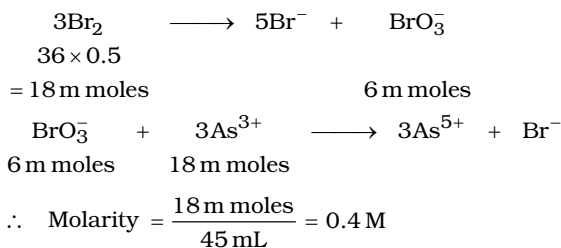
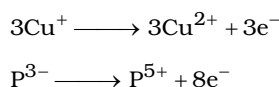


Miscellaneous Exercise Question Bank

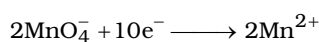
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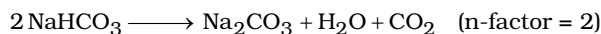
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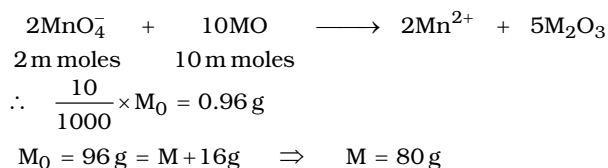
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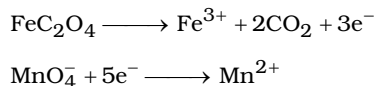
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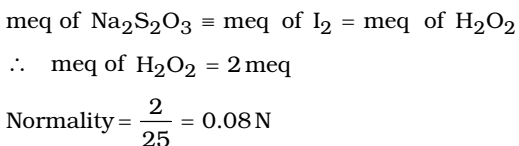
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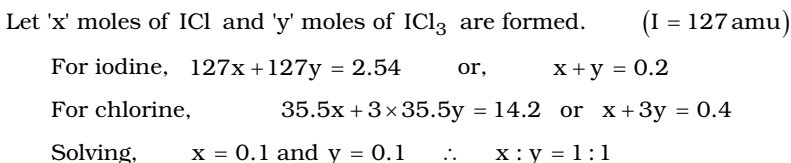
6.(A)



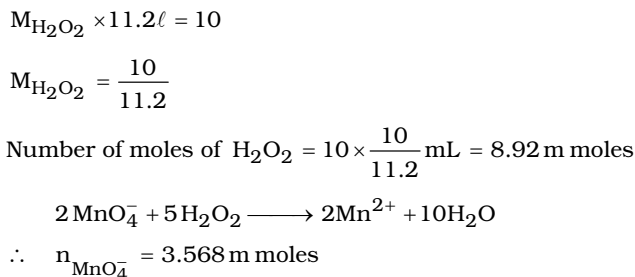
7.(C)



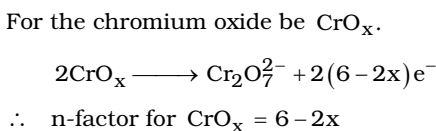
8.(A)



9.(B)



10.(B)



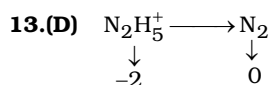
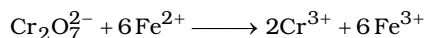
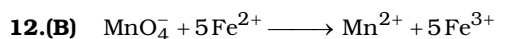
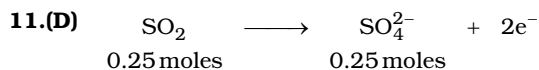
Now, number of equation of $\text{ClO}^- \equiv$ number of equation of $\text{CrO}_x = 0.15 \times 2 = 0.3 \text{ eq}$

$$\text{Also, } 0.3 \text{ eq} = \frac{12.6 \text{ g}}{E_{\text{CrO}_x}} \Rightarrow E_{\text{CrO}_x} = 42 \text{ g}$$

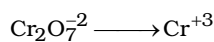
$$\text{or } E_{\text{CrO}_x} = 42 = \frac{M_0}{6-2x} \Rightarrow 42 = \frac{52+16x}{6-2x} \Rightarrow 63-21x = 13+4x$$

$$\Rightarrow 25x = 50 \Rightarrow x = 2$$

\therefore Formula is CrO_2



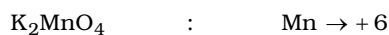
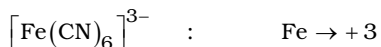
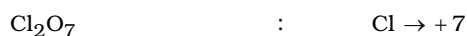
$$X_F = 4$$



