Daltons Theory Laws Of Chemical Cobination And Various Types Of Masses

1. The isotopic abundance of $C - 12$ and $C - 14$ is 98% and 2% respectively. What would be the number of $C - 14$ isotope in $12 g$ carbon sample?

    A. (a) 1.032×10^{22}

    B. (b) 1.20×10^{22}

C. (c)5.88×10^{23}

D. (d)6.02×10^{23}

Answer: B

▶ **Watch Video Solution**

2. An oxide of metal have 20% oxygen. The eq.wt. of oxide is:

A. 32

B. 40

C. 48

D. 52

Answer: B

▶ **Watch Video Solution**

3. 1.0 g of an oxide of A contained 0.5 g of A. 4.0 g of another oxide of A contained 1.6 g of A . The data indicate the law of-

A. (a)Reciprocal proportions

B. (b)Constant proportions

C. (c)Conservation of energy

D. (d)Multiple proportions

Answer: D

▶ **Watch Video Solution**

4. Equivalent weight of carbon in CO and CO_2 are in the ratio of:

A. (a)1 : 1

B. (b)$1:2$

C. (c)$2:1$

D. (d)$1:4$

Answer: C

▶ **Watch Video Solution**

---

5. Two oxides of a metal contain 50% and 40% metal M respectively. If the formula of the first oxide is MO_2, the formula of the second oxide will be

A. (a)MO_2

B. (b)MO_3

C. (c)M_2O

D. (d)M_2O_5

Answer: B

6. In the following reaction:

$3Fe + 4H_2O \rightarrow Fe_3O_4 + 4H_2$, if the atomic weight of iron is 56

, then its equivalent weight will be

 A. 42

 B. 21

 C. 63

 D. 84

Answer: B

7. Among the following pairs of compounds, the one that illustrates the law of multiple proportions is

    A. (a)NH_3 and NCI_3

    B. (b)H_2S and SO_2

    C. (c)CuO and Cu_2O

    D. (d)CS_2 and $FeSO_4$

Answer: C

> ▶ **Watch Video Solution**

8. In an ionic compound moles ratio of cation to anion is $1:2$. If atomic masses of metal and non-metal respectively are 138 and 19, then correct statement is

A. (a)molecular mass of compound is 176

B. (b)formula mass of compound is 176

C. (c)formula mass of compound is 157

D. (d)molecular mass of compound is 157

Answer: B

▶ **Watch Video Solution**

9. Two samples of lead oxide were separately reduced to metallic

lead by heating in a current of hydrogen. The weight of lead from

one oxide was half the weight of lead obtained from the other

oxide. The data illustrates

A. (a)Law of reciprocal proportions

B. (b)Law of constant proportions

C. (c)Law of multiple proportions

D. (d)Law of equivalent proportions

Answer: C

10. If $1/6$, in place of $1/12$, mass of carbon atom is taken to be the relative atomic mass unit, the mass of one one of a substance will:

A. (a)Decrease twice

B. (b)Increase two folds

C. (c)Remains unchanged

D. (d)Be a function of the molecular mass of element

Answer: C

11. When $10ml$ of propane (gas) is combusted completely, volume of $CO_2(g)$ obtained in similar condition is

A. (a)$10ml$

B. (b)$20ml$

C. (c)$30ml$

D. (d)$40ml$

Answer: C

12. Two elements X and Y have atomic weight of 14 and 16. They from a series of compounds A, B, C, D and E in which the same amount of element X, Y is present in the ratio $1:2:3:4:5$. If the compound A has 28 parts by weight of X and 16 parts by weight of Y, then the compound of C will have 28 parts weight of X and

A. (a)32 parts by weight of Y

B. (b)48 parts by weight of Y

C. (c)64 parts by weight of Y

D. (d)80 parts by weight of Y

Answer: B

▶ **Watch Video Solution**

13. Iron forms two oxides, in first oxide 56 grams. Iron is found to be combined with 16 grams oxygen and in second oxide 112 grams iron is found to be combined with 48 grams oxygen. This data satisfy the law of

    A. (a)Conservation of mass

    B. (b)Reciprocal proportion

    C. (c)Multiple proportion

    D. (d)Combining volume

Answer: C

▶ **Watch Video Solution**

---

14. A sample of calcuium carbonate $(CaCO_3)$ has the following percentage composition: $Ca = 40\%$, $C = 12\%$, $O = 48\%$ If

the law of constant proportions is true. Then the weight of calcium in $4g$ of a sample of calcium carbonate obtained from another source will be

A. (a)$0.016g$

B. (b)$0.10g$

C. (c)$1.6g$

D. (d)$16g$

Answer: C

▶ **Watch Video Solution**

15. ng of substance X reacts with mg of substance Y to from pg of substance R and q g of substance S. This reaction can be represented as, $X + Y = R + S$. The relation which can be

established in the amounts of the reactants and the products will be

A. (a)$n - m = p - q$

B. (b)$n + m = p + q$

C. (c)$n = m$

D. (d)$p = q$

Answer: B

▶ **Watch Video Solution**

16. Which of the following is the best example of law of conservation of mass

A. (a)$12g$ of carbon combines with $32g$ of oxygen to from $44g$ of CO_2

B. (b)When $12g$ of carbon is heated in a vacuum there is no change in mass

C. (c)A sample of air increase in volume when heated at constant pressure but its mass remains unaltered

D. (d)The weight of a piece of platinum is the same before and after heating in air

Answer: A

▶ **Watch Video Solution**

17. There are two common oxides of sulphur, one of which contains $50\%\ O_2$ by weight, the other almost exactly 60% . The weight of sulphur which combine with $1g$ of O_2 (fixed) are in the ratio of

A. (a)1:1

B. (b)2:1

C. (c)2:3

D. (d)3:2

Answer: D

18. In compound A, $1.00g$ nitrogen units with $0.57g$ oxygen. In compound B, $2.00g$ nitrogen combines with $2.24g$ oxygen. In compound C, $3.00g$ nitrogen combines with $5.11g$ oxygen. These results obey the following law

A. (a)Law of constant proportion

B. (b)Law of multiple proportion

C. (c)Law of reciprocal proportion

D. (d)Dalton's Law of partial pressure

Answer: B

▶ **Watch Video Solution**

19. Hydrogen combines with oxygen with oxygen to form H_2O in which $16g$ of oxygen combine with $2g$ of hydrogen. Hydrogen also combines with carbon to form CH_4 in which $2g$ of hydrogen combine with $6g$ of carbon. If carbon and oxygen combine togather then they will do show in the ratio of

A. (a)$6 : 16$ or $12 : 32$

B. (b)$6 : 18$

C. (c)$1 : 2$

D. (d)$12:24$

Answer: A

▶ **Watch Video Solution**

---

20. $2g$ hydrogen combine with $16g$ of oxygen to from water and with $6g$ of carbon to form methane. In carbon dioxide $12h$ of carbon are combined with $32g$ of oxygen. These figures illustrate the law of

A. (a)Multiple proportions

B. (b)Constant proportions

C. (c)Reciprocal proportions

D. (d)Conservation of mass

Answer: C

21. An element forms two oxides containing respectively 53.33 and 36.36 percent of oxygen. These figures illustrate the law of

A. (a)Conservation of mass

B. (b)Constant proportions

C. (c)Reciprocal proportions

D. (d)Multiple proportions

Answer: D

22. A sample of pure carbon dioxide, irrespective of its source contains 27.27% carbon and 72.73% oxygen. The data support

A. (a)Law of constant composition

B. (b)Law of conservation of mass

C. (c)Law of reciprocal proportions

D. (d)Law of multiple proportions

Answer: A

▶ **Watch Video Solution**

23. Which one of the following pairs of compound illustrates the law of multiple proportion

A. (a)H_2O, Na_2O

B. (b)MgO, Na_2O

C. (c)Na_2O, BaO

D. (d)$SnCl_2$, $SnCl_4$

Answer: D

---

24. 1 amu is equal to

A. $\dfrac{1}{12}$ mass of $C - 12$

B. $\dfrac{1}{14}$ mass of $O - 16$

C. 1 g of H_2

D. $1.6 \times 10^{-23} kg$

Answer: A

25. Sulphur forms the chlorides S_2Cl_2 and SCl_2. The equivalent mass of sulphur in SCl_2 is

A. (a)$8g/mol$

B. (b)$16g/mol$

C. (c)$64.8g/mol$

D. (d)$32g/mol$

Answer: B

▶ Watch Video Solution

26. The sulphate of a metal M contains 9.87% of M, This sulphate is isomorphous with $ZnSO_4.7H_2O$. The atomic weight of M is

A. (a)40.3

B. (b)36.3

C. (c)24.3

D. (d)11.3

Answer: C

▶ **Watch Video Solution**

27. In chemical scale, the relative mass of the isotopic mixture of oxygen atoms $\left(O^{16}, O^{17}, O^{18}\right)$ is assumed to be equal to

A. (a)16.002

B. (b)16.00

C. (c)17.00

D. (d)11.00

Answer: B

---

28. Boron has two stable isotopes, $^{10}B(19\,\%)$ and $^{11}B(81\,\%)$. The atomic mass that should appear for boron in the periodic table is

A. 10.8

B. 10.2

C. 11.2

D. 10.0

Answer: A

29. $74.5g$ of a metallic chloride contain $35.5g$ of chlorine. The equivalent weight of the metal is

    A. (a)19.5

    B. (b)35.5

    C. (c)39.0

    D. (d)78.0

Answer: C

▶ **Watch Video Solution**

---

30. Equivalent weight of crystalline oxalic acid is

    A. (a)30

    B. (b)63

C. (c)53

D. (d)45

Answer: B

▶ **Watch Video Solution**

---

31. The equivelent weight of an element is 4. Its chloride has a V. $D 59.25$. Then the valency of the element is

A. (a)4

B. (b)3

C. (c)2

D. (d)1

Answer: B

32. The oxide of a metal has 32% oxygen. Its equivalent weight would be

A. (a)34

B. (b)32

C. (c)17

D. (d)8

Answer: C

33. $1.520g$ of the hydroxide of a metal on ignition gave $0.995g$ of oxide. The equivalent weight of metal is

A. (a)1.520

B. (b)0.995

C. (c)19.00

D. (d)9.00

Answer: D

▶ **Watch Video Solution**

34. The specific heat of a metal os 0.16 its approximate atomic weight would be

A. (a)32

B. (b)16

C. (c)40

D. (d)64

Answer: C

---

35. Vapour density of a metal chloride is 6.6. Its oxide contains

53 % metal. The atomic weight of metal is:

A. (a)21

B. (b)54

C. (c)27.06

D. (d)2.086

Answer: C

36. The molecular weight of a gas is 45. Its density at STP is

    A. (a)22.4

    B. (b)11.2

    C. (c)5.7

    D. (d)2.0

Answer: D

▶ **Watch Video Solution**

37. Equivalent weight of a bivalent metal is 37.2. The molecular weight of its chloride is

    A. (a)412.2

    B. (b)216

C. (c)145.4

D. (d)108.2

Answer: C

▶ Watch Video Solution

---

38. On reduction with hydrogen, $3.6g$ of an oxide of matel left $3.2g$ of metal. If the vapour density of metal is 32, the simplest formula of the oxide would be

A. (a)MO

B. (b)M_2O_3

C. (c)M_2O

D. (d)M_2O_5

Answer: C

39. The percentage of oxygen in NaOH is

A. (a)40

B. (b)60

C. (c)8

D. (d)10

Answer: A

40. A compound $(80g)$ on analysis gave $C = 24g, H = 4g, O = 32g.$ Its empirical formula is

A. $C_2H_2O_2$
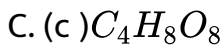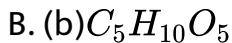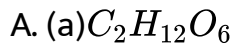
B. C_2H_2O

C. CH_2O_2

D. CH_2O
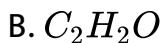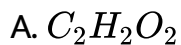
Answer: D

▶ **Watch Video Solution**

41. The empirical formula of a compound is CH_2O. 0.0835 moles of the compound contains $1.0g$ of hydrogen Molecular formula of the compound is
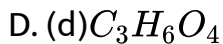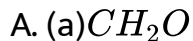
A. (a)$C_2H_{12}O_6$

B. (b)$C_5H_{10}O_5$

C. (c)$C_4H_8O_8$

D. (d)$C_3H_6O_3$
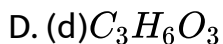
Answer: A

▶ **Watch Video Solution**

---

42. The empirical formula of an acid is CH_2O_2, the probable

molecular formula of acid may be

A. (a)CH_2O

B. (b)CH_2O_2

C. (c)$C_2H_4O_2$

D. (d)$C_3H_6O_4$

Answer: B

43. In which of the following pairs of compounds the ratio of C, H and O is same

A. (a)Acetic acid and methyl alcohol

B. (b)Glucose and acetic acid

C. (c)Fructose and sucrose

D. (d)All of these

Answer: B

44. Given that the abundacne of isotopes $.^{54}Fe$, $.^{56}Fe$, and $.^{57}Fe$ is 5%, 90% and 5% respectively. The atomic mass of Fe is

