1.

Which has maximum number of molecules?

(a) 7g N_2

(b) 2g H_2

(c) 16g NO_2

(d) 16g O_2

2.

What volume of oxygen gas (O_2) measured at $0^\circ C$ and 1 atm, is needed to burn completely 1L of propane gas (C_3H_8) measured under the same conditions?

(a) 7L

(b) 6L

(c) 5L

(d) 10L

3.

The product of atomic mass and specific heat of a metal is approximately 6.4. This was given by:
(a) Dalton's law
(b) Avogadro's law
(c) Newton's law
(d) Dulong Petit's law

4.

A gas is found to have the formula (CO)x. Its VD is 70. The value of x must be:

(a) 7

(b) 4

(c) 5

(d) 6

5.

2 gm Iron pyrite (FeS_2) is burnt with O_2 to form Fe_2O_3 and SO_2. The mass of SO_2 produced is (Fe=56, S=32, O=16)

1. 2 gm

2. 2.13 gm

3. 4 gm

4. 4.26 gm

6.

Oxygen contains 90% O^{16} and 10% O^{18}. Its atomic mass is **[KCET 1998]**

(1) 17.4

(2) 16.2

(3) 16.5

(4) 17

7.

$KClO_3$ on heating decomposes to KCl and O_2. The volume of O_2 at STP liberated by 0.1 mole $KClO_3$ is

(1) 4.36 *L*

(2) 3.36 *L*

(3) 2.36 *L*

(4) none of these

8.

At S.T.P. the density of CCl_4 vapour in g/L will be nearest to **[CBSE PMT 1988]**

(1) 6.84

(2) 3.42

(3) 10.26

(4) 4.57

9.

4.4 *g* of an unknown gas occupies 2.24 litres of volume at NTP. The gas may be **[MP PMT 1995]**

(1) Carbon dioxide

(2) Carbon monoxide

(3) Oxygen

(4) Sulphur dioxide

10.

The mass of carbon present in 0.5 mole of $K_4[Fe(CN)_6]$ is

(1) 1.8 g

(2) 18 g

(3) 3.6 g

(4) 36 g

11.

The number of moles of oxygen in one litre of air containing 21% oxygen by volume under standard conditions is **[CBSE PMT 1995]**

(1) 0.186 mole

(2) 0.21 mole

(3) 0.0093 mole

(4) 2.10 mole

12.

The empirical formula of an organic compound containing carbon and hydrogen is CH_2. The mass of one litre of this organic gas is exactly equal to that of one litre of N_2. Therefore, the molecular formula of the organic gas is **[EAMCET 1985]**

(1) C_2H_4

(2) C_3H_6

(3) C_6H_{12}

(4) C_4H_8

13.

An organic compound containing *C, H* and *N* gave the following on analysis: *C* = 40%, *H* = 13.3% and *N* = 46.67%. Its empirical formula would be **[CBSE PMT 1999, 2002]**

(1) CHN

(2) C_2H_2N

(3) CH_4N

(4) C_2H_7N

14.

The volume of oxygen at STP required to completely burn 30 *ml* of acetylene at STP is **[Orissa JEE 1997]**

(1) 100 *ml*

(2) 75 *ml*

(3) 50 *ml*

(4) 25 *ml*

15.

If Avogadro number N_A, is changed from 6.022×10^{23} mol^{-1} to 6.022×10^{20} mol^{-1} this would change

(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

16.

6.02×10^{20} molecules of urea are present in 100 mL of its solution. The concentration of the solution is

(a) 0.02 M

(b) 0.01 M

(c) 0.001 M

(d) 0.1 M

17.

The maximum amount of $BaSO_4$ precipitated on mixing 20mL of 0.5 M $BaCl_2$ with 20 mL of 1 M H_2SO_4 is:

1. 0.25 mole
2. 0.5 mole
3. 1 mole
4. 0.01 mole

18.

Insulin contains 3.4% sulphur: The minimum molar mass of insulin is:

1. 941 g
2. 1000 g
3. 841 g
4. 1041 g

19.

1.60 g of a metal were dessolved in HNO_3 to prepare its nitrate. The nitrate on strong heating gives 2 g oxide. The equvalent mass of metal is:

1. 16
2. 32
3. 48
4. 12

20.

100 ml each of 0.5 N NaOH, N/5 HCl and N/10 H_2SO_4 are mixed together. The resulting solution will be

1. Acidic
2. Alkaline
3. Neutral
4. Can't be determine

21.

An element A (at. wt. = 75) and B (at. wt. = 25) combine to form a compound contains 75% A by weight. The formula of the compound will be

1. A_2B
2. A_3B
3. AB_3
4. AB

22.

The ratio of number of atoms in 4.4 gm CO

$_2$ and 1.7 gm NH_3 is
1. 1:1
2. 3:4
3. 4:3
4. 1:2

23.

$2\,SO_2 + O_2 \rightarrow 2\,SO_3$, 6.4 gm SO_2 and 3.2 gm O_2 to form SO_3. How much maximum mass of SO_3 is formed?

1. 32 gm
2. 16 gm
3. 8 gm
4. 4 gm

24.

A metallic nitride(M_3N_2) contains 20% nitrogen. Equivalent weight of metal is
1. 37.33
2. 18.67
3. 112
4. 56

25.

The weight of iron which will be converted into oxide (Fe_3O_4) by the action of 18 gm of steam of it will be (at. wt. of Fe = 56)
1. 168 gm
2. 84 gm
3. 42 gm
4. 21 gm

26.

Calculate the molality of 20% $CaCO_3$ solution is (by mass). The density of solution is 1.2 gm/ml
1. 1.25 m
2. 2.5 m
3. 2.08 m
4. 1.5 m

27.

