JEE MAIN : CHAPTER WISE TEST PAPER-1	
SUBJECT :- CHEMISTRY	DATE..
CLASS :- 11th	NAME..
CHAPTER :- MOLE CONCEPT	SECTION..

(SECTION-A)

1. Mark the option containing temperature – independent concentration terms.
(I) ppm (II) % w/w
(III) Volume strength of H_2O_2
(IV) % labelling (V) % w/v
(A) All except V (B) I, II and IV
(C) I, II only (D) Only II

2. 40 gm of a carbonate of an **alkali metal** or **alkaline earth metal** containing some inert impurities was made to react with excess HCl solution. The liberated CO_2 occupied 12.315 lit. at 1 atm & 300 K. The correct option is
(A) Mass of impurity is 1 gm and metal is Be
(B) Mass of impurity is 3 gm and metal is Li
(C) Mass of impurity is 5 gm and metal is Be
(D) Mass of impurity is 2 gm and metal is Mg

3. The percentage by mole of NO_2 in a mixture of $NO_2(g)$ and $NO(g)$ having average molecular mass 34 is :
(A) 25% (B) 20% (C) 40% (D) 75%

4. The minimum mass of mixture of A_2 and B_4 required to produce at least 1 kg of each product is (Given At. mass of 'A' = 10 ; At. mass of 'B' = 120) $5A_2 + 2B_4 \longrightarrow 2AB_2 + 4A_2B$
(A) 2120 gm (B) 1060 gm
(C) 560 gm (D) 1660 gm

5. The mass of CO_2 produced from 620 gm mixture of $C_2H_4O_2$ & O_2, prepared to produce maximum energy is
(A) 413.33 gm (B) 593.04 gm
(C) 440 gm (D) 320 gm

6. Assuming complete precipitation of AgCl, calculate the sum of the molar concentration of all the ions if 2 lit of 2M Ag_2SO_4 is mixed with 4 lit of 1 M NaCl solution is :
(A) 4M (B) 2M (C) 3 M (D) 2.5 M

7. 200 ml of a gaseous mixture containing CO, CO_2 and N_2 on complete combustion in just sufficient amount of O_2 showed contraction of 40 ml when the resulting gases were passed through KOH solution it reduces by 50 % then calculate the volume ratio of $V_{CO_2} : V_{CO} : V_{N_2}$ in original mixture.
(A) 4 : 1 : 5 (B) 2 : 3 : 5
(C) 1 : 4 : 5 (D) 1 : 3 : 5

8. Volume of water which must be added to 8M HCl to make 2 lit. of 7.3 % w/v HCl solution is
(A) 1.5 lit. (B) 0.5 lit.
(C) 1 lit. (D) 2 lit.

9. The density of a pure liquid (mol wt. 70) is 1.2 gm/ml. If 2 ml of liquid contain 35 drops, the no. of molecules in 2 ml of liquid are
(A) $\dfrac{1.2}{(35)^2} \times N_A$ (B) $\dfrac{1}{35} \times N_A$
(C) $\dfrac{1.2}{35} \times N_A$ (D) $1.2\, N_A$

10. 1.5 gm mixture of SiO_2 and Fe_2O_3 on very strong heating leave a residue weighing 1.46 gm. The reaction responsible for loss of weight is
$Fe_2O_3 (s) \longrightarrow Fe_3O_4 (s) + O_2(g)$
What is the percentage by mass of Fe_2O_3 in original sample.
(A) 80% (B) 20%
(C) 40% (D) 60%

11. Some amount of a diacidic organic Lewis base (molar mass = 58) reacts with chloroplatinic acid to form 12 gm of chloroplatinate salt. The mass of residue produced on heating is
(A) 0.2 gm (B) 2 gm
(C) 5 gm (D) 8 gm

12. If 0.5 M methanol undergo self dissociation like $CH_3OH \rightleftharpoons CH_3O^- + H^+$ & if concentration of H^+ is 2.5×10^{-4} M then calculate % dissociation of methanol.
(A) 2.5 (B) 0.05 (C) 0.005 (D) 5

