CHEMISTRY

BOOKS - CENGAGE CHEMISTRY

ELECTROCHEMISTRY

Worked Examples

1. Calculate the amount of Ag deposited when (i) 9650 coulmbs and (ii) 965 coulombs of electricity is passed through a solution of silver nitrate . (Atomic weight of Ag = 108)

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2. Calculate the amount of electricity required to deposit 11 . 5 g of Na . (Atomic weight of Na=23)

3. Calculate the mass of copper that will be deposited by passing 2 F of electricity through a cupric salt solution .(Atomic weight of Cu = 63 . 5)

4. A certain amount of electricity is passed through aqueous silver nitrate and copper sulphate solution connected in series .If the mount of silver deposited at the catchode is 1.08 g , calculate the amount of copper deposited .(Atomic weight of Ag= 108 and atomic weight of Cu = 63 . 53)

5. An electric current of 0.5 ampere was passed through acidulated water for 1 hour .Calculate the volume of hydrogen at STP .(1 coulmb of electricity deposits 0.0000 1 g of hydrogen)
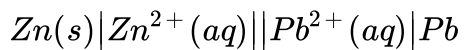
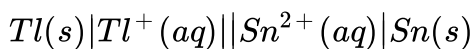**6.** Write the notation for a cell in which the electrode reactions are as follows :

$$2H^+(aq) + 2e^- \rightarrow H_2(g)$$

$$Zn(s) \rightarrow Zn^{2+} + 2e^-$$
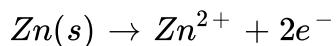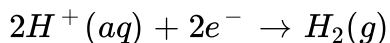
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7. Write the cell reaction from the cell notation

$$Zn(s)|Zn^{2+}(aq)||Pb^{2+}(aq)|Pb$$

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8. Write the cell reaction from the cell notation

$$Tl(s)|Tl^+(aq)||Sn^{2+}(aq)|Sn(s)$$

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1. Find the time required to deposit 1 g of gold when 6 A of electric current is passed into $AuCl_3$ solution . [Given : Equivalent weight of gold is 65 . 66 g]

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2. Calculate the strength of current in amperes which is required to liberate 10 g of bromine from KBr solution in half an hour ?

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3. Molten aluminium chloride is electrolysed with a current of 0 . 5 ampere to produce 27 g of aluminium .

A. How many gram equivalent of aluminium was produced ?

B. How many gram atoms of aluminium was produced ?

C. How long did the electrolysis take place ?

D. How many litres of chlorine at STP was produced ?

Answer:

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4. Solid sodium chloride is a bad conductor of electricity due to the

A. absence of ions

B. presence of mobile ions

C. absence of ionic bonds .

D. absence of mobile ions

Answer: D

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5. During electrolysis , electrons are

    A. gained

    B. lost

    C. gained by cation and lost by anion

    D. lost by anoin and gained by cation

Answer: C

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6. The anode is the electrode at which

    A. electrons are given up by the reactant

    B. electrons are accepted by the reactant

    C. anions are produced

    D. reduction takes place

Answer: A

7. Coulomb and ampere denote

A. quantity of electric current

B. strength of electric current

C. strength and quantity of electric current

D. quantity and strength of electric current

Answer: D

8. A substance is known as an electrolyte if it can conduct electricity

A. only in solution

B. only in fused state

C. both in solution and in fused state

D. either in solution or in fused state

Answer: C

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9. Electrolytes are generally found only among

A. metallic compounds

B. non -metals

C. electrovalent compounds

D. covalent compounds

Answer: A

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10. Which of the following is not a non -electrolyte ?

    A. Acetic acid

    B. glucose

    C. urea

    D. sucrose

Answer: A

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11. Which of the following is a good conductor of electricity ?

    A. Diamond

    B. graphite

    C. Solid NaCl

    D. Wood

Answer: B

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12. Which of the following does not conduct electricity ?

    A. Fused NaCl

    B. Solid NaCl

    C. Brine solution

    D. Copper

Answer: B

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13. Which cell convert electrical energy into chemical energy ?

