Chapter 01
Some Basic Concepts of Chemistry

🏆 NEET RANKER'S STUFF 🏆

Q.1 How much coulomb charge is present on 1 g ion of N^{-3}
(1) 5.2×10^6 Coulomb
(2) 2.894×10^5 Coulomb
(3) 6.6×10^6 Coulomb
(4) 8.2×10^6 Coulomb

Q.2 A gas is found to have the formula $(CO)_x$. It's VD is 70 the value of x must be :
(1) 7 (2) 4 (3) 5 (4) 6

Q.3 Butane C_4H_{10}, burns with the oxygen in air to give carbon dioxide and water.
What is the amount (in moles) of carbon dioxide produced from 0.15 mol C_4H_{10} ?
$C_4H_{10}(g) + O_2(g) \longrightarrow CO_2(g) + H_2O(g)$
(not balanced)
(1) 0.15 mol CO_2
(2) 0.30 mol CO_2
(3) 0.45 mol CO_2
(4) 0.60 mol CO_2

Q.4 When 100% pure sample of $CaCO_3$ was heated strongly 6.72 L of CO_2 was produced at STP. Find the weight of residual CaO left ?
(1) 30 g
(2) 0.56 g
(3) 16.8 g
(4) None of these

Q.5 When sodium bicarbonate is heated 3.6×10^{24} molecules of water are obtained. Find the moles of sodium bicarbonate heated.
$NaHCO_3 \longrightarrow Na_2CO_3 + CO_2 + H_2O$
(1) 6
(2) 12
(3) 9
(4) 8

Q.6 0.5 mole of H_2SO_4 is mixed with 0.2 mole of $Ca(OH)_2$. The maximum number of moles of $CaSO_4$ formed is:
(1) 0.2 (2) 0.5
(3) 0.4 (4) 1.5

Q.7 Zinc and hydrochloric acid react according to the reaction.
$Zn(s) + 2HCl(aq.) \longrightarrow ZnCl_2(aq.) + H_2(g)$
If 0.30 mole of Zn are added to hydrochloric acid containing 0.52 mole HCl, how many moles of H_2 are produced ?
(1) 0.26 (2) 1.04 (3) 0.52 (4) 0.13

Q.8 A mixture of 1.0 mole of Al and 3.0 mole of Cl_2 are allowed to react as :
$2Al(s) + 3Cl_2(g) \longrightarrow 2AlCl_3(s)$
(a) Which is limiting reagent ?
(b) How many moles of $AlCl_3$ are formed
(c) Moles of excess reagent left unreacted is
(1) (a) Al, (b) 1.0 (c) 1.5
(2) (a) Cl_2, (b) 2.0 (c) 2.0
(3) (a) Al, (b) 0.5 (c) 1.5
(4) (a) Cl_2, (b) 1.0 (c) 1.5

Q.9 How many moles of electron weigh one kilogram :
(1) 6.023×10^{23}
(2) $\dfrac{1}{9.108} \times 10^{31}$
(3) $\dfrac{6.023}{9.108} \times 10^{54}$
(4) $\dfrac{1}{9.108 \times 6.023} \times 10^8$

Q.10 If LPG cylinder contains mixture of butane and isobutane, then the amount of oxygen that would be required for combustion of 1 kg of it will be :

(1) 1.8 kg   (2) 2.7 kg

(3) 4.5 kg   (4) 3.58 kg

Q.11 The ratio of masses of oxygen and nitrogen in a particular gaseous mixture is 1 : 4. The ratio of number of their molecule is :

(1) 1 : 4   (2) 7 : 32

(3) 1 : 8   (4) 3 : 16

Q.12 $A + 2B + 3C \rightleftharpoons AB_2C_3$

Reaction of 6.0 g of A, 6.0×10^{23} atoms of B, and 0.036 mol of C yields 4.8 g of compound AB_2C_3. If the atomic mass of A and C are 60 and 80 amu, respectively, the atomic mass of B is (Avogadro no. $= 6 \times 10^{23}$) : $A + 2B + 3C \rightleftharpoons AB_2C_3$

(1) 50 amu   (2) 60 amu

(3) 70 amu   (4) 40 amu

Q.13 Rearrange the following (I to IV) in the order of increasing masses and choose the correct answer.

