DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth
DATE :

Solutio

SUBJECT : CHEMISTRY
DPP No. : 3

Topic :- THE D-AND F-BLOCK ELEMENTS

1 **(b)**

$HgO \xrightarrow{\Delta} Hg + \frac{1}{2}O_2$

2 **(a)**

Cast iron has the highest percentage of carbon. It contains 2 to 4.5 % of carbon along with impurities such as sulphur, silicon, phosphorus etc. It is the least pure form of iron.

3 **(a)**

Argentite is Ag_2S.

4 **(d)**

$2HgS + 3O_2 \longrightarrow 2HgO + 2SO_2$,
$2HgO + HgS \longrightarrow 3Hg + SO_2$

5 **(a)**

Transuranic elements start after uranium and begin with Np (Neptunium)

6 **(a)**

All these compounds are less soluble in water and only $Zn(OH)_2$ is soluble in $NH_4Cl + NH_4OH$ due to formation of tetramine zinc (II) complex.
$Zn^{2+} + 4NH_4OH \longrightarrow [Zn(NH_3)_4]^{2+} + 2H_2O$

7 **(d)**

Transition metals can form ionic or covalent compounds and their melting and boiling points are high. Their compounds are generally coloured and they usually exhibit variable valency.

8 **(b)**

Both $KMnO_4$ and $FeCl_3$ are oxidant and thus, no reaction.

9 **(b)**

Alloy is a homogeneous mixture of two or more metals. Mercury forms amalgams (alloy) with gold, silver and tin. But it does not react with iron or platinum.

10 **(b)**

Purple of Cassius is the trade name for gold sol. in water.

12 **(d)**

Gd(64)
$[Xe]_{54}$

$4f^7$

↑	↑	↑	↑	↑	↑	↑

$5d^1$

↑					⇅

All the electrons of $4f$-orbital are unpaired, hence stable.
Thus, Gd(64) has EC as $[Xe]_{54}\ 4f^7\ 5d^1\ 6s^2$
Instead of $[Xe]_{54}\ 4f^8\ 6s^2$

13 **(c)**

The electronic configuration of mercury (80) is $[Xe]4f^{10}, 5d^{10}, 6s^2$. Its d-subshell is completely filled, thus it prevents the overlapping of d-orbitals ($d - d$ overlapping).

Hence, it is liquid metal at room temperature.

14 **(c)**

Azurite is the ore of copper, its molecular formula is $Cu(OH)_2.2CuCO_3$.

15 **(b)**

$CrO_4^{2-} + 2H^+ \longrightarrow Cr_2O_7^{2-} + H_2O$

16 **(d)**

$Zn + 2HCl \longrightarrow ZnCl_2 + H_2$

$Zn + \underset{\text{Dil.}}{H_2SO_4} \longrightarrow ZnSO_4 + H_2$

$4Zn + 10HNO_3 \longrightarrow 4Zn(NO_3)_2 + N_2O + 5H_2O$

Thus, NO_3^- ions are reduced to N_2O whereas in first two reactions H^+ is reduced to H_2.

17 **(b)**

Siderite —$FeCO_3$, calcite (or limestone) — $CaCO_3$, silver glance(or argentite) —Ag_2S, fool's gold (or iron pyrites) —FeS_2.

18 **(c)**

$3Fe + 4H_2O \longrightarrow Fe_3O_4 + 4H_2$

19 **(d)**

In the electrolytic refining of zinc, anode is made up of impure zinc while a strip of pure zinc acts as cathode. An acidified solution of zinc sulphate acts as electrolyte. When electricity is passed, following reactions occur.

At cathode

$$\underset{\text{pure}}{Zn^{2+} + 2e^- \longrightarrow Zn}$$

At anode

$$\underset{\text{impure}}{Zn \longrightarrow Zn^{2+} + 2e^-}$$

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