edurise INDIA



(D)4 gm

## **MOLE CONCEPT**

## **Objectives Type Questions**

- An hydride of nitrogen decomposes to give nitrogen and hydrogen. It was found that one volume of the 1. hydride gave one volume of  $N_2$  and 2 volumes of  $H_2$  at STP. The hydride of nitrogen is
  - $(A)NH_3$ (B)  $N_2H_6$ (C)  $NH_2$  $(D)N_2H_4$
- 5 volumes of a hydrocarbon on complete combustion consumed 10 volumes of oxygen giving 5 volumes of 2.  $CO_2$  at STP. The hydrocarbon is
  - (B)  $C_{2}H_{4}$  $(A)C_{2}H_{6}$ (C) CH<sub>4</sub>  $(D)C_2H_4$
- 3. The volume of oxygen used when x gms of Zn is converted to ZnO is

(A)  $\frac{x \times 2}{65} \times 5.6$  litres (B)  $\frac{x}{65} \times 5.6$  litres (C)  $\frac{4x}{65} \times 5.6$  litres (D)None of these A sample of clay was partially dried and then contained 50% silica and 7% water. The original clay contained 4. 12% water. The % of silica in original sample is : (A) 51.69 (B) 47.31 (C) 63.31 (D)None of these 5. The haemoglobin from the red corpuscles of most mammals contains app 0.33% of iron by weight. The physical measurement indicates the molecular weight of haemoglobin to be 7000. The number of iron atoms in each molecule of haemoglobin is (At. wt. of Fe = 56) (A)2 (B) 3 (C) 4 (D)None of these If 0.5 mol of BaCl<sub>2</sub> is mixed with 0.2 mol of Na<sub>3</sub>PO<sub>4</sub>, the maximum number of moles of Ba<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub> that can 6.

be formed is

(C) 0.30 (A)0.7 (B) 0.5 (D)0.10

7. Six gm of magnesium (atomic weight 24) reacts with excess of an acid, the amount of hydrogen produced would be

(A)0.5 gm (B) 1.0 gm (C) 2 gmn

- A gas mixture of 3.0 litres of propane and butane on complete combustion at 25°C produced 10 litres of 8. CO<sub>2</sub>. Find out the composition of the gas mixture.
  - (A) 70%, 30% respectively (B) 66.66%, 33.33% respectively (C) 30%, 70% respectively (D) None of these

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9.	Molecular weight of a gas, 11.2 litre of which at NTP weighs 14 g is				
	(A)14	(B) 28	(C) 11/11.2	(D)14 × 11.2	
10.	Amount of oxygen required for complete combustion of 27 g Al is				
	(A)24 g	(B) 12 g	(C) 20 g	(D)6 g	
11.	$6.022 \times 10^{22}$ molecules of	of $N_2$ at NTP will occupy a	a volume of		
	(A)22.4 litre	(B) 2.24 litre	(C) 6.02 litre	(D)6.02 ml	
12.	One mole of a mixture of CO and CO <sub>2</sub> required exactly 20 g of NaOH in solution for complete conversion of all the CO <sub>2</sub> into Na <sub>2</sub> CO <sub>3</sub> . How much NaOH would it require for conversion into Na <sub>2</sub> CO <sub>3</sub> if the mixture (one mole) is completely oxidised to CO <sub>2</sub> :				
	(A)60 g	(B) 80 g	(C) 40 g	(D)20 g	
13.	2.76 g of silver carbonate on being strongly heated yields a residue weighing				
	(A)2.16 g of Ag	(B) 2.16 gm of Ag <sub>2</sub> O	(C) Both of these	(D)None of these	
14.	Which has the maximum number of atoms of oxygen ?				
	(A) $10 \text{ml} \text{H}_2 \text{O}(1)$		(B) 0.1 mole of $V_2O_5$		
	(C) $12  \text{gmO}_3(g)$		(D) $12.00 \times 10^{22}$ molecul	es of CO <sub>2</sub>	
15.	The mass of one atom of element A ?	f the element A is 3.9854×	$\times 10^{-23}$ g . How many atoms	are contained in 1 g of the	
	(A) $2.509 \times 10^{23}$	(B) $6.022 \times 10^{23}$	(C) $12.044 \times 10^{23}$	(D)None	
16.	The total number of electrons present in 11.2 litre of NH <sub>3</sub> at STP are				
17.	(A) $6.02 \times 10^{23}$ The largest number of me	(B) $3.011 \times 10^{23}$ olcules is in	(C) 3.011×10 <sup>24</sup>	(D)None	
	(A) 28 gm of CO	(B) 46 gm of $C_2H_5OH$	(C) 36 gm of $H_2O$	(D) 54 gm of $N_2O_5$	
18.	What volume of $CO_2$ at S	STP will evolve when 1 g	ram of CaCO <sub>3</sub> reacts with	excess of dil HCl ?	
	(A) 224 ml	(B) 112 ml	(C) 56 ml	(D) 448 ml	
19.	Common salt obtained fro present in 10.0 g of the s	om sea water contains 96 9 alt is	% NaCl by mass. The appro	eximate number of molecules	
	(A) 10 <sup>21</sup>	(B) 10 <sup>22</sup>	(C) $10^{23}$	(D) 10 <sup>24</sup>	
20.	A gaseous mixture comta of $CO_2$ and $N_2O$ is	tins $CO_2(g)$ and $N_2O(g)$ in	a 2 : 5 ratio by mass. The	ratio of the no. of molecules	
	(A) 5 : 2	(B) 2 : 5	(C) 1 : 2	(D) 5 : 4	

