

1. The number of protons, neutrons and electrons in  ${}^{175}_{71}\text{Lu}$ , respectively, are [NEET (Sep.) 2020]  
 (a) 104, 71 and 71 (b) 71, 71 and 104  
 (c) 175, 104 and 71 (d) 71, 104 and 71

Ans. (d)

2. One mole of carbon atom weighs 12 g, the number of atoms in it is equal to, (Mass of carbon -12 is  $1.9926 \times 10^{-23}$  g) [NEET (Oct.) 2020]  
 (a)  $1.2 \times 10^{23}$  (b)  $6.022 \times 10^{22}$   
 (c)  $12 \times 10^{22}$  (d)  $6.022 \times 10^{23}$

Ans. (d)

3. Which one of the followings has maximum number of atoms?  
 [NEET (Sep.) 2020]

- (a) 1 g of Mg(s) [Atomic mass of Mg = 24]  
 (b) 1 g of  $\text{O}_2$ (g) [Atomic mass of O = 16]  
 (c) 1 g of Li(s) [Atomic mass of Li = 7]  
 (d) 1 g of Ag(s) [Atomic mass of Ag = 108]

Ans. (c)

4. In which case is the number of molecules of water maximum?  
 [NEET 2018]

- (a) 0.00224 L of water vapours at 1 atm and 273 K  
 (b) 0.18 g of water  
 (c) 18 mL of water  
 (d)  $10^{-3}$  mol of water

Ans. (c)

5. Volume occupied by one molecule of water (density =  $1 \text{ g cm}^{-3}$ ) is  
 [CBSE AIPMT 2008]

- (a)  $9.0 \times 10^{-23} \text{ cm}^3$   
 (b)  $6.023 \times 10^{-23} \text{ cm}^3$   
 (c)  $3.0 \times 10^{-23} \text{ cm}^3$   
 (d)  $5.5 \times 10^{-23} \text{ cm}^3$

Ans. (c)



6. The maximum number of molecules are present in  
 [CBSE AIPMT 2004]

- (a) 15 L of  $\text{H}_2$  gas at STP  
 (b) 5 L of  $\text{N}_2$  gas at STP  
 (c) 0.5 g of  $\text{H}_2$  gas  
 (d) 10 g of  $\text{O}_2$  gas

Ans. (a)

7. The number of atoms in 4.25 g of  $\text{NH}_3$  is approximately  
 [CBSE AIPMT 1999]

- (a)  $4 \times 10^{23}$  (b)  $2 \times 10^{23}$   
 (c)  $1 \times 10^{23}$  (d)  $6 \times 10^{23}$

Ans. (d)

8. Haemoglobin contains 0.33% of iron by weight. The molecular weight of haemoglobin is approximately 67200 g. The number of iron atoms (at. weight of Fe is 56) present in one molecule of haemoglobin are

[CBSE AIPMT 1998]

- (a) 1 (b) 6 (c) 4 (d) 2

Ans. (c)

9. The number of atoms in 0.1 mole of a triatomic gas is  
 ( $N_A = 6.023 \times 10^{23} \text{ mol}^{-1}$ )  
 [CBSE AIPMT 2010]

- (a)  $6.026 \times 10^{22}$  (b)  $1.806 \times 10^{23}$   
 (c)  $3.600 \times 10^{23}$  (d)  $1.800 \times 10^{22}$

Ans. (b)

10. The number of moles of oxygen in 1 L of air containing 21% oxygen by volume, under standard conditions, is  
 [CBSE AIPMT 1995]

- (a) 0.0093 mole (b) 2.10 moles  
 (c) 0.186 mole (d) 0.21 mole

Ans. (a)

11. The percentage weight of Zn in white vitriol [ $\text{ZnSO}_4 \cdot 7\text{H}_2\text{O}$ ] is approximately equal to (at. mass of Zn = 65, S = 32, O = 16 and H = 1) [CBSE AIPMT 1995]

- (a) 33.65% (b) 32.56%  
(c) 23.65% (d) 22.65%

Ans. (d)

12. The total number of valence electrons in 4.2 g of  $\text{N}_3^-$  ion is ( $N_A$  is the Avogadro's number) [CBSE AIPMT 1994]

- (a)  $2.1 N_A$  (b)  $4.2 N_A$  (c)  $1.6 N_A$  (d)  $3.2 N_A$

Ans. (c)

13. If Avogadro number  $N_A$ , is changed from  $6.022 \times 10^{23} \text{ mol}^{-1}$  to  $6.022 \times 10^{20} \text{ mol}^{-1}$  this would change [CBSE AIPMT 2015]

- (a) the definition of mass in units of grams  
(b) the mass of one mole of carbon  
(c) the ratio of chemical species to each other in a balanced equation  
(d) the ratio of elements to each other in a compound

Ans. (b)

14. Suppose the elements X and Y combine to form two compounds  $\text{XY}_2$  and  $\text{X}_3\text{Y}_2$ . When 0.1 mole of  $\text{XY}_2$  weighs 10 g and 0.05 mole of  $\text{X}_3\text{Y}_2$  weighs 9 g, the atomic weights of X and Y are [NEET Phase II 2016]

- (a) 40, 30 (b) 60, 40 (c) 20, 30 (d) 30, 20

Ans. (a)

