CHEMISTRY

BOOKS - PATHFINDER CHEMISTRY (BENGALI ENGLISH)

MOLE AND STOICHIOMETRY-I

Question Bank

1. Calculate the total number of (a) molecule, (b) oxygen atoms and (c) neutrons in 4.4 g of CO_2 (g).

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2. The number of lone pair of electrons present in 2.56 gm of orthorhombic sulphur are

A. $0.32N_0$

B. $0.16N_0$

C. $0.02N_0$

D. $0.08N_0$

Answer:

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3. Calculate the number of oxygen atoms in 88 g CO_2 What would be the mass of CO having the same number of oxygen atoms ?

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4. XY_2 and X_2Y_3 are two compounds of the elements X and Y 0.15 mole of each of these compounds weigh 9.3 and 15.9 g respectively. Calculate the atomic masses of X and Y.

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5. Calculate the atomic mass (average) of chlorine using the following data :

	% Natural Abundance	Molar Mass
^{35}Cl	75.77	34.9689 amu
^{37}Cl	24.23	36.9659 amu

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6. In three moles of ethane (C_2H_6) calculate : Number of moles of carbon atoms

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7. In three moles of ethane (C_2H_6) calculate : Number of moles of hydrogen atoms.

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8. In three moles of ethane (C_2H_6) calculate : Number of molecules of ethane

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9. The chloride of a metal (M) contain 65.5% of chlorine 100 ml of the vapour of the chloride of metal at STP, weighs 0.72 g. The molecular formula of the metal chloride is

A. MCl

B. MCl_2

C. MCl_3

D. MCl_4

Answer: C

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10. 214.2 g of sugar syrup contains 34.2 g of sugar. Calculate :-

Molality of the solution.

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11. 214.2 g of sugar syrup contains 34.2 g of sugar. Calculate :-

Mole fraction (x) of sugar in syrup

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12. What is the concentration of sugar $(C_{12}H_{22}O_{11})$ in mol L^{-1} if its 20 g are dissolved in enough water to make a final volume up to 2L ?

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13. What is the normality of $90\,\%$ solution of H_2SO_4 of specific gravity 1.84 ?

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14. Determine the number of gram equivalents of solute in

100 mL of 5N HCl

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15. Determine the number of gram equivalents of solute in

200 mL of 0.1 N Na_2CO_3

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16. Calculate equivalent mass (E) of the following -

(1) K-Alum (molar mass = M_1) in the reaction :

$H_3PO_3 + NaOH \rightarrow Na_2HPO_3 + H_2O$

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17. Calculate equivalent mass (E) of the following -

H_3PO_3 (molar mass = M_2) in the reaction :

$$H_3PO_3 + NaOH \rightarrow Na_2HPO_3 + H_2O$$

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18. Specific heat of a metal is 0.031 cal per gram, and its eq. wt is 103.6 Calculate the exact atomic weight of the metal.

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19. A chloride of an element contain $49.5\,\%$ chlorine. The specific heat of the element is 0.064. Calculated the equivalent mass, valency and atomic mass of the element.

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20. On dissolving 2.0 g of metal in sulphuric acid, 4.51 g of the metal sulphate was formed. The specific heat of metal is $0.057 cal g^{-1}$. What is valency of the metal and exact atomic mass ?

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21. How are 0.50 mol Na_2CO_3 and 0.50 M Na_2CO_3 different ?

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22. Potassium sulphate $(S = 18.38\,\%)$ and potassium selenate $Se = 35.75\,\%)$ are isomorphous. At wt of S = 32 Find the atomic wt. of Se.

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23. If the density of methanol is $0.793 kg L^{-1}$, what is its volume needed for making 2.5 L of its 0.25 M solution ?

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24. Carbon combines with hydrogen to form three compounds A, B and C. The percentage of hydrogen in A, B and C are 25, 14.3 and 7.7 respectively. Which law of chemical combination is illustrated ?

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25. Aluminium oxide contains 53% Al and carbon dioxide contains 28% C. Assuming the validity of LRP, calculate $Al\%$ in AL_4C_3

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26. Calculate the percentage composition of calcium nitrate.

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27. In the reaction $A + B_2 \rightarrow AB_2$, Identify the limiting reagent, if any, in the following mixtures.

(i) 300 atoms of A + 200 molecules of B

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28. In the reaction $A + B_2 \rightarrow AB_2$, Identify the limiting reagent, if any, in the following mixtures.

