MOLE CALCULATIONS (Easy Level)

1. What is the mole number of 12.04×10^{24} sodium atoms?
A. 20 B. 2 C. 0.5 D. 23 E. 200

2. What is the mass of 2.24 L of sulfur dioxide at STP?
A. 3.2 g B. 6.4 g C. 9.6 g D. 16 g E. 32 g

3. Which one is the heaviest?
A. 3 moles of iron
B. 44.8 L of oxygen gas at STP
C. 2 moles of sulfuric acid
D. 150 g of calcium carbonate
E. 50 moles of hydrogen gas

4. Which one of the gases given below has the greatest volume at STP?
A. 34 g H_2S B. 5 moles F_2 C. 8 g H_2
D. 22 g CO_2 E. 67.2 L N_2

5. Which one of the following substances given below has the greatest number of moles of atoms?
A. 1mol Na
B. 4.4 g CO_2
C. 0.2 moles CO
D. 0.1 mol O_3
E. $6.02x10^{23}$ molecules CO

6.
I. An atom of nitrogen
II. One gram of nitrogen
III. A molecule of nitrogen
What is the correct increasing order of masses for nitrogen?
A. I<II<III B. I<III<II C. II<III<I
D. III<II<I E. II<I<III

7. 1 mol of CO gas and 1 mol of CO_2 gas have the same ……. at STP.
A. mass
B. number of atoms
C. density
D. mass of O
E. number of molecules

8. 2.24 L of XO gas has a mass of 3 g at STP. What is the atomic weight of X?
A. 14 B. 31 C. 1 D. 12 E. 32

8. Which of the following compounds has a molecular weight of 174 g/mole?
A. sodium carbonate
B. barium chloride
C. lithium phosphate
D. potassium sulfate
E. aluminum oxide

9. How many atoms are there in 14 g of iron? (Avogadro's number, $N_A = 6\times10^{23}$)
A. 1×10^{23} B. 1.5×10^{23} C. 3×10^{23}
D. 6×10^{23} E. 24×10^{23}

10. What is the mass of 44.8 L of carbon dioxide gas at STP?
A. 8.8 g B. 44 g C. 2.2 g
D. 88 g E. 22 g

11. What is the mass of 6.72 L of ammonia at STP?
A. 8.5 g B. 6.8 g C. 5.1 g
D. 3.4 g E. 1.7 g

12. Which one of the following substances contains Avogadro number of atoms?
A. 1 mole hydrogen gas
B. 17 g ammonia
C. 20 g calcium
D. 0.5 mole oxygen gas
E. 9 g water

13. Which one is wrong for 22 g of CO_2 gas?
A. It is 0.5 moles.
B. It occupies 11.2 L at STP.
C. It contains 3.01×10^{23} of CO_2 molecules.
D. It contains 6.02×10^{23} of oxygen atoms.
E. It contains 12 g of carbon atoms.

14. We have 2 moles of each of the following at STP. Which one's volume is not equal to 44.8 L?
A. oxygen B. iodine C. chlorine
D. hydrogen E. nitrogen

15. Which one of the following contains 6 moles of hydrogen atoms?
A. 44.8 L of ammonia at STP
B. 196 g of sulfuric acid
C. 2 moles of water
D. 63 g of nitric acid
E. 3 g of hydrogen gas at STP

16. How many grams are 0.5 mole of CO_2? (CO_2: 44 g/mole.
A. 11 B. 22 C. 28 D. 30 E. 44

17. What is the mass of 1.12 L of NO_2 at STP? (NO_2: 46 g/mole.
A. 2.3 B. 4.6 C. 5 D. 9.2 E. 23

18. Which one of the followings has the highest number of molecules? (CO_2: 44)

A. 5.6 L H_2 gas at STP
B. 1 gram CO_2(g)
C. 0.4 mole of NO(g)
D. 0.01 mole of NH_3(g)
E. 6.02 10^{22} molecules of H_2SO_4(g)

19. What is the number of molecules of 2 moles of CO_2 gas? (Avogadro's number is $6.02x10^{23}$)
A. 12.04 $x10^{23}$
B. 6.02x 10^{23}
C. 3.01x 10^{23}
D. 24.08x 10^{23}
E. 18.06 $x10^{23}$

20. About the same masses of C_3H_8 and N_2O gases;
I. Mole numbers
II. Volumes at STP
III. Number of molecules
Which of the above is/are correct?
(C: 12, N: 14, O: 16, H: 1)
A. II only B. I and II C. I and III
D. II and III E. I, II and III