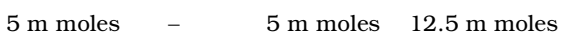
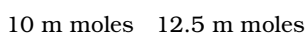
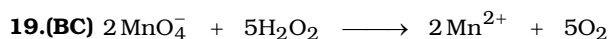
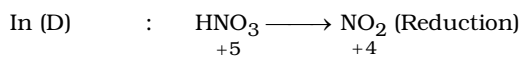
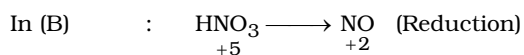
$$X_F = 6$$

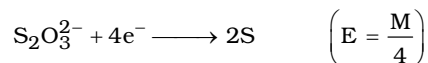
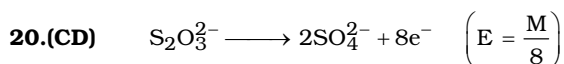
$$n\text{Cr}_2\text{O}_7^{2-}(6) = 0.136 = \frac{0.136}{6} = 0.0227$$

14.(A) Oleum is $\text{H}_2\text{S}_2\text{O}_7$ hence oxidation state of S is +6.



17.(BD) In (A) & (C), O.S. of nitrogen remains same i.e. +5

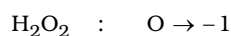




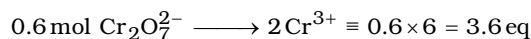
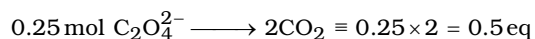
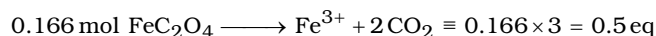
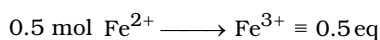
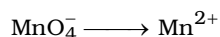
21.(ABD)



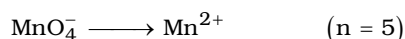
So, N can be oxidised further as well as reduced



22.(ABC) In acidic medium,



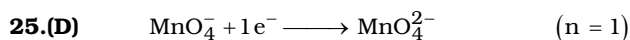
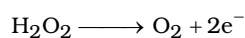
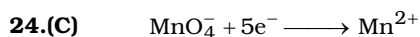
23.(B) In acidic medium,



\therefore For 1 L 1 N $KMnO_4$ solution,

We have, 1 gm-eq of $KMnO_4$

$\Rightarrow \frac{M_0}{5} = 31.6 \text{ g}$



$\therefore E = \frac{M_0}{1} = 158 \text{ g}$

26.(B) For $KMnO_4$, meq of $KHC_2O_4 \equiv$ meq of $KMnO_4 = 10 \text{ meq}$

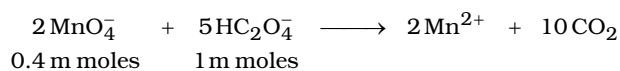
$\therefore x = \frac{10}{1000} \times \frac{128}{2} = 0.64 \text{ g} \quad \left(E_{KHC_2O_4} = \frac{128}{2} \text{ g} \right)$

For $Ca(OH)_2$, meq of $KHC_2O_4 \equiv$ meq of $Ca(OH)_2 = 10 \text{ meq}$

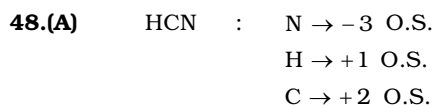
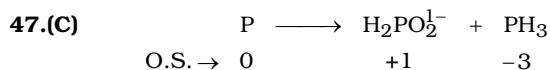
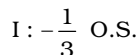
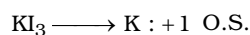
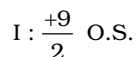
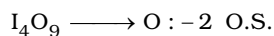
$\therefore y = \frac{10}{1000} \times 128 = 1.28 \text{ g} \quad (E_{KHC_2O_4} = 128 \text{ g})$