    A. voltaic cell

B. electrolytic cell

C. Galvanic cell

D. Electrochemical cell

Answer: B

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14. In electrolytic cell , cathode acts as an

A. oxidising agent

B. reducing agent

C. A and B

D. none

Answer: B

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15. In galvanic cell anode is

A. negative electrode

B. positive electrode

C. neutral electrode

D. none

Answer: A

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16. For electrolysis to work used compound should be a

A. Insulator

B. cinductor

C. metalloid

D. non - conductor

Answer: B

17. The complete equipment of electrolysis is known as

    A. electrolytic cell

    B. electrolytic circuit

    C. electolytic current

    D. electrolytic process

Answer: A

18. When water is electrolysed , the gas collected at cathode is

    A. sulphur

B. oxygen

C. hydrogen

D. sulphur dioxide

Answer: C

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19. Electrolysis is used to purity which metal

A. sodium

B. lithium

C. copper

D. potassium

Answer: C

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1. How many grams of lithium is liberated when $5 \times 10^3 C$ of charge is passed through molten lithium chloride ?

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2. A constant current of 30 A is passed through an aqueous solution of NaCl for 1 hour . How many grams of NaOH is produced ? What is the volume of Cl_2 gas at STP produced ?

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3. How many electrons per second pass through a cross -section of copper wire carrying $10^{-16} A$?

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4. How many grams of cadmium is deposited from an aqueous solution of cadmium sulphate when an electric current of 1.51 A flows through the solution for 156 minutes ?

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5. Calculate the mass of copper deposited from a solution of $CuSO_4$ by passage of 5.0 A current for 965 seconds .

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6. A solution of a salt of a metal of atomic mass 112 was electrolysed for 150 minutes with a current of 0 . 15 ampare .The mass of metal deposited was 0 . 783 g . Find the equivalent mass and valency of the metal in the salt .

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7. 1 faraday of electricity will liberate 1 g atom of the metal from a solution of

A. NaCl

B. $BaCl_2$

C. $CuSO_4$

D. $AlCl_3$

Answer: A

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8. When a current of 2 amperes is passed through solutions of copper sulphate and silver nitrate in series , 0 . 635 g of copper is deposited .The weight of silver deposited is

A. 0.59 g

B. 3.24 g

C. 1.08 g

D. 2.16 g

Answer: C

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9. On passing electricity through dilute sulphuric acid , the amount of substance liberated at the cathod and the anode is in the ratio

A. $1:8$

B. $8:1$

C. $16:1$

D. $1:16$

Answer: A

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10. The quantity of electricity required to liberate $112cm^3$ of hydrogen at STP from acidified water is

    A. 1 faraday

    B. 965 coulombs

    C. 8650 coulombs

    D. 0 . 1 faraday

Answer: B

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11. The electric charge for electrode deposition of one equivalent of the substance is

    A. one ampere per second

    B. 96500 ampere per second

    C. one ampere per hour

D. change on 1 mole of electrons

Answer: B

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12. Faraday ' s law of electrolysis are related to the

    A. atomic number of cation

    B. atomic number of anion

    C. equivalent mass of ions

    D. speed of cation

Answer: C

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13. During electrolysis mass of a substance produced is proportional to

A. time of constant current

B. strength of current

C. voltage provided

D. both a and b

Answer: B

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14. In electrolysis of silver solution , silver is deposited at

A. anode

B. cathode

C. Inert electrode

D. change electrode

Answer: B

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15. What is the electrochemical equivalent of Ag (g/C)

A. 108×96500

B. $\dfrac{108}{96500}$

C. $\dfrac{96500}{108}$

D. $\dfrac{96500}{108}$

Answer: B

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16. Give the products availabe on the cathode and the anode respectively during the elctrolysis of an aqueous solution of $MgSO_4$ between inert electrodes

