Q-1 - 14160714

When acidified solution of $K_2Cr_2O_7$ is shaken with aqeous solution of $FeSO_4$, Then:

(A) $Cr_2O_7^{2-}$ ions is reduced to Cr^{3+} ions

(B) $Cr_2O_7^{2-}$ ion is converted to CrO_4^{2-} ion

(C) $Cr_2O_7^{2-}$ ions is reduced to Cr

(D) $Cr_2O_7^{2-}$ ions is converted to CrO_3

CORRECT ANSWER: A

Q-2 - 12227056

H_2O_2 reduces $K_4Fe(CN)_6$

(A) In neutral solution

(B) In acidic solution

(C) In non-polar solution

(D) In alkaline solution

CORRECT ANSWER: B

SOLUTION:

When H_2O_2 reduces with $K_4\left[Fe(CN)_6\right]$. It is present

in acidic solution.

$$2K_4\left[Fe(CN)_6\right] + H_2SO_4 + H_2O_2 \rightarrow 2K_3\left[Fe(CN)_6\right] + K_2SO_4 + 2H_2O$$

Q-3 - 11032461

Using stock notation, represent the following compounds and write their names also.

a. $Na_2Cr_2O_7$, b. Mn_2O_7, c. V_2O_5, d. K_2CrO_4

e. Cr_2O_3, f. $FeSO_4$, g. $Fe_2(SO_4)_3$, h. $CuBr_2$

i. Cu_2Br_2

CORRECT ANSWER: A

SOLUTION:

10.

	Stock notation	Name of the compound
a.	$\overset{+1\times2\ +6\times2\ -2\times7}{Na_2\ Cr_2\ O_7}$, $Na_2Cr_2(VI)O_7$	Sodium dichromate
b.	$\overset{+7\times2\ -2\times7}{Mn_2\ O_7}$, $Mn_2(VII)O_7$	Manganese heptaoxide
c.	$\overset{+5\times2\ -2\times7}{V_2\ O_5}$, $V_2(V)O_5$	Vanadium pentaoxide
d.	$\overset{+1\times2\ +6\ -2\times4}{K_2\ Cr\ O_4}$, $K_2Cr(VI)O_4$	Potassium chromate
e.	$\overset{+3\times2\ -2\times3}{Cr_2\ O_3}$, $Cr_2(III)O_3$	Chromium trioxide
f.	$\overset{+2\ +6\ -2\times4}{Fe\ S\ O_4}$, $Fe(II)SO_4$	Ferrous sulphate
g.	$\overset{+3\times2\ \ -2\times3}{Fe_2\ (SO_4)_3}$, $Fe_2(III)(SO_4)_3$	Ferric sulphate
h.	$\overset{+2\ \ -1\times2}{Cu\ Br_2}$, $Cu(II)\ Br_2$	Cupric bromide
i.	$\overset{+1\times2\ \ -1\times2}{Cu_2\ Br_2}$, $Cu_2(I)Br_2$	Cuprous bromide

Q-4 - 11480295

Complete and balance the following equation:

(i). $FeSO_4 \xrightarrow[2.\,K_4\left[Fe(CN)_6\right]]{1.\,K_2Cr_2O_7}$

(ii). $FeSO_4 \xrightarrow[tored \neq ss]{heated}$

SOLUTION:

(i).

$$6FeSO_4 + K_2Cr_2O_7 + 7H_2SO_4 \rightarrow 3Fe(SO_4)_3 + Cr_3(SO_4)_3 + K_2SO_4 + 7H_2O$$

(ii).

$$2FeSO_4 \xrightarrow{\text{Heated to redness}} Fe_2O_3 + SO_2 + SO_3$$

Q-5 - 11480297

Draw shape of $FeCl_3$ in :