27.(C) As an acid, n-factor of $NaHC_2O_4 = 1$

\therefore Molarity of $NaHC_2O_4$ solution = 0.1 M



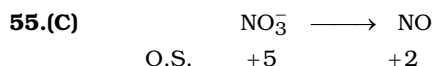
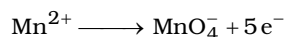
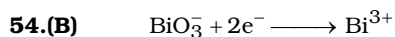
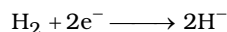
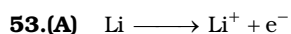
\therefore Molarity of $KMnO_4$ solution = $\frac{0.4}{10} = 0.04 \text{ M}$



49.(A) Option (A) is a decomposition reaction. **50.(A)** Oxidation number of Cl does not change

51.(B) Sodium hydride \rightarrow NaH

52.(C) Option (A), (B) & (D) are double-displacement reactions



57.(D) All these statements are correct regarding oxidation number.

58.(D) C_6H_5CHO

Let O.S. of C be 'x'

$$\therefore 7x + 6(+1) + 1(-2) = 0 \quad \Rightarrow \quad 7x = -4$$

59.(D) O.S. of H is +1

$$N_3H \Rightarrow 3x + 1 = 0$$

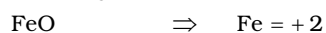
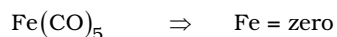
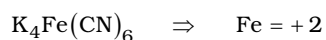
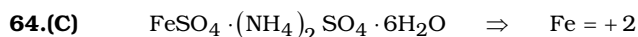
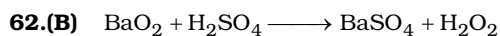
$$x = -\frac{1}{3}$$

60.(B) Let oxidation number of S be x

$$\therefore 2x - 6 = -2$$

$$x = +2$$

61.(B) O.S. of C_2H_4 and H_2O is zero



- 65.(C)** $0.94x - 2 = 0 \Rightarrow x = \frac{2}{0.94}$
- 66.(D)** Metallic iron is getting oxidised to Fe^{3+}
- 67.(C)** $\text{Br}_2 \longrightarrow \text{Br}^- + \text{BrO}_3^-$
 O.S. \rightarrow 0 -1 +5
- 68.(C)** $\text{NO}_2^- \longrightarrow \text{NO}_3^- + 2e^-$
 O.S. \rightarrow +3 +5
- 69.(A)** $\text{MnO}_4^- : \text{Mn} \rightarrow +7$
 $\text{MnO}_3^- : \text{Mn} \rightarrow +5$
- 70.(A)** $\text{H}_4\text{IO}_6^- \Rightarrow 4(+1) + x + 6(-2) = -1$
 $\Rightarrow x - 12 + 4 = -1 \Rightarrow x = +7$
- 71.(B)** Carbon sub-oxide is C_3O_2 .
- 72.(CD)** In option (C), O.S. of N remains same ; In option (D), O.S. of Fe remains same
- 73.(BC)** $\text{S}_2\text{O}_3^{2-}$ is getting oxidised while I_2 is getting reduced
- 74.(BCD)** In option (A), the O.S. of Cr remains same i.e. +6 **75.(CD)** O.S. of C ranges from -4 to 4
- 76.(BC)** In KMnO_4 , Mn is in highest O.S. i.e. +7 ; In $\text{K}_2\text{Cr}_2\text{O}_7$, Cr is in highest O.S. i.e. +6
- 77.(CD)** In option (A), SO_2 is getting reduced to FeS ; In option (B), SO_2 is getting reduced to S
- 78.(BD)** $\text{MnO}_4^- : \text{Mn} \rightarrow +7 ; \quad \text{O} \rightarrow -2$
 $\text{NiF}_6^{2-} : \text{Ni} \rightarrow +4 ; \quad \text{F} \rightarrow -1$
- 79.(BD)** **(A)** O.S. of N = -3 **(C)** O.S. of N = -2
- 80.(B)** The required reaction is $\text{Y} + 3\text{H}^+ \longrightarrow \text{Y}^{3+} + \frac{3}{2}\text{H}_2$
 \therefore Molar ratio of Yttrium to hydrogen produced is 2 : 3
- 81.(A)** $\text{MnO}_2 + (\text{NH}_4)_2\text{SO}_4 \xrightarrow{+2} \text{MnSO}_4 + (\text{NH}_2)_2\text{S}_2\text{O}_8$
 (+4) (+2) (+2)
 (n = 2) (n = 1)
 Let the moles of ammonium sulphate reacting with 1 mole of MnO_2 are x.
 Since, equivalents of MnO_2 = Equivalents of $(\text{NH}_4)_2\text{SO}_4$
 $\therefore 1 \times 2 = 1 \times x, x = 2$
- 82.(BCD)** Since the disproportionation reaction is the one in which oxidising and reducing agents are same.
- 83.(A)** Molar ratio of reactants being 1 : 2
 \therefore n factor ratio has to be 2 : 1. As n-factor of OH^- is 1.
 \therefore n factor of H_3PO_3 is 2 \therefore Normality = $0.3 \times 2 = 0.6 \text{ N}$
- 84.(B)** $2\text{S}_2\text{O}_3^{2-} \longrightarrow \text{S}_4\text{O}_6^{2-} + 2e^-$
 n-factor = 1 $\therefore E = \frac{M_o}{1}$
- 85.(B)** $\text{NO}_3^- + 8e^- \longrightarrow \text{NH}_4^+$ $\therefore E = \frac{62}{8} = 7.75 \text{ g}$
- 86.(D)** $2\text{MnO}_4^- + 10\text{HCl} \longrightarrow 2\text{Mn}^{2+} + 5\text{Cl}_2$

