

Topic :- THE D-AND F-BLOCK ELEMENTS

- 1 (c)
Cassiterite is an ore of Sn.
- 2 (b)
 $\text{CuSO}_4 + 4\text{NH}_3 \rightarrow [\text{Cu}(\text{NH}_3)_4]^{2+} \text{SO}_4^{2-}$
- 3 (c)
Pig iron is formed during metallurgical operations. All other forms are then prepared by using it.
- 4 (c)
—do—
- 5 (c)
An element is paramagnetic if it has unpaired electron.
- 6 (b)
Commercial zinc, about 97% pure containing lead and other impurities is called spelter.
- 7 (a)
ZnO is known as philosopher's wool because it is very light, white, soft wooly powder.
- 8 (a)
The density of transition elements gradually increases along the period or in a series, e.g., 3d-series: ${}_{21}\text{Sc}$ (3.0g/mL) to ${}_{29}\text{Cu}$ (8.9g/mL). ${}_{30}\text{Zn}$ has 7.1 g/mL.
- 9 (b)
Silver containing lead as impurity is purified by cupellation process.
- 10 (c)
Pig iron contains about 4% carbon. P, Mn and Si are in less percentage.
- 11 (d)
The electronic configurations of Cu^{2+} is
 $\text{Cu}^{2+} : [\text{Ar}] 3d^9$
Hence, it has one unpaired electron.
Magnetic moment (μ) = $\sqrt{n(n+2)}$
 $\sqrt{1(1+2)}$
= 1.73
- 12 (b)
Ni-steel contains 3.5% Ni and is used in making cables, automobiles and aeroplane parts,

- armour plates, propeller shafts, etc.
- 13 **(c)**
Hg exists as Hg_2^{2+} and not Hg^+ .
- 14 **(a)**
 CrO_3 and Mn_2O_7 are acidic oxide. Since, they react with water and form the acids.
e.g., $\text{CrO}_3 + \text{H}_2\text{O} \rightarrow \text{H}_2\text{CrO}_4$
chromic acid
 $\text{Mn}_2\text{O}_7 + \text{H}_2\text{O} \rightarrow 2\text{HMnO}_4$
permanganic acid
- 15 **(d)**
Copper metallurgy involves bessmerization. In Bessemer convertor, the impurities of ferric oxide forms slag with silica and copper oxide is reduced to give blister copper.
 $\text{FeO} + \text{SiO}_2 \rightarrow \text{FeSiO}_3$
slag
- $\text{Cu}_2\text{S} + 2\text{Cu}_2\text{O} \rightarrow 6\text{Cu} + \text{SO}_2$
- 16 **(c)**
It is a fact.
- 17 **(b)**
It is a fact
 $4\text{Au} + 8\text{KCN} + 2\text{H}_2\text{O} + \text{O}_2 \rightarrow 4\text{K}[\text{Au}(\text{CN})_2] + 4\text{KOH}$
 $2\text{K}[\text{Au}(\text{CN})_2] + \text{Zn} \rightarrow \text{K}_2[\text{Zn}(\text{CN})_4] + 2\text{Au}$]
- 18 **(b)**
The chief ore of copper is copper pyrite, CuFeS_2 .
- 20 **(a)**
Transitional metal ions having electronic configuration $(n-1)d^0$ or $(n-1)d^{10}$ are colourless while those have $(n-1)d^{1-9}$ are coloured.
 $\text{Cu}^+ : [\text{Ar}] 3d^{10}$: colourless
 $\text{Cu}^{2+} : [\text{Ar}] 3d^9$: coloured
 $\text{Fe}^{2+} : [\text{Ar}] 3d^6$: coloured
 $\text{Mn}^{2+} : [\text{Ar}] 3d^5$: coloured

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

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