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21. When 1 L of CO<sub>2</sub> is heated with graphite, the volume of the gas collected is 1.5 L. Calculate the no. of moles of CO produced at STP.

(A) 1/11.2 (B) 28/22.4 (C) 1/22.4 (D) 14/22.4

## **INTEGER TYPE QUESTION**

1. If the number of moles of e present in 1kg of electron is  $\frac{1}{9.1 \times 6.023} \times 10^{x}$  if the mass of one election is

 $\left\lceil 9.1 \times 10^{-31} \text{kg} \right\rceil$  find the value of x.

- 2. A sample of ammonium phosphate  $(NH_4)_3 PO_4$ , contains 6 moles of hydrogen atoms. The number of moles of oxygen atoms in the sample is....
- 3. 13.4g of sample of an unstable hydrated salt  $Na_2SO_4.xH_2O$  was found to contain 6.3g of water, x is
- 4. A gas has a vapour density 11.2. The volume occupied by 1gm of the gas at NTP is.....lit.
- 5. A plant virus is found to consist of uniform cylindrical particles of 150A° in diameter & 5000A° long. The specific volume of the virus is  $0.75 \text{ cm}^2/\text{g}$ . If the virus is considered to be a single paticle, its molecular weight is  $x \times 10^7$ . Then x is
- 6. A solution contains 0.18g/ml of a substance x whose mole wt. is approximately 68,000. It is found that 0.27ml of oxygen at 760mm Hg and 30°C will combine with the amount of x present in 1ml of solution. How many molecules of oxygen will combine with one molecule of x ?
- 7. 6m moles of pure gypsum is heated to convert it completely to plaster of pairs. What is the number of moles of steam evolved in the process ?
- 8. The hydrated salt Na<sub>2</sub>SO<sub>4</sub>.nH<sub>2</sub>O undergoes 50.3% loss in weight on heating and becomes anhydrous. The value of n will be.....
- 9. Calcuate the number of moles of  $H_2$  gas produced from 6 mole  $NH_3$  gas

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		Answer key	
<b>Objectives</b> Type			
1. (D)	2. (C)	3. (A)	4. (B)
5. (C)	6. (D)	7. (A)	8. (B)
9. (B)	10. (A)	11. (B)	12. (B)
13. (A)	14. (C)	15. (D)	16. (C)
17. (C)	18. (A)	19. (C)	20. (B)
21. (C)			
Integer Type			
1. (8)	2. (2)	3. (7)	4. (1)
5. (7)	6. (4)	7. (9)	8. (8)
9. (9)			
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