(i). Water

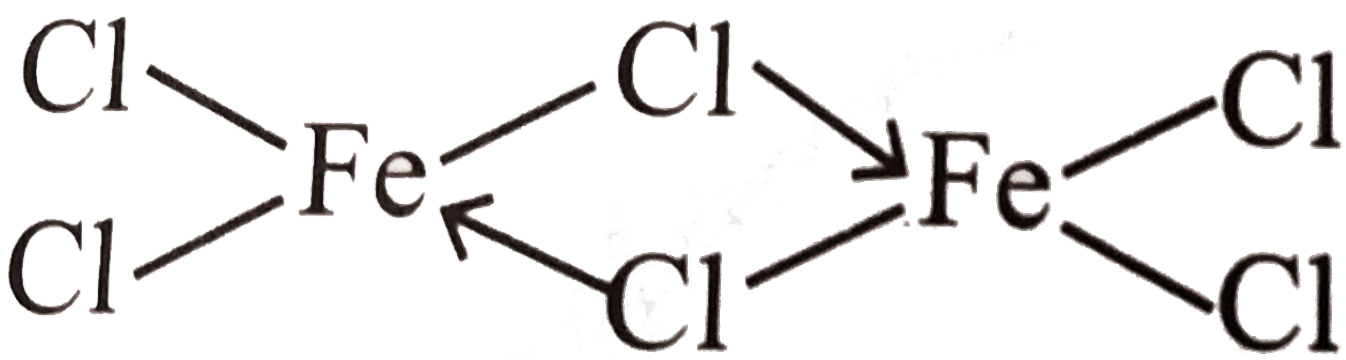
(ii). Ether

(iii). Gaseous state.

SOLUTION:

(i). In water $FeCl_3$ remains as it is .

(ii). In ether, $FeCl_3$ remains in solvated monomeric form



as:

(iii). In gaseous state, $FeCl_3$ remains in dimeric state

as:

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Q-6 - 12226776

Assertion: A solution of $FeCl_3$ in water produces brown precipitate

on standing.

Reason: Hydrolysis of $FeCl_3$ takes place in water.

(A) If both assertion and reason are true and the reason is the correct explantion of the assertion.

(B) If both the assertion and reason are true and reason is not the correct explanation of assertion.

(C) If the assertion is true but reason is false.

(D) If the assertion and reason both are false.

CORRECT ANSWER: A

SOLUTION:

Aq. Solution of $FeCl_3$ on standing produces brown ppt. Due to hydrolysis it produces ppt. of $Fe(OH)_3$ which is of brown colour. Hence both are correct and reason in the correct explanation.

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Q-7 - 11480331

Transition metals and many of their compounds show paramagnetic behaviour where there are unpaired electron or electrons. The magnetic moment arises from the spin and orbital motions in ions or molecule. Magnetic moment of n unpaired electrons is given as $\mu = \sqrt{n(n+2)}$ Bohr magneton

Magnetic moment increases as the number of unpaired electrons increases.

Q. There are three unpaired electrons in $\left[Co(H_2O)_6\right]^{2+}$ and calculated value of magnetic moment on the basis of $\sqrt{n(n+2)}$ formula is 3.87 BM. which is lower than the expermental value of 4.40 BM. The reason for this difference is due to

(A) increase in number of unpaired electrons during determination

(B) Some contribution of the orbital motion of the electrons to the magnetic moment

(C) d-d transition

(D) Experimental error

CORRECT ANSWER: B

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Q-8 - 11480347

$KMnO_4$ reacts with $Na_2S_2O_3$ in acidic, strongly basic and aqueous (neutral) media. $100mL$ of $LMnO_4$ reacts with 100 mL of 0.1 M $Na_2S_2O_3$ in acidic, basic and neutral media.