13. Mass of 1 mole of electron in amu will be (Mass of 1 electron = 9.1×10^{-31} kg), $N_A = 6 \times 10^{23}$
(A) 54.6×10^{-8} (B) 54.6×10^{-5}
(C) 3.27×10^{20} (D) 3.27×10^{17}

14. The oxidation number of Oxygen in Na_2O_2 is :
(A) + 1 (B) + 2
(C) – 2 (D) – 1

15. The volume of monoatomic gas at 0°C and 760 torr is 44.8 mL. The number of atoms present in this volume is
(A) 2×10^{-3} (B) $12.046\, N_A$
(C) $0.002\, N_A$ (D) None of these

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16. The empirical formula of a compound of molecular mass 120 is CH_2O. The molecular formula of the compound is :
(A) $C_2H_4O_2$
(B) $C_4H_8O_4$
(C) $C_3H_6O_3$
(D) all of these

17. 500 mL of a glucose solution contains 6.02×10^{22} molecules. The concentration of the solution is
(A) 0.1 M
(B) 1.0 M
(C) 0.2 M
(D) 2.0 M

18. The mole fraction of water in a solution containing 117 g sodium chloride and 900 g of water is ?
(A) 0.0632
(B) 0.038
(C) 0.9615
(D) 1.000

19. The molality of a sulphuric acid solution is 0.2. Calculate the total weight of the solution having 1000 gm of solvent.
(A) 1000 g
(B) 1098.6 g
(C) 980.4 g
(D) 1019.6g

20. A certain element, X reacts with sulfur to form the compound X_2S_5. If 0.3 g of element form 3.5 g of compound what is the atomic mass of the element.
(A) 3.1 g/mol
(B) 58.9 g/mol
(C) 65.4 g/mol
(D) 7.5 g/mol

(SECTION-B)

21. $2AgNO_3(aq) + Fe(s) \longrightarrow Fe(NO_3)_2(aq) + 2Ag(s)$. 100 ml solution of $AgNO_3$ was mixed with 11.2 gm Fe. The mass of the total solid at the completion of reaction was found to be 35.2 gm. Calculate molarity of $AgNO_3$ in the solution and the remaining mass of Fe.

22. If the atomic mass of Sodium is 23, the number of moles in 46 g of sodium is :

23. Acid samples are prepared for analysis by using H_2SO_4, H_3PO_4 and HNO_3 separately or as mixture. What minimum volume of 33.6 (w/v) % KOH solution (d = 1.6 gm/ml) must be added to a sample of 1.96 gm in order to ensure complete neutralisation of acid in every possible case.

24. When 20 ml of pure acetic acid (density = 0.75 gm ml^{-1}) is mixed with 50 gm of water (density = 1gm ml^{-1}) at a certain temperature. Calculate the molality of acetic acid in the final solution.

25. For the reaction,
$$2x + 3y + 4z \longrightarrow 5w$$
Initially if 1 mole of x, 3 mole of y and 4 mole of z is taken. If 1.25 mole of w is obtained then % yield of this reaction is _____.

26. Vapour density of a volatile substance w.r.t. CH_4 is 4 (CH_4 = 1). Its molecular weight would be –

27. What weight of $CaCO_3$ must be decomposed to produce the sufficient quantity of carbon dioxide to convert 21.2 kg of Na_2CO_3 completely in to $NaHCO_3$. [Atomic mass Na = 23, Ca = 40]

$$CaCO_3 \longrightarrow CaO + CO_2$$

$$Na_2CO_3 + CO_2 + H_2O \longrightarrow 2NaHCO_3$$

28. Calculate the amount of H_2 which is left unreacted in the given reaction :

$$2H_2 + O_2 \longrightarrow 2H_2O$$
If 8 g of H_2 is mixed with 16 g O_2 ?

29. If 500 ml of 1 M solution of glucose is mixed with 500 ml of 1 M solution of glucose final molarity of solution will be :

30. What volume of water should be added to 1600 ml of 0.205 M solution so that the resulting solution becomes 0.2 M?