AVIRAL CLASSES
IIT-JEE | NEET | FOUNDATIONS

CHEMISTRY
CRASH COURSE   LECTURE-01

TOPICS : SOME BASIC CONCEPT OF CHEMISTRY

1. The empirical formula of an organic compound containing carbon and hydrogen is CH_2. The mass of one litre of this organic gas is exactly equal to that of one litre of N_2. Therefore, the molecular formula of the organic gas is

   (a) C_2H_4 (b) C_3H_6

   (c) C_6H_{12} (d) C_4H_8

2. Matching the following.

List I	List II
A. 1 Faraday	(i) 10^{-5} N
B. 1 Dyne	(ii) 0.2390 cal
C. 1 Joule	(iii) 2.389×10^{-8} cal
D. 1 Litre	(iv) 9.6487×10^4 coulomb
E. 1 Erg	(v) 10^{-3} m^3

   (a) A-(iv), B-(i), C-(ii), (v), E- (iii)

   (b) A-(ii), B-(i), C-(iv), (iii), E- (v)

   (c) A-(i), B-(ii), C-(iii), (iv), E- (v)

   (d) A-(v), B-(iii), C-(iv), (ii), E- (i)

3. The relative abundance of two isotopes of atomic weight 85 and 87 is 75% and 25% respectively. The average atomic weight of element is

   (a) 86.0   (b) 40.0

   (c) 85.5   (d) 75.5

4. 14 g of element X combine with 16 g of oxygen. On the basis of this information, which of the following is a correct statement (Atomic weight of oxygen = 16)

   (a) The element of X could have an atomic weight of 7 and its oxide the formula XO

   (b) The element X could have an atomic weight of 14 and its oxide the formula X_2O

   (c) The element X could have an atomic weight of 7 and its oxide the formula X_2O

   (d) The element X could have the atomic weight of 14 and its oxide the formula XO_2.

5. A gas is found to have the formula $(CO)_x$. Its vapour density is 70. The value of x must be

   (a) 7   (b) 4

   (c) 5   (d) 6

6. The total number of electrons present in 18 mL of water (density of water is 1 g mL^{-1}) is

   (a) 6.02×10^{23} (b) 6.02×10^{22}

   (c) 6.02×10^{24} (d) 6.02×10^{25}

7. In a solution, the concentration of $CaCl_2$ is 5 M and concentration of $MgCl_2$ is 5m. If the specific gravity of the solution is 1.05, the concentration of Cl^- in the solution is

   (a) 10 M   (b) 20 M

   (c) 18.5 M   (d) 17.12

8. To 100 mLO of 5 M NaOH solution (density 1.2 g/mL) were added 200 mL of another NaOH solution which has a density of 1.5 g/mL and contains 20 mass percent of NaOH. What will be the volume of gas (at STP) in litres liberated when aluminium reacts with this (final) solution. The reaction is

   $Al + NaOH + H_2O \rightarrow NaAlO_2 + 3/2H_2$

   (At. wt Na = 23, O = 16, H = 1)

   (a) 67.2 L   (b) 89.6 L

   (c) 44.8 L   (d) 22.4 L

9. In Habber process 30 L of dihydrogen and 30 L of dinitrogen were taken for reaction which yielded only 50% of the expected product. What will be composition of the gaseous mixture in the end ?

   (a) 20 L NH_3, 25 L N_2 and 20 LH_2

   (b) 10 L NH_3, 25 L N_2 and 15 LH_2

   (c) 20 L NH_3, 10 L N_2 and 30 LH_2

   (d) 20 L NH_3, 25 L N_2 and 15 LH_2

10. The following data are obtained when carbon and dioxygen react together to form different compounds :

Mass of carbon	Mass of oxygen
(i) 12 g	16 g
(ii) 12 g	32 g

    Which law of chemical combination is obeyed by the above experimental data ?

    (a) Law of definite proportions

    (b) Law of multiple proportions

    (c) Gay Lussac's law of gaseous volumes.

    (d) Avogadro Law