2 mol A + 3 mol B

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29. Dinitrogen and dihydrogen react with each other to produce ammonia according to the chemical equation :

$N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$

Calculate the mass of ammonia produced produced if $2.00 \times 10^3 g$ nitrogen react with$1.00 \times 10^3 g$ dihydrogen.

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30. Dinitrogen and dihydrogen react with each other to produce ammonia according to the chemical equation :

$N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$

Will any of the two reactants remain unreacted ?. If yes, which one and what would be its mass ?

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31. Dinitrogen and dihydrogen react with each other to produce ammonia according to the chemical equation :

$N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$

If yes, which one and what would be its mass ?

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32. A compound contains 4.07% hydrogen, 24.27% carbon and 71.65% chlorine . Its molar mass is 98.96 g. What are its empirical and molecular formulas ?

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33. Draw the structure of Vanilin.

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34. How many moles of electrons weigh one kilogram ?

A. 6.02×10^{23}

B. $\frac{1}{9.1} \times 10^{31}$

C. $\frac{6.02}{9.1} \times 10^{54}$

D. $\frac{1}{9.1 \times 6.02} \times 10^{8}$

Answer: B

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35. Volume of a gas at NTP is 1.12×10^{-7} cc The number of molecules is equal to

A. 3.01×10^{12}

B. 3.01×10^{18}

C. 3.01×10^{24}

D. 3.01×10^{30}

Answer: A

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36. Find the total no. of neutrons in 7 mg of C^{14}

A. 2.4×10^{21}

B. 1.2×10^{21}

C. 6.2×10^{20}

D. 5.4×10^{22}

Answer: A

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37. Chlorophyll contains $2.68\ \%$ of magnesium by mass. Calculate the no. of Mg atom in 2g of chlorophyll

A. 2.5×10^{21}

B. 1.35×10^{21}

C. 4.8×10^{20}

D. 6.1×10^{21}

Answer: B

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38. Calculate the no. of molecules present in one drop of water of mass 0.05 g

A. 7.8×10^{20}

B. 1.67×10^{22}

C. 2.66×10^{21}

D. 1.67×10^{21}

Answer: D

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39. Calculate normality of $0.6\ \%$ (w/v) of H_2O_2 (aq)

A. 3N

B. 6.5 N

C. 0.35 N

D. 0.25 N

Answer: C

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40. We have 100 ml 0.1 M KCL solution. To make it 0.2 M,

A. evaporate 50 ml H_2O

B. evaporate 50 ml solution

C. add 0.1 mol KCL

D. add 0.01 mol KCL

Answer: A

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41. A metal forms an oxide, containing 30% oxygen calculate the valency of the metal in the oxide if the atomic mass of the metal is 56

A. 3

B. 2

C. 1

D. 4

Answer: A

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42. The chloride of a metal contains 54.4% of chlorine. The vapour density of the chloride is 130.56. Find the atomic mass of the metal

A. 24

B. 119

C. 86

D. 56

Answer: B

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43. A laboratory bottle containing conc. H_2SO_4. If density is 1.78 g/ml. Calculate the strength of the solution is normality.

A. 12 N

B. 36 N

C. 31.4 N

D. 18.2 N

Answer: C

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44. Calculate the normality of a solution containing 3.15g of hydrated oxalic acid dissolved in 300 ml of the solution

A. 8.5 N

B. 4.6 N

C. 0.5N

D. 0.2 N

Answer: C

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45. 0.2g of an organic compound contain 40.67% of carbon, 8.47% of hydrogen, 37.96 mL of nitrogen are obtained at S.T.P. from the same amount of the compound. Find out the empirical formula of the compound

A. C_3H_7NO

B. C_2H_5NO

C. $C_2H_5NO_2$

D. $C_3H_7NO_2$

Answer: B

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46. A compound contains $K = 42.39\,\%$, $Fe = 15.23\,\%$ and $C = 19.44\,\%$ $N = 22.8260\,\%$. The molecular mass of the compound is 368. Find the molecular formula of the compound

A. $K_3\left[Fe(CN)_6\right]$

B. $K\left[Fe(CN)_4\right]$

C. $K_4\left[Fe(CN)_6\right]$

D. $K_2\left[Fe(CN)_4\right]$

Answer: C

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47. Percentage composition of an organic compound was $C = 40\,\%$, $H = 6.67\,\%$ and $O = 53.33\,\%$. Its vapour density is found to be 2.813 times that of oxygen. Calculate its emprical formula.