Q. The molarity (M) of $KMnO_4$ solution in basic medium is:

(A) 0.8 M

(B) 0.08 M

(C) 0.26 M

(D) 0.026M

CORRECT ANSWER: A

SOLUTION:

$MnO_4^?$

$\equiv S_2O_3^{2-}\left(2S_2O_3^{2-}\right.$

$\left.\rightarrow 2S_4^{2-}\ \rightarrow 8e^?\right)(n$

$=8)$

$100mL \times N \equiv 100mL$

$\times 0.1 \times 8$

("n factor")

$n = 0.8$

$$M = \frac{N}{\text{n factor}}$$

$= 0.8M$

Q-9 - 11480350

dz^2 orbital is involvedr in which of the following hybridisastion?

(A) sp^3d

(B) dsp^3

(C) sp^3d^2

(D) d^2sp^3

CORRECT ANSWER: A,B

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Q-10 - 19212938

Find the number of colourless species among the following:

$Sc^{3+}, Ti^{4+}, V^{3+}, Zn^{2+},$
$Mn^{2+}, Fe^{3+}, Ni^{2+}, Cu^{2+},$
Cr^{3+}

CORRECT ANSWER: 0003

SOLUTION:

$Sc^{3+}, Ti^{4+}\left(d^{0}\right),$

$Zn^{2+}\left(d^{10}\right)$

.

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Q-11 - 11480356

Which of the following represents the incoorect order of the properties indicated?

(A)

$Ni^{2+} > Cr^{2+}$

$> Fe^{2+} > Mn^{2+}$

(size)

(B) $Sc > tI > Cr > Mn$ (size)

(C)

$Ni^{2+} < Co^{2+} < Fe^{2+} < Mn^{2+}$

(unpaired electron)

(D) $H_3AsO_4 > H_3PO_4$ (acidic strength order)

CORRECT ANSWER: A,D

SOLUTION:

(a). Same order for neutral atom and ion having same charge. (a) and (d) are incorrect.

$Sc > Ti > V > Cr > Mn \longrightarrow$

Therefore

$Cr^{2+} > Mn^{2+} > Fe^{2+} > Co^{2+} > Ni^{2+}$

(d). $H_2AsO_4 < H_2PO_4$ as P is more electronegative than As.

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Q-12 - 23545800

which of the following is correct set of quantum numbers for the last electron entering in Fe ?

(A)
n	l	m	s
4	0	0	$+\frac{1}{2}$

(B)
n	l	m	s
3	2	-1	$+\frac{1}{2}$

(C)
n	l	m	s
3	2	-2	$-\frac{1}{2}$

(D)
n	l	m	s
3	2	-3	$-\frac{1}{2}$

CORRECT ANSWER: C

SOLUTION:

N/a

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Q-13 - 11480358

Which is true statement about $KmnO_4$?

(A) Its solution is unstable in acidic medium.

(B) It has purple colour.

(C) $MnO_4^?$ changes to Mn^{2+} in basic solution.

(D) It is self indicator in $Fe\&(2+)$ or $C_2O_4^{2-}$ titration.

CORRECT ANSWER: A,B,D

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Q-14 - 11480359

Out of $\left[Fe(CN)_6\right]^{4-}$, $\left[Ni(CN)_4\right]^{2-}$, and $\left[Ni(CO)_4\right]$: select the incorrect Statement(s):

(A) All have identical geometry

(B) All are paramagnetic

(C) all are diamagnetic

(D) $\left[Fe(CN)_6\right]^{4-}$ is dimagnetic but $\left[Ni(CN)_4\right]^{2-}$ and $\left[Ni(CO)_4\right]$ are paramagnetic

---

CORRECT ANSWER: A,B,D

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Q-15 - 15090459

Assertion: A pink coloured solution of potassium permanganate turns green on passing $O3$ through it

Reason K_2MnO_4 is oxidised by O_3 to $KMnO_4$.

(A) Both asseration and reason are correct but reason is not the correct explanation.

(B) Both asseration and reason are correct but reason is not the correct explanation.

(C) Asseration is correct but reason is wrong.

(D) Asseration is wrong but reason is correct.

