

# CHEMISTRY

## **CLASS-XI** NEET

### MODULE-01

Some Basic Concept of Chemistry

| Structure of Atom | Classification of Elements  
| Chemical Bonding & Molecular Structure

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# Multi-Concept Questions



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- In HABER's process, 30 L of  $\text{H}_2$  and 30 L of  $\text{N}_2$  were taken for a reaction which yielded only 50% of the expected product. What will be the composition of the gaseous mixture under these conditions?
  - 10 L  $\text{NH}_3$ , 25 L  $\text{N}_2$ , 15 L  $\text{H}_2$
  - 20 L  $\text{NH}_3$ , 10 L  $\text{N}_2$ , 3 L  $\text{H}_2$
  - 20 L  $\text{NH}_3$ , 25 L  $\text{N}_2$ , 15 L  $\text{H}_2$
  - None of these
- Diborane ( $\text{B}_2\text{H}_6$ ) can be prepared by the following reaction-  

$$3\text{NaBH}_4 + 4\text{BF}_3 \longrightarrow 3\text{NaBF}_4 + 2\text{B}_2\text{H}_6$$

If the reaction has a 70% yield, how many moles of  $\text{NaBH}_4$  should be used with excess  $\text{BF}_3$  in order to obtain 0.200 mol of  $\text{B}_2\text{H}_6$ ?

  - 0.21 moles
  - 0.429 moles
  - 0.300 mol
  - 0.175 moles
- An ore contains 1.24% of mineral argentate,  $\text{Ag}_2\text{S}$  by mass. How many grams of this ore would have to be processed in order to obtain 1g of pure solid silver?
  - 92.6 g
  - 88.1 g
  - 101.11 g
  - 107.25 g
- Sulphuric acid reacts with sodium hydroxide as follows:  

$$\text{H}_2\text{SO}_4 + 2\text{NaOH} \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$$

When 1 L of 0.1 M sulphuric acid solution is allowed to react with 1 L of 0.1 M sodium hydroxide solution, the amount of sodium sulphate formed and its molarity in the solution obtained is :

  - 0.1 mol  $\text{L}^{-1}$
  - 7.10 g
  - 0.025 mol  $\text{L}^{-1}$
  - 3.55 g
- In an organic compound of molar mass  $108 \text{ g mol}^{-1}$  C, H and N atoms are present in 9 : 1 : 3.5 by weight. Molecular formula can be –
  - $\text{C}_6\text{H}_8\text{N}_2$
  - $\text{C}_7\text{H}_{10}\text{N}$
  - $\text{C}_5\text{H}_6\text{N}_3$
  - $\text{C}_4\text{H}_{18}\text{N}_3$
- $6.02 \times 10^{20}$  molecules of urea are present in 100 mL of its solution. The concentration of urea solution is -
  - 0.001 M
  - 0.01 M
  - 0.02 M
  - 0.1 M
- What is the empirical formula of a compound composed of O & Mn in equal weight ratio? (At. wt of Mn = 55)
  - MnO
  - $\text{MnO}_2$
  - $\text{Mn}_2\text{O}_3$
  - $\text{Mn}_2\text{O}_7$
- 1 g sample of alkaline earth metal react completely with 4.08 g  $\text{H}_2\text{SO}_4$  and yields an ionic product  $\text{MSO}_4$ . Then find out the atomic mass of alkaline earth metal (M)?
  - 9
  - 24
  - 40
  - 87
- A compound contains 36% C by mass. If each molecule contains two C atoms the number of moles of the compound in its 10 g is/are-
  - 0.15
  - 1.5
  - 150
  - 1500
- When a certain amount of octane is burnt completely, 7.04 g of  $\text{CO}_2$  is formed. What mass of  $\text{H}_2\text{O}$  is formed simultaneously?
  - 3.24 g
  - 6.68 g
  - 6.48 g
  - 6.16 g
- A 1.50 g sample of  $\text{KHCO}_3$  having 80% purity is strongly heated. Assuming the impurity to be thermally stable, the loss in weight of the sample, on heating is:
  - 26.4 g
  - 2.64 g
  - 0.264 g
  - 0.0264 g
- Chlorine can be prepared by reacting HCl with  $\text{MnO}_2$ . The reaction is represented by the equation  

$$\text{MnO}_2(\text{g}) + 4\text{HCl}(\text{aq}) \rightarrow \text{MnCl}_2(\text{aq}) + \text{Cl}_2(\text{g}) + 2\text{H}_2\text{O}(\text{l})$$

Assuming that the reaction goes to completion. What mass of conc. HCl solution (36% by mass) is needed to produce 2.5 g  $\text{Cl}_2$ ?