A. $H_2(g)$ and $O_2(g)$

B. $O_2(g)$ and $H_2(g)$
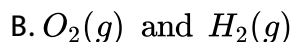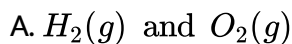
C. $O_2(g)$ and $Mg_2(g)$

D. $O_2(g)$ and $SO_2(g)$

Answer: A

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17. 1 C electricity deposits

A. 2 .3 g of Na

B. 96000 of Ag

C. electrochemical equivalent of Na

D. half of electrochemical equivalent of Ag

Answer: C

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18. In electrolysis if dil . H_2SO_4 using platinum electrodes

A. $H_2(g)$ is evolved at cathode

B. SO_2 is produced at cathode

C. O_2 is obtained of cathode

D. SO_2 is produced of cathode

Answer: A

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19. In the elctrolysis cell electron flows from

A. cathode to anode in solution

B. cathode to anode through external circuit

C. cathode to anode through internal circuit

D. anode to cathode through external circuit

Answer: D

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20. Copper is a divalent metal .The value of its electrochemical equivalent

is $3.29 \times 10^{-4}g$. Its atomic mass is

    A. $31.74g$

    B. 63.5 g

    C. 126.9 g

    D. $15.97g$

Answer: B

Mandatory Exercise Set Iii

1. Write anode and cathode reactions for a galvanic cell that untilises the following reaction : $Ni(s) + 2Fe^{3+} \rightarrow Ni^{2+} + 2Fe^{2+}$

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2. Write the anode and cathode half -reactions and sketch the experimental set - up .Label the anode and the cathode , identify the sign of each electrode and indicate the direction of electron and ion flow .

$2Al(s) + 3Cd^{2+}(aq) \rightarrow 2Al^{3+}(aq) + 3Cd(s)$
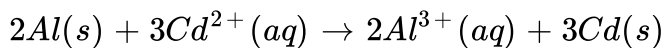
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3. Among the given statements , select the correct statements (s) regarding the galvanic /elctrolytic cell .

A. In a galvanic cell , a spontaneous chemical reaction generates an electric current .

B. In an electrolytic cell , an electric current drives a non -spontaneous

reaction .

C. In a galvanic cell ,an reaction is exothermic .

D. All the statements are correct .

Answer: D

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4. How many coulombs of electricity are required for the reduction of 1

mole of MnO_4^- to Mn^{2+} ?

A. 96500 C

B. $9.65 \times 10^6 C$

C. $4.83 \times 10^5 C$

D. $1.93 \times 10^5 C$

Answer: C

5. In the electrolysis of acidulated water , it is desired to obtained 1 . 12 CC of hydrogen per second under STP condition . The current to be passed is

A. 9 . 65 A

B. 19 . 3 A

C. 0.965 A

D. 1. 93 A

Answer: A

6. Which of the following reaction occurs at the cathode ?

A. $2OH^- \rightarrow H_2O + \frac{1}{2}O_2(g) + 2e^-$

B. $A > oAg^+ + e$

C. $Ag \rightarrow Ag^+ + e$

D. $Cu^{2+}2e \rightarrow Cu$
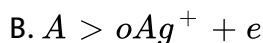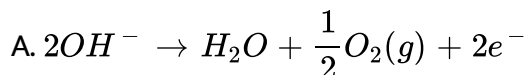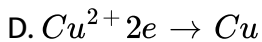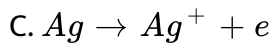
Answer: D

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7. What will be the proportion of moles of metal (cu : Ni : Ag) at cathode according ot the second law of Faraday ?

A. $1:2:1$

B. $2:2:1$

C. $1:2:2$

D. $1:1:2$

Answer: D

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8. How many coulombs are required to deposit 50 g of aluminium when the electrode reaction is $Al^{3+} + 3e^- \rightarrow Al$

A. 536111 C

B. 536 .111 C

C. 96500 C

D. 38600 C

Answer: A

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9. Pure water does not conduct electricity because it is

A. basic

B. almost not ionised

C. decomposed easily

D. acidic

Answer: B

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10. The charge required to liberate one gram equivalent of an element is

A. 96 500 F

B. 1 F

C. 1 C

D. none of these

Answer: B

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11. When 3 . 86 A current is passed through an electrolyte for 50 min , 2.4 g of divalent metal is deposited .The gram atomic weight of the metal is (in gram)

A. 24

B. 12

C. 64

D. 40

Answer: D

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12. How many atoms of calcium will be deposited from a solution of $CaCl_2$ by a current of 25 mA flowing for 60 s ?