A. (a)55.85

B. (b)55.95

C. (c)55.75

D. (d)55.05

Answer: B

▶ **Watch Video Solution**

45. Approximate atomic weight of an element is 26.89. If its equivalent weight is 8.9, the exact atomic weight of element would be

A. 26.89

B. 8.9

C. 17.8

D. 26.7

Answer: D

▶ **Watch Video Solution**

---

46. Irrespective of the source, pure sample of water always yields

88.89% mass of oxygen and 11.11% mass of hydrogen. This is

explained by the law of

A. (a)Conservation of mass

B. (b)Constant composition

C. (c)Multiple proportions

D. (d)Constant volume

Answer: B

▶ Watch Video Solution

---

47. Zinc sulphate contains 22.65% of zinc and 43.9% of water of crystallization. If the law of constant proportions is true, then the the weight of zinc required to produce $20g$ of the crystals will be

A. (a)$45.3g$

B. (b)$4.53g$

C. (c)$0.453g$

D. (d)$453g$

Answer: B

Mole Concept Empirical Formula And Molecular Formula

1. 1 mol of CH_4 contains

    A. (a)6.02×10^{23} atoms of H

    B. (b)$4g$ atom of Hydrogen

    C. (c)1.81×10^{23} molecules of CH_4

    D. (d)$3.0g$ of carbon

Answer: B

2. $20g$ of an acid furnishes 0.5 mole of H_3O^+ ions in its aqueous solution. The value of 1 equivalent of the acid will be:

   A. $40g$

   B. $20g$

   C. $10g$

   D. $100g$

Answer: A

▶ **Watch Video Solution**

3. The largest number of molecules in

   A. (a)$36g$ of water

   B. (b)$28g$ of carbon monoxide

C. (c)46g of ethyl alcohol

D. (d)54g of nitrogen pentoxide

Answer: A

▶ **Watch Video Solution**

4. An ion is reduced to the element when it absorbs 6×10^{20} electrons. The number of equivalents of the ion is:

A. 0.1

B. 0.01

C. 0.001

D. 0.0001

Answer: C

5. The total number of electrons in one molecule of carbon dioxide is

A. 22

B. 44

C. 66

D. 88

Answer: A

6. $510mg$ of liquid on vaporization in Victor Meyer's apparatus displaces $67.2cm^3$ of at (STP). The molecular weight of the liquid

is-

A. (a)130

B. (b)17

C. (c)170

D. (d)1700

Answer: C

▶ **Watch Video Solution**

7. Number of atoms in $558.5\ g\ Fe(at.\ wt.55.85)$ is:

A. (a)Twice that in $60g$ carbon

B. (b)6.023×10^{22}

C. (c)Half in $8g$ He

D. (d)$558.5 \times 6.023 \times 10^{23}$

Answer: A

▶ **Watch Video Solution**

---

8. 7.5 grams of a gas occupy 5.8 litres of volume at STP the gas is
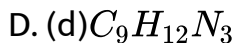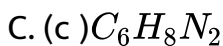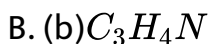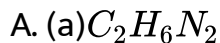
A. (a)NO

B. (b)N_2O

C. (c)CO

D. (d)CO_2

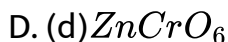**Answer: A**

▶ **Watch Video Solution**

9. In a compound C, H, N atoms are present in $9:1:3.5$ by weight. Molecular weight of compound is 108. Its molecular formula is:

A. (a)$C_2H_6N_2$

B. (b)C_3H_4N

C. (c)$C_6H_8N_2$

D. (d)$C_9H_{12}N_3$

Answer: C

▶ Watch Video Solution

10. A given sample of pure compound contains $9.81g$ of Zn, 1.8×10^{23} atoms of chromium, and 0.60 mol of oxygen atoms. What is the simplest formula?

A. (a)$ZnCr_2O_7$

B. (b)$ZnCr_2O_4$

C. (c)$ZnCrO_4$

D. (d)$ZnCrO_6$
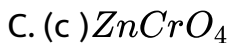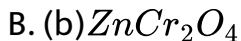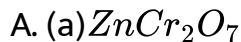
Answer: B

▶ **Watch Video Solution**

11. A compound was found to contain nitrogen and oxygen in the ratio $28g$ and $80g$ respectively. The formula of compound is

A. (a)NO

B. (b)N_2O_3

C. (c)N_2O_5

D. (d)N_2O_4
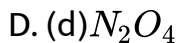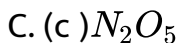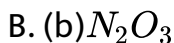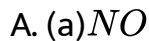
Answer: C

12. Four one litre flask are separately filled with the gases H_2, He, O_2 and O_3 at the same temperature and pressure. The ratio of total number of atoms of these gases present in different flask would be:

A. (a)$1:1:1:1$

B. (b)$1:2:2:3$

C. (c)$2:1:2:3$

D. (d)$3:2:2:1$

Answer: C

13. The number of atoms in $4.25gNH_3$ is approximately:

A. 1×10^{23}

B. 2×10^{23}

C. 4×10^{23}

D. 6×10^{23}

Answer: D

▶ **Watch Video Solution**

14. How many mole of magnesium phosphate $Mg_3(PO_4)_2$ will contain 0.25mole of oxygen atoms?

A. (a)2.5×10^{-2}

B. (b)0.02

C. (c)3.125×10^{-2}

D. (d)1.25×10^{-2}

Answer: C

▶ **Watch Video Solution**

---

15. At room temperature ratio of pressures of CH_4 and CO_2 kept in two separate containers of equal volume is $3:5$. Then two containers have equal number of-

A. (a)moles

B. (b)electrons

C. (c)atoms

D. (d)molecules

Answer: C

16. One litre of a gas at STP weight 1.16 g it can possible be

A. (a)C_2H_2

B. (b)CO

C. (c)O_2

D. (d)CH_4

Answer: A

17. A gases mixture contains oxygen and nitrogen in the ratio $1:4$ by weight. Therefore, the ratio of the number of molecules is:

A. (a)1:4

B. (b)1:8

C. (c)7:32

D. (d)3:16

Answer: C

▶ **Watch Video Solution**

18. The vapour density of a gas is 11.2. The volume occupied by 11.2 g of the gas at STP will be

A. 11.2 L

B. 22.4 L

C. 1 L

D. 44.8 L

Answer: A

▶ Watch Video Solution

19. Under the same conditions, two gases have the same number of molecules. They must

A. (a)be noble gases

B. (b)have equal volume

C. (c)have a volume of $22.4dm^3$ each

D. (d)have an equal number of atoms

Answer: B

20. The mass of a molecule of water is

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

    B. $3 \times 10^{-25} kg$

    C. $1.5 \times 10^{-26} kg$

    D. $2.5 \times 10^{-26} kg$

Answer: A

21. 1.24 g P is present in 2.2 g

A. (a)P_4S_3

B. (b)P_2S_2

C. (c)PS_2

D. (d)P_2S_4

Answer: A

▶ **Watch Video Solution**

---

22. A gaseous mixture contain CH_4 and C_2H_6 in equimolecular proportion. The weight of 2.24 litres of this mixture at NTP is

A. (a)4.6 g

B. (b)2.3 g

C. (c)1.6 g

D. (d)23 g

Answer: B

23. Assuming fully decomposed, the volume of CO_2 released at STP on heating 9.85 g of $BaCO_3$ (Atomic mass of Ba=137) will be

    A. (a)$0.84L$

    B. (b)$2.24L$

    C. (c)$4.06L$

    D. (d)$1.12L$

Answer: D

24. A gaseous hydrocarbon gives upon combustion, 0.72 g of water and 3.08 g of CO_2. The empirical formula of the hydrocarbon is

A. (a)C_2H_4

B. (b)C_3H_4

C. (c)C_6H_5

D. (d)C_7H_8
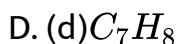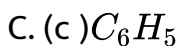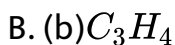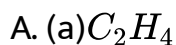
Answer: D

▶ **Watch Video Solution**

---

25. How many moles of electrons weigh one kilogram?

A. (a)6.023×10^{23}
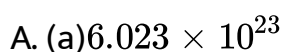
B. (b) $\dfrac{1}{9.108} \times 10^{23}$

C. (c) $\dfrac{6.023}{9.108} \times 10^{54}$

D. (d) $\dfrac{1}{9.108 \times 6.023} \times 10^{8}$

Answer: D

▶ **Watch Video Solution**

---

26. Which of the following has the maximum number of atoms?

A. (a)24 g of$C(12)$

B. (b)56 g of$Fe(56)$

C. (c)27 g of o Al(27)

D. (d)108 g of Ag(108)

Answer: A

27. If N_A is Avogadro's number then number of valence electrons in 4.2 g of nitride ions (N^{3-})

A. (a)$2.4N_A$

B. (b)$4.2N_A$

C. (c)$1.6N_A$

D. (d)$3.2N_A$

Answer: A

28. How many gram ions of SO_4^{-2} are present in 1 gram molecule ofK_2SO_4. $Al_2(SO_4)_3.24H_2O$?

A. (a)2

B. (b)3

C. (c)1

D. (d)4

Answer: D

▶ **Watch Video Solution**

29. The weight of 1×10^{22} molecules of $CuSO_4.5H_2O$ is

A. 41.59 g

B. 415.9 g

C. 4.159 g

D. None of these

Answer: C

30. Arrange the following in order of increasing masses.

i. 1 molecules of oxygen ii. 1 atom of nitrogen

iii. 1 mol of water iv. 1×10^{-10} of iron

a. ii, i, iii, iv b. i, ii, iv, iii

c. ii, i, iv, iii d. i, ii, iii, iv

    A. (a)IIIt Ilt IIIlt IV

    B. (b)IVlt IIIlt IIlt I

    C. (c)IIlt IIIlt Ilt IV

    D. (d)IIIlt IVlt Ilt II

Answer: A

31. The vapour density of a gas A is twice that of a gas B. If the molecular weight of B is M, the molecular weight of A will be:

A. (a)M

B. (b)2M

C. (c)3M

D. (d)M/2

Answer: B

32. The charge in coulombs on 1 g ion of N^{3-} is

A. (a)$5.2 \times 10^6 C$

B. (b)$2.894 \times 10^5 C$

C. (c)$6.6 \times 10^6 C$

D. (d)$8.2 \times 10^6 C$

Answer: B

33. Ratio of C_p and C_v of a gas X is 1.4, the number of atom of the gas 'X' present in 11.2 litres of it at NTP will be

A. (a)6.02×10^{23}

B. (b)1.2×10^{23}

C. (c)3.01×10^{23}

D. (d)2.01×10^{23}

Answer: A

---

34. The weight of a molecule of the compound $C_{60}H_{122}$ is

    A. (a)$1.4 \times 10^{-21}g$

    B. (b)$1.09 \times 10^{-21}g$

    C. (c)$5.025 \times 10^{23}g$

    D. (d)$16.023 \times 10^{23}g$

Answer: A

35. The atomic weights of two alements A and B are 40 and 80 reapectively. If x g of A contains y atoms, how many atoms are present in 2x g of B?

