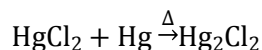


Topic :- THE D-AND F-BLOCK ELEMENTS

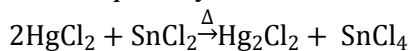
- 1 (c)
Many of the *d*-block (transition) elements and their compounds act as catalyst. Catalytic property is probably due to the utilisation of $(n - 1)$ *d*-orbitals or formation of interstitial compounds.
- 2 (a)
 $2\text{HgCl}_2 + \text{SnCl}_2 \rightarrow \text{SnCl}_4 + \text{Hg}_2\text{Cl}_2$ (white)
 $\text{Hg}_2\text{Cl}_2 + \text{SnCl}_2 \rightarrow \text{SnCl}_4 + \text{Hg}_2$ (Grey)
- 3 (b)
Mohr salt is $\text{FeSO}_4 \cdot (\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$
 \therefore It is double salt having FeSO_4 and $(\text{NH}_4)_2\text{SO}_4$.
- 4 (a)
Mn in MnO_4^- has +7 and Cr in CrO_2Cl_2 has +6 oxidation state, the highest for Mn and Cr respectively.
- 5 (c)
Lanthanides are the 14 elements of IIIB group and sixth period (At. no.=58 to 71) that are filling 4*f*-subshell of antipenultimate shell from 1 to 14. Actually, they are placed below the Periodic Table in horizontal row as lanthanide series.
- 6 (a)
When the quenched steel is heated to temperature below red hot and then allowed to cool slowly. It becomes soft. This process is known as annealing
- 7 (d)
It is a use of chrome alum.
- 8 (c)
We know that by reducing auric chloride by stannous chloride, the colloidal solution of gold is obtained. It is known as purple of cassius
- 9 (b)
 $2\text{CuCl}_2 + \text{SO}_2 + 2\text{H}_2\text{O} \rightarrow \text{Cu}_2\text{Cl}_2 + 2\text{HCl} + \text{H}_2\text{SO}_4$
- 10 (d)
C, Fe, Mg react with hot water to give H_2 .

11 **(b)**
Tungsten is the highest m.p. metal (3410°C).

12 **(d)**
Mercurous chloride (calomel) is prepared by heating HgCl_2 and Hg in iron vessel.



It can also be prepared by the reduction of mercury (II) chloride by tin (II) chloride in a limited quantity.

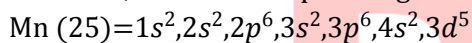


13 **(a)**
It is a fact.

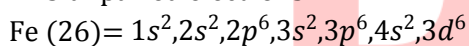
14 **(b)**
 $\text{SO}_3^{2-} + \text{H}_2\text{O} \rightarrow \text{SO}_4^{2-} + 2\text{H}^+ + 2e$
 $\text{MnO}_4^- + 8\text{H}^+ + 5e \rightarrow \text{Mn}^{2+} + 4\text{H}_2\text{O}$.

15 **(c)**
It is a fact.

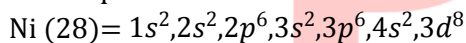
16 **(d)**
The element having unpaired electron is paramagnetic. More the number of unpaired electrons, more will be paramagnetic character.



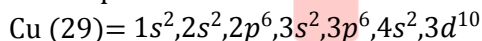
∴ 5 unpaired electrons



∴ 4 unpaired electrons



∴ 2 unpaired electrons



∴ 1 unpaired electrons

∴ Mn has maximum and Cu has least paramagnetic property.

17 **(b)**
It is a reason for the given fact.

18 **(c)**
The cupellation step in Parke's process is used to purify Ag from lead.

19 **(c)**
It is a fact.

ANSWER-KEY										
Q.	1	2	3	4	5	6	7	8	9	10
A.	C	A	B	A	C	A	D	C	B	D
Q.	11	12	13	14	15	16	17	18	19	20
A.	B	D	A	B	C	D	B	C	C	B

PE