(Atomic masses : N = 14, O = 16, Cu = 63)

I   1 molecule of oxygen

II   1 atom of Nitrogen

III $1 \times 10^{-10} \times$ (gm molecular weight of oxygen)

IV $1 \times 10^{-10} \times$ (gm atomic weight of copper)

(1) II < I < III < IV   (2) IV < III < II < I

(3) II < III < I < IV   (4) III < IV < I < II

Q.14 Percentage composition of an organic compound is as follows :

C = 10.06, H = 0.84, Cl = 89.10

Which of the following corresponds to its molecular formula if the vapour density is 60.0

(1) CH_2Cl_2 (2) $CHCl_3$

(3) CH_3Cl (4) None

Q.15 The oxide of an element possess the molecular formula M_2O_3. If the equivalent mass of the metal is 9, the molecular mass of the oxide will be –

(1) 27   (2) 75   (3) 102   (4) 18

Q.16 4.0 g of caustic soda (mol mass 40) contains same number of sodium ions as are present in-

(1) 10.6 g of Na_2CO_3 (mol. mass 106)

(2) 58.5 g of NaCl (Formula mass 58.5)

(3) 7.1 g of Na_2SO_4 (Formula mass 142)

(4) 1 mol of $NaNO_3$ (mol. mass 85)

Q.17 A gaseous mixture contains $CO_2(g)$ and $N_2O(g)$ in 2 : 5 ratio by mass. The ratio of the number of molecules of $CO_2(g)$ and $N_2O(g)$ is :

(1) 5 : 2   (2) 2 : 5

(3) 1 : 2   (4) 5 : 4

Q.18 Density of ozone relative to methane under the same temperature & pressure conditions is :

(1) 1   (2) 3

(3) 1.5   (4) 2.5

Q.19 Weight of oxygen in Fe_2O_3 and FeO is in the simple ratio for the same amount of iron is :

(1) 3 : 2   (2) 1 : 2   (3) 2 : 1   (4) 3 : 1

Q.20 The pair of species having same percentage (mass) of carbon is :

(1) CH_3COOH and $C_6H_{12}O_6$

(2) CH_3COOH and C_2H_5OH

(3) $HCOOCH_3$ and $C_{12}H_{22}O_{11}$

(4) $C_6H_{12}O_6$ and $C_{12}H_{22}O_{11}$

Q.21 Calculate the molecular formula of compound which contains 20% Ca and 80% Br (by wt.) if molecular weight of compound is 200. (Atomic wt. Ca = 40, Br = 80)

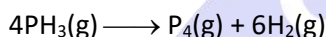(1) $Ca_{1/2}Br$ (2) $CaBr_2$

(3) CaBr   (4) Ca_2Br

Q.22 The minimum quantity in gram of H_2S needed to precipitate 63.5 g of Cu^{+2} will be nearly

$Cu^{+2} + H_2S \longrightarrow CuS + 2H^+$

(1) 63.5 g   (2) 31.75 g

(3) 34 g   (4) 20 g

Q.23 Phosphine (PH_3) decomposes to produce vapours of phosphorus and H_2 gas. What will be the change in volume when 100 mL of phosphine is decomposed ?

$4PH_3(g) \longrightarrow P_4(g) + 6H_2(g)$

(1) + 50 mL   (2) 500 mL

(3) + 75 mL   (4) – 500 mL

Q.24 Calculate the amount of Ni needed in the Mond's process given below

$Ni + 4CO \longrightarrow Ni(CO)_4$

If CO used in this process is obtained through a process, in which 6 g of carbon is mixed with 44 g CO_2.

(1) 14.675 g   (2) 29 g

(3) 58 g   (4) 28 g

Q.25 $A + B \rightarrow A_3B_2$ (unbalanced)

$A_3B_2 + C \rightarrow A_3B_2C_2$ (unbalanced)
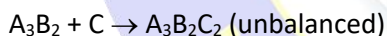
Above two reactions are carried out by taking 3 moles each of A and B and one mole of C. Then which option is/are correct ?

(1) 1 mole of $A_3B_2C_2$ is formed

(2) 1/3 mole of $A_3B_2C_2$ is formed

(3) 1/2 mole of A_3B_2 is formed

(4) 1/2 mole of A_3B_2 is left finally

Q.26 Formation of polyethene from calcium carbide takes place as follows :

$CaC_2 + H_2O \rightarrow Ca(OH)_2 + C_2H_2 \rightarrow C_2H_4; n(C_2H_4) \rightarrow$ $(-CH_2-CH_2-)n$.
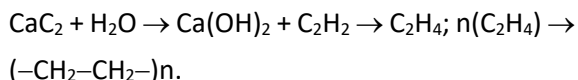
The amount of polyethylene possibly obtainable from 64.0 kg CaC_2 can be

(1) 28 kg   (2) 14 kg

(3) 21 kg   (4) 42 kg

Q.27 21.6 g of silver coin is dissolved in HNO_3. When NaCl is added to this solution, all silver is precipitated as AgCl. The weight of AgCl is found to be 14.35 g then % of silver in coin is :

(1) 50%   (2) 75%

(3) 100%   (4) 15%

Q.28 The molality of a sulphuric acid solution is 0.2 M Calculate the total weight of the solution having 1000 g of solvent.