CORRECT ANSWER: D

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Q-16 - 14801482

When H_2S is passed through nitric acid and acidified $KMnO_4$ solution the product formed is

(A) H_2SO_4

(B) colloidal sulpher

(C) SO_2

(D) plastic sulpher

CORRECT ANSWER: B

SOLUTION:

H_2S acts as strong reducing agent nitric acid and

accidified $KMnO_4$

$2HNO_3 + H_2S$

$\rightarrow 2H_2O + NO_2 + S$

.

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Q-17 - 11480566

Potassium manganate (K_2MnO_4) is formed when

(A) Chlorine is passed through aqueous $KMnO_4$

solution

(B) Manganese dioxide is fused with potassium

hydroxide in air.

(C) Formaldehyde reacts with potassium permanganate in the presence of a strong alkali.

(D) Potassium permanganate reacts with concentrated sulphuric acid.

CORRECT ANSWER: B::C

SOLUTION:

Potassium maganate (K_2MnO_4) is formed when mangnese dioxide is fused with potassium hydroxide in air of formaldehyde reacts with potassium permanganate in the presence of a strong alkali.

$$4KOH + 2MnO_2 + O_2 \rightarrow 2K_2MnO_4 + 2H_2O$$

$$HCHO + 2KMnO_4 + 2KOH \rightarrow K_2MnO_4 + H_2O + HCOOH$$

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Q-18 - 12978982

Which of the d-block elements are not referred to as the transition elements ?

(A) Group 9

(B) Group 12

(C) Group 10

(D) Group 13

CORRECT ANSWER: B

SOLUTION:

Transition elements are those d-block elements which have incompletely filled (n-1) d subshells either in their atomic state or in their common ionic states. On the

basis of incompletely filled 3d subshell in case of scandium atom in its ground state $\left(3d^14s^2\right)$, it is regarded as a transition element. On the other hand, Zinc atom (Group. 12) has completely filled 3d subshell $\left(3d^{10}\right)$ in its atomic state as well as in its + 2 state hence it is not regarded as a transition element. Silver atom has completely field (n-1) d subshell in the ground state of its atom $\left(4d^{10}5s^1\right)$, but it is a transition element because it shows oxidation state of $+1\left(4d^{10}\right)$, $+2\left(4d^9\right)$ and $+3\left(4d^8\right)$.

Q-19 - 18237366

Which statement is incorrect for the d-block elements

(A) Have atomic radii larger than s and p-block elements

(B) Have high melting points, boiling points an tensile strength

(C) Have variable oxidation states

(D) Exhibit catalytic activity

CORRECT ANSWER: A

Q-20 - 11480379

In general the melting and boiling points of transition metals

(A) increases gradually across the period from left to right

(B) decreases gradually across the period from left to right

(C) first increases till the middle of the period and then

decreases towards the end

(D) First decreases regulary till the middle of the period and then increases towards the end.

CORRECT ANSWER: C

Q-21 - 18698889

Which metal has the lowest melting point?

(A) W

(B) Cu

(C) Au

(D) Ag

CORRECT ANSWER: D

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Q-22 - 11480383

Which of the following electronic structures refers to transition elements?

(A) 2, 8, 18, 5

(B) 2, 8, 14, 2

(C) 2, 8, 18, 32, 18, 8, 1

(D) 2, 8, 5

CORRECT ANSWER: B

SOLUTION:

Transition elements have unpaired electrons in $(n-1)$ d-orbitals.

