DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth
DATE :

Solutions

SUBJECT : CHEMISTRY
DPP No. : 1

Topic :- SOME BASIC CONCEPTS OF CHEMISTRY

2 **(c)**

g atom of $N = \frac{28}{14} = 2$

g atom of oxygen $= \frac{80}{16} = 5$

3 **(d)**

1 mole Ca^{2+} =1 mole $CaCO_3 = 100$ g

Rating = mg of $CaCO_3$ needed per g chelating agent (mol. wt. = 380)

$$= \frac{100 \times 10^3}{380} = 263 \text{ mg}$$

5 **(c)**

Meq. of HCl = Meq. of $CaCO_3$;

$\therefore \quad N \times 50 = \frac{1}{50} \times 1000$ or $N = 0.4$

6 **(a)**

Weight of $NH_3 = 4.25$g

We know that number of atoms in 1 mole or 17 g of

$NH_3 = 4 \times 6.023 \times 10^{23}$

$\therefore$ Number of atom in 4.25 g of

$$NH_3 = \frac{4 \times 6.023 \times 10^{23}}{17} \times 4.25$$

$$= 6.023 \times 10^{23}$$

7 **(c)**

In acidic medium, MnO_4^- is reduced to Mn^{2+}

$$\overset{+7}{Mn}\ O_4^- \rightarrow Mn^{2+}$$

Change in oxidation number$= 7 - 2 = 5$

Solution X Solution Y

$N_1V_1 = N_2V_2$

For Fe^{2+} For MnO_4^-

$N \times 25 = 5\text{M} \times V$ [$\because$ For MnO_4^-, $N = 5$M in acidic medium]

$25\text{N} = 5\text{M} \times 20$

$25N=100M$ ...(i)

In neutral medium, MnO_4^- is reduced to MnO_2

$\overset{+7}{Mn}\ O_4^- \rightarrow \overset{+4}{MnO_4^-}$

Change in oxidation number$=7-4=3$

Solution X Solution Y

$N_1V_1 = N_2V_2$

For Fe^{2+} For MnO_4^-

$25 \times N = 3M \times V$

[$\because$ For MnO_4^-, $N = 3M$ in neutral medium]

$25N = 3M \times V$ ...(ii)

From Eqs (i) and (ii)

$100M = 3M \times V$

$V = \frac{100}{3} = 33.3$ mL

8 **(a)**

$\because$ 4 u = 1 He atom

$\therefore$ 1 u = $\frac{1}{4}$He atom

Hence, 100 u = $\frac{1 \times 100}{4} = 25$ atoms

9 **(b)**

Mass = $0.8 \times 1 = 0.8$ g

$\therefore$ 180 g $C_6H_{12}O_6$ has 24 atom

$\therefore$ 0.8 g $C_6H_{12}O_6$ has $\frac{24 \times 0.8 \times N}{180} = 6.42 \times 10^{22}$

10 **(a)**

Mill mole of $H_2SO_4 = \frac{1}{10} \times 1000 = 100$

$\therefore$ $\frac{w}{98} \times 1000 = 100$

$\therefore$ w = 9.8 g

11 **(b)**

Average atomic weight

$$= \frac{54 \times 5 + 56 \times 90 + 57 \times 5}{100} = 55.95$$

12 **(a)**

$$m = \frac{0.5 \times 1000}{500} = 1$$

14 **(c)**

$CaCO_3 + 2HCl \xrightarrow{\Delta} CaCl_2 + H_2O + CO_2$

100 g 2 × 36.5g 44 g

1 L of 1 N HCl means=36.5 g HCl

Here, HCl is limiting reagent. Therefore, it reacts with 50 g $CaCO_3$ and produces 22 g CO_2.

15 **(b)**

The mass of KI in 2g salt $= \frac{2 \times 1}{100} = 0.02g$

$= \frac{0.02}{39 + 127}$ mol

$= \frac{0.02}{166} \times 6.02 \times 10^{23}$ ions

$= 7.2 \times 19^{19}$ ions

16 **(a)**

22.4 L= 17 g

11.2 L=$\frac{17}{22.4} \times 11.2 = 8.5$g

17 **(b)**

Meq. of acid. Meq. of NaOH

$\frac{0.52}{E} \times 1000 = 100 \times 0.1$

$\therefore \quad E = 52$

18 **(d)**

In 100 tons of Fe_2O_3, pure Fe_2O_3

$= 100 - \frac{100 \times 20}{100}$

$= 80$ tons

$Fe_2O_3 + 3H_2 \longrightarrow 2Fe_2 + 3H_2O$

$2 \times 56 + 48 \qquad 2 \times 56$

$160 \qquad 2 \times 56$

$\because$ 160 g Fe_2O_3 gives Fe $= 2 \times 56$ g

$\therefore$ 80 tons Fe_2O_3 will give Fe $= \frac{2 \times 56 \times 80}{160}$

$= 56$ tons

19 **(c)**

Meq. Of $Ba(OH)_2$ = Meq. of HCl

$N \times 25 = 0.1 \times 35$

$N_{Ba(OH)_2} = \frac{3.5}{25}$

$\therefore \quad M_{Ba(OH)_2} = \frac{3.5}{25 \times 2} = 0.07$

20 **(b)**

1000 g H_2O = 1000 cm^3 H_2O

$\frac{1000}{18}$ mole H_2O = 1000 cm^3 H_2O

$\frac{1000}{18} \times 6.023 \times 10^{23}$ molecule of H_2O = 1000 cm^3 H_2O

$\therefore$ 1 molecule of $H_2O = 3 \times 10^{-23} cm^3$

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