15. The molecular weight of  $\text{O}_2$  and  $\text{SO}_2$  are 32 and 64 respectively. At  $15^\circ\text{C}$  and 150 mmHg pressure, 1 L of  $\text{O}_2$  contains 'N' molecules. The number of molecules in 2L of  $\text{SO}_2$  under the same conditions of temperature and pressure will be [CBSE AIPMT 1990]

- (a)  $N/2$  (b) N  
(c)  $2N$  (d)  $4N$

16. The number of gram molecules of oxygen in  $6.02 \times 10^{24}$  CO molecules is [CBSE AIPMT 1990]

- (a) 10 g molecules (b) 5 g molecules  
(c) 1 g molecule (d) 0.5 g molecule

17. The number of oxygen atoms in 4.4 g of  $\text{CO}_2$  is [CBSE AIPMT 1990]

- (a)  $1.2 \times 10^{23}$  (b)  $6 \times 10^{22}$   
(c)  $6 \times 10^{23}$  (d)  $12 \times 10^{23}$

Ans. (a)

18. 1 cc  $\text{N}_2\text{O}$  at NTP contains [CBSE AIPMT 1988]

- (a)  $\frac{1.8}{224} \times 10^{22}$  atoms  
(b)  $\frac{6.02}{22400} \times 10^{23}$  molecules  
(c)  $\frac{1.32}{224} \times 10^{23}$  electrons

(d) All of the above

19. At STP, the density of  $\text{CCl}_4$  vapour in g/L will be nearest to [CBSE AIPMT 1988]

- (a) 6.87 (b) 3.42 (c) 10.26 (d) 4.57

Ans. (a)

20. The weight of a single atom of oxygen is : [1997]

- (a)  $1.057 \times 10^{23}$  g      (b)  $3.556 \times 10^{23}$  g  
 (c)  $2.656 \times 10^{-23}$  g      (d)  $4.538 \times 10^{-23}$  g

21. The weight of one molecule of a compound of molecular formula  $C_{60}H_{122}$  is [2002]

- (a)  $1.2 \times 10^{-20}$  g      (b)  $5.025 \times 10^{23}$  g  
 (c)  $1.4 \times 10^{-21}$  g      (d)  $6.023 \times 10^{-20}$  g

22.  $10^{21}$  molecules are removed from 200 mg of  $CO_2$ . The moles of  $CO_2$  left are : [2001]

- (a)  $2.88 \times 10^{-3}$       (b)  $28.8 \times 10^{-3}$   
 (c)  $288 \times 10^{-3}$       (d)  $28.8 \times 10^3$

23. Volume of a gas at NTP is  $1.12 \times 10^{-7}$  cc. The number of molecule in it is : [1998]

- (a)  $3.01 \times 10^{12}$       (b)  $3.01 \times 10^{18}$   
 (c)  $3.01 \times 10^{24}$       (d)  $3.01 \times 10^{30}$

24. Which has the maximum number of molecules among the following ? [2014]

- (a) 44 g  $CO_2$       (b) 48 g  $O_3$   
 (c) 8 g  $H_2$       (d) 64 g  $SO_2$

25. Arrange the following in the order of increasing mass (atomic mass: O = 16, Cu = 63, N = 14)

- I. one atom of oxygen  
 II. one atom of nitrogen  
 III.  $1 \times 10^{-10}$  mole of oxygen  
 IV.  $1 \times 10^{-10}$  mole of copper [2016]

- (a) II < I < III < IV      (b) I < II < III < IV  
 (c) III < II < IV < I      (d) IV < II < III < I

29. A 10.0 L flask contains 64 g of oxygen at 27°C. (Assume  $O_2$  gas is behaving ideally). The pressure inside the flask in bar is (Given  $R = 0.0831$  L bar  $K^{-1}$  mol $^{-1}$ ) [NEET-2022]

- (1) 4.9  
 (2) 2.5  
 (3) 498.6  
 (4) 49.8

Answer (1)

26. Among the following, choose the ones with equal number of atoms.

- A. 212 g of  $Na_2CO_3$  (s) [molar mass = 106 g]  
 B. 248 g of  $Na_2O$  (s) [molar mass = 62 g]  
 C. 240 g of  $NaOH$  (s) [molar mass = 40 g]  
 D. 12 g of  $H_2$  (g) [molar mass = 2 g]  
 E. 220 g of  $CO_2$  (g) [molar mass = 44 g]

Choose the correct answer from the options given below : [NEET-2025]

- (1) B, D, and E only  
 (2) A, B, and C only  
 (3) A, B, and D only  
 (4) B, C, and D only

27. The highest number of helium atoms is in [NEET-2024]

- (1) 4 mol of helium  
 (2) 4 u of helium  
 (3) 4 g of helium  
 (4) 2.271098 L of helium at STP

28. Choose the correct option for the total pressure (in atm.) in a mixture of 4 g  $O_2$  and 2 g  $H_2$  confined in a total volume of one litre at 0°C is :

[Given  $R = 0.082$  L atm mol $^{-1}$  K $^{-1}$ ,  $T = 273$  K]

- (1) 2.518  
 (2) 2.602  
 (3) 25.18  
 (4) 26.02