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Q-23 - 11480388

Among the following series of transition metal ions the one where all meal ions have $3d^2$ electronic configuration is

(A)

$Ti^{3+}k, V^{2+}, Cr^{3+},$

Mn^{4+}

(B)

$Ti^{\oplus}, V^{4+}, Cr^{6+},$

Mn^{7+}

(C)

$Ti^{4+}, V^{3+}, Cr^{2+},$

Mn^{3+}

(D)

$Ti^{2+}, V^{3+}, Cr^{4+},$

Mn^{5+}

CORRECT ANSWER: D

SOLUTION:

$$Ti(Z = 22) = 3d^{24}s^2,$$
$$Ti^{3+} = 3d^2$$

$$V(Z = 33) = 3d^{34}s^2,$$
$$V^{3+}) = 3d^2$$

$$Cr(Z = 24) = 3d^{64}s^1,$$
$$Cr^{4+} = 3d^2$$

$$Mn(Z = 25)$$
$$= 3d^{54}s^2, M^{5+} = 3d^2$$

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Q-24 - 11480396

The tendency of the transition elements to form coloured compounds is attributed to

(A) Transition of electrons from one atom to the other

(B) Transition of electrons from s-orbitals of then outer shells to p-orbitals.

(C) d-d-transition in last but one shell.

(D) None of the reason is correct.

CORRECT ANSWER: C

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Q-25 - 12661276

The metal ion which does not form coloured compound is

(A) Chromium

(B) Zine

(C) Manganese

(D) Iron

CORRECT ANSWER: B

SOLUTION:

Zince does not have any unparied electron pair so it forms only colour compound.

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Q-26 - 11480399

Which of the following contains the maximum number of unpaired electrons?

(A) $TiCl_3$

(B) $MnCl_3$

(C) $FeSO_4$

(D) $CuSO_4$

CORRECT ANSWER: B

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Q-27 - 11480401

In general, the Transition elements exhibit their highest oxidation states in their compounds with elements like:

(A) C

(B) S

(C) S and P

(D) F and O

CORRECT ANSWER: D

SOLUTION:

It is because these have small size, can have highest coordination number.

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Q-28 - 11480403

In which of the following complexes the metal ion is in zero oxidation state?

(A) $\left[Cu(NH_3)_4\right]Cl_2$

(B) $Zn_2\left[Fe(CN)_6\right]$

(C) $Mn_2(CO)_{10}$

(D) $\left[Ag(NH_3)_2\right]Cl$

CORRECT ANSWER: C

SOLUTION:

Inmetal carbonyl the O.S. of metal is zero.

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Q-29 - 11480416

Which of the following of manganese is amphoteric?

(A) MnO_7

(B) Mn_2O_3

(C) Mn_2O_7

(D) MnO

CORRECT ANSWER: A

SOLUTION:

Acidic character of oxides increases when$O$. S.

increases. Thus MnO and Mn_2O_3 are basic. MnO_2

is amphoteric and Mn_2O_7 is acidic.

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Q-30 - 11480417

Number of moles of $K_2Cr_2O_7$ reduced by one mole of Sn^{2+} ion is

(A) $\frac{1}{3}$

(B) 3

(C) $\frac{1}{6}$

(D) 6

CORRECT ANSWER: A

SOLUTION:

Eq. of $Cr_2O_7^{2-}$ $=$ Eq. of Sn^{2+}

(n factor $= 6$) (n factor $= 6$) Itbr $\frac{1}{6}$ mol. Of

$Cr_2O_7^{2-} = \frac{1}{2}$mol. Of Sn^{2+}

1 mol of $Sn^{2+} = \frac{2}{6} = \frac{1}{3}$ mol. Of $Cr_2O_7^{2-}$

Q-31 - 19212796

CrO_3 dissolves in aqueous NaOH to give:

(A) $Cr_2O_7^{2-}$

(B) CrO_4^{2-}

(C) $Cr(OH)_3$

(D) $Cr(OH)_2$

CORRECT ANSWER: B

Q-32 - 11032432

Balance the following by ion electron method (basic medium):

$$Cr(OH)_3 + IO_3^{?} \rightarrow I^{?} + CrO_4^{2-}$$

SOLUTION:

Two half reactions are:

a. $Cr(OH)_3 \rightarrow CeO_4^{2-}$

b. $IO_3^{?} \rightarrow I^{?}$

Balancing O atoms:

a.

