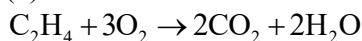


**CHEMISTRY**

51. (3)



$\therefore$  28 gm  $\text{C}_2\text{H}_4$  requires 96 gm oxygen

$\therefore$   $2.8 \times 10^3$  gm  $\text{C}_2\text{H}_4$  requires =

$$\frac{96}{28} \times 2.8 \times 10^3 \text{ gm} = 9.6 \times 10^3 \text{ gm} = 9.6 \text{ kg.}$$

52. (1)

$\therefore$  2.24 L of gas has mass = 4.4 gm

$\therefore$  22.4 L of gas has mass

$$= \frac{4.4}{2.24} \times 22.4 = 44$$

So given gas is  $\text{CO}_2$  because  $\text{CO}_2$  has molecular mass = 44.

53. (1)

44g of  $\text{CO}_2$  has  $2 \times 6 \times 10^{23}$  atoms of oxygen

$$4.4 \text{ g of } \text{CO}_2 \text{ has } = \frac{12 \times 10^{23}}{44} \times 4.4$$

$$= 1.2 \times 10^{23} \text{ atoms.}$$

54. (3)

According to Avogadro's hypothesis equal volumes of all gases under similar conditions of temperature and pressure contains equal number of molecules.

55. (4)

Amount of gold = 19.7 kg

$$= 19.7 \times 1000 \text{ gm} = 19700 \text{ gm}$$

$$\text{Number of moles} = \frac{19700}{197} = 100$$

$$\therefore \text{Number of atoms} = 100 \times 6.023 \times 10^{23}$$

$$= 6.023 \times 10^{25} \text{ atoms.}$$

56. (1)

(1) 34 gm of water

$$\therefore 18 \text{ gm } \text{H}_2\text{O} = 6.023 \times 10^{23} \text{ molecule}$$

$$\therefore 34 \text{ gm } \text{H}_2\text{O} = \frac{6.023 \times 10^{23}}{18} \times 34$$

$$= 11.37 \times 10^{23} \text{ molecules}$$

(2) 28 gm of  $\text{CO}_2$

$$\therefore 44 \text{ gm } \text{CO}_2 = 6 \times 10^{23} \text{ molecules}$$

$$\therefore 28 \text{ gm } \text{CO}_2$$

$$= \frac{6 \times 10^{23}}{44} \times 28 = 3.8 \times 10^{23}$$

(3) 46 gm of  $\text{CH}_3\text{OH}$

$$\therefore 32 \text{ gm } \text{CH}_3\text{OH} = 6 \times 10^{23} \text{ molecules}$$

$$\therefore 46 \text{ gm}$$

$$\text{CH}_3\text{OH} = \frac{6 \times 10^{23}}{32} \times 46 = 8.625 \times 10^{23}$$

(4)  $\therefore$  108 gm of  $\text{N}_2\text{O}_5 = 6 \times 10^{23}$  molecules

$$\therefore 54 \text{ gm of } \text{N}_2\text{O}_5 = \frac{6 \times 10^{23}}{108} \times 54$$

$$= 3 \times 10^{23} \text{ molecules.}$$

57. (1)

Urea-  $\text{NH}_2 - \text{CO} - \text{NH}_2$

$\therefore$  60 gm of urea contains 28 gm of nitrogen

$\therefore$  100 gm of urea contains

$$\frac{28}{60} \times 100 = 46.66.$$

58. (3)

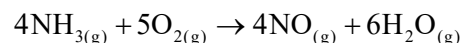
$$\text{N}_1\text{V}_1 = \text{N}_2\text{V}_2; \frac{1}{2} \times 200 = \frac{1}{10} \times \text{V}_2;$$

$$\text{V}_2 = 1000 \text{ ml}$$

Volume of water added

$$= 1000 - 200 = 800 \text{ ml}$$

59. (3)



$$t = 0 \quad 1 \quad 1 \quad 0 \quad 0$$

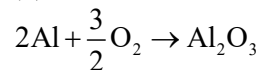
$$t = t \quad 1 - 4x \quad 1 - 5x \quad 4x \quad 6x$$

Oxygen is limiting reagent

$$\text{So, } X = \frac{1}{5} = 0.2 \text{ all oxygen consumed}$$

$$\text{Left } \text{NH}_3 = 1 - 4 \times 0.2 = 0.2.$$

60. (2)



According to equation  $\frac{3}{2}$  mole of  $\text{O}_2$

combines with 2 mole Al.

$$2 \text{ mole Al} = 54 \text{ gm}$$