CLASS – XI

SUBJECT : CHEMISTRY

MONTH : JULY 2024

QUES NO	TYPE OF QUESTION (REASONING / MCQ / MATRIX / GRID / OTHER)	QUESTION	OPTION PROVIDED	CORRECT OPTION	EXPLANATION	% OF STUDENTS ATTEMPTED CORRECTLY
01	**MCQ**	Which of the following reactions is not correct according to the law of conservation of mass?	(i) $2Mg(s) + O_2(g) \rightarrow 2MgO(s)$ (ii) $C_3H_8(g) + O_2(g) \rightarrow CO_2(g) + H_2O(g)$ (iii) $P_4(s) + 5O_2(g) \rightarrow P_4O_{10}(s)$ (iv) $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O\ (g)$	**(ii)**		
02	**MCQ**	Which of the following statements about a compound is incorrect?	(i) A molecule of a compound has atoms of different elements. (ii) A compound cannot be separated into its constituent elements by physical methods of separation. (iii) A compound retains the physical properties of its constituent elements. (iv) The ratio of atoms of different elements in a compound is fixed.	**(iii)**		
03	**MCQ**	Which of the following statements indicates that law of multiple proportions is being followed?	(i) Sample of carbon dioxide taken from any source will always have carbon and oxygen atoms in the ratio 1:2. (ii) Carbon forms two oxides namely CO_2 and CO, where masses of oxygen which combine with fixed mass of carbon are in the simple ratio 2:1. (iii) When magnesium burns in oxygen, the amount of magnesium taken for the reaction is equal to the amount of magnesium in magnesium oxide formed.	**(ii)**		

			(iv) At constant temperature and pressure 200 mL of hydrogen will combine with 100 mL oxygen to produce 200 mL of water vapour.			
04	**MCQ**	Which of the following postulates of Dalton's Atomic Theory was later found to be incorrect based on the discovery of isotopes?	(i) Atoms are indivisible and indestructible. (ii) Atoms of different elements have different properties. (iii) Atoms of the same element are identical in mass and other properties. (iv) Atoms can combine in fixed ratios to form compounds.	**(iii)**		
05	**Assertion-reasoning**	Assertion: Dalton's theory states that an atom is indivisible. Reason: An atom is made up of electrons, protons and neutrons.	(i) Both the Assertion and the Reason are correct and the reason is the correct explanation of the Assertion (ii) The Assertion and the Reason are correct but the reason is not the correct explanation of the Assertion (iii) The Assertion is true but the reason is false (iv) Both the statements are false	**(ii)**		
06	**MCQ**	The number of molecules present in 8g of oxygen gas is	(i) 6.022×10^{23} (ii) 3.011×10^{23} (iii) 12.044×10^{23} (iv) 1.55×10^{23}	**(iv)**	The molar mass of oxygen gas is 32 g/mol. n = 8g /32g mol^{-1} = 0.25 mol $0.25 \times 6.022 \times 10^{23} = 1.55 \times 10^{23}$ molecules	
07	**MCQ**	27g of Aluminium (At. Mass= 27) will react with ____g of oxygen to form Al_2O_3	(i) 24 g (ii) 8 g (iii) 40 g (d) 10 g	**(i)**	The balance equation is $4Al + 3O_2 \rightarrow 2Al_2O_3$ Atomic mass of Al= 27 g Atomic mass of O_2= 2× 16 = 32g Mole ratio , Al : O = 4:3 = 1:34	

					Mass of O_2 required = 34 × 32 = 24g	
08	**MCQ**	The number of moles of H_2 in 0.224 L of hydrogen gas at STP (273 K and 1 atm) is	(i) 1 (ii) 0.1 (iii) 0.01 (iv) 0.001	**(iii)**	Since volume of 1 mole of any gas at STP is 22.4 L Number of moles = given volume /22.4 = 0.224 /224 = 0.01	
09	**MCQ**	Which of the following contains largest number of molecules?	(i) 54 g of nitrogen dioxide (ii) 28 g of carbon dioxide (iii) 36 g of water (iv) 46 g of ethanol	**(iii)**	Number of molecules present in 'W' g of a compound = W × N_A. Here, N_A represents Avogadro's number. M represents the molar mass of compound. Number of molecules present in 36g of water = 36 / 18 × N_A= $2N_A$	
10	**MCQ**	When 1 mole of ammonia and 1 mole of oxygen are made to react to completion, then $4\,NH_3 + 5O_2 \xrightarrow{Pt,\ 800^\circ C} 4\,NO + 6H_2O$ (ammonia) (oxygen) (nitric oxide) (water)	((i) 1 mole of water is formed (ii) all the oxygen is consumed (iii) 1.5 mole of NO is formed (iv) all the ammonia is consumed	**(ii)**	$4NH_3 + 5O_2 \longrightarrow 4NO + 6H_2O$ $1NH_3 + 1.25\ O_2 \longrightarrow 1NO + 1.5H_2O$ Hence 1 mole of NH_3 reacts with 1.25 moles of O_2 to produce 1 mole of NO and 1.5 moles of H_2O. Hence when one mole of ammonia and one mole of oxygen are made to react to completion, then all the oxygen are made	

					to react to completion, then all the oxygen is consumed.	