$$Cr(OH)_3 + 2\overset{?}{O}H \rightarrow CrO_4^{2-} + H_2O$$

b.

$$IO_3^{?} + 3H_2O \rightarrow I^{?} + 6\overset{?}{O}H$$

Balancing H atoms:

a.

$$Cr(OH)_3 + 2\overset{?}{O}H + 3\overset{?}{O}H \rightarrow CrO_4^{2-} + H_2O + 3H_2O$$

b.

$$IO_3^{?} + 3H_2O \rightarrow I^{?} + 6\overset{?}{O}H$$

Balancing the charge:

a.

$$Cr(OH)_3 5\overset{?}{O}H \rightarrow CrO_4^{2-} + 4H_2O^{+}3e^{-}$$

b.

$$IO_3^? + 3H_2O + 6e^-$$

$$\rightarrow I^? + 6\overset{?}{O}H$$

Adding (a) and (b), we get

$$2Cr(OH)_3 + IO_3^?$$

$$+ 4\overset{?}{O}H \rightarrow 2CrO_4^{2-}$$

$$+ I^? + 5H_2O$$

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Q-33 - 11480419

An explosion takes place when conc. H_2SO_4 is added to $KMnO_4$.

Which of the following is formed?

(A) Mn^2O_7

(B) MnO_2

(C) $MnSO_4$

(D) Mn_2O_3

CORRECT ANSWER: A

SOLUTION:

$2KMnO_4$
$+ H_2SO_4(conc.)$
$\rightarrow K_2SO_4 + H_2O$
$+ Mn_2O_7$

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Q-34 - 11480420

Formation of interstitial compound makes the transition metal

(A) More soft

(B) More ductile

(C) More metallic

(D) More hard

CORRECT ANSWER: D

SOLUTION:

Formation of interstitial compounds make transition elements more hard as the small non-metallic atoms present at interstitial sites form covalent bonds with the transition metal atoms.

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Q-35 - 11480422

The properties of Zr and Hf are similar because

(A) Both belong to d-block

(B) Both belong to same group of the periodic table

(C) both have simular radii

(D) both have same number of electrons

CORRECT ANSWER: C

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Q-36 - 11480426

Which of the two have almost similar soze

(A) $\_(22)Ti$ and $\_(40)Zr$

(B) $\_(41)Nb$ and $\_(73)Ta$

(C) $\_(39)Y$ and $\_(57)La$

(D) $\_(20)Ca$ and $\_(31)Ir$

CORRECT ANSWER: B

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Q-37 - 11480428

The reason for the stability of Gd^{3+} ion is

(A) 4f-subshell-half filled

(B) 4f subshell-completely filled

(C) Possesses the general electronic configuration of noble gases

(D) 4f-subshell empty.

CORRECT ANSWER: A

SOLUTION:

$Gd(Z = 64)$

$\Rightarrow 4f^{75}d^{16}s^{2}$

$Gd^{3} = 4f^{7}$

Gd^{3+} is stable due to the presence of exactly half-filled 4f-subshell.

Q-38 - 11480430

The radius of $La^{3+}(Z = 57)$ is 106 pm. Which one of the following given values will be closest to the radius of $Lu^{3+}(Z = 71)$?

(A) 160 pm

(B) 140 pm

(C) 106 pm

(D) 85 pm

CORRECT ANSWER: D

SOLUTION:

Since ionic radii decreases from La^{3+}, to Lu^{3+} due to lanthanoid contraction, so Lu^{3+} have least ionic radii out of the given radii. Hence answer is 85 pm.

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Q-39 - 11480435

Which transition metal has lowest density?