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13. Electrolysis of molten NACl produces _____ at cathode

A. $H_2(g)$

B. $Na(g)$

C. $Cl_2(g)$

D. $O_2(g)$

Answer: A

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14. If the $E^\circ_{(cl)}$ in negative then which of following is correct

A. $\Delta G^\circ > 0, K_{ea} < 1$

B. $\Delta G^\circ > 0, K_{ea} > 1$

C. $\Delta G^\circ < 0, K_{ea} > 1$

D. $\Delta G^\circ < 0, K_{ea} > 1$

Answer: A

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15. $Cu^{2+}(aq) + e \rightarrow Cu^+(aq), E° = +0.15v$

$Cu^+(aq) + e \rightarrow Cu(s), E° = +0.50v$
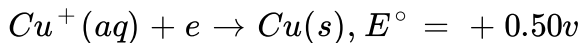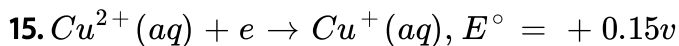
The value of $E°_{Cu^{2+}/Cu}$ will be

A. 0 . 150 v

B. 0 . 50 v

C. 0 . 325 v

D. 0 . 650 v

Answer: C

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16. Standard electrode potential of three metals x , y and z are - 1. 2 v,+0.5v and - 3 .0 v . The reducing power of these metals will be

A. $x > y > z$

B. $y > z > x$

C. $y > x > z$

D. $z > x > y$

Answer: D

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17. If $-\left(Sn^{+4}/Sn^{+2}\right) = +0.15v$ and $E^{\circ}_{Cr^{3+}/Cr} = -0.75v$. Then E°_{cell} = ?

A. $+1.83v$

B. $+1.19v$

C. $+0.89v$

D. $+0.18v$

Answer: C

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18. The standard EMF of a galvanic cell involving 2 moles of electrons in its redox reaction is 0 . 59 v . The equilibrium constant for the redox reaction of the cell is

A. 10^{20}

B. 10^5

C. 10

D. 10^{10}

Answer: A

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Mandatory Exercise Set Iv

1. Can we use a copper vessel to store 1 M $AgNO_3$ solution ? Given $E_{Cu^{2+}/Cu} = +0.34V$. And $E_{Ag^+/Ag} = +0.80V$.

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2. What is the potential for the cell

$$Zn|Zn^{2+}(1.0M)||Cu^{2+}(1.0M)|Cu \ ?$$

3. Using the reactivity series or table of standard reduction potentials , predict whether a reaction takes place , and if so , give a balanced reaction equation .
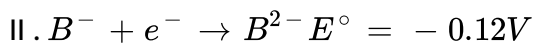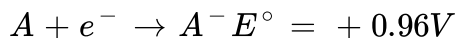
    A. $Ag(s) + HCl(aq)$

    B. $Mg(s) + FeSO_4(aq)$

    C. $Cu(s) + AuCl_3(aq)$

    D. $Sn(s) + Al_2(SO_4)_3(s)$
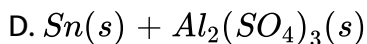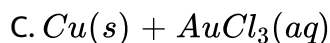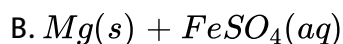
Answer:

