

48. The weight of  $2.01 \times 10^{23}$  molecules of CO is— [AIEEE 2002]  
 (1) 9.3 g                      (2) 7.2 g                      (3) 1.2 g                      (4) 3 g
49. If we consider that  $1/6$ , in place of  $1/12$ , mass of carbon atom is taken to be the relative atomic mass unit, the mass of one mole of the substance will :- [AIEEE-2005]  
 (1) be a function of the molecular mass of the substance  
 (2) remain unchanged  
 (3) increase two fold  
 (4) decrease twice
50. How many moles of magnesium phosphate,  $Mg_3(PO_4)_2$  will contain 0.25 mole of oxygen atoms? [AIEEE 2006]  
 (1)  $3.125 \times 10^{-2}$                       (2)  $1.25 \times 10^{-2}$                       (3)  $2.5 \times 10^{-2}$                       (4) 0.02
51. The ratio of number of oxygen atoms (O) in 16.0g ozone ( $O_3$ ), 28.0 g carbon monoxide (CO) and 16.0g oxygen ( $O_2$ ) is :-  
 (Atomic mass : C = 12, O = 16 and Avogadro's constant  $N_A = 6.0 \times 10^{23} \text{ mol}^{-1}$ ) [AIEEE 2012 (Online)]  
 (1) 3 : 1 : 1                      (2) 1 : 1 : 2                      (3) 3 : 1 : 2                       (4) 1 : 1 : 1
52. The percentage composition of carbon by mole in methane is : [JEE(Main)-2019(April)]  
 (1) 25%                      (2) 75%                       (3) 20%                      (4) 80%

53. 8 Grams of oxygen at NTP contain  
[IJSO-Stage-I/2012]

- (A)  $1.5 \times 10^{23}$  molecules
- (B)  $3.0 \times 10^{23}$  molecules
- (C)  $6.023 \times 10^{23}$  molecules
- (D)  $1.5 \times 10^{22}$  molecules

54. How many H atoms are in 3.4 g of  $C_{12}H_{22}O_{11}$ ?  
[IJSO-Stage-I/2013]

- (A)  $6.0 \times 10^{23}$
- (B)  $1.3 \times 10^{23}$
- (C)  $3.8 \times 10^{22}$
- (D)  $6.0 \times 10^{23}$

55. The mass of 0.2 mole of Oxygen molecule is :  
[IJSO-Stage-I/2013]

- (A) 6.4g
- (B) 3.2g
- (C) 1.6g
- (D) 7.75g

56. 8 grams of oxygen at NTP contain  
[IJSO-Stage-I/2012-13]

- (A)  $1.5 \times 10^{23}$  molecules
- (B)  $3.0 \times 10^{23}$  molecules
- (C)  $6.023 \times 10^{23}$  molecules
- (D)  $1.5 \times 10^{22}$  molecules

57. Which of the following contains the same number of atoms as 13.5 grams of aluminium ?

[IJSO-Stage-I/2014-15]

- (A) 20 g of calcium
- (B) 10g of magnesium
- (C) 20 g of potassium
- (D) 10 of sodium

58. How many molecules of water of hydration are present in 252mg of oxalic acid ( $H_2C_2O_4 \cdot 2H_2O$ ) ?

[IJSO-Stage-II/2014]

- (A)  $2.68 \times 10^{18}$
- (B)  $2.52 \times 10^{21}$
- (C)  $1.83 \times 10^{24}$
- (D)  $2.4 \times 10^{21}$

59. A chemist's report on a batch of pharmaceutical products, Aspirin ( $C_9H_8O_4$ ) (250 mg tablets) and paracetamol ( $C_8H_9NO_2$ ) (500 mg tablets) indicated a '+0.5% weigh error in each tablet. Due to this error, the consumer gets extra 'x' molecules of aspirin per tablet and extra 'y' molecules of paracetamol per tablet, Choose the 'best' relation between x and y [IJSO Stage-1/2015]

- (A)  $x = y$
- (B)  $x > y$
- (C)  $y > x$
- (D)  $x = 2y$

60. Four 1-litre flasks are separately filled with the gases  $N_2$ , Ne,  $N_2O$  and  $SO_3$  at the same temperature and pressure. The ratio of total number of atoms of these gases present in different flask would be :

- (A) 1 : 1 : 1 : 1
- (B) 1 : 2 : 2 : 3
- (C) 2 : 1 : 3 : 4
- (D) 3 : 2 : 2 : 1

61. 4.4 g of  $CO_2$  and 2.24 litre of  $H_2$  at STP are mixed in a container. The total number of molecules present in the container will be -

- (A)  $6.022 \times 10^{23}$
- (B)  $1.2044 \times 10^{23}$
- (C) 2 mole
- (D)  $6.023 \times 10^{24}$

62. How many atoms are contained in a mole of  $Ca(OH)_2$  -

- (A)  $30 \times 6.02 \times 10^{23}$  atoms/mol
- (B)  $5 \times 6.02 \times 10^{23}$  atoms/mol
- (C)  $6 \times 6.02 \times 10^{23}$  atoms/mol
- (D) None of these

63. Number of moles present in  $1 \text{ m}^3$  of a gas at NTP are -

- (A) 44.6
- (B) 40.6
- (C) 42.6
- (D) 48.6

64. 5.6 litre of oxygen at STP contains :

- (A)  $6.02 \times 10^{23}$  atoms
- (B)  $3.01 \times 10^{23}$  atoms
- (C)  $1.505 \times 10^{23}$  atoms
- (D)  $0.7525 \times 10^{23}$  atoms

65. The volume of a gas in discharge tube is  $1.12 \times 10^{-7}$  ml. at STP then the number of molecule of gas in the tube is :

- (A)  $3.01 \times 10^4$
- (B)  $3.01 \times 10^{15}$
- (C)  $3.01 \times 10^{12}$
- (D)  $3.01 \times 10^{16}$

66. The number of sodium atoms in 2 moles of sodium ferrocyanide ( $Na_4[Fe(CN)_6]$ ) is :

- (A)  $12 \times 23$
- (B)  $26 \times 10^{23}$
- (C)  $34 \times 10^{23}$
- (D)  $48 \times 10^{23}$