(A) Sc

(B) Ti

(C) Zn

(D) La

CORRECT ANSWER: A

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Q-40 - 12979086

When $(NH_4)_2Cr_2O_7$ is heated, the gas evolved is

(A) NO_2

(B) N_2

(C) O_2

(D) N_2O

CORRECT ANSWER: B

SOLUTION:

$$(NH_4)_2Cr_2O_7 \xrightarrow{\Delta} Cr_2O_3 + 4H_2O + N_2$$

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Q-41 - 11480447

Which among FeO and Fe_2O_3 is more basic?

(A) FeO

(B) Fe_2O_3

(C) both have same basic length

(D) None of them is basic

CORRECT ANSWER: A

SOLUTION:

Iron is extracted from haematite (Fe_2O_3). Al is extracted from bauxite $(Al_2O_{32}H_2O)$.

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Q-42 - 11480453

On heating copper nitrate strongly the compound obtained is

(A) Copper

(B) Copper oxide

(C) Copper nirtite

(D) Copper nitride

CORRECT ANSWER: B

SOLUTION:

$$2Cu(NO_3)_2 \xrightarrow{\Delta} 2CuO_4NO_2 + O_2$$

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Q-43 - 11480462

$AgNO_3$ gives red ppt. with.

(A) NaI

(B) KCl

(C) $NaNO_3$

(D) Na_2CrO_4

CORRECT ANSWER: D

SOLUTION:

$$2AgNO_3 + Na_2CrO_4 \rightarrow 2NaNO_3 + Ag_2CrO_4$$

(red ppt)

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Q-44 - 11480463

percentage of gold in 21.6 carat gold is

(A) $21.8\ \%$

(B) $90\ \%$

(C) $10\ \%$

(D) $70\ \%$

CORRECT ANSWER: B

SOLUTION:

21.6 carat gold contains 21.6 parts of gold in 24 parts by weight of alloy.

$\%$ of gold in 21.6 carat gold

$$= \frac{21.6}{24} \times 100 = 90$$

%

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Q-45 - 11480464

Gold dissolves in aqua regia forming

(A) $Au(NO_3)_2$

(B) $H[AuCl_4]$

(C) $AuCl$

(D) $AuNO_3$

CORRECT ANSWER: B

SOLUTION:

$$3HCl + 4HNO_3 \rightarrow NOCl + 2H_2O + 2[Cl]$$

$$Au + 3[Cl] \rightarrow AuCl_3$$

$$AuCl_3 + 3\mathrm{HCl} \rightarrow H[AuCl_4]$$

(complex)

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Q-46 - 11480467

The roasting of HgS in air produces

(A) HgO

(B) $HgCl_2$

(C) $HgSO_4$

(D) Hg

CORRECT ANSWER: D

SOLUTION:

$$HgS + O_2 \xrightarrow{773-873K} Hg + SO_2$$

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Q-47 - 11480468

Which of the following is used as a white pigment?

(A) ZnO

(B) Na_2ZnO_2

(C) ZnS

(D) $ZnCO_3$

CORRECT ANSWER: A

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Q-48 - 11480470

White vitriol is

(A) $CuSO_{4.5}H_2O$

(B) $FeSO_{4.7}H_2O$

(C) $ZnSO_{4.7}H_2O$

(D) $NiSO_{4.5}H_2O$

CORRECT ANSWER: C

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Q-49 - 11480473

Iron is rendered passive by treatment with

(A) H_2SO_4 is a strong oxidising agent and it reacts with $KMnO_4$ during titration

(B) H_3PO_4

(C) HCl

(D) conc. HNO_3

CORRECT ANSWER: D

SOLUTION:

Iron on reaction with conc. HNO_3 is covered with oxide film (Fe_2O_3) and is rendered passive.

Q-50 - 11480475

Which of the following is used for joining the broken pieces of glass and stones?

(A) Heamatite

(B) Sindoor

(C) Massicot

(D) German silver

CORRECT ANSWER: C

SOLUTION:

A mixture of massicot (yellow form of PbO) and glycerine

is used for joining broken pieces of stones and glass.