A. $C_3H_6O_3$

B. $C_2H_4O_3$

C. $C_4H_7O_2$

D. CH_2O

Answer: D

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48. 9.0 mL of a mixture of CH_4 and C_2H_4 is mixed with 30.0 mL of O_2 and the mixture is exploded in an eudiometer tube. On cooling, the resulting gas mixture occupy a volume of 21.0 mL. on shaking the residual

gas with KOH, the volume becomes 7.0 mL. Find the volumes of CH_4 and C_2H_4 in the mixture

(All volumes are measured at the same temperature and pressure)

A. 3 mL, 6 mL

B. 4 mL, 5 mL

C. 5 mL, 4 mL

D. 6 mL, 3 mL

Answer: B

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49. 20 mL of a gaseous hydrocarbon is exploded with excess oxygen in an eudiometer tube and the contraction in volume was 70 mL. Vapour density of the hydrocarbon is 29. Find its molecular formula

A. C_5H_{12}

B. `C_8H 10

C. C_3H_6

D. C_4H_{10}

Answer: D

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

I. One atom of oxygen

II. One atom of nitrogen

III. $1 \times 10^{-10} mol$ of oxygen atom

(IV) $1 \times 10^{-10} mol$ of copper

(1) $II < I < III < IV$

(2) $I < II < III < IV$

(3) $III < II < IV < I$

(4) $IV < II < III < I$

(5) $II < IV < I < III$

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51. The maximum number of molecules are present in

A. 15 L of H_2 gas at STP

B. 5 L of N_2 gas at STP

C. 0.5 g of H_2 gas

D. 10 g of O_2 gas

Answer: A

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

A. 0.02

B. 3.125×10^{-2}

C. 0

D. 0

Answer: B

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53. The total number of protons in 10 g of calcium carbonate is $\left(N_0 = 6.023 \times 10^{23}\right)$

A. 3.01×10^{24}

B. 4.06×10^{24}

C. 2.01×10^{24}

D. 3.02×10^{24}

Answer: A

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54. The number of hydrogen atoms present in 25.6 g of sucrose $(C_{12}H_{22}O_{11})$ which has a molar mass of 342.3 g is

A. 22×10^{23}

B. 9.91×10^{23}

C. 11×10^{23}

D. 44×10^{23} H atoms

Answer: B

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55. A compound used in making nylon contains $48.3\,\%$ oxygen. There are four oxygen atoms per molecule. What is the molecular weight of the compound ?

A. 36

B. 116

C. 15

D. 132.5

Answer: D

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

A. 55.85

B. 55.95

C. 55.75

D. 56.05

Answer: B

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57. An unknown element forms an oxide. What will be the equivalent weight of the element if the oxygen content is 20% by weight ?

A. 16

B. 32

C. 8

D. 64

Answer: B

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58. 1.520 g of hydroxide of a metal on ignition gave 0.995 g of oxide. The equivalent weight of metal is

A. 1.52

B. 0.995

C. 190

D. 9

Answer: D

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

A. 412.2

B. 216

C. 145.4

D. 108.2

Answer: C

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60. A sample of H_2SO_4 (density 1.787 gmL^{-1}) is labelled as 86% by weight. What is the molarity of acid ? What volume of acid has be used to make 1 litre of $0.2MH_2SO_4$?

A. 14.75 ml

B. 15.75 ml

C. 12.75 ml

D. 16.75 ml

Answer: C

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61. A 3M solution of $Na_2S_2O_3$ (Relative Formula Mass = 158) has density of 1.25 g/mL. Calculated its molality.

A. 3.87

B. 3.5

C. 4.5

D. 4.87

Answer: A

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62. What is the empirical formula of an oxide of vanadium, if 2,74 gm, of the oxide contains 1.53 gm metal (Atomic mass of V = 52 amu)

A. V_2O_3

B. VO

C. V_2O_5

D. V_2O_7

Answer: C

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63. A gaseous compound is composed of $85.7\,\%$ by mass of carbon and $14.3\,\%$ by mass hydrogen. Its density is 2.28 g/L at 300 K and 1 atm pressure. Determine molecular formula of the compound.

A. C_2H_2

B. C_2H_4

C. C_4H_8

D. C_4H_{10}

Answer: C

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64. 0.1 mole of a carbohydrate with empirical formula CH_2O contain 1 g of hydrogen. What is its molecular formula ?