4. Consider the following half - cell reactions : I .

$$A + e^- \rightarrow A^- \, E^\circ = +0.96V$$

$$\text{II} . B^- + e^- \rightarrow B^{2-} \, E^\circ = -0.12V$$

$$\text{III} . C^+ + e^- \rightarrow CE^\circ = +0.18V$$

$$\text{IV} . D^{2+} + 2e^- \rightarrow DE^\circ = -1.\,12V$$
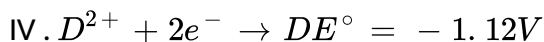
Which combination of two half cells will result in a cell with the largest
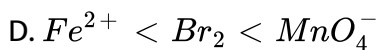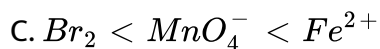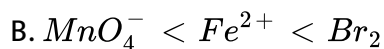
potential ?
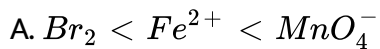
A. I and II

B. I and III

C. I and IV

D. II and IV

Answer: C

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5. Increasing order of $Br_2(l)$, $Fe^{2+}(aq)$, and $MnO_4^-(aq)$ as oxidising agents is

A. $Br_2 < Fe^{2+} < MnO_4^-$

B. $MnO_4^- < Fe^{2+} < Br_2$

C. $Br_2 < MnO_4^- < Fe^{2+}$

D. $Fe^{2+} < Br_2 < MnO_4^-$

Answer: D

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6. It is not advisable to

A. stir copper sulphate solution with a zinc spoon

B. stir silver nitrate solution with a copper spoon

C. both (A) and (B)

D. none of these

Answer: C

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7. The E_{cell} is given by the reaction

A. $E_{anode} - E_{cathode}$

B. $E_{cathode} - E_{anode}$

C. $E_{cathode} + E_{anode}$

D. $E_{anode} + E_{cathode}$

Answer: B

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8. Four alkali metals A, B ,C , and D have standard lectrode potentials as $-3.05, -166, -040$ and $+0.80V$, respectively . Which one will be the most reducing ?

A. A

B. B

C. C

D. D

Answer: A

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9. Match the following :

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Multiple Choice Questions With One Or More Than One Correct Answer

1. By passage of 1 F electricity

A. 1 mole of Cu is deposited

B. 0.5 mole of Mg is deposited

C. 9 g of Al is deposited

D. 5. $6L$ of O_2 gas is evolved at the anode

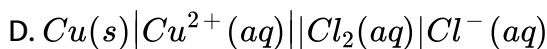Answer: (B) , (C) , AND (D)
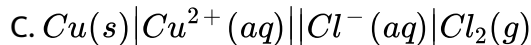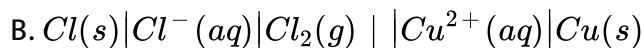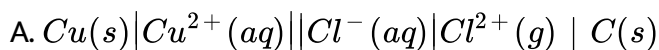
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2. Which of the following is /are functions (s) of salt bridge ?

A. It completes the electrical circuit with electrons flowing from one

electrode to the other through external wires and a flow of ions

between the two compartments through salt bridge .

B. It prevents the accumulation of ions .

C. Either (A) or (B) .

D. Neither (A) nor (B) .

Answer: (A) ,(B)

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3. For the cell reaction $Cu(s) + Cl_2(aq) \rightarrow Cu^{2+}(aq) + 2Cl - (aq)$, cell notation is

A. $Cu(s)|Cu^{2+}(aq)||Cl^-(aq)|Cl^{2+}(g) \mid C(s)$

B. $Cl(s)|Cl^-(aq)|Cl_2(g) \mid |Cu^{2+}(aq)|Cu(s)$

C. $Cu(s)|Cu^{2+}(aq)||Cl^-(aq)|Cl_2(g)$

D. $Cu(s)|Cu^{2+}(aq)||Cl_2(aq)|Cl^-(aq)$

Answer: B

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4. Given $E^\circ_{Ag^+/Cu} = 0.80V$, $E^\circ_{Hg^{2+}/Mg} = 0.79V$

$E^\circ_{Cu^{2+}/Cu} = 0.34V$, $E_{Hg^{2+}/Hg} = 0.34V$

Which of the following statement (s) is /are incorrect ?

