

Topic : Mole Concept**Type of Questions****M.M., Min.****Single choice Objective ('-1' negative marking) Q.1 to Q.11****(3 marks, 3 min.)****[33, 33]**

1. The mass of half mole of electrons is about : (Given : Mass of electron = 9.109×10^{-28} g)
(A) 0.548 mg (B) 0.274 mg (C) 1.096 mg (D) 9.109 mg
2. 39.4 kg of gold was recovered from a smuggler. The number of atoms of gold recovered are :
(A) 200 (B) 1.2044×10^{25} (C) 6.022×10^{25} (D) 1.2044×10^{26}
3. The mass of Magnesium that contains the same number of atoms as are present in 2g of Calcium is :
(A) 1.2 g (B) 2.4 g (C) 0.6 g (D) 1.8 g
4. The number of gram-atoms present in 288g of sulphur is :
(A) 18 (B) 9 (C) 4.5 (D) 13.5
5. 1.5×10^{22} atoms of an element weigh 0.9 g. The atomic mass of the element (in amu) is :
(A) 36 (B) 18 (C) 54 (D) 72
6. The ratio of mass of a Titanium atom to the mass of a Carbon atom is 4 : 1. Then, the molar mass of Titanium is :
(A) 3 g (B) 48 g (C) 12 g (D) 24 g
7. A hypothetical element Z exists in nature as two isotopes Z^{65} and Z^{67} with their relative abundances 25% and 75% respectively. Then, the average atomic mass (in u) of element Z is :
(A) 65.5 (B) 66 (C) 66.25 (D) 66.5
8. The mass of a molecule of water is :
(A) 3×10^{-26} kg (B) 3×10^{-25} kg (C) 1.5×10^{-26} kg (D) 2.5×10^{-26} kg
9. The weight of 1×10^{22} molecules of $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ is :
(A) 4.1 g (B) 41 g (C) 410 g (D) 0.41 g
10. Among the following samples, the largest number of molecules is in :
(A) 28 g of CO (B) 46 g of $\text{C}_2\text{H}_5\text{OH}$ (C) 36 g of H_2O (D) 54 g of N_2O_5
11. 124 g of P_4 will contain which of the following :
(1) 4 atoms of Phosphorus (2) $4N_A$ atoms of Phosphorus
(3) N_A molecules of Phosphorus (4) 1 molecule of Phosphorus
(A) 1 and 4 (B) 2 and 3 (C) 1 and 3 (D) 2 and 4

Answer Key

DPP No. # 2

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|---------|--------|--------|--------|---------|
| 1. (B) | 2. (D) | 3. (A) | 4. (B) | 5. (A) |
| 6. (B) | 7. (D) | 8. (A) | 9. (A) | 10. (C) |
| 11. (B) | | | | |

Hints & Solutions

DPP No. # 2

2. No. of atoms of gold recovered = Moles of gold $\times N_A$

$$= \left(\frac{39.4 \times 10^3}{197} \right) \times N_A$$

$$= 1.2044 \times 10^{26}$$

5. Mole of element \times At. Mass of element = Mass of element

$$\left(\frac{1.5 \times 10^{22}}{N_A} \right) \times \text{At. Mass of element} = 0.9$$

\therefore At. Mass of element = 36 u.

8. 6×10^{23} molecules has mass = 18gm

$$1 \text{ molecules has mass} = \frac{18}{6 \times 10^{23}} = 3 \times 10^{-23} \text{ gm}$$

$$= 3 \times 10^{-26} \text{ kg.}$$

10. (A) No. of molecules = $\frac{28}{28} \times N_A = N_A$ (B) No. of molecules = $\frac{46}{46} \times N_A = N_A$
 (C) No. of molecules = $\frac{36}{18} \times N_A = 2N_A$ (max) (D) No. of molecules = $\frac{54}{108} \times N_A = 0.5N_A$

11. Molecular mass of $P_4 = 4 \times 31 = 124$ amu
 \therefore 124 g of P_4 contains 1 mole of $P_4 = N_A$ molecules of Phosphorus.
 1 mole of P_4 contains $4N_A$ atoms of P.