A. $C_5H_{10}O_5$

B. $C_6H_{12}O_6$

C. $C_4H_6O_4$

D. $C_2H_4O_2$

Answer: A

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65. One hydrated salt $Na_2CO_3.xH_2O$ undergoes 63% loss in mass on heating and become anhydrous The value of X is

A. 10

B. 12

C. 8

D. 18

Answer: A

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66. 2 gm of a sample contains mixture of SiO_2 and FE_2O_3. The sample on very strong heating leave a residue of mass 1.96 gm. The reaction responsible for weight loss is $3Fe_2O_3 \rightarrow 2Fe_3O_4 + \frac{1}{2}O_2$

What is the percentage by mass of SiO_2 in original mixture

A. $10\ \%$

B. $20\ \%$

C. $40\ \%$

D. $50\ \%$

Answer: C

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67. Calculated the weight of MnO_2 required to produce 1.78 litre of Cl_2 at STP by following reaction

$MnO_2 + 4HCl \rightarrow MnCl_2 + Cl_2 + 2H_2O$

A. 7.9 gm

B. 5.9 gm

C. 6.9 gm

D. 4.9 gm

Answer: C

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68. The volume of oxygen necessary for the complete combustion of 20 L of propane is

A. 40 L

B. 60 L

C. 80 L

D. 100 L

Answer: D

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69. 2.76 g of silver carbonate on being strongly heated yield a residue weighing

A. 2.16 g

B. 2.48 g

C. 2.64 g

D. 2.32 g

Answer: A

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70. A mixture of NH_4NO_3 and $(NH_4)_2HPO_4$ contain 30.4 mass percentage of nitrogen what is the mass ratio of two components in the mixture ?

A. $2:1$

B. $1:2$

C. $3:4$

D. $4:1$

Answer: A

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71. 6.2 gm of a sample containing $Na_2CO_3, NaHCO_3$ & non volatile impurity on gentle heating loses 5% of its weight due to the reaction $2NaHCO_3 \rightarrow Na_2CO_3 + CO_2 + H_2O$ Residue is dissolved in water to form 100 ml solution & its 10 ml portion requires 7.5 ml of 0.2 M aqueous solution of $BaCl_2$ for complete precipitation of carbonates . What is the weight of Na_2CO_3 in gm in the origin sample ?

A. 1.59

B. 1.06

C. 0.53

D. None

Answer: B

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72. A metal M forms the sulphate $M_2(SO_4)_3$ 0.596 gm of the sample reacts with excess $BaCl_2$ to give, 1.22 gm $BaSO_4$. What is the atomic weight of the M ? (S = 32, Ba + 137.3)

A. 26.9

B. 69.7

C. 55.8

D. 2.3

Answer: A

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73. 100 mL of pure phosphine is decomposed to produce vapours of phosphorus and H_2. The change in volume during reaction is :

A. 75 mL

B. 50 mL

C. 25 mL

D. 150 mL

Answer: A

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74. 11.2 litre of a gas at STP weighs 14 g. The gas could not be :

A. N_2

B. CO

C. B_2H_6

D. N_2O

Answer: D

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75. 8 g of oxygen has same number of atoms in :

A. $2gH_2$

B. $8gO_3$

C. $16gO_3$

D. $4gH_2$

Answer: B

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76. Volume of H_2SO_4 acid ($98\,\%$ by mass, d = 1.80 g/mL) required to prepare 1 litre of 0.1 M H_2SO_4 solution is :

A. 16.65 mL

B. 22.20 mL

C. 5.55 mL

D. 11.1 mL

Answer: C

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77. Chloride of an element is given by the formula MCl_x and it is $100\,\%$ ionised in 0.01 M aqueous solution. Then,

A. if $\left[Cl^-\right]$ = 0.03 M then the value of x is 3

B. if $\left[Cl^-\right] = 0.05$then the value of x is 5

C. $\left[M^{x+}\right]$ = 0.01 M, irrespective of $\left[Cl^-\right]$

D. $\left[M^{x+}\right]$ depends on $\left[Cl^{-}\right]$

Answer: A::B::C

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78. 10 g carbon (C) reacts with 100 g of Cl_2 of form CCl_4 The correct statement(s) is/are

A. carbon is the limiting reagent

B. Cl_2 is the limiting reagent

C. 108.45 g CCl_4 is formed

D. 0.833 moles of CCl_4 is formed

Answer: B::C

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79. 1 gm of molecule of V_2O_5 contains

A. 5 moles of O atom

B. 2 moles of V atom

C. 1 mole of O atom

D. 2.5 mole of O atom

Answer: A::B

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80. Which of the following is correct ?

