

Q1 Chlorine is prepared in the laboratory by treating manganese dioxide (MnO_2) with aqueous hydrochloric acid according to the reaction.



How many grams of HCl react with 5.0g of manganese dioxide? (Atomic mass of Mn=55)

Q2 The following data were obtained when dinitrogen and dioxygen react together to form different compounds:

Mass of N_2	+ 14g	14g	28g	28g
Mass of O_2	+ 16g	32g	32g	80g

Q3 Which law of chemical combination is obeyed by the above experimental data? Give its statement.

Q4 Calculate the number of atoms in each of the following:

(i) 52 moles of He (ii) 52g of He.

Q5 Identify the limiting reactant in following reaction.



(i) 300 atoms of A + 200 molecules of B

(ii) 2.5 moles of A + 5 mole of B.

Q6 Which one of following will have largest number of atoms?

(i) 1g Au (ii) 1g Li

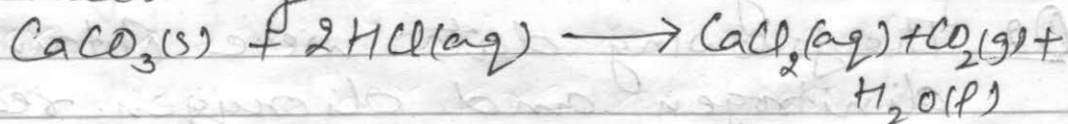
Q7 How much copper can be obtained from 100g of copper sulphate ($CuSO_4$)

Q8 What is the concentration of sugar $C_{12}H_{22}O_{11}$ in $mol L^{-1}$ if its 20g are dissolved in enough water to make a final volume up to 2L.

Q8 If the density of methanol is 0.793 kg L^{-1} what is its volume needed for making 2.5L of its 0.25M solution.

Q9 What will be mass of one ^{12}C atom in g?

Q10 Calcium carbonate reacts with aqueous HCl according to the reaction.



What mass of CaCO_3 is required to react completely with 25 ml of 0.75M HCl?

Q11 A solution is prepared by adding 2g of a substance to 18g of water.

Calculate the mass percent of solute.

Q12 Calculate the molarity of NaOH in the solution prepared by dissolving its 4g in enough water from 250 ml of the solution.

Q13 The molarity of sulphuric acid H_2SO_4 is 0.8M and its density is 1.06 g cm^{-3} . What will be the concentration of solution in term of molarity and mole fraction.

Q14 Calculate the molarity of water if its density is 1000 kg m^{-3}

Q15 The density of 2 molar aqueous solution of NaOH is 1.10 g mL^{-1} . Calculate the molarity of its solution.

Q16 50.0 Kg of $\text{N}_2(\text{g})$ and 10.0 Kg of $\text{H}_2(\text{g})$ are mixed to produce $\text{NH}_3(\text{g})$. Calculate mass of $\text{NH}_3(\text{g})$ formed. Identify the limiting reagent in the production of NH_3 in this situation.

UNIT-2

- Q1 Calculate the number of protons, neutrons and electrons in $^{80}\text{Br}^?$
- Q2 The number of electron, protons and neutrons in a species are equal to 18, 16 and 16 respectively. Assign the proper symbol of species.
- Q3 Calculate the energy of one mole photons of radiations whose frequency is $5 \times 10^{10} \text{ s}^{-1}$?
- Q4 When electromagnetic radiation of wavelength 300 nm falls on the surface of sodium electrons are emitted with kinetic energy of $1.68 \times 10^5 \text{ J mol}^{-1}$. What is the minimum energy needed to remove an electron from sodium? What is the maximum wavelength that will cause a photoelectron to be emitted.
- Q5 In a hydrogen atom, an electron jumps from third orbit to the first orbit. Find out the frequency of spectral line.
- Q6 What is the wave number for the longest wavelength transition in the Balmer series of atomic hydrogen.
- Q7 Find the wavelength of a 100 g particle moving with a velocity of 100 m s^{-1}
- Q8 The kinetic energy of an electron is $4.55 \times 10^{-25} \text{ J}$. The mass of electron is $9.1 \times 10^{-31} \text{ kg}$. Calculate velocity, momentum and wavelength of electron.
- Q9 A microscope using suitable photons is employed to locate an electron in an atom within a distance of 0.1 \AA . What