A. (a) $\dfrac{y}{2}$

B. (b) $\dfrac{y}{4}$

C. (c) y

D. (d) 2y

Answer: C

▶ **Watch Video Solution**

---

36. If the density of water is 1 g cm^{-3} then the volume occupied by one molecule of water is approximately

A. (a)$18cm^3$

B. (b)$22400cm^3$

C. (c)$6.02 \times 10^{-23}cm^3$

D. (d)$3.0 \times 10^{-23}cm^3$

Answer: D

▶ **Watch Video Solution**

37. Caffeine has a molecular weight of 194. If it contains 28.9 % by mass of nitrogen, number of atoms of nitrogen in one molecule of caffeine is

A. (a)4

B. (b)6

C. (c)2

D. (d)3

Answer: A

▶ **Watch Video Solution**

---

38. A 400 mg iron capsule contains 100 mg of ferrous fumarate, $(CHCOO)_2$Fe. The percentage of iron present in it is approximately

A. (a)33%

B. (b)25%

C. (c)14%

D. (d)8%

Answer: D

▶ Watch Video Solution

39. Volume of a gas at STP is 1.12×10^{-7} c c. Calculate the number of molecules in it

  A. (a)3.01×10^{20}

  B. (b)3.0×10^{12}

  C. (c)3.01×10^{23}

  D. (d)3.0×10^{24}

Answer: B

▶ **Watch Video Solution**

40. The number of electrons in a mole of hydrogen molecule is

  A. (a)6.02×10^{23}

B. (b)12.046×10^{23}

C. (c)3.0115×10^{23}

D. (d)Indefinite

Answer: A

▶ **Watch Video Solution**

41. The number of moles of $BaCO_3$ which contains 1.5 moles of oxygen atoms is

A. (a)0.5

B. (b)1

C. (c)3

D. (d)6.02×10^{23}

Answer: A

---

42. The total number of gram-molecules of SO_2Cl_2 in 13.5 g of sulphuryl chloride is

A. (a) 0.1

B. (b) 0.2

C. (c) 0.3

D. (d) 0.4

Answer: A

43. How many atoms are comtained in one mole of sucrose $(C_{12}H_{22}O_{11})$1?

A. (a)$45 \times 6.02 \times 10^{23}$atoms$/$mole

B. (b)$5 \times 6.62 \times 10^{23}$atoms$/$mole

C. (c)$5 \times 6.02 \times 10^{23}$atoms$/$mole

D. (d)None of these

Answer: A

▶ **Watch Video Solution**

44. Haemoglobin contains 0.33% of iron by weight. The molecular weight of heamoglobin is approximately 67200. The number of iron atoms (At. Wt. of Fe=56) present in one molecule of haemoglobin is

A. (a)6

B. (b)1

C. (c)4

D. (d)2

Answer: C

▶ **Watch Video Solution**

---

45. What is the % of H_2O in $Fe(CNS)_3.3H_2O$?

A. (a)45

B. (b)30

C. (c)19

D. (d)25

Answer: C

46. A hydrocarbon contain 86% carbon, 488 ml of the hydrocarbon weight 1.68 g at STP. Then the hydrocarbon is an

A. (a)Alkane

B. (b)Alkene

C. (c)Alkyne

D. (d)Arene

Answer: B

47. The simplest formula of a compound containing 50% of an element X (atomic weight 10) and 50% of element Y (atomic weight 20) is:

A. (a)XY

B. (b)X_2Y

C. (c)XY_3

D. (d)X_2Y_3

Answer: B

▶ **Watch Video Solution**

Stoichiometry And Limiting Reagents

1. 12 g of Mg (at. Mass 24) on reacting completely with acid gives hydrogen gas, the volume of which at STP would be

    A. (a)22.4 L

    B. (b)11.2 L

    C. (c)44.8 L

    D. (d)6.1 L

Answer: B

▶ **Watch Video Solution**

---

2. $27g$ of Al will react completely with...... g of O_2

    A. (a)8 g

    B. (b)16 g

C. (c)32 g

D. (d)24 g

Answer: D

▶ **Watch Video Solution**

3. If 10 g of Ag reacts with 1 g of sulfur, the amount of Ag_2S formed will be [Atomic weight of Ag=108, S=32]?

A. 7.75 g

B. 0.775 g

C. 11 g

D. 10 g

Answer: A

4. What volume of H_2 at $273K$ and 1 atm will be consumed in obtaining $21.6g$ of elemental boron (atomic mass of $B = 10.8$) from the reduction of BCl_3 with H_2.

A. (a) 44.8 L

B. (b) 22.4 L

C. (c) 89.6 L

D. (d) 67.2 L

Answer: D

5. When $2.76g$ of silver carbonate is strongly heated, it yields a residue weighing

    A. (a)2.16 g

    B. (b)2.48 g

    C. (c)2.64 g

    D. (d)2.32 g

Answer: A

▶ **Watch Video Solution**

---

6. In the reaction, $4NH_3(g) + 5O_2(g) \rightarrow 4NO(g) + 6H_2O(g)$, when 1 mole of ammonia and 1 mole of O_2 are made to react to completion

A. (a)1.0 mole of H_2O is produced

B. (b)1.0 mole of NO will be produced

C. (c)All the oxygen will be consumed

D. (d)All the ammonia will be consumed

Answer: C

▶ Watch Video Solution

7. Equal weights of X (atomic weight = 36) and Y (atomic weight = 24) are reacted to form the compound X_2Y_3, which of the following is/are correct

A. (a)X is the limiting reagent

B. (b)Y is the limiting reagent

C. (c)No reactant is left over and mass of X_2Y_3 formed is

double the mass of 'X' taken

D. (d)None of these

Answer: C

▶ **Watch Video Solution**

---

8. What quanitity of ammonium sulphate is necessary for the production of NH_3 gas sufficient to neutralize a solution containing 292 g of HC1? $\left[HCl = 36.5, (NH_4)_2SO_4 = 132, NH_3 = 17\right]$

A. (a)272 g

B. (b)403 g

C. (c)528 g

D. (d)1056 g

Answer: C

> ▶ Watch Video Solution

9. When the same amount of zinc is treated separately with excess of sulphric acid and excess of sodium hydroxide, the ratio of volume of hydrogen evolved is

A. (a)1:1

B. (b)1:2

C. (c)2:1

D. (d)9:4

Answer: A

> ▶ Watch Video Solution

10. Calculate the weight of lime (CaO) obtained by heating 200 kg

of 95% pure lime stone $(CaCO_3)$.

    A. (a)104.4 kg

    B. (b)105.4 kg

    C. (c)212.8 kg

    D. (d)106.4 kg

Answer: D

▶ **Watch Video Solution**

---

11. The percentage of P_2O_5 in diammonium hydrogen phosphate

is:

A. (a)23.48

B. (b)46.96

C. (c)53.78

D. (d)71.00

Answer: C

▶ **Watch Video Solution**

---

12. In the reaction:

$$2Al_{(s)} + 6HCl_{(aq.)} \rightarrow 2Al^{3+}_{(aq.)} + 6Cl^-_{(aq.)} + 3H_{2(g)}$$
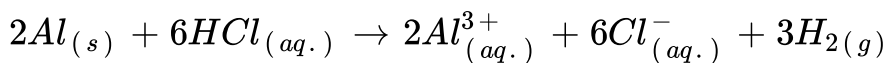
A. (a)6 litres $HCl_{(aq.)}$ is consumed for every $3LH_{2(g)}$ produced

B. (b)33.6 litres $H_{2(g)}$ is produced regardless of temperature and pressure for every mole Al that reacts

C. (c)67.2 litres H_2g)) at STP is produced for every mole Al

that reacts

D. (d) 11.2 litres $H_{2(g)}$ at STP is produced for every mole

$HCI_{(aq.)}$ consumed

Answer: D

▶ Watch Video Solution

13. If $1\dfrac{1}{2}$ moles of oxygen combine with Al to form Al_2O_3 the

weight of Al used in the reaction is $(Al = 27)$

A. 27 g

B. 54 g

C. 49.5 g

D. 31 g

Answer: B

14. Calculate the amount of Ni needed in the Mond's process

given below

$$Ni + 4CO \rightarrow Ni(CO)_4$$
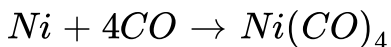
If CO used in this process is obtained through a process, in which

6 g of carbon is mixed with 4 gCO_2.

    A. (a)14.675 g

    B. (b)29 g

    C. (c)58 g

    D. (d)28 g

Answer: A

15. If 0.50 mol of $BaCl_2$ is mixed with 0.20 mol of Na_3PO_4, the maximum number of moles of $Ba_3(PO_4)_2$ that can be formed is

    A. $0.70 mol$

    B. $0.50 mol$

    C. $0.20 mol$

    D. $0.10 mol$

Answer: D

16. H_2 evolved at STP on complete reaction of 27 g of aluminium with excess of aqueous NaOH would be

A. (a)22.4 litres

B. (b)44.8 litres

C. (c)67.2 litres

D. (d)33.6 litres

Answer: D

▶ **Watch Video Solution**

17. What weight of SO_2 can be made by burning sulphur in 5.0 moles of oxygen?

A. (a)640 grams

B. (b)160 grams

C. (c)80 grams

D. (d)320 grams

Answer: D

18. An electric discharge is passed through a mixture containing 50 c.c. of O_2 and 50 c.c. of H_2. The volume of the gases formed (i) at room temperature and (ii) at $110°$ C will be

    A. (a)(i) 25 c.c. (ii) 50 c.c.

    B. (b)(i) 50 c.c. (ii) 75 c.c.

    C. (c)(i) 25 c.c. (ii) 75 c.c.

    D. (d)(i) 75 c.c. (ii) 75 c.c.

Answer: C

19. The following process has been used to obtain iodine from oil-field drines in California.

$$NaI + AgNO_3 \rightarrow AgI + NaNO_3 \text{ ...(1)}$$

$$2AgI + Fe \rightarrow FeI_2 + 2Ag...(2)$$

$$2FeI_2 + 3Cl_2 \rightarrow 2FeCl_3 + 2I_2 \text{ ...(3)}$$
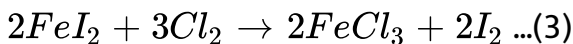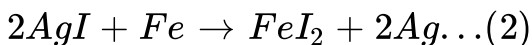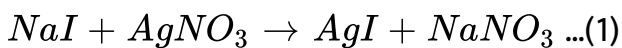
How many grams of $AgNO_3$ are required in the first step for every $254kgI_2$ produced in the third step?

A. (a)340×10^3

B. (b)240×10^3

C. (c)440×10^3

D. (d)540×10^3

Answer: A

20. If isobutane and n-butane are present in a gas, then how much oxygen should be required for complete combustion of 5 kg of this gas

    A. (a)17.9 kg

    B. (b)9 kg

    C. (c)27 kg

    D. (d)1.8 kg

Answer: A

▶ **Watch Video Solution**

21. 1.12 ml of a gas is produced at STP by the action of 4.12 mg of alcohole, with methyl magnesium iodide. The molecular mass of alcohol is

A. (a)16.0

B. (b)41.2

C. (c)84.2

D. (d)156.0

Answer: C

22. What will be the volume of CO_2 at NTP obtained on heating 10 grams of (90% pure) limestone?

A. (a)22.4 litres

B. (b)2.016 litres

C. (c)2.24 litres

D. (d)20.16 litres

Answer: B

---

23. In a cartain operation 358 g of $TiCl_4$ is reacted with 96 g of Mg. Calculate % yield of Ti if 32 g of Ti is actually obtained [At. Wt. Ti=48, Mg=24][Hint: $\dfrac{358}{190} = 1.88$]

A. (a)35.38%

B. (b)66.6%

C. (c)100%

D. (d)60%

Answer: A

24. 12 g of Mg (at. Mass 24) will react completely with acid to give

A. (a)One mole of H_2

B. (b)1/2 mole of H_2

C. (c)2/3 mole of O_2

D. (d)Both 1/2 mol ofH_2 and 1/2mol ofO_2

Answer: B

▶ **Watch Video Solution**

25. 1.5 mol of O_2 combines with Mg to form oxide MgO. The mass

of Mg (at. Mass 24) that has combined is

A. (a)72 g

B. (b)36 g

C. (c)48 g

D. (d)24 g

Answer: A

▶ **Watch Video Solution**

---

26. NX is produced by the following step of reactions

$$M + X_2 \rightarrow MX_2$$

$$3MX_2 + X_2 \rightarrow M_3X_8$$

$$M_3X_8 + N_2CO_3 \rightarrow NX + CO_2 + M_3O_4$$
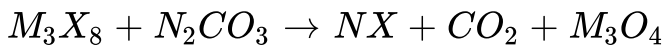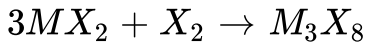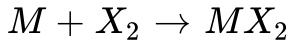
How much M (metal) is consumed to produce 206 gm of NX?

(Take at. wt of M = 56, N=23, X = 80]

A. (a)42g

B. (b)56 g

C. (c)$\dfrac{14}{3}$ g

D. (d)$\dfrac{7}{4}$ g

Answer: A

▶ **Watch Video Solution**

---

27. Complete combustion of 0.858 g of compound X gives 2.63 g

of CO_2 and 1.28 g ofH_2O. The lowest molecular mass X can have

A. (a)43 g

B. (b)86 g

C. (c)129 g

D. (d)172 g

Answer: A

Mole Concepts In Solution

1. The density (in g mL^{-1}) of a $3.60M$ sulphuric acid solution that is $29\% \ H_2SO_4$ (Molar mass $= 98gmol^{-1}$) by mass will be

A. (a)1.64

B. (b)1.88

C. (c)1.22

D. (d)1.45

Answer: C

2. The number of molecules in 100 mL of $0.02N\ H_2SO_4$ is:

A. (a)6.02×10^{20}

B. (b)6.02×10^{18}

C. (c)6.02×10^{21}

D. (d)6.02×10^{22}

Answer: A

▶ **Watch Video Solution**

3. The mass of oxalic acid crystals $(H_2C_2O_4.2H_2O)$ required to

prepare 50 mL of a 0.2 N solution is:

A. (a)4.5 g

B. (b)6.3 g

C. (c)0.63 g

D. (d)0.45 g

Answer: C

> ▶ **Watch Video Solution**

4. How many millilitres of $0.1NH_2SO_4$ solution will be required for complete reaction with a solution containing 0.125 g of pure Na_2CO_3?