A. g-mole wt. = mol.wt.in g = wt. of 6.02×10^{23} molecules

B. Mole = N molecule = 6.02×10^{23} molecule

C. Mole = g-molecule

D. None of the above

Answer: A::B::C

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81. The vapour density of a gas is given by :

A. V.D = $M.\ wt.\ /2$

B. V.D = ("wt. of N molecules of gas")/("wt. of N molecules of" H_2)`

C. V.D = $\frac{\text{wt. of 1 mole of gas}}{\text{wt. of 1 mole of } H_2}$

D. none of these

Answer: A::B::C

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82. 8 g of O_2 has the same number of molecules are :

A. 7 g of CO

B. 14 g of CO

C. 28 f of CO

D. 11 g of CO_2

Answer: A::D

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83. 10 g of NaCl is dissolved in 250 g water. The correct expressions for concentration of NaCl in solution are :

A. mass fraction = 0.04

B. mole fraction = 0.0122

C. molarity = 0.684

D. molality = 0.684

Answer: A::B::C::D

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84. A toothpaste containing fluoride in form of sodium mono fluoro ortho phosphate Na_3PO_4F has 0.754 g sodium in 100 ml solution. Which of the following are correct for the given observation ?

A. The number of fluorine atoms present in 100 mL = 6.62×10^{21}

B. The amount of Na_3PO_4F 100 mL = 2.0 g.

C. The concentration of Na_3PO_4F = 0.11 M

D. Moles of Na_3PO_4F = moles of F = moles of P

Answer: A::B::C::D

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85. 35 drops of a liquid having density 1.2 g/mL, weigh 2.4 g. assuming molecular weight of liquid 70, select the correct statements

A. Volume of one drop of liquid = 0.057 mL

B. weight of one drop of liquid = 0.068 g

C. Number of molecules in one drop of liquid = 5.85×10^{20}

D. Number of molecules is 35 drop of liquid = 2.05×10^{22}

Answer: A::B::C::D

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86. 1 g of activated charcoal has a surface area of $10^3 m^2$. One molecule of NH_3 having diameter 0.3 nm is supposed to be adsorbed on complete surface of charcoal forming unilayer adsorption. The activated charcoal is brought in contact with 100mL of 2 M NH_3 solution

Answer the following questions based on above passage:

How many NH_3 molecules are adsorbed on chemical surface ?

A. (A)1.4×10^{22}

B. (B)1.4×10^{23}

C. (C)1.4×10^{21}

D. (D)1.4×10^{20}

Answer: A

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87. 1 g of activated charcoal has a surface area of $10^3 m^2$. One molecule of NH_3 having diameter 0.3 nm is supposed to be adsorbed on complete surface of charcoal forming unilayer adsorption. The activated charcoal is brought in contact with 100mL of 2 M NH_3 solution

Answer the following questions based on above passage:

The molarity of NH_3 left after the adsorption on charcoal surface is

A. (A)1.77

B. (B)1.150

C. (C)1.125

D. (D)1.12

Answer: A

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88. Match Column- I with Column -II

Column - I		Column - II	
(A)	1.8 mL $H_2O(l)$ (d=1g/mL)	(P)	$\frac{1}{10}N_A$ molecules of H_2O
(B)	1.8 mL $H_2O(v)$ at STP	(Q)	2.24 litre at STP
(C)	8.03×10^{-5} mole $H_2O(v)$	(R)	1.8 g of $H_2O(l)$
(D)	0.8×10^{-4} mol H_2O	(S)	1.44×10^{-3} g H_2O
		(T)	4.84×10^{19} molecules of H_2O

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89. Match Column- I with Column -II

Column - I	Column - II
(A) 1 mol NaOH	(P) 2.24 L at STP
(B) 0.2 mol $CO_2(g)$	(Q) 2.8 g
(C) 0.1 mol N_2 (g)	(R) 40 g
(D) 0.1 mol CO (g)	(S) 0.2 N_A no of molecules

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90. Match Column- I with Column -II

Column - I	Column - II
(A) 98 g H_2SO_4 in 1000 mL solution	(P) gives N_A no of H^+ on ionisation
(B) 98 g H_3PO_4 in 1000 mL solution	(Q) $2N_A$ H^+ on ionisation
(C) 36.5 g HCl in 500 mL solution	(R) $3N_A$ H^+ on complete ionisation
(D) 6.3 g HNO_3 in 100 mL solution	(S) Concentration is 2 M

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91. A solution of H_2O_2 has normality N/1.7 what is its $\%$ strength.