21. Which one of the followings is wrong for 1 mole of NH_3 gas? (N: 14, H: 1)
A. It is 22.4 L at STP
B. It contains 3 moles H atoms
C. Its mass is 17 amu
D. It contains as much as Avogadro's number of NH_3 molecules
E. It contains totally 4 moles of atoms

22. Which one of the followings is wrong for 4 grams of CH_4? (CH_4: 16, Avogadro's number: $6.02x\ 10^{23}$)
A. It is 0.25 moles
B. It is 5.6 L at STP
C. It contains $1.505x10^{23}$ of molecules
D. It contains 3 grams of C
E. It contains 2 moles of Hydrogen atoms

23. Which one of the followings is wrong for 1.54 grams of CCl_4 molecules?
(CCl_4: 154, Na: Avogadro's number)
A. It is 0.01 mole
B. It contains 0.04 mole of Cl atom
C. It contains Na/100 atoms of C
D. It is Na/100 molecules itself
E. It contains 5xNa atoms totally

24. Which of the followings is/are wrong for the same number of mole of CaO and CO_2?
I. They contain the same mass of oxygen
II. The mass of CaO is greater than the mass of CO_2
III. They contain the same number of atoms (total number of atoms)
A. II only B. III only C. I and III
D. II and III E. I, II and III

25. Which of the followings is/are correct for 1 gram of H_2 molecules?
I. It is 0.5 mole
II. It contains 6.02 10^{23} atoms
III. It occupies 11.2 L at STP
A. I only B. I and II C. I and III
D. II and III E. I, II and III

26. Which of the followings is/are correct for 0.5 mole of N_2O_3 gas?
I. It contains 3.01 10^{23} atoms
II. It contains 1.5.Na atoms of oxygen
III. It contains 1 mole of nitrogen atom
(Na: Avogadro's number)

A. II only B. III only C. I and II
D. II and III E. I, II and III

27. Which one of the followings is wrong for SO_3 gas which contains 24 grams of oxygen? (O: 16)
A. It is 0.5 mole
B. Number of molecule is 3.01 10^{23}
C. It contains 3.01 10^{23} atoms of sulfur
D. It contains 0.4 mole of atoms totally
E. It occupies 11.2 L volume at STP

28. Which of the followings is wrong for 0.2 mole of $C_2H_4(OH)_2$? (H: 1, C: 12, O: 16)
A. It contains 0.4 mole of C atom
B. It is 0.2 mole of molecules
C. It contains 0.8 mole hydrogen atom
D. It contains 6.4 grams of oxygen
E. It is 12.4 grams

29. Which of the followings is/are correct for NO_2 compound which contains 2.8 gram of nitrogen?
(N: 14, O: 16)
I. It is 0.2 mole
II. It contains 6.4 gram of oxygen
III. It contains 0.6 mole of atom totally
A. I only B. II only C. I and II
D. II and III E. I, II and III

30. Which of the followings is/are certainly the same for X and Y gases which have the same volume and mass?
I. Molar masses
II. The number of atoms which they contain
III. Mass of one X and one Y
A. I only B. III only C. I and III
D. II and III E. I, II and III

31. Which of the followings is/are correct for C_2H_6, SO_3 and H_2 gases which contain the same numbers of atoms?
I. Their mole numbers are the same
II. They have the same volumes at STP
III. Their numbers of molecules are different
A. I only B. III only C. I and III
D. II and III E. I, II and III

32. What is the mass of 0.1 mole of sodium atom?
A. 2.3 g B. 4.6 g C. 23 g D. 12.5 g E. 0.23 g

34. What is the volume of 0.2 moles of hydrogen gas at STP?
A. 2.24 L B. 44.8 L C. 11.2 L
D. 4.48 L E. 1.12L

33. How many moles are there in 3.01×10^{23} lithium atoms?
A. 0.1 B. 1 C. 0.5 D. 0.2 E. 0.3

34. What is the mass of 0.2 moles of water?
A. 1.8 g B. 2.4 g C. 24 g
D. 3.6 g E. 36 g

35. Which one of the following is Avogadro's number?
A. 6.02×10^{23}
B. 1.204×10^{23}
C. 3.01×10^{23}
D. 4.04×10^{22}
E. 6.01×5^{23}