A. $AgNO_3$ can be stored in a copper vessel .

B. $Cu(NO_3)_2$ can be stored in a magnesium vessel .

C. $Cu(NO_3)_2$ can be stored in a silver vessel .

D. $HgCl_2$ can be stored in a copper vessel .
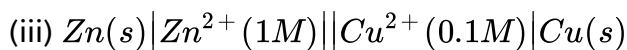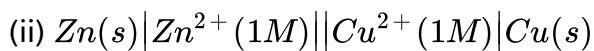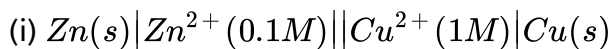
Answer: (A) , (B) , AND (D)

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5. Corrosion of metals can be prevented by

A. coating the metal surface with a paint

B. applying a film of oil and grease on the surface of the metal

C. electroplating the metal with non -corroding metals

D. covering the surface of the metal with another metal which is more

electropositive

Answer: (A) , (B) , (C) , AND (D)

6. E_1, E_2 and E_3 are the emf of the following three cells

(i) $Zn(s)\big|Zn^{2+}(0.1M)\big|\big|Cu^{2+}(1M)\big|Cu(s)$

(ii) $Zn(s)\big|Zn^{2+}(1M)\big|\big|Cu^{2+}(1M)\big|Cu(s)$

(iii) $Zn(s)\big|Zn^{2+}(1M)\big|\big|Cu^{2+}(0.1M)\big|Cu(s)$

Which one of the following is true ?

A. $E_2 > E_1 > E_3$

B. $E_1 > E_2 > E_3$

C. $E_3 > E_1 > E_2$

D. $E_3 > E_2 > E_1$

Answer: B

7. If $E^\circ_{Sn^{+4}/Sn^{+2}} = +0.15$ and $E^\circ_{Au^{3+}/Au} = 1.5v$ Then for the reaction

$35n^{+2} + 2Au^{3+} \rightarrow 35n^{+4} + 2Au$, E°_{cell} is
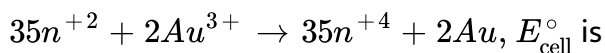
A. $+1.35$

B. $+2.55$

C. -1.35

D. -2.55

Answer: A

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8. The $E^\circ_{M^{3+}/M^{2+}}$ value of cr , Mn Fe and Co are - 0.41, +1.57,+0.77 and +1.97v for which metal change in oxidation state from +2 to + 3 is easiest .

A. Cr

B. Mn

C. Fe

D. Co

Answer: A

---

9. If $Cu^{2+} + 2e \rightarrow Cu$, $E^\circ = 0.337v$, $Cu^{2+} + e \rightarrow Cu$,

$E^\circ = 0.153v$ then E° for the reaction $Cu^+ + e \rightarrow Cu$ will be
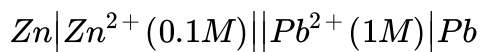
A. $0.52v$

B. $0.50v$

C. $0.30v$

D. $0.38v$

Answer: A

10. Given $Pb^{2+}/Pb = -0.12v$, $Zn^{2+}/Zn = -0.763v$ find emf of the following cell .

$Zn|Zn^{2+}(0.1M)||Pb^{2+}(1M)|Pb$

A. -0.637

B. $+0.637$

C. 0.667

D. -0.889

Answer: C

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11. $E°$ for

$Mg^{2+}/Mg = -2.37v$, $Zn^{2+}/Zn = -0.76v$ and $Fe^{2+}/Fe = -0.44v$

which statement is correct ?