A. (a)23.6 mL

B. (b)25.6 mL

C. (c)26.3 mL

D. (d)32.6 mL

Answer: A

5. What volume of NH_3 gas at STP would be needed to prepare 100 ml of 2.5 molal (2.5 m) ammonium hydroxide solution?

    A. (a)0.056 litre

    B. (b)0.56 litre

    C. (c)5.6 litres

    D. (d)11.2 litres

Answer: C

6. One litre of a solution contains 18 .9 g of HNO_3 and one litre of another solution contains 3.2 g of NaOH. In what volume ratio must these solution be mixed to obtain a neutral solution?

   A. (a)3:8

   B. (b)8:3

   C. (c)15:4

   D. (d)4:15

Answer: D

▶ **Watch Video Solution**

---

7. In the reaction $CA(OH)_2 + H_3PO_4 \rightarrow Ca_3(PO_4)_2 + H_2O$, the equivalent mass of H_2O is: (M molecular mass)

A. (a)M

B. (b)M/2

C. (c)M/3

D. (d)M/6

Answer: A

▶ **Watch Video Solution**

---

8. The amount of wet NaOH containing 15% water required to prepare 70 liters of 0.5 N solution is:

A. (a)1.65 kg

B. (b)1.4 kg

C. (c)16.5 kg

D. (d)140 kg

Answer: A

9. The molarity of the solution containing 2.8% (mass/volume) solution of KOH is: (Given atomic mass of K=39) is:

A. 0.1M

B. 0.5M

C. 0.2M

D. 1 M

Answer: B

10. Which of the following relations is incorrect for solutions?

A. (a)$3NAl_2(SO_4)_3 = 0.5Mal_2(SO_4)_3$

B. (b)$3MH_2SO_4 = 6NH_2SO_4$

C. (c)$1MH_3PO_4 = 1/3NH_3PO_4$

D. (d)$1MAl_2(SO_4)_3 = 6NAl_2(SO_4)_3$
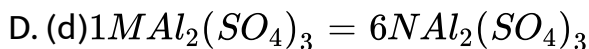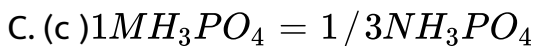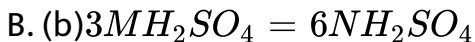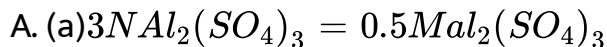
Answer: C

▶ **Watch Video Solution**

---

11. A molal solution is one that contains 1 mol of a solute in

A. (a)1000 g of the solvent

B. (b)one litre of the solvent

C. (c)one litre of the solution

D. (d)22.4 litres of the solution

Answer: A

---

12. 10 mL of 1 NHCl is mixed with 20 mL of $1MH_2SO_4$ and 30 mL of 1M NaOH. The resultant solution has:

A. (a)20 meq of H^+ ions

B. (b)20 meq of OH^-

C. (c)0 meq of H^+ or OH^-

D. (d)30 millimoles of H^+

Answer: A

13. Which of the following increases with increase in temperature?

    A. (a)Molality

    B. (b)Weight fraction of solute

    C. (c)Fraction of solute present in water

    D. (d)Mole fraction

Answer: C

▶ **Watch Video Solution**

14. The molarity of a solution obtained by mixing 750 mL of 0.5 M HCl with 250 mL of 2 M HCl will be

    A. (a)0.875 M

B. (b)1.00 M

C. (c)1.75 M

D. (d)0.0975 M

Answer: A

▶ Watch Video Solution

15. In which mode of expression, the concentration of a solution

remains independent of temperature?

A. (a)Molarity

B. (b)Normality

C. (c)Formality

D. (d)Molality

16. 250 ml of a sodium carbonate solution contains 2.65 grams of Na_2CO_3. If 10 ml of this solution is diluted to one litre, what is the concentration of the resultant solution (mol. Wt. of Na_(a) $CO_3 = 106$)

    A. (a)0.1 M

    B. (b)0.001 M

    C. (c)0.01 M

    D. (d)$10^{-4}M$

Answer: B

17. $25mL$ of a solution of barium hydroxide on titration with 0.1molar solution of hydrochloric acid give a titre value of $35mL$. The molarity of barium hydroxide is:

    A. (a)0.28

    B. (b)0.35

    C. (c)0.07

    D. (d)0.14

Answer: C

▶ **Watch Video Solution**

18. What is the molarity of H_2SO_4 solution that has a density 1.84 g/c c at $35°$ C and contains 98% by weight?

A. (a)4.18 M

B. (b)8.14 M

C. (c)18.4 M

D. (d)18 M

Answer: C

19. Two solutions of a substance (non-electroyte) are mixed in the following manner $480mL$ of $1.5M$ of first solution with $520mL$ or $1.2M$ of second solution. The molarity of final solution is:

A. (a)1.20 M

B. (b)1.50 M

C. (c)1.344 M

D. (d)2.70 M

Answer: C

▶ **Watch Video Solution**

---

20. The volume strength of $1.5NH_2O_2$ solution is

A. (a)4.8

B. (b)8.4

C. (c)3.0

D. (d)8.0

Answer: B

▶ **Watch Video Solution**

21. The density of a solution prepared by dissolving 120 g of urea (mol. Mass=60 u) in 1000 g of water is 1.15 g/mL. The molarity if this solution is

    A. (a)0.50 M

    B. (b)1.78 M

    C. (c)1.02 M

    D. (d)2.05 M

Answer: D

▶ **Watch Video Solution**

22. A molar solution is one that contains one mole of a solute in

    A. (a)1000 g of the solvent

B. (b)one litre of the solvent

C. (c)one litre of the solution

D. (d)22.4 litres of the solution

Answer: C

▶ **Watch Video Solution**

23. The normality of $0.3M$ phosphorous acid (H_3PO_3) is

A. (a)0.1

B. (b)0.9

C. (c)0.3

D. (d)0.6

Answer: D

24. Mole fraction of I_2 in C_6H_6 is 0.2. Calculate molality of I_2 in

C_6H_6. $\left(Mw\,of\,C_6H_6 = 78gmol^{-1}\right)$

A. (a)0.32

B. (b)3.2

C. (c)0.032

D. (d)0.48

Answer: B

25. What is the normlity of a 1 M solution of H_3PO_4?

A. (a) 0.5 N

B. (b) 1.0 N

C. (c) 2.0 N

D. (d) 3.0 N

Answer: D

> ▶ **Watch Video Solution**

26. Normality of 2 M sulphuric acid is

A. (a) 2 N

B. (b) 4 N

C. (c) $\dfrac{N}{2}$

D. (d) $\dfrac{N}{4}$

Answer: B

---

27. 6.02×10^{20} molecules of urea are present in $100 mL$ solution.

The concentration of urea solution is:

    A. (a)0.1 M

    B. (b)0.01 M

    C. (c)0.02 M

    D. (d)0.001 M

Answer: B

28. The molality of a urea solution in which $0.0100g$ of urea, $[(NH_2)_2CO]$ is added to $0.3000dm^3$ of water at STP is

A. (a)$5.55 \times 10^{-4}M$

B. (b)33.3 M

C. (c)$3.33 \times 10^{-2}M$

D. (d)0.555 M

Answer: A

▶ **Watch Video Solution**

29. $H_3PO_4(98gmol^{-1})$ is 98% by mass of solution. If the density is 1.8 g/ml, the molarity is:

A. (a)18 M

B. (b)36 M

C. (c)54 M

D. (d)0.18 M

Answer: A

▶ Watch Video Solution

30. At $100°C$ and $1atm$, if the density of the liquid water is $1.0gcm^{-3}$ and that of water vapour is $0.0006gcm^{-3}$, then the volume occupied by water molecules in $1L$ of steam at this temperature is

A. (a)$6cm^3$

B. (b)$60cm^3$

C. (c)$0.6cm^3$

D. (d)$0.06cm^3$

Answer: D

▶ **Watch Video Solution**

---

31. Amount of oxalic acid present in a solution can be determined by its titration with $KMnO_4$ solution in the presence of H_2SO_4. The titration gives unsatisfactory result when carried out in the presence of HCl because HCl:

A. (a) Gets oxidized by oxalic acid to chlorine

B. (b) Furnishes H^+ ions in addition to those from oxalic acid

C. (c) Reduces permanganate to Mn^{2+}

D. (d) Oxidises oxalic acid to carbon dioxide and water

Answer: C

32. To neutralize completely $20mL$ of $0.1M$ aqueous solution of phosphorus (H_3PO_3) acid the volume of $0.1M$ aqueous KOH solution required is:

    A. (a)60 mL

    B. (b)20 mL

    C. (c)40 mL

    D. (d)10 mL

Answer: C

33. How many grams of a dibasic acid (Mol. Wt. =200) should be present in 100 ml of its aqueous solution to give decinormal strength

A. (a)1 g

B. (b)2 g

C. (c)10 g

D. (d)20 g

Answer: A

▶ Watch Video Solution

34. The solution of sulphuric acid contains 80% by weight H_2SO_4. Specific gravity of this solution is 1.71. Its normality is about

A. (a)18.0

B. (b)27.9

C. (c)1.0

D. (d)10.0

Answer: B

▶ **Watch Video Solution**

35. An aqueous solution of $6.3g$ oxalic acid dihydrate is made up

to $250mL$. The volume of $0.1NNaOH$ required to completely

neutralise $10mL$ of this solution is

A. (a)40 mL

B. (b)20 mL

C. (c)10 mL

D. (d)4 mL

Answer: A

36. A mixture x containing 0.02 mol of $[Co(NH_3)_5SO_4]Br$ and 0.02 mol of $[Co(NH_3)_5Br]SO_4$ was prepared in $2L$ of solution.

$1L$ of mixture X + excess $AgNO_3 \rightarrow Y$

$1L$ of mixture X + excess $BaCl_2 \rightarrow Z$

The number of moles of Y and Z are

A. (a)0.01, 0.01

B. (b)0.02, 0.01

C. (c)0.01, 0.02

D. (d)0.02, 0.02

Answer: A

---

37. Density of $2.05M$ solution of acetic acid in water is $1.02g/mL$. The molality of same solution is:

A. (a)0.44 mol kg^{-1}

B. (b)1.14 mol k^{-1}

C. (c)3.28 mol kg^{-1}

D. (d)2.28 mol kg^{-1}

Answer: D

38. One litre hard water contains 12.00 mg Mg^{2+} millieqivalent of washing soda required to remove its hardness is

    A. (a)1

    B. (b)12.15

    C. (c)1×10^{-3}

    D. (d)12.5×10^{-3}

Answer: A

▶ **Watch Video Solution**

---

39. How much of NaOH is reuired to neutralise 1500 cm^3 of 0.1 N HCl (Na=23)?

    A. (a)40 g

B. (b)4 g

C. (c)6 g

D. (d)60 g

Answer: C

 Watch Video Solution

40. How much water should be added to 200 c.c of seminormal

solution of NaOH to make it exactly decinormal?