36. What is the volume of 1 mole of any gas at STP?
A. 1.12 L B. 2.24 L C. 4.48 L
D. 22.4 L E. 5.6 L

37. What is the mole number of 9.8 g of sulfuric acid?
A. 2 B. 0.2 C. 0.1 D. 0.5 E. 1

38. What is the mole number of 180 g of water?
A. 10 B. 5 C. 2 D. 1 E. 15

39. What is the mass of 0.25 moles of carbon dioxide gas?
A. 11 g B. 12 g C. 10 g
D. 22 g E. 44 g

40. What is the volume of 142 g of chlorine gas at STP?
A. 89.6 L B. 67.2 L C. 44.8 L
D. 22.4 L E. 11.2 L

41. How many atoms are there in 0.5 moles of silver? (Avogadro's number is = 6×10^{23})
A. 1×10^{23}
B. 3×10^{23}
C. 6×10^{23}
D. 2×10^{23}
E. 5×10^{23}

42. What is the mole number of 5.6 L of oxygen gas at STP?
A. 1 B. 2 C. 0.25 D. 0.5 E. 0.75

43. Which one is the heaviest?
A. 5 moles of lithium
B. 20 g of calcium
C. 11.2 L of sulfur dioxide gas at STP
D. 0.5 moles of sodium hydroxide
E. 44.8 L of hydrogen gas at STP

44. What is the mass of 2.24 L of carbon dioxide gas at STP?
A. 2.2 g B. 4.4 g C. 11 g D. 22 g E. 44 g

45. Which one of the following gases has the greatest volume at STP?
A. 10 g of hydrogen
B. 128 g of sulfur dioxide
C. 112 g of nitrogen
D. 64 g of oxygen
E. 132 g of carbon dioxide

46. What is the mole number of $12.04.10^{24}$ sodium atoms?
A. 20 B. 2 C. 0.5 D. 23 E. 200

47. How many atoms are there in 0.25 mole of silver? (Avogadro's number, $N_A = 6.10^{23}$)
A. 1.10^{23}
B. $1.5.10^{23}$
C. 3.10^{23}
D. 6.10^{23}
E. 24.10^{23}

48. What is the mass of 2.24 L of sulfur dioxide at STP?
A. 3.2 g B. 6.4 g C. 9.6 g D. 16 g E. 32 g

49. Which one is the heaviest?
A. 3 moles of iron
B. 44.8 L of oxygen gas at STP
C. 2 moles of sulfuric acid
D. 150 g of calcium carbonate
E. 50 moles of hydrogen gas

50. Which one is wrong for 22 g of CO_2 gas?
A. It is 0.5 moles.
B. It occupies 11.2 L at STP.
C. It contains 3.01×10^{23} of CO_2 molecules.
D. It contains 6.02×10^{23} of oxygen atoms.

E. It contains 12 g of carbon atoms.

51. Which one of the gases given below has the greatest volume at STP?
A. 34 g H_2S
B. 5 moles H_2
C. 8 g H_2
D. 22 g CO_2
E. 67.2 L N_2

52. 3 g of the compound X_2O has 1.4 g of X. What is the molecular weight of X_2O?
A. 18 B. 55 C. 30 D. 78 E. 94

53. What is the volume of C_2H_2 gas in liters at STP containing 0.25 mol of H atoms?
A. 22.4 B. 11.2 C. 5.6 D. 3.5 E. 2.8

54. Which one of the following substances given below has the greatest number of moles of atoms?
A. 1mol Na
B. 4.4 g CO_2
C. 0.2 mol CO
D. 0.1 mol O_3
E. $6.02x10^{23}$ molecules CO

55. I. An atom of nitrogen
II. One gram of nitrogen
III. A molecule of nitrogen
Find the correct increasing order of masses for nitrogen.
A. I<II<III B. I<III<II C. II<III<I
D. III<II<I E. II<I<III

56. 1 mol of CO gas and 1 mol of CO_2 gas have the same ……. at STP.
A. mass
B. number of atoms
C. density
D. mass of O
E. number of molecules

57. What is the weight of one carbon atom if 7 mol of it weighs 84 g?
A. $1.99x10^{-23}$
B. $4.2x10^{-22}$
C. $6.02x10^{-23}$
D. $4.2x10^{-23}$
E. 12

58. Which one of the following substances contain Avogadro's number of atoms?
A. 1 mol H_2
B. 17 g NH_3
C. 20 g Ca
D. 0.5 mol O_2
E. 9 g H_20

59. 22.4 L of a gas has a mass of 28 g at STP. What is the mass of one molecule of the gas?
A. $2.33x10^{-23}$
B. $4.65x10^{-23}$
C. $4.21x10^{24}$
D. $1.16x10^{-23}$
E. $1.69x10^{25}$