) $Zn + Cu^{2+} \rightarrow Zn^{2+} + Cu$

Marks :(4)

Hide Answer

Qn No. 31 *Chapter Name:Reactivity series and Electrochemistry*

Qn.

Reaction of some metals with water is given in the table(symbols are not real)

Metal	Reaction
A	Reaction with steam
B	Does not react
C	Reacts vigourously even with cold water
D	React with hot water

a)Based on the above reaction ,aarrange the given metals in the decreasing order of their reactivity

b)If a galvanic cell is constructed using A and B as electrodes, which is the anode?

c) Write the equation of the reaction taking place at electrode B of the cell

(valency of B=2)

Hint.

a) C>D>A>B

b) A

c) $B^{2+} + 2\,\bar{e} \rightarrow B$

Marks :(3)

Hide Answer

Qn No. 32 *Chapter Name:Reactivity series and Electrochemistry*

Qn.

Sodium vigourously reacts with cold water

a) Which is the gas formed in the reaction?

b) Write the balanced chemical eqation of the reaction

c) If two drops of phenolphthalein are added to the test tube ,what can you observe?

Hint.

a) Hydrogen

b) $2Na + 2H_2O \rightarrow 2NaOH + H_2$

c) Solution becomes pink

Marks :(3)

Hide Answer

Qn No. 33 *Chapter Name:Reactivity series and Electrochemistry*

Qn.

Which among the given metals does not react with dilute acids ?

(Sodium, Copper, Magnesium, Lead)

Hint.
Copper

Marks :(1)

Hide Answer

Qn No. 34 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
Electricity is passed through sodium chloride solution taken in a beaker.

a) Which is the substance formed at the cathode?

b)Which substance gets discharged at the anode?

c) The reaction taking place at one electrode is
$2H_2O + 2\bar{e} \rightarrow H_2 + 2OH^-$
At which electrode this reaction takes place?

d) What will be the nature of the solution after electrolysis?

(Acidic / Neutral / Alkaline)

Hint.
a) H_2

b) Cl^-

c) At cathode

d) Alkaline

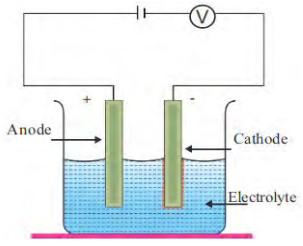
Marks :(4)

Hide Answer

Qn No. 35 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.

Observe the cell given below.



a) What is the energy change taking place in the cell ?

b) Write the equation showing the reaction taking place at the cathode of the cell.

c) Give any two practical utility of electrolysis.

Hint.
a) Electrical energy is converted to chemical energy.

b) $M^{n+} + n\,\bar{e} \rightarrow M$

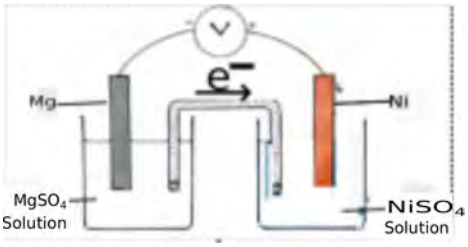
c)Write any two uses.

Marks :(4)

Hide Answer

Qn No. 36 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
The diagram of a galvanic cell is given



a) Which are the anode and cathode of the cell ?

b) Write the equation of the reaction taking place at the cathode.

c) Write the redox reaction taking place in this cell.

Hint.
a) Anode – Mg , Cathode - Ni

b) $Ni^{2+} + 2\,\bar{e} \rightarrow Ni$

c) $Ni^{2+} + Mg \rightarrow Ni + Mg^{2+}$

($NiSO_4 + Mg \rightarrow MgSO_4 + Ni$)

Marks :(4)

Hide Answer

Qn No. 37 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
A redox reaction is given below.