A. Zn reduces Fe^{2+}

B. Zn reduced Mg^{2+}

C. Mg oxidises Fe

D. Zn oxidises Fe

Answer: A

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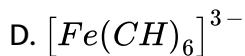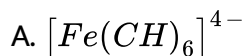12. Hydrogen gas in not liberated when the following metal is added to dil HCl .
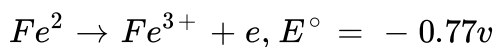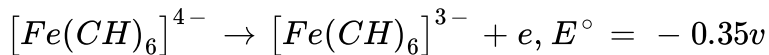
A. Ag

B. Zn

C. Mg

D. Sn

Answer: A

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13. On the basis of the following E° values the strong - est oxidising agent is

$$[Fe(CH)_6]^{4-} \rightarrow [Fe(CH)_6]^{3-} + e, \; E^\circ = -0.35v$$

$$Fe^2 \rightarrow Fe^{3+} + e, \; E^\circ = -0.77v$$

A. $[Fe(CH)_6]^{4-}$

B. Fe^{2+}

C. Fe^{3+}

D. $[Fe(CH)_6]^{3-}$

Answer: C

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14.

$$Zn(s) + Cl_2(1atm) \rightarrow Zn^{2+} + 2Cl^-, \; E^\circ_{Cell} \, of \, the \, cell \, is \, 2.12v. \, To \in crease.$$
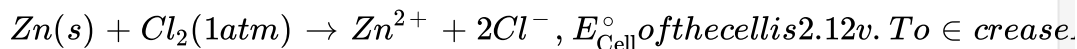
A. $\left[Zn^{2+}\right]$ should be increased

B. $\left[Zn^{2+}\right]$ should be decreased

C. $\left[Cl^-\right]$ should be increased

D. P_{Cl_2} should be decreased

Answer: B

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15. The standard reduction potential of hydrogen electrode at 1 M concentration and hydrogen gas at 1 atm pressure is

A. 1 v

B. 6 v

C. 8 v

D. 0 v

Answer: D

16. Alkali metals have high oxidation potential hence they behave as

A. oxidising agent

B. Lewis base

C. reducing agent

D. electrolyses

Answer: C

17. When iron is rusted , it is

A. reduced

B. decomposed

C. oxidised

D. none

Answer: C

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18. Chemical formula of rust is

A. $Fe_2O_3 . H_2O$

B. $Fe_2O_3 \cdot 5H_2O$

C. $Fe_2O_3 \cdot xH_2O$
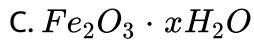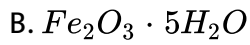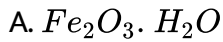
D. none

Answer: C

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19. The rusting of iron is catalysed by

A. Fe

B. O_2

C. $H^{\oplus}$

D. Zn

Answer: C

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20. Which one of the following metal is used in galvanisation ?

A. Cu

B. Ag

C. Zn

D. Fe

Answer: C

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1. Chlorine is produced commercially by the electrolysis of aqueous sodium chloride .How long will it take to produce 1.18 kg of chlorine if the current of 5×10^2 A is passed ?

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2. A constant current of 1.25 amperes is passed through an electrolytic cell containing a 0.05 M solution of $CuSO_4$ and a copper anode and a platinum cathode until 1.58 g of copper is deposited .

How long does the current flow to obtain 1.58 g of copper ?

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3. Calculate the mass of silver that would be deposited in a similar cell containing 0.1 M Ag^+ if the same amount of current is passed ?

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4. Calculate the value of Avogadro number , if 96 , 500 C of current deposits 107 . 9 g silver from $AgNO_3$ solution .

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5. A 100 - watt , 110 - volt , incandescent lamp is connected in series with an electrolytic cell containing cadmium sulphate solution .Calculate the mass of cadmium deposited by the current which is passed for 10 hours .

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6. How many faradays of electricity is required for the following processes ?

A. Reduction of 1 mole Fe^{3+} to Fe

B. Reduction of 1 mole Fe^{3+} to Fe^{2+}

C. Oxidation of 1 gSn^{+2} to Sn^{+4}

D. Oxidation of 1 gH_2O to O_2

Answer:

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7. A cell is prepared by dipping the Cu rod in M $CuSO_4$ solution and the Zn rod in 1 M $ZnSO_4$ solution . The standard reduction potentials of copper and zinc are 0.34 V and - 0 . 76 V , respectively .