(1) 1000 g   (2) 1098.6 g

(3) 980.4 g   (4) 1019.6 g

Q.29 What is the molarity of H_2SO_4 solution that has a density of 1.84 g/cc and contains 98% by mass of H_2SO_4? (Given atomic mass of S = 32)

(1) 4.18 M   (2) 8.14 M

(3) 18.4 M   (4) 18 M

Q.30 125 mL of 8% w/w NaOH solution (specific gravity 1) is added to 125 mL of 10% w/v HCl solution.

The nature of resultant solution would be _____.

(1) Acidic   (2) Basic

(3) Neutral   (4) None

Q.31 An organic compound having molecular mass 60 is found to contain C = 20%, H = 6.67% and N = 46.67% while rest is oxygen. On heating it gives NH_3 along with a solid residue. The solid residue give violet colour with alkaline copper sulphate solution. The compound is -

(1) $(NH_2)_2CO$ (2) $CH_3CH_2CONH_2$

(3) CH_3NCO (4) CH_3CONH_2

Q.32 The density of a solution prepared by dissolving 120 g of urea (mol. mass = 60 u) in 1000 g of water is 1.15 g/mL. The molarity of this solution is:

(1) 2.05 M   (2) 0.50 M

(3) 1.78 M   (4) 1.02 M

Q.33 A gaseous hydrocarbon gives upon combustion 0.72 g of water and 3.08 g of CO_2. The empirical formula of the hydrocarbon is

(1) C_2H_4 (2) C_3H_4

(3) C_6H_5 (4) C_7H_8

Q.34 A certain alkaloid has 70.8% carbon, 6.2% hydrogen, 4.1% nitrogen and the rest oxygen. What is its empirical formula?

(1) $C_{20}H_{21}NO_4$ (2) $C_{20}H_{20}NO_4$

(3) $C_{21}H_{20}NO_3$ (4) $C_{20}H_{19}NO_3$

Q.35 $CaCO_3$ is 90% pure. Volume of CO_2 collected at STP when 10 gms of $CaCO_3$ is decomposed is -

(1) 2.016 litres   (2) 1.008 litres

(3) 10.08 litres   (4) 20.16 litres

Q.36 50 gm $CaCO_3$ will react with ...... gms of 20% HCl by weight.

(1) 36.5 gm   (2) 73 gm

(3) 109.5 gm   (4) 182.5 gm

Q.37 0.01 mole of iodoform (CHI_3) reacts with Ag to produce a gas whose volume at NTP is

$2CHI_3 + 6Ag \rightarrow C_2H_2 + 6Ag\,I(s)$

(1) 224 ml   (2) 112 ml

(3) 336 ml   (4) None of these

Q.38 If m_1 gram of a metal A displaces m_2 gram of another metal B from its salt solution and if the equivalent weights are E_1 and E_2 respectively then the equivalent weight of A can be expressed by

(1) $E_1 = \dfrac{m_1}{m_2} \times E_2$ (2) $E_1 = \dfrac{m_2 \times E_2}{m_1}$

(3) $E_1 = \dfrac{m_1 \times m_2}{E_2}$ (4) $E_1 = \sqrt{\dfrac{m_1}{m_2}} \times E_2$

Q.39 Chlorine is prepared in the laboratory by treating manganese dioxide (MnO_2) with aqueous hydrochloric acid according to the reaction

$$4HCl_{(aq)} + MnO_{2(S)} + 2H_2O_{(l)} + MnCl_{2(aq)} + Cl_{2(g)}$$
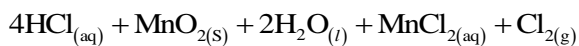
How many grams of HCl will react with 5.0 g of manganese dioxide?

(1) 6.4 g HCl   (2) 4.8 g HCl

(3) 8.4 g HCl   (4) 7.2 g HCl

Q.40 A normal solution

(1) Contains one gram equivalent mass of the substance in one litre solution

(2) Contains one gram molecular mass of the substance in one litre solution

(3) Contains one gram equivalent mass of the substance in 100 mL of the solution

(4) Is that whose concentration is known.

Q.41 Match the following List I and List II.