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92. Haemoglobin contains $0.25\,\%$ iron by weight of haemoglobin is 89600. Find the number of iron atoms present in one molecule of haemoglobin.

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93. An atom X has a mass that is four times that of carbon atom. What mass of X will combines with 1.00 g of carbon in forming the compound X_2C ?

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94. When 500 mL of 1M $LaCl_2$ and 1 L of 3.0 M NaCl are mixed. What is the molarity of Cl^{Θ} ion

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95. If 9 moles of O_2 and 14 moles of N_2 are placed in a container and allowed to react according to the equation

$3O_2 + 2N_2 \rightarrow 2N_2O_3$

The reaction proceeds until 3 moles of O_2 remain. How many moles of N_2O_3 are present at that instant.

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96. The vapour density of a mixture containing NO_2 and N_2O_4 is 38.3 at $27^{\circ}C$. Calculated the moles of NO_2 in 100 moles mixture.

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97. 1.878 g of MB_X, when heated in a stream of HCl gas was completely converted to chloride MCl_X (1.0 g). The specific heat of metal is $0.14 cal/g$. Calculate molecular weight of metal bromide.

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98. A mixture of NaCI and Na_2CO_3 is given. On heating 12 g of the mixture with dil. HCI. 2.241 g of CO_2 is evolved at normal temperature. Calculate the amounts of each in the mixture

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99. Brass is an alloy of Cu-Zn. A sample of brass weighing 5.793 g, when treated with excess of dil. H_2SO_4 gives 324 mi of dry H_2 at $20^\circ C$ and 750 mm pressure. What is the percentage of Cu by mass in the alloy ?

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100. Chlorophyll, the green colouring matter of plants contains 2.68% of magnesium by mass. Calculate the number of magnesium atoms in 3.00 g of chlorophyll. [Atomic mass of magnesium = $24.3g/mol$]

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101. A plant virus is found to consists of uniform cylindrical particles of 150A in diameter and 5000A long. The specific volume of the virus Is $0.75cm^3/g$ If the virus is considered to be a single particle, find its molecular mass.

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102. What volume of a liquid will contain 4 mole ? Molar mass of liquid is $280gmol^{-1}$ and its is $1.4g/ml$

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103. A polystyrene, having the formula $Br_3C_6H_3(C_2H_6)_n$ was prepared by heating styrene with tribromobenzoic peroxide in the absence of air. If it was found to contain $10.46\ \%$ bromine by weight, Find the value of n.

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104. 116 g of Fe_3O_4 has 1.5 moles of Fe. Calculate the molecular mass of Fe_3O_4without using atomic mass of Fe and O.

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105. A sample of a mixture of $CaCl_2$ and NaCl weighing 4.22 g was treated to precipitate all the Ca as $CaCO_3$ which was then heated at quantitatively converted to 0.959 g of CaO. Calculated $CaCl_2\ \%$ in the mixture

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106. Aspirin has the formula $C_9H_8O_4$. How many atoms of oxygen are there in a tablet weigh 360 mg.

A. 4.8×10^{23}

B. 4.8×10^{21}

C. 1.2×10^{23}

D. 1.08×10^{22}

Answer: B

Watch Video Solution

107. Which of the following contains greatest number of oxygen atoms ?

A. 1 g of O

B. 1 g of O_2

C. 1 g of O_3

D. All have the same number of atoms

Answer: D

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108. 80 g of oxygen contain as many atoms as in

A. 80 g of hydrogen

B. 1 g of hydrogen

C. 10 g of hydrogen

D. 5 g of hydrogen

Answer: D

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109. The number of gram molecules of chlorine in 6.02×10^{25} hydrogen chloride molecules is

A. 10

B. 100

C. 50

D. 5

Answer: C

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110. Which of the following has the smallest number of molecules ?