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Q-51 - 11480484

Iron, once dipped in concentrated H_2SO_4, does not displace copper

from copper sulphate solution, because

(A) It is lessreactive than copper

(B) A layer of sulphate is deposited on it

(C) An inert layer of iron oxide s deposited on it

(D) All valence electrons of iron are consumed

CORRECT ANSWER: C

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Q-52 - 11480485

Which of the followig ions will finally give a black precipitate with $Ag^{\oplus}$ ion?

(A) SO_3^{2-}

(B) $Br^{?}$

(C) CrO_4^{2-}

(D) $S_2O_3^{2-}$

CORRECT ANSWER: D

SOLUTION:

$$Ag^{\oplus} + S_2O_3^{2-}$$

$$\rightarrow Ag_2S_2O_3 \xrightarrow{H_2O} Ag_2S$$

$$+ H_2SO_4$$

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Q-53 - 11480488

KI and $CuSO_4$ solutions when mixed give

(A) $CuI_2 + K_2SO_4$

(B) $Cu_2I_2 + K_2SO_4$

(C) $K_2SO_4 + Cu_2I_2 + I_2$

(D) $K_2SO_4 + CuI_2 + I_2$

CORRECT ANSWER: C

SOLUTION:

$$3KI + 2CuSO_4 \rightarrow 2Cu_2I_2 + K_2SO_4 + I_2$$

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Q-54 - 18237860

Mercury is the only metal which is liquid at $0C$. This is due to its

(A) Very high ionisation energy and weak metallic bond

(B) Low ionisation potential and high electronegativity

(C) High atomic mass and small size

(D) High electronegativity and low ionisation potential

CORRECT ANSWER: A

Q-55 - 12661260

Which of the following alloys contain only Cu and Zn?

(A) Bronze

(B) Gun metal

(C) Brass

(D) Bell metal

CORRECT ANSWER: C

SOLUTION:

Brass contains $Cu = 60\,\%$ and $Zn = 40\,\%$ in its composition.

Q-56 - 15163137

Match each of the reaction given in Column I with the corresponding product(s) given in Column II.

Column I	Column II
A. $Cu+dil.\ HNO_3$	p. NO
B. $Cu+cons.\ HNO_3$	q. NO_2
C. $Zn+dil.HNO_3$	r. N_2O
D. $Zn+cons\ HNO_3$	s. $Cu(NO_3)_2$
	t. $Zn(NO_3)_2$

CORRECT ANSWER: A$RA\mathbb{R}$P, S; B$RA\mathbb{R}$Q, S; C$RA\mathbb{R}$R, T; D$RA\mathbb{R}$Q,T

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Q-57 - 19212888

An element of 3d-transition series shows two oxidation states x and y, differing by two units. Then:

(A) compounds in oxidation state x are ionic if xgty

(B) compounds in oxidation state x are ionic if xlty

(C) compounds in oxidation state y are covalent if xlty

(D) compound in oxidation state y are covalent if yltx

CORRECT ANSWER: B::C

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Q-58 - 19212878

Beyond Mn no metal has a trihalide except:

(A) Co

(B) Fe

(C) Ni

(D) Cu

CORRECT ANSWER: A::B

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Q-59 - 18699092

The diamagnetic compounds is/are

(A) $HgCl_2$

(B) Hg_2Cl_2

(C) Cu_2Cl_2

(D) $K_2Cr_2O_7$

CORRECT ANSWER: A::B::C::D

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Q-60 - 18256107

In context of the lanthanoids, which of the following statements is

not correct?

(A) There is a gradual decrease in the radii of the members with increasing atomic number in the series

(B) All the members exhibit + 3 oxidation state

(C) Because of similar properties, the separation of lanthanoids is not easy

(D) Availability of 4f electrons results in the formation of compounds in + 4 state for all the members of the series

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CORRECT ANSWER: D

SOLUTION:

Formation of + 4 state requires very high energy, thus incorrect.