Column-I

(A) $10 \text{ g } CaCO_3 \xrightarrow[\text{decomposition}]{\Delta}$

(B) $1.06 \text{ g } Na_2CO_3 \xrightarrow{\text{Excess HCl}}$

(C) $2.4 \text{ g C} \xrightarrow[\text{Combustion}]{\text{Excess } O_2}$

(D) $0.56 \text{ g CO} \xrightarrow[\text{Combustion}]{\text{Excess } O_2}$

Column- II

(1) 0.224 L CO_2

(2) 4.48 L CO_2

(3) 0.448 L CO_2

(4) 2.24 L CO_2

(5) 22.4 L CO_2

CODES :

	A	B	C	D		A	B	C	D
(1)	4	1	2	3	(2)	5	1	2	3
(3)	4	1	3	2	(4)	1	4	2	3

Q.42 Match the reactions given in column I with neutralization reactions given in column II

Column-I

(A) 0.1 mol Na_2CO_3 + 0.2 mol $NaHCO_3$ + 0.3 mol NaCl

(B) 200 mL of 0.1 M HCl + 100 of 0.1 M H_2SO_4 + 200 ML of 0.1 M $H_2C_2O_4$

(C) 1 g NaOH and 2.25 g of oxalic acid

(D) 0.01 mol H_3PO_4 and 0.0025 mol of $Ca(OH)_2$

Column- II

(p) 320 mL of 0.25 N KOH solution

(q) 400 mL of 0.5 M H_2SO_4

(r) 125 mL of N/5 $Mg(OH)_2$

(s) 125 mL of N/5 H_2SO_4

CODES :

	A	B	C	D			A	B	C	D
(1)	r	s	q	p		(2)	s	r	p	q
(3)	p	q	s	r		(4)	q	p	r	s

ASSERTION & REASON TYPE QUESTIONS

Directions : In the following questions, a statement of assertion is followed by a corresponding statements of reason of the following statements, choose the correct one.

(A) Both (A) and (R) are correct, (R) is the correct explanation of (A).

(B) Both (A) and (R) are correct, (R) is not the correct explanation of (A).

(C) (A) is correct, (R) is incorrect.

(D) (A) is incorrect, (R) is correct.

Q.43 Assertion : The empirical mass of ethene is half of its molecular mass.

Reason : The empirical formula represent the simplest whole number ratio of various atoms present in a compound.

(1) A   (2) B   (3) C   (4) D

Q.44 Assertion : One atomic mass unit is defined as one twelfth of the mass of one carbon-12 atom.

Reason : Carbon-12 isotope is the most abundant isotope of carbon and has been chosen as standard.

(1) A   (2) B   (3) C   (4) D

Q.45 Assertion : Significant figures for 0.200 is 3 whereas for 200 it is 1.

Reason : Zeros at the end or right of a number are significant provided they are not on the right side of the decimal point.

(1) A   (2) B   (3) C   (4) D

Q.46 Assertion : Combustion of 16 g of methane gives 18 g of water.

Reason : In the combustion of methane, water is one of the product.

(1) A   (2) B   (3) C   (4) D

Q.47 Assertion : Equal moles of different substance contain same number of constituent particles.

Reason : Equal weights of different substance contains the same number of constituent particles.

(1) A   (2) B   (3) C   (4) D

Q.48 Assertion : Volume of a gas is inversely proportional to the number of moles of gas.

Reason : The ratio by volume of gaseous reactants and products is in agreement with their mole ratio.

(1) A   (2) B   (3) C   (4) D

Q.49 Assertion : Normality and molarity can be calculated from each other.

Reason : Normality is equal to the product of molarity and n.

(1) A   (2) B   (3) C   (4) D

Q.50 Assertion : Weight of 1 molecule of O_2 = 32u

Reason : 1 g molecule = 6.023×10^{23} molecules.

(1) A   (2) B   (3) C   (4) D

Q.51 Assertion : The molality of the solution does not change with change in temperature.

Reason : The molality of the solution is expressed in units of moles per 1000 g of solvent.

(1) A   (2) B   (3) C   (4) D

Q.52 **Assertion :** A solution which contains one-gram equivalent of solute per litre of solutions is known as molar solution

Reason : Normality = molarity $\times \frac{mol.wt.of\ solute}{eq.wt.of\ solute}$

(1) A   (2) B   (3) C   (4) D

ANSWER KEY

NEET RANKER'S STUFF

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	3	4	3	2	1	1	1	4	4	2	1	1	2	3
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	3	2	2	1	1	2	3	3	1	4	1	1	4	3	1
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	1	1	4	1	1	4	2	1	3	1	1	4	1	2	3
Que.	46	47	48	49	50	51	52								
Ans.	4	3	4	1	2	1	4								