A. 0.1 mole of CO_2 gas

B. 11.2 L of CO_2 gas at STP

C. 22 g of CO_2 gas

D. $22.4x10^3$ mL of CO2 gas at STP

Answer: A

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111. The mass of 1 mole of electrons is

A. $9.1 \times 10^{-28} g$

B. 1.0008 mg

C. 0.55 mg

D. $9.1 \times 10^{-27} g$

Answer: C

Watch Video Solution

112. 2 g of $O-2$ at $0^\circ C$ and 760 mm of Hg pressure has volume

A. 1.4 L

B. 2.8 L

C. 11.2 L

D. 22.4 L

Answer: A

Watch Video Solution

113. The numerical value of N/n (where, N is the number of molecules in a given sample of gas) is

A. 8.314

B. 6.02×10^{23}

C. 0.0821

D. 1.66×10^{-19}

Answer: B

Watch Video Solution

114. Number of atoms of oxygen presenting in 10.6 g of Na_2CO_3 will be

A. 6.02×10^{23}

B. 12.04×10^{22}

C. 1.806 xx 10^23`

D. 31.80×10^{28}

Answer: C

Watch Video Solution

115. Which has minimum number of atoms ?

A. 2.0 mol of S_8

B. 6.0 mol of S

C. 5.5 mol of SO_2

D. 4.48 L of CO_2 at STP

Answer: C

Watch Video Solution

116. How many H-atoms are present in 0.046 g of ethanol ?

A. 6×10^{20}

B. 1.2×10^{21}

C. 3×10^{21}

D. 3.6×10^{21}

Answer: D

Watch Video Solution

117. Caffeine contains 28.9% nitrogen. If molecular weight of caffeine is 194, how many N atoms are present in one molecule of caffeine ?

A. 3

B. 4

C. 5

D. 6

Answer: B

Watch Video Solution

118. 74.5 g of a metallic chloride contains 35.5 g of chlorine, the equivalent weight of the metal is

A. 19.5

B. 35.5

C. 39

D. 78

Answer: C

Watch Video Solution

119. A gas is found to have a formula $[CO]_x$.Its vapour density is 70, the x is

A. 3

B. 3.5

C. 5

D. 6.5

Answer: C

Watch Video Solution

120. The equivalent weight of a solid element is found to be 9. If the specific heat of this element is $1.05 Jg^{-1}K^{-1}$then its atomic weight is

A. 17

B. 21

C. 25

D. 27

Answer: D

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

A. 35.5

B. 28.1

C. 128

D. 19

Answer: A

Watch Video Solution

122. Each molecule of a gas, contains 2 hydrogen atoms, $1.78 \times 10^{-22} g$ chlorine, 2 carbon atoms and $1.25 \times 10^{-22} g$ of an unknown metal. Its molecular weight will be

A. 145

B. 206

C. 178

D. 342

Answer: B

Watch Video Solution

123. A sample of pure calcium weighing 1.35 g was quantitatively converted to 1.88 g of pure CaO. Atomic mass of calcium is

A. 20

B. 40

C. 60

D. 80

Answer: B

Watch Video Solution

124. 100 ml urea solution contains 6×10^{20} molecules of urea. What is the concentration of the solution.

A. 0.001 M

B. 0.1 M

C. 0.02 M

D. 0.01 M

Answer: D

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125. The vapour density of a mixture containing NO_2 and N_2O_4 is 27.6. The mole fraction of NO_2 in the mixture is

A. 0.8

B. 0.5

C. 0.2

D. 0.11

Answer: A

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126. The mole fraction of glucose $(C_6H_{12}O_6)$ in aqueous solution is 0.2, then molality of solution is 0.2, then molality of solution will be

A. 13.8

B. 12

C. 2

D. 55.56

Answer: A

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127. 480 mL of 1.5 M HCl was mixed with 520 Ml of 1.2 M HCl. What is the molarity of resulting solution ?

A. 1.2 M

B. 1.5 M

C. 1.344 M

D. 2.7 M

Answer: C

Watch Video Solution

128. Which option is correct ?

If the temperature of an aqueous solution is increased, its

A. molality decreases

B. molarity decreases

C. mole fraction decreases

D. $\% \left(\frac{w}{w} \right)$ decreases

Answer: B

Watch Video Solution

129. A given sample of pure compound contains 9.81 gm of Zn, 1.8×10^{23} atoms of chromium and 0.6 mole of oxygen atom. What is the simple molecular formula of the sample ? [Atomic mass of Zn = 65.38]

A. $ZnCr_2O_7$

B. $ZnCr_2O_6$

C. $ZnCrO_4$

D. $ZnCrO_6$

Answer: B

Watch Video Solution

130. The gaseous compound is composed of 85.7% C by $w/W\&14.3\%$ by mass hydrogen. It's density id $2.28gm/litre$ at 300 K and and 1 atm pressure. Determine molecular formula of the compound.