- 87.(C)** $\overset{+5}{\text{BrO}_3^-} + 5\text{Br}^- \longrightarrow 3\overset{0}{\text{Br}_2}$ \therefore n-factor for BrO_3^- is 5
- 88.(B)** $\text{Mn}_3\text{O}_4 \Rightarrow \text{MnO} \cdot \text{MnO}_2$
- 89.(A)** $\text{BrO}_3^- + 6\text{e}^- \longrightarrow \text{Br}^-$
 $\text{X}^{n+} \longrightarrow \text{X}^{m+} + (m-n)\text{e}^-$
 $\therefore 1.34 \times 10^{-3} \times 6 = 4.02 + 10^{-3} \times (m-n)$
 $\Rightarrow m-n=2 \Rightarrow m=n+2$
- 90.(D)** ICl : O.S. of I is +1 ; HIO_4 : O.S. of I is +7
- 91.(D)** $\text{H}_2\text{S} \longrightarrow \text{S} + 2\text{e}^-$ $\therefore E_{\text{H}_2\text{S}} = \frac{34}{2} = 17 \text{ g}$ **92.(A)** Refer to theory
- 93.(C)** In CO_2 , C is in maximum O.S. of +4 and
 \therefore Cannot be further oxidised
- 94.(B)** Refer to module
- 95. (A-t) (B-s) (C-q) (D-p)**
 In $\text{NaN}_3 \rightarrow$ O.S. of Na is +1
 O.S. of N is $-\frac{1}{3}$
- 96.(ABCD)** $28\text{NO}_3^- + 3\text{As}_2\text{S}_3 + 4\text{H}_2\text{O} \longrightarrow 6\text{AsO}_4^{3-} + 28\text{NO} + 9\text{SO}_4^{2-} + 8\text{H}^+$
- 97.(AB)** $2\text{FeS}_2 + \frac{11}{2}\text{O}_2 \longrightarrow \text{Fe}_2\text{O}_3 + 4\text{SO}_2$
 $\text{Fe}^{2+} \longrightarrow \text{Fe}^{3+} + 1\text{e}^-$
 $2\text{S}^{-1} \longrightarrow 2\text{SO}_2 + 10\text{e}^-$
- 98.(ACD)** $2\text{MnO}_4^- + 5\text{HC}_2\text{O}_4^- \longrightarrow 2\text{Mn}^{2+} + 10\text{CO}_2$
 0.2 m moles 0.5 m moles
 \therefore Molarity of $\text{NaHC}_2\text{O}_4 = \frac{0.5}{10} = 0.05 \text{ M}$
 As an acid, n-factor for $\text{NaHC}_2\text{O}_4 = 1$
 \therefore Normality = 0.05 N
- 99.(ABC)** As an acid, n-factor = 2. As an oxidizing agent, n-factor = 2
- 100.(A)** $3\text{I}_2 \longrightarrow 5\text{I}^{1-} + \text{IO}_3^{1-}$