  - 14.27 g
  - 25 g
  - 25.21 g
  - 30 g
- 29.2% (w/w) HCl stock solution has a density of  $1.25 \text{ g mL}^{-1}$ . The molecular weight of HCl is  $36.5 \text{ g mol}^{-1}$ . The volume (in mL) of stock solution required to prepare a 200 mL solution of 0.4 M HCl is-
  - 16 mL
  - 61 mL
  - 80 mL
  - 8 mL
- The composition of residual mixture will be, if 30 g of Mg combines with 30 g of  $\text{O}_2$  -
  - 40 g  $\text{MgO}$  + 20 g  $\text{O}_2$
  - 45 g  $\text{MgO}$  + 15 g  $\text{O}_2$
  - 50 g  $\text{MgO}$  + 10 g  $\text{O}_2$
  - 60 g  $\text{MgO}$  only
- If the yield of given reaction is 33.33% what volume of  $\text{O}_2$  gas will be produced if 4 moles of  $\text{K}_2\text{Cr}_2\text{O}_7$  are taken initially;  

$$\text{K}_2\text{Cr}_2\text{O}_7 \xrightarrow{\Delta} \text{K}_2\text{CrO}_4 + \text{Cr}_2\text{O}_3 + \text{O}_2 \quad (\text{unbalanced})$$
  - 11.2 L
  - 22.4 L
  - 33.6 L
  - 67.2 L

16. 0.8 mole of a mixture of CO and  $\text{CO}_2$  requires exactly 40 gram of NaOH in solution for complete conversion of all the  $\text{CO}_2$  into  $\text{Na}_2\text{CO}_3$ , if the mixture (0.8 mole) is completely oxidised to  $\text{CO}_2$ , find further required moles of NaOH.
- 0.2
  - 0.6
  - 1
  - 1.5
17. 3.68 g of mixture of  $\text{CaCO}_3$  and  $\text{MgCO}_3$  is heated to liberate 0.04 mole of  $\text{CO}_2$ . The mole % of  $\text{CaCO}_3$  and  $\text{MgCO}_3$  in the mixture is respectively:
- 50%, 50%
  - 60%, 40%
  - 40%, 60%
  - 30%, 70%
18. An element is found in nature in two isotopic forms with mass numbers (A-1) and (A + 3). If the average atomic mass of the element is found to be A, then the relative abundance of the heavier isotope in the nature will be.
- 66.6%
  - 75%
  - 25%
  - 33.3%
19. If 42 g of an unknown gas X occupies a volume of 125 L at 0.3 bar pressure and 300 K temperature, then the gas X could be:
- $\text{N}_2$
  - $\text{CO}_2$
  - CO
  - $\text{NO}_2$
20. Which of the following molarity values of ions in a aqueous solution of 5.85% w/v NaCl, 5.55% w/v  $\text{CaCl}_2$  and 6% w/v NaOH are correct [Na = 23, Cl = 35.5, Ca = 40 = 16]
- $[\text{Cl}^-] = 2\text{M}$
  - $[\text{OH}^-] = 1.5\text{M}$
  - $[\text{Ca}^{2+}] = 0.5\text{M}$
  - All of these
21. How many moles of ferric alum,  $(\text{NH}_4)_2\text{SO}_4 \cdot \text{Fe}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$  can be made from the sample of Fe containing 0.0056 g of it?
- $10^{-4}\text{mol}$
  - $0.5 \times 10^{-4}\text{mol}$
  - $0.33 \times 10^{-4}\text{mol}$
  - $2 \times 10^{-4}\text{mol}$
22. The following substances are present in different containers
- one gram atom of nitrogen
  - one mole of calcium
  - One atom of silver
  - One mole of oxygen molecules
  - $10^{23}$  atoms of carbon
  - One gram of iron.
- The correct order of increasing masses (in grams) is/are
- (iii) < (iv) < (i) < (v)
  - (iii) < (vi) < (iv) < (ii)
  - (vi) < (v) < (i) < (iv)
  - (b) and (c) both are correct
23. How many molecules of HCl gas will be produced by reacting 112 L of  $\text{H}_2$  (0 °C, 1 atm) with 213 g of  $\text{Cl}_2$ ?
- $3.61 \times 10^{24}$
  - $6.13 \times 10^{23}$
  - $6.13 \times 10^{24}$
  - $1.63 \times 10^{24}$
24. 85 g  $\text{CaCO}_3$  (limestone sample), on heating produces exactly the same amount of  $\text{CO}_2$  which converts 30 g of MgO to  $\text{MgCO}_3$ . The percentage purity of limestone sample is
- 80%
  - 82.4%
  - 88.24%
  - 84.8%

# ABOUT PHYSICS WALLAH



Alakh Pandey is one of the most renowned faculty in NEET & JEE domain's Physics. On his YouTube channel, Physics Wallah, he teaches the Science courses of 11th and 12th standard to the students aiming to appear for the engineering and medical entrance exams.



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