A. (a)200 c c

B. (b)400 c c

C. (c)800 c c

D. (d)600 c c

Answer: C

41. 0.16 g of dibasic acid required 25 ml of decinormal NaOH solution for complete neutralisation. The molecular weight of the acid will be

A. (a)32

B. (b)64

C. (c)128

D. (d)256

Answer: C

42. To neutralise 20 ml of M/10 sodium hydroxide, the volume of M/20 hydrochloric acid required is

A. (a)10 ml

B. (b)15 ml

C. (c)20 ml

D. (d)40 ml

Answer: D

▶ **Watch Video Solution**

43. Hydrolic acid solution A and B have concentration of 0.5 N and 0.1N respectively. The volume of solutions A and B required to make 2 litres of 0.2 N hydrochloric are

A. (a)$0.5 L$ of A + $1.5 L$ of B

B. (b)$1.5 L$ of A + $0.5 L$ of B

C. (c)$1.0 L$ of A + $1.0 L$ of B

D. (d)$0.75 L$ of A + $1.25 L$ of B

Answer: A

▶ Watch Video Solution

44. $5 mL$ of $N - HCl$, $20 mL$ of $N/2 H_2 SO_4$ and $30 mL$ of $N/3$ HNO_3 are mixed together and the volume is made to $1 L$. The normality of the resulting solution is

A. (a)N/5

B. (b)N/10

C. (c)N/20

D. (d)N/40

Answer: D

▶ Watch Video Solution

45. 30 ml of acid solution is netralized by 15 ml of a 0.2 N base. The srength of acid solution is

A. (a)0.1 N

B. (b)0.15 N

C. (c)0.3 N

D. (d)0.4 N

Answer: A

▶ Watch Video Solution

46. How many ml of 1 (M) H_2SO_4 is required neutralise 10 ml of 1 (M) NaOH solution?

A. (a) 2.5

B. (b) 5.0

C. (c) 10.0

D. (d) 20.0

Answer: B

▶ **Watch Video Solution**

47. The amount of water that should be added to 500 ml of 0.5 N solution of NaOH to give a concentration of 10 mg per ml is

A. (a) 100

B. (b)200

C. (c)250

D. (d)500

Answer: D

▶ **Watch Video Solution**

Redox Titration And Stoichiometry In Various Types Of Reaction

1. In the reaction $2Na_aS_2O_3 + I_2 \rightarrow Na_2S_4O_6 + 2NaI$, the equivalent weight of $Na_2S_2O_3 (mol.\,Wt. = M)$ is equal to

A. (a)M

B. (b)$M/2$

C. (c)$M/3$

D. (d)$M/4$

Answer: A

> ▶ Watch Video Solution

2. The equivalent weight of $MnSO_4$ is half its molecular weight when it is converted to

A. (a)Mn_2O_3

B. (b)MnO_2

C. (c)MnO_4^-

D. (d)MnO_4^{2-}

Answer: B

> ▶ Watch Video Solution

3. When HNO_3 is converted into NH_3, the equivalent weight of HNO_3 will be:

A. (a)$M/2$

B. (b)$M/1$

C. (c)$M/6$

D. (d)$M/8$

Answer: D

▶ **Watch Video Solution**

4. In the conversion $NH_2OH \rightarrow N_2O$, the equivalent weight of NH_2OH will be:

A. (a)$M/4$

B. (b)$M/2$

C. (c)$M/5$

D. (d)$M/1$

Answer: B

▶ **Watch Video Solution**

---

5. The mass of potassium dichromate crystal required to oxidise

$750cm^3$ of 0.6 M Mohr's salt solution is $(molar\,mass = 392)$

A. (a)$0.49g$

B. (b)$0.45g$

C. (c)$22.05g$

D. (d)$2.2g$

Answer: C

6. When potassium permanganate is titrated against ferrous ammonoum sulphate, the equivalent weight of potassium permanganent is

A. (a)Molecular weight /10

B. (b)Molecular weight /5

C. (c)Molecular weight /2

D. (d)Molecular weight

Answer: B

7. A substance which participates readily in both acid-base and oxidation-reduction reactions is:

A. (a) Na_2CO_3

B. (b) KOH

C. (c) $KMnO_4$

D. (d) $H_2C_2O_4$
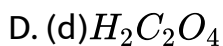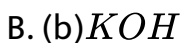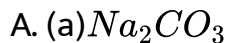
Answer: D

▶ **Watch Video Solution**

8. The number of moles of $KMnO_4$ that will be needed to react with $1mol$ of sulphite ion in acidic solution is

A. (a) $\dfrac{2}{5}$

B. (b)$\dfrac{3}{5}$

C. (c)$\dfrac{4}{5}$

D. (d)1

Answer: A

▶ **Watch Video Solution**

---

9. H_2O_2 acts as both oxidising and reducing agent. As oxidising agent, its product is H_2O but as redusing agent, its product is O_2. Volume strength has great significance for chemical reactions. The strength of '10 V means 1 volume (or litre) of H_2O_2 on decomposition $\left(H_2O_2 \rightarrow H_2O + \dfrac{1}{2}O_2 \right)$ gives 10 volumes (or litre) of oxygen at NTP.

$15gBa(MnO_4)_2$ sample containing inert impurity is completely reacting with 100 mL of '11.2 V' H_2O_2, then what will be the %

purity of $Ba(MnO_4)_2$ in the sample: (Atomic mass: $Ba = 137, Mn = 55$)

A. (a)5 %

B. (b)10 %

C. (c)50 %

D. (d)None of these

Answer: C

▶ Watch Video Solution

10. The valency factor of I_2 when, (i) it is formed by the reaction of potassium iodide and potassium iodate in acid medium and (ii) when it reacts with hypo, are respectively:

A. (a)2, 2

B. (b)$\frac{5}{3}$, 2

C. (c)$\frac{3}{5}$, 2

D. (d)5, 2

Answer: B

▶ **Watch Video Solution**

11. In the neutralization of $Na_2S_2O_3$ using $K_2Cr_2O_7$ by idometry, the equivalent weight of $K_2Cr_2O_7$ is

A. (a)molecular weight $/2$

B. (b)molecular weight $/6$

C. (c)molecular weight $/3$

D. (d)same as molecular weight

Answer: B

12. When N_2 is converted into NH_3, the equivalent weight of nitrogen will be:

A. (a)1.67

B. (b)2.67

C. (c)3.67

D. (d)4.67

Answer: D

13. Equivalent weight of $KMnO_4$ acting as an oxidant in acidic medium is

A. The same as its molecular weight

B. (b)Half of its molecular weight

C. (c)One-third of its molecular weight

D. (d)One-fifth of its molecular weight

Answer: D

▶ **Watch Video Solution**

14. In the reaction:
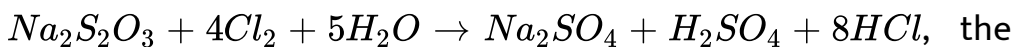
$Na_2S_2O_3 + 4Cl_2 + 5H_2O \rightarrow Na_2SO_4 + H_2SO_4 + 8HCl$, the equivalent weight of $Na_2S_2O_3$ will be: (M= molecular weight of $Na_2S_2O_3$)

A. (a)$M/4$

B. (b)$M/8$

C. (c)$M/1$

D. (d)$M/2$

Answer: B

▶ **Watch Video Solution**

15. In the reaction

$2CuSO_4 + 4KI \rightarrow 2Cu_2I_2 + I_2 + 2K_2SO_4$ the   equivalent
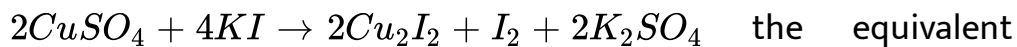
weight of $CuSO_4$ will be:

A. (a)79.75

B. (b)159.5

C. (c)329

D. (d)None of these

Answer: B

16. $KMnO_4$ react with oxalic acid according to the equation,

$$2MnO_4^- + 5C_2O_4^{2-} + 16H^+ \rightarrow 2Mn^{2+} + 10CO_2 + 8H_2O,$$
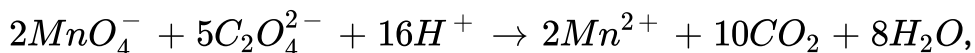
here $20ml$ of $0.1MKMnO_4$ is equivalemt to

A. (a)20ml of$0.5MH_2C_2O_4$

B. (b)50ml of$0.1MH_2C_2O_4$

C. (c)50 ml of$0.5MH_2C_2O_4$

D. (d)20ml of$0.1MH_2C_2O_4$

Answer: B

17.

$$28NO_3^- + 3As_2S_3 + 4H_2O \rightarrow 6AsO_4^{3-} + 28NO + 9SO_4^{2-} + H^+$$
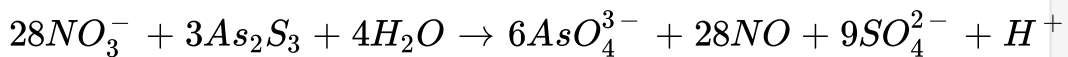
What will be the equivalent mass of As_(2)S_(3)` in the above reaction?

A. (a) $\dfrac{M}{2}$

B. (b) $\dfrac{M}{4}$

C. (c) $\dfrac{M}{24}$

D. (d) $\dfrac{M}{28}$

Answer: D

18. In order to prepare one litre normal solution of $KMnO_4$, how many grams of $KMnO_4$ are required if the solution is used in acidic medium for oxidation

    A. (a)$158g$

    B. (b)$31.6g$

    C. (c)$790g$

    D. (d)$62g$

Answer: B

▶ **Watch Video Solution**

---

19. HNO_3 oxidies NH_4^+ ions to nitrogen and itself gets reduced to NO_2. The moles of HNO_3 required by 1 mole of $(NH_4)_2SO_4$ is:

A. (a)4

B. (b)5

C. (c)6

D. (d)2

Answer: C

▶ **Watch Video Solution**

20. What is the concentration of nitrate ions if equal volumes of $0.1MAgNO_3$ and $0.1MNaCl$ are mixed together?

A. (a)$0.1N$

B. (b)$0.2M$

C. (c)$0.05M$

D. (d)$0.25M$

Answer: C

21. How many litres of Cl_2 at STP will be liberated by the oxidation of $NaCl$ with $10gKMnO_4$ in acidic medium: (Atomic weight: $Mn = 55$ and $K = 39$)

A. (a)3.54

B. (b)7.08

C. (c)1.77

D. (d)None of these

Answer: A

22. A solution containing Na_2CO_3 and $NaOH$ requires $300ml$ of $0.1NHCl$ using phenolphthalein as an indicator. Methyl orange is then added to the above titrated solution when a further $25ml$ of $0.2NHCl$ is required. The amount of $NaOH$ present in solution is ($NaOH = 40$, $Na_2CO_3 = 106$)

A. (a)0.6g

B. (b)1.0g

C. (c)1.5g

D. (d)2.0g

Answer: B

▶ **Watch Video Solution**

23. Which of the following cannot give iodometric titrations?

A. (a)Fe^{3+}

B. (b)Cu^{3+}

C. (c)Pb^{2+}

D. (d)Ag^+
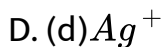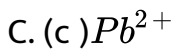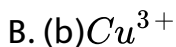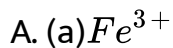
Answer: C

▶ **Watch Video Solution**

---

24. $KMnO_4$ reacts with ferrous ammonium sulphate according

to   the   equation

$MnO_4^- + 5Fe^{2+} + 8H^+ \rightarrow Mn^{2+} + 5Fe^{3+} + 4H_2O,$ here
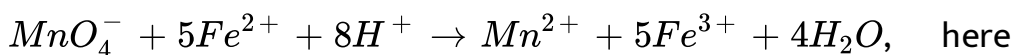
$10ml$ of $0.1MKMnO_4$ is equivalent to

A. (a)20ml of $0.1MFeSO_4$
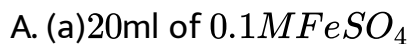
B. (b)30 ml of$0.1MFeSO_4$

C. (c)40 ml of $0.1MFeSO_4$

D. (d)50 ml of $0.1MFeSO_4$

Answer: D

▶ **Watch Video Solution**

---

25. Calculate the mass of $BaCO_3$ produced when excess CO_2 is bubbled through a solution containing 0.205 moles of $Ba(OH)_2$

.

A. (a)81g

B. (b)40.5g

C. (c)20.25g

D. (d)162g

Answer: B

---

26. The number of moles of $KMnO_4$ required to oxidise $1mol$ of $Fe(C_2O_4)$ in acidic medium is

A. (a)0.6

B. (b)0.167

C. (c)0.2

D. (d)0.4

Answer: A

27. The ratio of amounts of H_2S needed to precipitate all the metal ions from $100ml$ of $1M AgNO_3$ and $100ml$ of $1M CuSO_4$ will be

    A. (a)$1:1$

    B. (b)$1:2$

    C. (c)$2:1$

    D. (d)None of these

Answer: B

▶ **Watch Video Solution**

---

28. $100ml$ of $0.1N$ hypo decolourised iodine by the addition of x g of crystalline copper sulphate to excess of KI. The value of 'x' is (molecular wt. of $CuSO_4.5H_2O is 250$)

A. (a)$5.0g$

B. (b)$1.25g$

C. (c)$2.5g$

D. (d)$4g$

Answer: C

▶ **Watch Video Solution**

---

29. How many grams of caustic potash required to completely neutralise $12.6gHNO_3$?

A. (a)$22.4KOH$

B. (b)$1.01KOH$

C. (c)$6.02KOH$

D. (d)$11.2KOH$

Answer: D

30. What should be the weight and moles of AgCl precipitate obtained on adding $500ml$ of $0.20MHCl$ in $30g$ of $AgNO_3$ solution? $(agNO_3 = 170)$

A. (a)$14.35g$

B. (b)$15g$

C. (c)$18g$

D. (d)$19g$

Answer: A

31. A solution of $10ml\dfrac{M}{10}FeSO_4$ war titrated with $KMnO_4$ solution in acidic medium. The amount of $KMNO_4$ used will be

    A. (a)5 ml of$0.1M$

    B. (b)10 ml of $1.1M$

    C. (c)10ml of $0.5M$

    D. (d)10 ml of $0.02M$

Answer: D

 Watch Video Solution

---

32. $100gCaCO_3$ reacts with $1litre1NHCl.$ On completion of reaction how much weight of CO_2 will be obtain