$FeCl_2 + Mg \rightarrow MgCl_2 + Fe$

If a galvanic cell is constructed based on the given redox reaction

a) Which are the electrolytes you choose?

b) Draw the diagram of the cell you constructed.

c) Write the equation of the reaction occuring at the negative electrode.

Hint.
a) $FeCl_2$, $MgCl_2$

b) Correct diagram with salt bridge and direction of electron flow.

c) $Mg \rightarrow Mg^{2+} + 2\bar{e}$

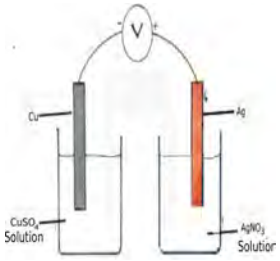
Marks :(4)

Hide Answer

Qn No. 38 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.

- **Figure of a galvanic cell is given.**



a) Observe the figure and correct the figure,if it is wrong?

b) To which catagory does the reaction occuring at the anode of a galvanic cell belong?

(Oxidation / Reduction)

c) Write the equation showing the reaction occuring at the negative electrode of the cell?

Hint.
a) Correct diagram with salt bridge and direction of electron flow.

b) Oxidation

c) $Cu \rightarrow Cu^{2+} + 2\bar{e}$

Marks :(4)

Hide Answer

Qn No. 39 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.

Some substances available in the lab are given in the box.

NaCl, $MgSO_4$, $CuSO_4$, $ZnSO_4$, $BaCl_2$, KCl, $AgNO_3$, Mg, Fe, Cu, Ag, N

a) How many galvanic cells can be construct using the materials given in the box? Which are they ?

b) Which of the above metal will act only as anode of the galvanic cells constructed?

Hint.
a) 3 cells, Mg – Fe / Fe-Cu / Mg-Cu

b) Mg

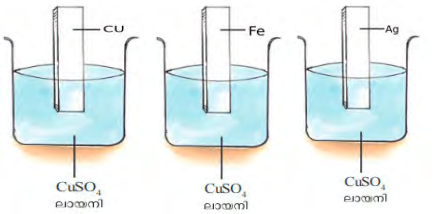
Marks :(3)

Hide Answer

Qn No. 40 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.

Analyse the following pictures and answer the following questions.



A **B** **C**

a) In which beaker does colour change occur after a few minutes?

b) write the equation showing the reaction that causes the colour change?

c) If you construct a galvanic cell using any given metal as electrode which metal will act as cathode?Write the equation showing the reaction taking place at the cathode.

Hint.
a) B

b) $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$

c) Ag

$2Ag^+ + 2e^- \rightarrow 2Ag$

$(Ag^+ + 1e^- \rightarrow Ag)$

Marks :(4)

Hide Answer

Qn No. 41 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
Certain metals are given in the box

Ag, Au, Zn, Mg

a) Which of the metals can displace Cu from $CuSO_4$ solution ?

b) Which metal cannot displace other metals from the salt solution of these metals?

Hint.
a) Zn, Mg

b) Au

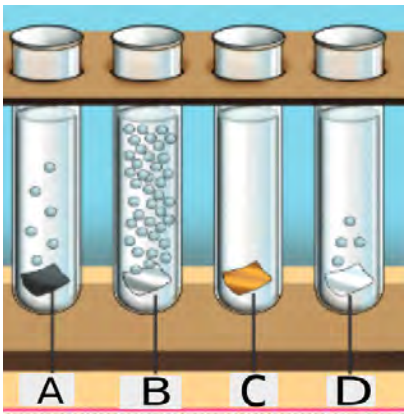
Marks :(2)

Hide Answer

Qn No. 42 *Chapter Name:Reactivity series and Electrochemistry*

Qn.

Four different metal pieces of same mass dipped in dil.HCl is shwn in the figure



a) Which is the gas evolved in the test tubes?

b) Write the equation showing the reaction of metal B with HCl.

(valency of B = 2)

c) Arrange the metals as seen in the reactivity series?

d) If we construct a galvanic cell using any two of the above metals,which metal will always act as the cathode?

