

Topic :- SOME BASIC CONCEPTS OF CHEMISTRY

- 1 (d)
It is the basic definition of equivalent weight.
- 4 (c)
Mole fraction of H₂O = 0.85;
Mole fraction of H₂SO₄ = 0.15;
$$\therefore \frac{\text{M. f. of H}_2\text{SO}_4}{\text{M. f. of H}_2\text{O}} = \frac{\text{mole of H}_2\text{SO}_4}{\text{mole of H}_2\text{O}}$$
$$= \frac{0.15}{0.85}$$
$$m = \frac{\text{mole of H}_2\text{SO}_4}{\text{wt. of H}_2\text{O in kg}} = \frac{\text{mole of H}_2\text{SO}_4 \times 1000}{18 \times (\text{wt. of H}_2\text{O}/18)}$$
or
$$m = \frac{\text{mole of H}_2\text{SO}_4}{\text{mole of H}_2\text{O}} \times \frac{1000}{18}$$
$$= \frac{0.15 \times 1000}{0.85 \times 18} = 9.8$$
5. (b)
0.1 mole has atoms = $0.1 \times 6.02 \times 10^{23} \times 3$
 $= 1.806 \times 10^{23}$
- 6 (d)
16 g O contains N atoms of O
32 g O₂ contains $2N$ atoms of O
48 g O₃ contains $3N$ atoms of O
- 7 (b)
We know that, $E = F.z$
 $\therefore E = 96500 \times x$
- 8 (c)
Victor meyer's method is used for volatile substances.
- 9 (a)
Per cent of oxygen in NaOH = $\frac{16 \times 100}{40} = 40$.
- 10 (d)
71 g Cl₂ reacts with 64 g S,

∴ 35.5 g Cl₂ reacts with 32 g S.

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(d)

Wt. of metal hydroxide

$$\frac{\text{Wt. of metal oxide}}{\text{Eq. wt. of metal} + \text{Eq. wt. of OH}^-} = \frac{\text{Eq. wt. of metal} + \text{Eq. wt. of O}_2^{2-}}{\text{Eq. wt. of metal} + \text{Eq. wt. of O}_2^{2-}}$$

$$\Rightarrow \frac{1.520}{0.995} = \frac{E + 17}{E + 8}$$

On solving, $E = 9.0$

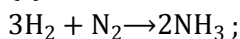
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(d)

Dulong Petit's law: at. wt. \times sp. heat ≈ 6.4

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(c)



Initial volume or mole = 4

Final volume or mole = 2

14

(b)

As, we know that least count of the instrument is equal to the most possible error of the instrument hence, least count of the instrument will be 0.01 cm.

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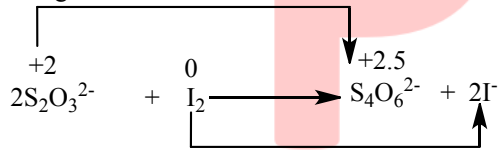
(a)

$M_2\text{HPO}_4$ means valence of metal is one and thus, sulphate of metal is $M_2\text{SO}_4$.

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(b)

Change in oxidation number $0.5 \times 2 = 1$



Change in oxidation number = $1 \times 2 = 2$

Equivalent mass of $\text{Na}_2\text{S}_2\text{O}_3 = \frac{M_1}{1} = M_1$

Equivalent mass of $\text{I}_2 = \frac{M_2}{2}$

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(b)

$$\frac{(29.2 - 20.2)(1.79 \times 10^5)}{1.37} = \frac{9.0 \times 1.79 \times 10^5}{1.37}$$

Since, there are two SF in 9.0, the answer must also have two significant figures.

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(c)

In 100 g haemoglobin, mass of iron = 0.33 g

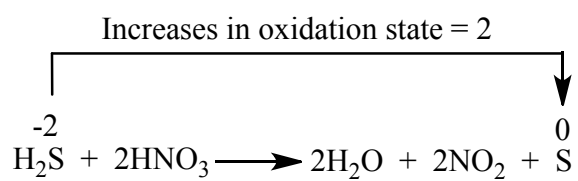
∴ in 67200 g haemoglobin, mass of iron = $\frac{67200 \times 0.33}{100}$

∴ the number of Fe atoms in one Hb molecule

$$= \frac{672 \times 0.33}{56}$$

= 4

19 (d)



Hence, the equivalent weight of

$$\text{H}_2\text{S} = \frac{\text{molecular weight}}{\text{change in oxidation number}} = \frac{34}{2} = 17.$$

20 (c)

C	H	N
9	1	3.5
$9/12=0.75$	$1/1=1$	$3.5/14=0.25$
$\frac{0.75}{0.25} = 3$	$\frac{1}{0.25} = 4$	$\frac{0.25}{0.25} = 1$

So, empirical formula = $\text{C}_3\text{H}_4\text{N}$

$$n = \frac{108}{54} = 2$$

Molecular formula = $(\text{C}_3\text{H}_4\text{N})_2 = \text{C}_6\text{H}_8\text{N}_2$

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

PE