    A. (a)5.5g

B. (b)11g

C. (c)22g

D. (d)33g

Answer: C

▶ **Watch Video Solution**

33. 3.92 g of ferrous ammonium sulphate crystals are dissolved in

100 mL of water, 20 mL of this solution requires 18 mL of

$KMnO_4$ during titration for complete oxidation. The weight of

$KMnO_4$ present in one litre of the solution is

A. 3.476g

B. 12.38g

C. (c)34.76g

D. $1.238g$

Answer: A

▶ **Watch Video Solution**

---

34. A $100ml$ solution of $0.1NHCl$ was titrated with 0.2? $NNaOH$ solution. The titration. The remaining titration war completed by adding $0.25NKOH$ solution. The volume of KOH required for completing the titration is

A. (a)$70ml$

B. (b)$32ml$

C. (c)$35ml$

D. (d)$16ml$

Answer: D

Significant Figures Rounding Off And Dimentional Analysis

1. One fermi is

A. (a)$10^{-13}m$

B. (b)$10^{-15}m$

C. (c)$10^{-10}m$

D. (d)$10^{-12}m$

Answer: A

2. A picometre is written as

A. (a)$10^{-9}m$

B. (b)$10^{-10}m$

C. (c)$10^{-11}m$

D. (d)$10^{-12}m$

Answer: D

▶ **Watch Video Solution**

---

3. One atmosphere is equal to

A. (a)$101.325KPa$

B. (b)$1013.25Kpa$

C. (b)10^5Nm

D. (d)None of these

Answer: A

▶ **Watch Video Solution**

---

4. Dimensions of pressure are same as that of

    A. (a)Energy

    B. (b)Force

    C. (c)Energy per unit volume

    D. (d)Force per unit volume

Answer: C

▶ **Watch Video Solution**

---

5. The prefix 10^{18} is

A. (a)Giga

B. (b)Nano

C. (c)Mega

D. (d)Exa

Answer: D

6. Given the number: 161 cm, 0.161 cm, 0.0161 cm. The number of significant figures for the three numbers are

A. (a)3, 4 and 5 respectively

B. (b)3, 3 and 3 respectively

C. (c)3, 3 and 4 respectively

D. (d)3, 4 and 4 respectively

Answer: B

7. Significant figures in 0.00051 are

A. (a)5

B. (b)3

C. (c)2

D. (d)4

Answer: C

8. In the final answer of the expression

$$\frac{(29.2 - 20.2)(1.79 \times 10^5)}{1.37}$$. The number of significant figures is

A. (a)1

B. (b)2

C. (c)3

D. (d)4

Answer: B

▶ **Watch Video Solution**

9. $81.4g$ sample of enthyl ethyl alcohol contains $0.002g$ of water. The amount of pure ethyl alcohol to the proper number of significant figures is

A. (a)$81.398g$

B. (b)$71.40g$

C. (c)$91.4g$

D. (d)$81g$

Answer: A

▶ **Watch Video Solution**

---

10. The unit JPa^{-1} is equivalent to

A. (a)m^3

B. (b)cm^3

C. (c)dm^3

D. (d)None of these

Answer: A

---

11. From the following masses, the one which is expressed nearest to the milligram is

A. (a)$16g$

B. (b)$16.4g$

C. (c)$16.428g$

D. (d)$16.4284g$

Answer: C

12. The number of significant figures in 6.02×10^{23} is

A. (a)23

B. (b)3

C. (c)4

D. (d)26

Answer: B

▶ **Watch Video Solution**

13. The prefix zepto stands for

A. (a)10^9

B. (b)10^{-12}

C. (c)10^{-15}

D. (d)10^{-21}

Answer: D

▶ Watch Video Solution

---

14. The significant figures in 3400 are

A. (a)2

B. (b)5

C. (c)6

D. (d)4

Answer: A

▶ Watch Video Solution

15. The number of significant figures in 6.0023 are

A. (a)5

B. (b)4

C. (c)3

D. (d)1

Answer: A

16. Given $P = 0.0030m, Q = 2.40m, R = 3000m,$ Significant figures in P, Q and R are respectively

A. (a)2, 2, 1

B. (b)1, 3, 4

C. (c)4, 2, 1

D. (d)4, 2, 3

Answer: B

▶ **Watch Video Solution**

17. The number of significant figures in 60.0001 is

A. (a)5

B. (b)6

C. (c)3

D. (d)2

Answer: B

▶ **Watch Video Solution**

18. A sample was weighted using two different balances. The results were (i) $3.929g$ and (ii) $4.0g.$ How would the weight of the sample be reported?

    A. (a)$3.929g$

    B. (b)$3g$

    C. (c)$3.9g$

    D. (d)$3.93g$

Answer: D

▶ **View Text Solution**

Section B Assertion Reasoning

1. Assertion: Volume of a gas is inversely proportional to the number of moles of a gas.

Reason: The ratio by volume of gaseous reactants and products is in agreement with their molar ratio.

A. (a)If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: D

▶ **Watch Video Solution**

2. Assertion: Molecular weight of oxygen is 16.

Reason: Atomic weight of oxygen is 16.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: D

3. Assertion: Atoms can neither be created nor destroyed.

Reason: Under similar condition of temperature and pressure,

equal volume of gases does not contain equal number of atoms.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: C

▶ **Watch Video Solution**

---

4. Assertion: Equivalent mass of ozone in the change

$O_3 \rightarrow O_2 is 8.$

Reason: 1 moles of O_3 on decomposition gives $3/2$ mole of O_2.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: B

▶ View Text Solution

5. Assertion: Equivalent mass of H_3BO_3 and Na_3BO_3 are $M/3$

Reason: Equivalent mass of H_3BO_3 is $M/1$ and Na_3BO_3 is

$M/3$

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: D

▶ **Watch Video Solution**

6. Assertion: 1 equivalent of H_2SO_4 contains 1 equivalent of H, S

and O each

Reason: A species contains same number of equivalents of its

components.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true and the reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer: A

▶ **Watch Video Solution**

7. Assertion: Acidimetry and alkalimetry are the terms used in volumetric analysis.

Reason: The reactant left the chemical reaction is called limiting reagent.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: C

▶ Watch Video Solution

8. Assertion: $NaNO_3$ has no definite molecule.

Reason: Its formula mass is 85.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: B

9. Assertion: $31.26 mL$ of $0.165M$ solution of $Ba(OH)_2$ is exactly

neutralised by $25mL$ of citric acid $C_6H_8O_7$ of molarity 0.138.

Reason: The acid is tribasic in nature.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: A

▶ **Watch Video Solution**

10. Statement H_3BO_3 is monobasic Lewis acid but its salt

Na_3BO_3 exist.

Explanation H_3BO_3 reacts with $NaOH$ to give Na_3BO_3.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

  not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: C

▶ **Watch Video Solution**

11. Assertion: In the titration of Na_2CO_3 with HCl using methyl

orange indicator, the volume of acid required is twice that of the

acid required using phenolphthalein as indicaton.

Reason: Two moles of HCl are required for the complete

neutralisation of one mole of Na_2CO_3.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: B

▶ **Watch Video Solution**

12. Assertion (A): pure water obtained from different states of

india always contains hydrogen and oxygen in the ration of 1:8 by

mass.

Reason (R): Total mass of reactants and products during

chemical change is always the same.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: B

> ▶ **Watch Video Solution**

13. Statement $1\text{mole}O_3 = N\text{molecule}O_3 = 3N$ atoms of

$O = 48g$

Explanation A mole is the amount of matter that contains as

many as objects as the amount of atoms exactly in $12gC^{12}$.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: A

▶ **Watch Video Solution**

14. Assertion (A): The standard unit of expressing the mass of

atom is amu.

Reason (R): amu is also called as avogram.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: B

▶ **Watch Video Solution**

15. Statement Equivalent weight of a species can be written as

molecular weight of species divided by valence factor.

Explanation Valence factor represents valence in element, acidity

in bases, basicity in acids and total charge on cation or anion in

an ionic compound.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true and the reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer: B

▶ **Watch Video Solution**

16. Statement H_3PO_3 is a dibasic acid and its salt Na_2PO_3 does not exist.

Explanation Being dibasic nature, only two H are replaceable.

A. (a)If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: A

▶ **Watch Video Solution**

17. Statement Addition of water to a solution containing solute and solvent changes its normality or molarity only.

Explanation The milli-equivalent and milli-moles of solutes are not changed on dilution.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. If both assertion and reason are true and the reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer: B

▶ **Watch Video Solution**

18. Assertion: The weight percentage of a compound A in a solution is given by

$$\% \ of A = \frac{\text{Mass A}}{\text{Total mass of solution}} \times 100$$

Reason: The mole fraction of a component A is given by, Mole

fraction of A

$$= \frac{\text{No. of moles of A}}{\text{Total no. of moles of all components}}$$

A. (a)If both assertion and reason are true and the reason is

    the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

    not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: B

▶ **Watch Video Solution**

19. Assertion: The ratio of the mass of 100 billion atoms of

magnesium to the mass of 100 billion atoms of lead can be

expressed as $\dfrac{27}{207}$.

Reason: Atomic weight are relative masses.

A. (a)If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: A

20. Assertion: The average mass of one Mg atom is $24.305a\mu$, which is not actual mass of one Mg atom.

Reason: Three isotopes, $24Mg, 25Mg$ and $26Mg$, of Mg are found in nature.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: A

▶ **Watch Video Solution**

21. Assertion: A molecule of butane, C_4H_{10} has a mass of $58.12a\mu$

.

Reason: One mole of butane contains 6.022×10^{23} molecules and has a mass of $58.12g$.

A. (a)If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: A

▶ Watch Video Solution

22. Assertion: Both $12g$. of carbon and $27g$. of aluminium will have 6.02×10^{23} atoms.

Reason: Gram atomic mass of an element contains Avogadro's number of atoms.

A. (a)If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: A

▶ Watch Video Solution

23. Assertion: The molality and molarity of very dilute aqueous solutions differ very little.

Reason: The density of water is about $1.0 gcm^{-3}$ at room temperature.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: A

▶ **Watch Video Solution**

24. Assertion: Laboratory reagents are usually made up to a specific molarity rather than a given molality.

Reason: The volume of a liquid is more easily measured than its mass.

A. (a)If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: A

▶ Watch Video Solution

25. Assertion: Molality and mole fraction concentration units do not change with temperature.

Reason: These units are not defined in terms of any volume.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: A

▶ Watch Video Solution

26. Assertion: A one mola solution prepared at $20^\circ C$ will retain

the same molality at $100^\circ C$, provided there is no loss of solute or

solvent on heating.

Reason: Molality is independent of temperature.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: A

▶ Watch Video Solution

Aipmt Neet Questions

1. Molarity of liquid HCl with density equal to $1.17 g/mL$ is:

A. (a)36.5

B. (b)18.25

C. (c)32.05

D. (d)4.65

Answer: C

▶ **Watch Video Solution**

2. Specific volume of cylindrical virus particle is $6.02 \times 10^{-2} cc/g$ whose radius and length 7Å and 10Å respectively. If $N_A = 6.02 \times 10^{23}$, find molecular weight of virus:

A. (a)$3.08 \times 10^3 kg/mol$

B. (b)$15.4 kg/mol$

C. (c)$1.54 \times 10^4 kg/mol$

D. (d)$3.08 \times 10^4 kg/mol$

Answer: B

▶ **Watch Video Solution**

3. Percentage of Se in peroxidase anhydrase enzyme is 0.5% by weight (at. Wt. $= 78.4$), then minimum molecular weight of peroxidase anhydrase enzyme is:

A. (a)1.568×10^3

B. (b)15.68

C. (c)1.568×10^4

D. (d)2.136×10^4

Answer: C

---

4. Which has maximum number of molecules?

A. (a)$7gN_2$

B. (b)$2gH_2$

C. (c)$16gNO_2$

D. (d)$16gO_2$

Answer: B

5. In Haber process 30 litre of dihydrogen and 30 litres of dinitrogen were taken for reaction which yielded only50 % of the expected product. What will be the composition of gaseous mixture under the aforesaid condition in the end ?