Hint.

a) Hydrogen

b) $B+2HCl \rightarrow BCl_2+H_2$

c) B,A,D,C

d) C

Marks :(4)

Hide Answer

Qn No. 43 *Chapter Name:Reactivity series and Electrochemistry*

Qn.

Rods of Fe, Mg, Cu are dipped in hot water taken in a test tube

a) From which rod bubbles are evolved easily?Which is the gas evolved ?

b) Which of these does not react with water under any circumstances?

c) Arrange the metals in the increasing order of their reactivity?

Hint.

a) Mg, Hydrogen

b) Cu

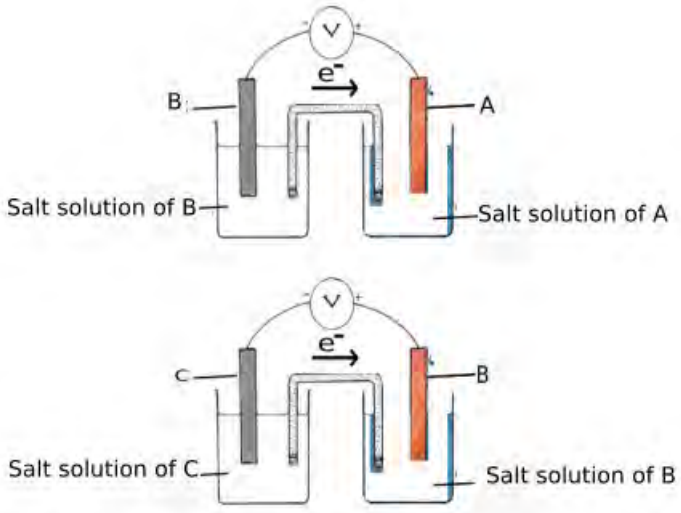
c) Cu, Fe , Mg

Marks :(3)

Hide Answer

Qn No. 44 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
Two galvanic cells constructed using metals A,B and C are shown in the figure.



a) Draw the figure of the galvanic cell constructed using metals A and C and mark the direction of flow of electrons.

b) Which will be the anode of this cell?

c) Write the equation of the reaction occuring at the cathode of this cell.

(Valency of the metal - 2)

Hint.
a) correct figure /correct direction of flow of electrons

c) Cathode - A

ന്) $A^{2+} + 2\,\bar{e} \rightarrow A$

Marks :(4)

Hide Answer

Qn No. 45 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
Give any two differences between a galvanic cell and an electrolytic cell.

Hint.
In a galvanic cell chemical energy is converted to electrical energy and in an electrolytic cell electrical energy is converted to chemical energy.

In galvanic cell positive electrode is cathode and negative electrode is anode. In electrolytic cell positive electrode is anode and negative electrode is cathode.

Marks :(4)

Hide Answer

Qn No. 46 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
(a)Gold is coated on a silver spoon using electricity. Name this process.

b) Give any two uses of the above process.

Hint.
a) electroplating

b) For decorative purpose / Resist corrosion etc

Marks :(2)

Hide Answer

Qn No. 47 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
Gold is electroplated on a silver spoon.

a) Which substance is to be used as the cathode of the cell?

b) Name the electrolyte used here.

Hint.
a) Cathode – silver spoon

b) Electrolyte – Solution of gold cyanide and sodium cyanide

Marks :(2)

Hide Answer

Qn No. 48 ***Chapter Name:Reactivity series and Electrochemistry***

Qn.
a) Which is the electrolyte used to electroplate silver over an iron nail?

b) Write the reaction taking place at the anode of that cell.

c) Write the reaction taking place at cathode of that cell.

Hint.

a) $AgNO_3$ solution / Solution of AgCN + NaCN

b) $Ag \rightarrow Ag^+ + 1e^-$

c) $Ag^+ + 1e^- \rightarrow Ag$

Marks :(3)

Hide Answer

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