A. What will be the cell reaction ?

B. What will be the standard EMF of the cell ?

C. Which electrode will be positive ?

D. How will the cell be represented ?

Answer:

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8. Zinc dissolves in dilute HCl to liberate H_2 , but from concentrated H_2SO_4, SO_2 is evolved . Explain .

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Olympiad And Ntse Level Exercises

1.

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2. By virtue of Faraday's second law of electrolysis the electrochemical equivalent of the electrolysis the electrochemical equivalent of the two metals liberated at the elctrodes has the same ratio as the of their

    A. Atomic masses

    B. Molecular masses

    C. Equivalent masses

    D. Any of three

Answer: C

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3. Which of the following statements is correct for a galvanic cell ?
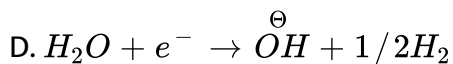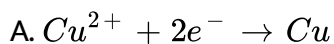
    A. Reduction occurs at cathode

    B. Oxidation occurs at anode

    C. Electrons flow from anode to cathode
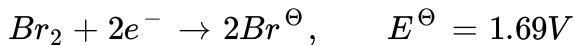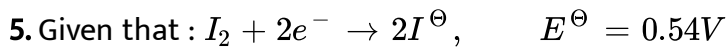
D. All the statements are correct .

Answer: D

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4. During the electrolysis of the aqueous solution of copper sulphate using Pt electrodes , the reaction taking place at anode electrode is

A. $Cu^{2+} + 2e^- \rightarrow Cu$

B. $Cu \rightarrow Cu^{2+} + 2e^-$

C. $2H_2O \rightarrow 4H^{\oplus} + O_2 + 4e^-$

D. $H_2O + e^- \rightarrow \overset{\ominus}{O}H + 1/2H_2$

Answer: C

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5. Given that : $I_2 + 2e^- \rightarrow 2I^{\ominus}$, $E^{\ominus} = 0.54V$

$Br_2 + 2e^- \rightarrow 2Br^{\ominus}$, $E^{\ominus} = 1.69V$

Predict which of the following is true .

A. $I^{\ominus}$ ions will be able to reduce bromin e.

B. $Br^{\ominus}$ ions will be able to reduce iodine .

C. Iodine will be able to reduce bromine .

D. Bromine will be able to reduce iodide ions .

Answer: A

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**6.** An electrochemical cell stop working after some time because

A. Electrode potential of both the electrodes becomes zero .

B. Electrode potential of both the electrodes

C. One of the electrode is eaten away .

D. The reaction starts proceeding in opposite direction .

Answer: B

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7. Which of the following is anodic reaction

A. $SO_4^{2-} + H_2O \rightarrow H_2SO_4 + 1/2O_2 + 2e^-$

B. $H^{\oplus} + e^- \rightarrow 1/2H_2$

C. $Ag^{\oplus} + e^- \rightarrow Ag$
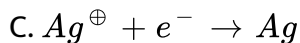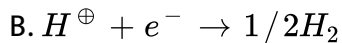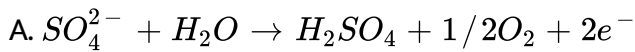
D. none of these

Answer: A

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8. Rust is a mixture of

A. FeO and $Fe(OH)_2$

B. FeO and $Fe(OH)_3$

C. Fe_2O_3 and $Fe(OH)_3$

D. Fe_3O_4 and $Fe(OH)_3$

Answer: C

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9. For the electrolytic production of $NaClO_4$ from $NaClO_3$ according to the reaction $NaClO_3 + H_2O \rightarrow NaClO_4 + H_2$ .How many faradays of electricity would be reduired to produce 0 . 5 mole of $NaClO_4$?

A. 1

B. 2

C. 3

D. 1.5

Answer: A

10. A certain current liberates 0 . 5 g of hydrogen in 2 hours .How many grams of copper can be liberated by the same current flowing for the same time in a copper sulphate solution ?

A. 12 . 7 g

B. 15 . 9 g

C. 31 . 8 g

D. 63 . 5 g

Answer: B