   A. (a)20 litres ammonia, 25 litres nitrogen, 15 litres hydrogen

   B. (b)20 litres ammonia, 20 litres nitrogen, 20 litres hydrogen

   C. (c)10 litres ammonia, 25 litres nitrogen, 15 litres hydrogen

   D. (d)20 litres ammonia, 10 litres nitrogen, 30 litres hydrogen

Answer: C

▶ **Watch Video Solution**

6. The maximum number of molecules is present in :

A. (a)15 L of H_2 gas at STP

B. (b)5 L of N_2 gas at STP

C. (c)0.5 g of $H_2 gas$

D. (d)10 g of $O_2 gas$

Answer: A

▶ **Watch Video Solution**

7. The mole fraction of the solute in one molal aqueous solution

is:

A. (a)1.7700

B. (b)0.1770

C. (c)0.0177

D. (d)0.0344

Answer: C

8. The mass of carbon anode consumed (giving only carbon dioxide) in the production of $270kg$ of aluminium metal from bauxite by the Hall process is (Atomic mass: $Al = 27$):

    A. (a)$90kg$

    B. (b)$540kg$

    C. (c)$270kg$

    D. (d)$180kg$

Answer: A

9. The number of moles of $KMnO_4$ reduced by 1mol of KI in alkaline medium is

    A. (a)one

    B. (b)two

    C. (c)five

    D. (d)one-fifth

Answer: a

▶ **Watch Video Solution**

---

10. The ionic stregth of Na^+ on mixing $100 mL 0.1 NaCl$ and $100 mL 0.1 N Na_2SO_4$ is:

    A. (a)0.2

B. (b)0.1

C. (c)0.3

D. (d)0.075

Answer: d

▶ **Watch Video Solution**

11. Concentrated aqueous solution of sulphuric acid is 98% by mass and has density of 1.80g mL^{-1}. What is the volume of acid required to make one liter $0.1M H_2SO_4$ solution ?
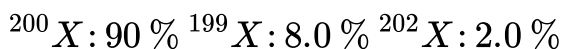
A. (a)$16.65mL$

B. (b)$22.20mL$

C. (c)$5.55mL$

D. (d)$11.10mL$

Answer: c

12. An element X has the following isotopic composition:

$$^{200}X : 90\,\% \quad ^{199}X : 8.0\,\% \quad ^{202}X : 2.0\,\%$$

The weight average atomic mass of the naturally occurring element X is closest to

A. 201 amu

B. 202 amu

C. 199 amu

D. 200 amu

Answer: D

13. The number of moles of $KMnO_4$ that will be needed to react with $1mol$ of sulphite ion in acidic solution is

    A. (a)$4/5$

    B. (b)$3/5$

    C. (c)1

    D. (d)$2/5$

Answer: d

▶ **Watch Video Solution**

14. What volume of oxygen gas (O_2) measured at $0°C$ and 1 atm is needed to burn completely $1L$ of propane gas (C_3H_8) measured under the same condition?

A. (a)$6L$

B. (b)$5L$

C. (c)$10L$

D. (d)$7L$

Answer: b

> ▶ **Watch Video Solution**

---

15. How many moles of lead (II) choride will be formed from a reaction between 6.5 g of PbO and 3.2 g of HCl?

A. (a)0.333

B. (b)0.011

C. (c)0.029

D. (d)0.044

Answer: C

16. If the density of water is 1 g cm^{-3} then the volume occupied by one molecule of water is approximately

A. (a)$6.023 \times 10^{-3} cm^3$

B. (b)$3.0 \times 10^{-3} cm^3$

C. (c)$5.5 \times 10^{-23} cm^3$

D. (d)$9.0 \times 10^{-23} cm^3$

Answer: B

17. The number of mole of $KMnO_4$ that will be needed to react completely with one mole of ferrous oxalate in acidic solution is:

A. (a)0.6 mole

B. (b)0.4 mole

C. (c)7.5 mole

D. (d)0.2 mole

Answer: a

▶ **Watch Video Solution**

18. 10 g of hygrogen and 64 g of oxygen were filled in a steel vessel and exploded. Amount of water produced in this reaxtion will be:

A. (a)1 mole

B. (b)2 moles

C. (c)3 moles

D. (d)4 moles

Answer: D

▶ Watch Video Solution

19. What is the $[OH^-]$ in the final solution prepared by mixing $20.0mL$ of $0.050MHCl$ with $30.0mL$ of $0.10MBa(OH)_2$?

A. (a)$0.12M$

B. (b)$0.10M$

C. (c)$0.40M$

D. (d)$0.0050M$

Answer: b

---

20. $25.3g$ sodium carbonate, Na_2CO_3, was dissolved in enough water to make $250mL$ of solution. If sodium carbonate dissociates completely, molar concentration of Na^+ and carbonate ions are respectively:

    A. (a)$0.9555M$ and $1.910M$

    B. (b)$1.910M$ and $0.955M$

    C. (c)$1.90M$ and $1.090M$

    D. (d)$0.477M$ and $0.477M$

Answer: b

21. The number of atoms in 0.1 mol of a triatomic gas is:

    A. (a)6.026×10^{23}

    B. (b)1.806×10^{23}

    C. (c)3.600×10^{23}

    D. (d)1.80×10^{23}

Answer: B

▶ **Watch Video Solution**

---

22. How many grams of concentrated nitric acid solution should be used to prepare $250mL$ of $2.0MHNO_3$? The concentrated acid is $70\% HNO_3$:

A. (a)90.0 g conc. HNO_3

B. (b)70.0 g conc. HNO_3

C. (c)54.0 g conc. HNO_3

D. (d)45.0 g conc. HNO_3

Answer: D

▶ **Watch Video Solution**

23. 6.02×10^{20} molecules of urea are present in $100mL$ solution.

The concentration of urea solution is:

A. (a)$0.01M$

B. (b)$0.001M$

C. (c)$0.1M$
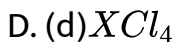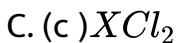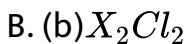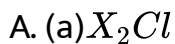
D. (d)$0.02M$

Answer: a

24. In an experiment it is shown that $10mL$ of $0.05M$ solution of chloride required $10mL$ of $0.1M$ solution of $AgNO_3$, which of the following will be the formula of the chloride (X stands for the symbol of the element other than chlorine):

A. (a)X_2Cl

B. (b)X_2Cl_2

C. (c)XCl_2

D. (d)XCl_4

Answer: c

25. Equal masses of H_2, O_2 and methane have been taken in a container of volume V at temperature $27°C$ in identical conditions. The ratio of the volume of gases $H_2 : O_2$: methane would be

A. (a)$8 : 16 : 1$

B. (b)$16 : 8 : 1$

C. (c)$16 : 1 : 2$

D. (d)$8 : 1 : 2$

Answer: c

▶ **Watch Video Solution**

26. When $22.4L$ of $H_2(g)$ is mixed with 11.2 of $Cl_2(g)$, each at STP, the moles of HCl(g) formed is equal to

    A. (a)1 mole of $HCl(g)$

    B. (b)2 moles of $HCl(g)$

    C. (c)0.5 mole of $HCl(g)$

    D. (d)1.5 mole of $HCl(g)$

Answer: a

> ▶ **Watch Video Solution**

---

27. 1.0 g of magnesium is burnt with 0.56 g O_2 in a closed vessel. Which reactant is left in excess and how much?

    A. (a)Mg, $0.16g$

B. (b)O_2, 0.16g

C. (c)Mg, 0.44g

D. (d)O_2, 0.28g

Answer: A

▶ **Watch Video Solution**

28. A mixture of gases contains H_2 and O_2 gases in the ratio of $1:4(w/w)$. What is the molar ratio of the two gases in the mixture?

A. (a)$16:1$

B. (b)$2:1$

C. (c)$1:4$

D. (d)$4:1$

Answer: b

---

29. The number of water molecules is maximum in

    A. (a)18 grams of water

    B. (b)18 moles of water

    C. (c)18 molecules of water

    D. (d)1.8 grams of water

Answer: B

30. If Avogadro number N_A is changed from $6.022 \times 10^{23} mol^{-1}$ to $6.022 \times 10^{20} mol^{-1}$, this would change:

A. (a)the ratio of chemical species to each other in a balance

   equation

B. (b)the ratio of elements to each other in a compound

C. (c)the definition of mass in unit of gram

D. (d)the mass of one mole of grams

Answer: D

▶ **Watch Video Solution**

31. 20.0 g of a magnesium carbonate sample decomposes on

heating to give carbon dioxide and 8.0 g magnesium oxide. What

be the percentage purity of magnsesium carbonate in the sample?

    A. (a)60

    B. (b)84

    C. (c)75

    D. (d)96

Answer: a

▶ **Watch Video Solution**

---

32. What is the mass of the precipitate formed when 50 mL of 16.9% solution of $AgNO_3$ is mixed with 50 mL of 5.8% NaCl solution?

    A. (a)7g

B. (b)$14g$

C. (c)$28g$

D. (d)$3.5g$

Answer: a

▶ **Watch Video Solution**

---

33. A mixture of 2.3 g formic acid and 4.5 g oxalic acid is treated with conc. H_2SO_4. The evolved gaseous mixture is passed through KOH pellets. Weight (in g) of the remaining product at STP will be

A. (a)1.4

B. (b)3.0

C. (c)2.8

D. (d)4.4

▶ **Watch Video Solution**

---

34. In which case is the number of molecules of water maximum?
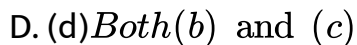
A. (a)18 mL of water

B. (b)0.18 g of water
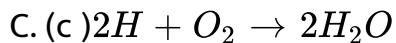
C. (c)0.00224 L of water vapour at 1 atm and 273 K

D. (d)10^{-3} mol of water

Answer: D

▶ **Watch Video Solution**

1. Which of the following equation does not obey the law of conservation of mass?

A. (a)$4H + O_2 \rightarrow 2H_2O$

B. (b)$H_2 + O \rightarrow 2H_2O$

C. (c)$2H + O_2 \rightarrow 2H_2O$

D. (d)$Both(b)$ and (c)
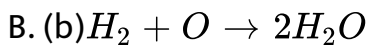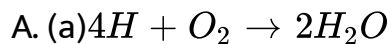
Answer: a

▶ **Watch Video Solution**

2. The specific heat of a metal os 0.16 its approximate atomic weight would be

A. (a)40

B. (b)16

C. (c)32

D. (d)64

Answer: a

▶ **Watch Video Solution**

---

3. Percentage of Se in peroxidase anhydrase enzyme is 0.5% by weight (at. Wt. $= 78.4$), then minimum molecular weight of peroxidase anhydrase enzyme is:

A. (a)1.576×10^4

B. (b)1.576×10^3

C. (c)15.76

D. (d)2.136×10^4

Answer: c

> ▶ **Watch Video Solution**

---

4. What is the molarity of H_2SO_4 solution that has a density 1.84 g/c c at $35°$C and contains 98% by weight?

A. (a)$4.18M$

B. (b)$8.14M$

C. (c)$18.4M$

D. (d)$18M$

Answer: C

> ▶ **Watch Video Solution**

5. 2.5 g of the carbonate of a metal war treated with 100 ml of $1NH_2SO_4$. After the completion of the reaction, the solution was boiled off to expel CO_2 and was then titrated against 1 N NaOH solution. The volume of alkali that would be consumed, if the equivalent weight of the metal is 20.

A. (a)50

B. (b)25

C. (c)75

D. (d)100

Answer: d

6. To a 25 mL H_2O_2 solution excess of an acidified solution of potassium iodide was added. The iodine liberated required 20 " mL of " 0.3 N sodium thiosulphate solution Calculate the volume strength of H_2O_2 solution.

   A. (a)$1.344g/L$

   B. (b)$3.244g/L$

   C. (c)$5.4g/L$

   D. (d)$4.08g/L$

Answer: d

▶ **Watch Video Solution**

7. The compound which does not exist as hydrate form

A. (a)ferrous sulphate

B. (b)copper sulphate

C. (c)magnesium sulphate

D. (d)sodium chloride

Answer: a

▶ **Watch Video Solution**

---

8. The weight of a molecule of the compound $C_{60}H_{122}$ is

A. (a)$1.4 \times 10^{-21}g$

B. (b)$1.09 \times 10^{-21}g$

C. (c)$5.025 \times 10^{23}g$

D. (d)$16.023 \times 10^{23}g$

Answer: A

9. The volume occupied by 4.4 g of CO_2 at STP is

    A. (a)$22.4L$

    B. (b)$2.24L$

    C. (c)$0.224L$

    D. (d)$0.1L$

Answer: b

10. How many molecules are present in one in one gram of hydrogen?

    A. (a)6.02×10^{23}

    B. (b)3.01×10^{23}

    C. (c)2.5×10^{23}

    D. (d)1.5×10^{23}

Answer: b

▶ **Watch Video Solution**

---

11. The empirical formula of an acid is CH_2O_2, the probable molecular formula of acid may be

    A. (a)CH_2O

B. (b)CH_2O_2

C. (c)$C_2H_4O_2$

D. (d)$C_3H_6O_4$

Answer: c

▶ **Watch Video Solution**

---

12. How much water should be added to 200 c.c of seminormal

solution of NaOH to make it exactly decinormal?

