DPP
DAILY PRACTICE PROBLEMS

CLASS : XIth
DATE :

Solutions

SUBJECT : CHEMISTRY
DPP No. : 10

Topic :- SOME BASIC CONCEPTS OF CHEMISTRY

1 **(c)**

$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$

The heat of combustion of 10 g CH_4

$= -560$ kJ

So, the heat of combustion of 16 g CH_4

$= \frac{-560}{10} \times 16$

$= -896$ kJ/mol

2 **(b)**

Meq. of H_2SO_4 = Meq. of NaOH

$0.1 \times 2 \times V = 50 \times 0.2 \times 1$

$\therefore \quad V = 50$ mL

3 **(c)**

$\underset{(1-x)}{\overset{1}{CO_2}} + \underset{0}{C} \longrightarrow \underset{2x}{2CO}$

$\therefore 1 - x + 2x = 1.4$ find x.

4 **(b)**

Follow definition of equivalent weight.

5 **(b)**

In first oxide,

Mass of arsenic = 65.2

Mass f oxygen = 34.8

$\therefore$ Eq. mass of arsenic $= \frac{65.2}{34.8} \times 8 = 14.99$

In second oxide,

Mass of arsenic = 75.7 g

Mass of oxygen = 24.3 g

$\therefore$ Eq. mass of arsenic $= \frac{75.7}{24.3} \times 8 = 24.92$

Eq. mass of arsenic : Eq. mass of arsenic

(oxide I) (oxide II)

14.99 : 24.92

Or 3 : 5

6 **(a)**

Meq. of metal = Meq. of oxygen

$$\frac{60}{E} = \frac{40}{8}$$

$$\therefore \quad E = 12$$

Now, Meq. of metal = Meq. of bromide

$$\frac{100 - a}{12} = \frac{a}{80}$$

$$\therefore \quad a \approx 87\%$$

7 **(a)**

Meq. of oxalic acid = Meq. of NaOH

$$\frac{6.3}{63} \times \frac{1000}{250} \times 10 = 0.1 \times V$$

$$\therefore \quad V = 40 \text{ mL}$$

8 **(d)**

The combustion of methane can be represented by the following equation

$CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O + 890$ kJ

16 g

$\therefore$ 16 g CH_4 burns in air to liberate=890 kJ of heat

$\therefore$ 3.2 g CH_4 will liberate=$\frac{890 \times 3.2}{16}$

=178 kJ of heat

10 **(a)**

1.12 litre $H_2 \equiv 1.2$ g

$\therefore$ 11.2 litre $H_2 = 12$ g

11 **(a)**

Amount of H_2O_2 in 1 mL. = $\frac{34}{1120}$g

Also, 34 g H_2O_2 gives 16 g O_2 of 11.2 litre O_2 at STP

$$\therefore \quad \frac{34}{1120}\text{g } H_2O_2 = \frac{11.2 \times 34}{1120 \times 34} \text{ litre } O_2$$

$$= \frac{1}{100}\text{litre}_{O_2} = 10 \text{ mL } O_2$$

12 **(c)**

$CaCl_2 + CO_3^{2-} \longrightarrow CaCO_3 + 2Cl^-$

111 g 100g

$CaCO_3 \longrightarrow CaO + CO_2$

100 g 56g

$\because$ 56 g CaO is obtained by decomposition of

$CaCO_3 = 100$g

$\therefore$ 0.959 g CaO will be obtained by the decomposition of

$$CaCO_3 = \frac{100 \times 0.959}{56}$$

$= 1.71$g

Further,

100 g $CaCO_3 \equiv 111$g$CaCl_2$

$1.71\text{g } CaCO_3 = \frac{111 \times 1.71}{100}$

$= 1.89 \text{ g } CaCl_2$

$\%$ of $CaCl_2$ in the mixture $= \frac{1.89}{4.22} \times 100$

$= 44.78$

$= 45\%$

13 **(d)**

1 mole $NH_3 \equiv 10$ N electron

$\frac{11.2}{22.4}$ mole $NH_3 \equiv 10 \times N \times \frac{1}{2} = 3.01 \times 10^{24}$ electron

14 **(a)**

Number of atoms in $N_2 = \frac{11.2 \times 10^{-3} \times 6.023 \times 10^{23} \times 2}{22.4}$

$= 6.023 \times 10^{20}$

Number of atoms in NO $= \frac{0.015 \times 2 \times 6.023 \times 10^{23}}{30}$

$= 6.023 \times 10^{20}$

15 **(a)**

For poly atomic molecules, mol. wt. = at. wt. $\times$ atomicity .

16 **(a)**

(a) Density of water $= 1\text{g cm}^{-3}$

Mass of water$=1 \text{ m}^3 = 10^6 \text{ cm}^{-3}$

Mass = volume $\times$ density

$= 10^6 \text{cm}^{-3} \times 1 \text{ g cm}^{-3}$

$=10^6$

$= \frac{10^6}{10^3}\text{kg}$

$= 1000$ kg

(b) Mass of normal adult man $= 65$ kg

(c) Density of Hg $= 13.6 \text{ g cm}^{-3}$

Volume of Hg $= 10\text{L} = 10 \times 1000 \text{ cm}^{-3}$

$\therefore$ Mass of Hg $= 13.6 \times 10 \times 1000$

$= 136000$ g

$= 13.6$ kg

$\therefore$ Mass of 1m^3 water is highest.

17 **(c)**

Equivalent weight of metal

$$= \frac{\text{wt.of metal}}{\text{wt.of chlorine}} \times 35.5$$

$$= \frac{(74.5 - 35.5) \times 35.5}{35.5} = 39$$

18 **(c)**

Element	%	% At. wt.	Ratio
N	30.5	30.5/14=2.18	1
O	69.5	69.5/16=4.34	2

Empirical formula=NO_2

Empirical formula weight=46

$$n = \frac{92}{46} = 2$$

$\therefore$ Molecular formula=$(NO_2)_2 = N_2O_4$

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