A mixture of methane and ethene in the molar ratio of x : y has a mean molar mass of 20. What would be the mean molar mass. if the gases are mixed in the molar ratio of y : x?

(A) 22

(B) 24

(C) 20.8

(D) 19

28.

The volume of a drop of water is 0.0018 mL then the number of water molecules present in two drop of water at room temperature is:

1. 12.046×10^{19}
2. 1.084×10^{18}
3. 4.84×10^{17}
4. 6.023×10^{23}

29.

Carbon and oxygen combine to form two oxides, carbon monoxide and carbon dioxide in which the ratio of the weights of carbon and oxygen is respectively 12 : 16 and 12 : 32. These figures illustrate the:

1. Law of multiple proportions
2. Law of reciprocal proportions
3. Law of conservation of mass
4. Law of constant proportions

30.

The formula of an acid is HXO_2. The mass of 0.0242 moles of the acid 1.657 g. What is the atomic weight of X?

1. 35.5
2. 28.1
3. 128
4. 19.0

31.

A 6.58 g sample of the hydrates $Sr(OH)_2.xH_2O$ is dried in an oven to give 3.13 g of anhydrous $Sr(OH)_2$. What is the value of x? (Atomic weights : Sr=87.60, O=16.0, H=1.0)

1. 8
2. 12
3. 10
4. 6

32.

A sample of phosphorus that weights 12.4 g exerts a pressure 8 atm in a 0.821 litre closed vessel at 527°C. The molecular formula of the phosphorus vapour is:

1. P_2
2. P_4
3. P_6

4. P_8

33.

Phosphoric acid (H_3PO_4) prepared in a two step process.

(1) $P_4 + 5O_2 \rightarrow P_4O_{10}$
(2) $P_4O_{10} + 6H_2O \rightarrow 4H_3PO_4$

We allow 62g of phosphorus to react with react with excess oxygen which form P_4O_{10} in 85% yield. In the step (2) reaction 90% yield of H_3PO_4 is obtained. Produced mass of H_3PO_4 is:

1. 37.485 g
2. 149.949 g
3. 125.47 g
4. 564.48 g

34.

What volume of HCl solution of density 1.2 g/cm^3 and containing 36.5% by weight HCl, must be allowed to react with zinc(Zn) in order to liberate 4.0 g of hydrogen?

1. 333.33 mL
2. 500 mL
3. 614.66 mL
4. None of these

35.

What is the molar mass of diacidic organic Lewis base (B), if 12 g of chloroplatinate salt (BH_2PtCl_6) on ignition produced 5 gm residue of Pt?

1. 52
2. 58
3. 88
4. None of these

36.

What volume of $O_2(g)$ measured at 1 atm and 273 K will be formed by action of 100 mL of 0.5 N $KMnO_4$ on hydrogen peroxide in an acid solution? The skeleton equation for the reaction is
$KMnO_4 + H_2SO_4 + H_2O_2$
$\rightarrow K_2SO_4 + MnSO_4 + O_2 + H_2O$

1. 0.12 litre
2. 0.028 litre
3. 0.56 litre
4. 1.12 litre

37.

Cisplatin, an anticancer drug, has the molecular formula $Pt(NH_3)_2Cl_2$. What is the mass (in gram) of one molecule? (Atomic weights : Pt=195, H=1.0, N=14, Cl=35.5)

1. 4.98×10^{-21}
2. 4.98×10^{-22}
3. 6.55×10^{-21}
4. 3.85×10^{-22}

38.

The conversion of oxygen to ozone occurs to the extent of 15% only. The mass of ozone that can be prepared from 67.2 L oxygen at 1 atm and 273 K will be:

1. 14.4 gm
2. 96 gm
3. 640 gm
4. 64 gm

39.

Average atomic mass of magnesium is 24.31 a.m.u. This magnesium is compound of 79 mole% of $_{24}$Mg and remaining 21 mole % of $_{25}$Mg and $_{26}$Mg. Calculate mole% of $_{26}$Mg.

1. 10
2. 11
3. 15
4. 16

40.

Calculate the % of free SO_3 in oleum (a solution of SO_3 in H_2SO_4) that is labelled 109% H_2SO_4.

1. 40
2. 30
3. 50
4. None

41.

Suppose two elements X and Y combine to form two compounds XY_2 and $X_2Y_3$when 0.05 mole ofXY_2 weighs 5 g while 3.011×10^{23} molecules of X_2Y_3

weighs 85 g. The atomic masses of x and y are respectively:

1. 20, 30
2. 30, 40
3. 40, 30
4. 80, 60

42.

The impure 6 g of NaCl is dissolved in water and then treated with excess of silver nitrate solution. The weight of precipitate of silver chloride is found to be 14 g. The % purity of NaCl solution would be:

1. 95%
2. 85%
3. 75%
4. 65%

43.

60 mL of a mixture of nitrous oxide and nitric oxide was exploded with excess of hydrogen. If 38 mL of N_2 was formed, calculate the volume of each gas in the mixture. All measurements are made at constant P and T.

1.20 ml +30 ml

2. 44 ml + 16 ml

3. 10 ml+40 ml

4 .25 ml +25 ml

44.

The haemoglobin from the red blood corpuscles of most mammals contains approximately 0.33% of iron by mass. The molar mass of haemoglobin as 67,200. The number of iron atoms in each molecule of haemoglobin is (atomic mass of iron=56):

1. 2
2. 3
3. 4
4. 5

45.

Volume strength of 1 M solution of H_2O_2 is:

1. 11.2 2. 22.4
3. 10.8 4. 21.6

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