DPP

DAILY PRACTICE PROBLEMS

CLASS : XIIth
DATE :

SOLUTION

SUBJECT : CHEMISTRY
DPP NO. : 1

Topic :-REDOX REACTIONS

1 **(d)**

Due to higher E^0_{OP} order.

2 **(c)**

Cl atom is oxidised ($Cl^{1+} \longrightarrow Cl^{5+} + 4e$) as well as Cl atom is reduced ($Cl^{1+} + 2e \longrightarrow Cl^{-}$). Such reactions are called auto redox or disproportionation reactions.

3 **(d)**

Ox.no. of S in $Na_2S_4O_6$ is no doubt 2.5 but it is average of two values, *i.e.*,

$$\frac{2 \times (+5) + 2 \times 0}{4} = +5/2$$

4 **(a)**

De-electronation is loss of electrons, i.e. $M \longrightarrow M^{4+} + 4e$

5 **(b)**

$CaCO_3 \xrightarrow{\Delta} CaO + CO_2$; This is simple decomposition and not a redox change.

6 **(b)**

S^{2-}has minimum ox.no. and thus, can act only as reducing agent.

7 **(a)**

It imparts its colour at end point.

8 **(c)**

$Zn^0 \longrightarrow Zn^{2+} + 2e$

9 **(d)**

Oxygen has highest electron affinity in its family.

10 **(a)**

$Na_2[Fe(CN)_5NO]$

11 **(d)**

The formula is obtained by taking an account of g atoms.

$Xe = \frac{53.3}{131} = 0.4, F = \frac{46.5}{20} = 2.325,$

i.e., 1 :6 *or* XeF_6

12 **(c)**

N in NH_3, NH_4^+, N_3H and NO_2^- has -3, -3, $-1/3$ and $+3$ oxidation number respectively.

13 **(b)**

Meq. of H_2O_2 = Meq. of $KMnO_4$

$\frac{w}{34/2} \times 1000 = 10 \times 1$

$\therefore w_{H_2O_2} = 0.17$

$\therefore$ Per cent purity $= \frac{0.17}{0.2} \times 100 = 85\%$

14 **(c)**

$Mn^{7+} + e \longrightarrow Mn^{6+} \quad (MnO_4^{2-})$

$Mn^{7+} + 3e \longrightarrow Mn^{4+} \quad (MnO_2)$

$2Mn^{7+} + 8e \longrightarrow (Mn^{3+})_2 \quad (Mn_2O_3)$

$Mn^{7+} + 5e \longrightarrow Mn^{2+} \quad (MnO_2)$

15 **(d)**

The reaction involves :

$H_2O_2 + 2I^- + 2H^+ \longrightarrow I_2 + 2H_2O(l)$

$2Na_2S_2O_3 + I_2 \longrightarrow Na_2S_4O_6 + 2NaI$

The reaction gives blue colour only after all the $Na_2S_2O_3$ is used. The reaction is carried out with adjusted amount of $Na_2S_2O_3$ so that only a fraction of H_2O_2 and KI reaction occurs before the blue colour of starch—I_2 appears, however the slow redox reaction of H_2O_2—I_2 continues. The appearance of blue colour is like clock alarm and in such reactions time for the appearance of blue colour is noticed. The phenomenon is used in studying rate of reaction. If time taken for blue colour appearance is longer, the reaction is slow and $vice - versa$.

16 **(c)**

N in $(N_2H_5)_2SO_4$ has -2 ox.no.

17 **(b)**

The $5p -$ electrons of outermost shell in iodine are unpaired during their excitation to $5d -$ subshell.

18 **(d)**

A characteristic property of transition elements.

19 **(c)**

Let the oxidation state of sulphur in $Na_2S_4O_6$ is x.

$Na_2S_4O_6$

$1 \times 2 + 4 \times x + (-2) \times 6 = 0$

$2 + 4x - 12 = 0$

$4x - 10 = 0$

$4x = 10$

$x = \frac{10}{4} = 2.5$

20 **(d)**

F_2 is strongest oxidant among all the species.

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