A. (a)$200cc$

B. (b)$400cc$

C. (c)$800cc$

D. (d)$600cc$

Answer: d

---

13. What is the normlity of a 1 M solution of H_3PO_4?

A. (a)$0.5N$

B. (b)$1.0N$

C. (c)$2.0N$

D. (d)$3.0N$

Answer: b

---

14. Normality of 2M sulphuric acid is

A. (a)$2N$

B. (b)$4N$

C. (c)$\dfrac{N}{2}$

D. (d)$\dfrac{N}{4}$

Answer: a

▶ **Watch Video Solution**

---

15. How many grams of a dibasic acid (Mol. Wt. =200) should be present in 100 ml of its aqueous solution to give decinormal strength

A. (a)$1g$

B. (b)$2g$

C. (c)$10g$

D. (d)$20g$

Answer: c

---

16. Vapour density of a gas is 22. What is its molecular mass?

A. (a)33

B. (b)22

C. (c)44

D. (d)11

Answer: c

17. Which of the following cannot give iodometric titrations?

A. (a)Fe^{3+}

B. (b)Cu^{2+}

C. (c)Pb^{2+}

D. (d)Ag^+
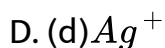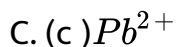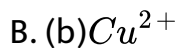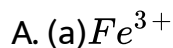
Answer: b

▶ Watch Video Solution

18. A compound possesses 8% sulphur by mass. The least molecular mass is?

A. (a)200

B. (b)400

C. (c)155

D. (d)355

Answer: B

▶ Watch Video Solution

19. $116mg$ of a compound on vaporisation in a Victor $-$ Meyer's apparatus displaced $44.8mL$ of air measured at $S.T.P.$ The molecular mass of the compound is

A. (a)116

B. (b)232

C. (c)58

D. (d)44.8

Answer: b

---

20. The density of a gas A is thrice that of a gas B at the same temperature. The molecular weight of gas B is twice that of A. What will be the ratio of the pressure acting on B and A?

A. (a) $\dfrac{1}{4}$

B. (b) $\dfrac{7}{8}$

C. (c) $\dfrac{2}{5}$

D. (d) $\dfrac{1}{6}$

Answer: D

1. Assertion: Analytical molarity of $1MHCl$ is zero.

Reason: Equilibrium molarity of $1MHCl$ is zero.

    A. (a)If both assertion and reason are true and the reason is

       the true explanation of the assertion.

    B. (b)If both assertion and reason are true and the reason is

       not the correct explanation of the assertion.

    C. (c)If the assertion is true but reason is false.

    D. (d)If assertion is false but reason is true.

Answer: d

▶ **Watch Video Solution**

2. Statement Addition of water to a solution containing solute and solvent changes its normality or molarity only.

Explanation The milli-equivalent and milli-moles of solutes are not changed on dilution.

A. (a)If both assertion and reason are true and the reason is the true explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is not the correct explanation of the assertion.

C. (c)If the assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: b

3. Assertion: Volume of a gas is inversely proportional to the number of moles of a gas.

Reason: The ratio by volume of gaseous reactants and products is in agreement with their molar ratio.

A. (a)If both assertion and reason are true and the reason is the true explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is not the correct explanation of the assertion.

C. (c)If the assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: d

▶ **Watch Video Solution**

4. Assertion: Molecular weight of oxygen is 16.

Reason: Atomic weight of oxygen is 16.

A. (a)If both assertion and reason are true and the reason is

the true explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If the assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: d

▶ Watch Video Solution

5. Assertion: Atoms can neither be created nor destroyed.

Reason: Under similar condition of temperature and pressure, equal volume of gases does not contain equal number of atoms.

A. (a)If both assertion and reason are true and the reason is

the true explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If the assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: c

▶ **Watch Video Solution**

Section D Chapter End Test

1. The number of meutrons in a drop water $(20drops = 1mL)$ at $4°C$

A. (a)6.023×10^{22}

B. (b)1.338×10^{22}

C. (c)6.023×10^{20}

D. (d)7.338×10^{22}

Answer: b

▶ **Watch Video Solution**

2. Assuming that petrol is octane (C_8H_{18}) and has density $0.8g/ml$, $1.425litre$ of petrol on complete combustion will consume

A. (a)50 mole of O_2

B. (b)125 mole of O_2

C. (c)100 mole of O_2

D. (d)200 mole of O_2

Answer: b

▶ **Watch Video Solution**

3. Weight of one atom an element is $6.44 \times 10^{-23} g$. Calculate g atom of elements in $40kg$.

A. (a)$10^3 g$ atom

B. (b)$10^2 g$ atom

C. (c)$10^4 g$ atom

D. (d)$10g$ atom

Answer: a

4. A compound contains 3.2% of oxygen. The minimum mol. Wt. of the compound is

    A. (a)300

    B. (b)440

    C. (c)350

    D. (d)500

Answer: D

5. Arrange the following in order of increasing mass

(i) 3.0115×10^{23} molecules of white phosphorus

(ii) 10 mole of H_2 gas

(iii) 1 g molecule of anhydrous Na_2CO_3

(iv) $33.6L$ of CO_2 gas at STP

  A. (a)$ii < i < Iv < iii$

  B. (b)$iii > iv > i > ii$

  C. (c)$i < ii < iv < iii$

  D. (d)$i < iv < iii < ii$

Answer: a

▶ **Watch Video Solution**

6. Calculate the number of oxalic acid molecules in 100 mL of 0.02

N oxalic acid

A. 6.023×10^{20}

B. 6.023×10^{21}

C. 6.023×10^{22}

D. 6.023×10^{23}

Answer: A

▶ **Watch Video Solution**

7. Arrange the following in order of decreasing mass

(i) 1 F atom

(ii) 1 N atom

(iii) 1 O atoms

(iv) 1 H atom

A. (a)$i > iii > iv > ii$

B. (b)$iv < ii < iii < i$

C. (c)$i > iii > ii > iv$

D. (d)$iii > i > ii > iv$

Answer: c

▶ **Watch Video Solution**

---

8. The number of millimoles contained in 0.160 g of NaOH is

A. (a)0.04

B. (b).4

C. (c)4

D. (d)40

Answer: c

9. Number of mole of $1m^3$ gas at NTP are:

A. (a)32.4

B. (b)54.6

C. (c)44.6 g

D. (d)28.2

Answer: c

10. 0.5 g of fuming sulphuric acid $(H_2SO_4 + SO_3)$, called oleum, is diluted with water. Thus solution completely neutralised 26.7 " mL of " 0.4 M $NaOH$. Find the percentage of free SO_3 in the sample solution.

A. (a)30.6%

B. (b)40.6%

C. (c)20.6%

D. (d)50%

Answer: c

▶ **Watch Video Solution**

11. The minimum quantity of H_2S needed to precipitate 64.5 g of Cu^{2+} will be nearly.

A. (a)63.5 g

B. (b)31.75 g

C. (c)34 g

D. (d)2.0 g

Answer: c

▶ **Watch Video Solution**

---

12. $34g$ of H_2O_2 is present in $1120ml$ of H_2O solution. This solution is called.

A. (a)10 volume solution

B. (b)20 volume

C. (c)30 volume

D. (d)32 volume

Answer: a

13. 1.82 g of a metal required 32.5 mL of N-HCl to dissolve it what is the equivalent weight of metal?

A. (a)54

B. (b)56

C. (c)28

D. (d)86

Answer: b

14. What volume at STP of ammonia gas will be required to be passed into $30mL$ of $1NH_2SO_4$ solution to bring down the acid normality to $0.2N$?

    A. (a)$556.5mL$

    B. (b)$480.5mL$

    C. (c)$537.6mL$

    D. (d)$438.4mL$

Answer: c

▶ **Watch Video Solution**

---

15. How many grams of $NaHSO_3$ will be required to react with one litre of $NaIO_3$ solution containing 5.8 g $NaIO_3$ according to the reaction?

A. (a)10.2 g

B. (b)9.8 g

C. (c)9.14 g

D. (d)8.2 g

Answer: c

 Watch Video Solution

16. A $5.0mL$ of solution of H_2O_2 liberates $0.508g$ of iodine from acidified KI solution. Calculate the strength of H_2O_2 solution in terms of volume strength at STP.

A. (a)2.2%

B. (b)3.8%

C. (c)4.48%

D. (d)None of these

Watch Video Solution

17. 1.5 litre of a solution of normality N and 2.5 litre of 2 M HCl are mixed together. The resutant solution had a normality 5. The value of N is

A. (a)6

B. (b)10

C. (c)8

D. (d)4

Watch Video Solution

18. The volume of 0.25 MH_3PO_3 required to neutralise 25 ml of 0.03 M $Ca(OH)_2$ is

A. (a)1.32 mL

B. (b)3 mL

C. (c)26.4 mL

D. (d)2.0 mL

Answer: b

▶ **Watch Video Solution**

19. A $0.1097g$ sample of As_2O_3 requried $26.10mL$ of $KMnO_4$ solution for its titration. The molarity of $KMnO_4$ solution is

molarity $= 0.017M \approx 0.018$
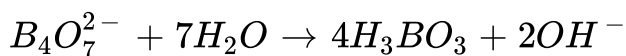
A. (a) 0.02

B. (b) 0.04

C. (c) 0.018

D. (d) 0.3

Answer: c

▶ **Watch Video Solution**

---

20. Borax in water gives

$$B_4O_7^{2-} + 7H_2O \rightarrow 4H_3BO_3 + 2OH^-$$

How many grams of Borax $(Na_2B_4O_7. 10H_2O)$ are required to prepare 50 ml of 0.2 M solution.

A. (a) 0.32 g

B. (b)3.82 g

C. (c)0.28 g

D. (d)None of these

Answer: b

▶ Watch Video Solution

21. 50 mL of a solution containing 1 g each of Na_2CO_3, $NaHCO_3$ and NaOH was titrated with N-HCl. What will be the titre reading when only phenolphalein is used as indicator?

A. (a)35 mL

B. (b)32.5 mL

C. (c)24.5 mL

D. (d)34.4 mL

Answer: d

22. Density of water at room temperature is 1 g/ml. How many molecules are there in a drop of water, if its volume is 0.05 ml?

A. (a)1.67×10^{21}

B. (b)16.7×10^{21}

C. (c)6.023×10^{23}

D. (d)1.67×10^{23}

Answer: a

23. How many molecule are present in 12 L of liquid C Cl_4? The density of the liquid is 1.59 g cm^{-3}?

A. (a)7.44×10^{26}

B. (b)$0.74 \times X10^{26}$

C. (c)1.59×10^{26}

D. (d)15.9×10^{26}

Answer: b

▶ **Watch Video Solution**

24. $13.4g$ of a sample of unstable hydrated salt $Na_2SO_4. XH_2O$ was found to contains $6.3g$ of H_2O. The number of molecular of water of crystalistion is

A. (a)6

B. (b)5

C. (c)7

D. (d)8

Answer: c

▶ **Watch Video Solution**

---

25. A solution containing Na_2CO_3 and $NaOH$ requires $300ml$ of $0.1NHCl$ using phenolphthalein as an indicator. Methyl orange is then added to the above titrated solution when a further $25ml$ of $0.2NHCl$ is required. The amount of $NaOH$ present in solution is $(NaOH = 40, Na_2CO_3 = 106)$

A. (a)0.6 g

B. (b)1.0 g

C. (c)1.5 g

D. (d)2.0 g

Answer: b

26. The amount of water that should be added to 500 ml of 0.5 N

solution of NaOH to give a concentration of 10 mg per ml is

A. (a)100

B. (b)200

C. (c)250

D. (d)500

Answer: d

---

27. $100g CaCO_3$ reacts with $1 litre 1 N HCl.$ On completion of reaction how much weight of CO_2 will be obtain

A. (a)5.5 g

B. (b)11 g

C. (c)22 g

D. (d)33 g

Answer: c

28. Assertion: For calculating the molality or the mole fraction of solute, if the molarity is known, it is necessary to know the density of the solution.

Reason: Molality, molarity and the mole fraction of solute can be calculated from the weight percentage and the density of the solution.

A. (a)If both assertion and reason are true and the reason is

the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is

not the correct explanation of the assertion.

C. (c)If the assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: b

▶ Watch Video Solution

29. Assertion: As mole is the basic chemical unit, the concentration of the dissolved solute is usually specified in terms of number of moles of solute.

Reason: The total number of molecules of reactants involved ina balanced chemical equation is known as molecularity of the reaction.

A. (a)If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is not the correct explanation of the assertion.

C. (c)If the assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: b

30. Assertion: Isomorphous substances from crystals of same shape and can grow in saturated solution of each other.

Reason: They have similar constitution and chemical formulae.

A. (a)If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. (b)If both assertion and reason are true and the reason is not the correct explanation of the assertion.

C. (c)If the assertion is true but reason is false.

D. (d)If assertion is false but reason is true.

Answer: a