A. C_2H_2

B. C_2H_4

C. C_4H_8

D. C_4H_{10}

Answer: C

Watch Video Solution

131. If 20 g of $CaCO_3$ is treated with 100 mL of 20% HCl solution, the amount of CO_2 produced is

A. 22.4 L

B. 8.80 g

C. 6.2 g

D. 2.24 L

Answer: B

Watch Video Solution

132. Write the names of monomers of Nylon-6,6.

Watch Video Solution

133. Draw the structure of Cytosine.

Watch Video Solution

134. $K_2Cr_2O_7 + HCl \rightarrow KCl + CrCl_3 + Cl_2 + H_2O$

Here one mole HCl reacts completely with $K_2Cr_2O_7$ to give chlorine (Cl_2). How many grams of MnO_2 will be required to produce the same amount of Cl_2

A. 18.642 gm

B. 43.5 gm

C. 14.034 gm

D. 1.19717 gm

Answer: A

Watch Video Solution

135. Chlorine is prepared by reacting HCl which react with 5 gm of MnO_2 according to the equation

$$4HCl(aq) + MnO_2(s) \rightarrow 2H_2O(l) + MnCl_2(aq) + Cl_2(g)$$

The grams of HCl which react with 5 gm of MnO_2 will be (Mn = 55)

A. 84 gm

B. 0.84 gm

C. 8.4 gm

D. 4.2 gm

Answer: C

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136. One mole of chlorine combine with certain weight of a metal giving 111 g of its chloride. The same amount of metal can displace 2 g of hydrogen from an acid. The Atomic weight of the metal is

A. 40 g

B. 20 g

C. 80 g

D. none

Answer: A

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137. The chloride of a metal contains 71% chlorine by weight and the vapour density of it is 50. The atomic weight of the metal will be

A. 29

B. 58

C. 35.5

D. 71

Answer: A

Watch Video Solution

138. When 100 g of ethylene polymerizes to polythene according to the equation

$n(CH_2 = CH_2) \rightarrow$ (-CH_2-CH-2-)_n`. The weight of polythene produced will be

A. $\frac{n}{2}$ g

B. 100 g

C. $\frac{100}{n}$ g

D. 100n g

Answer: B

Watch Video Solution

139. The total molarity and normality of all the ions present in a solution containing 0.1 M of $CuSO_4$ and 0.1 M of $Al_2(SO_4)_3$ is

A. 0.2 M, 0.4 N

B. 0.7 M, 1.6 N

C. 0.8M, 1.6 N

D. 1.105 M, 2.10 N

Answer: B

Watch Video Solution

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

A. 1.19×10^{22}

B. 3.01×10^{23}

C. 5.88×10^{23}

D. 6.02×10^{23}

Answer: A

Watch Video Solution

141. The vapour density of a volatile chloride of a metal is 95 and the specific heat of the metal is $0.13 cal/g$. The equivalent weight of the metal will be approximately

A. 6

B. 12

C. 18

D. 24

Answer: B

Watch Video Solution

142. An oxide of Iodine (I = 127) contain 25.4 g of iodine and 8 g of oxygen.

Its formula could be

A. I_2O_3

B. I_2O

C. I_2O_5

D. I_2O_7

Answer: C

Watch Video Solution

143. How many atoms are contained in a mole of acetic acid ?

A. $8 \times 6.02 \times 10^{23} a \rightarrow m / mol$

B. $4 \times 6.02 \times 10^{23} a \rightarrow m / mol$

C. $6 \times 6.02 \times 10^{23} a \rightarrow m / mol$

D. None of these

Answer: A

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144. How many g of KCl would have to be dissolved in 60 g H_2O to give $20\ \%$ by weight of solution ?

A. 15 g

B. 1.5 g

C. 12 g

D. 31.5 g

Answer: A

Watch Video Solution

145. Equal volumes of 0.1 M $AgNO_3$ and 0.2 M NaCl are mixed. The concentration of NO_3^- ions in the mixture will be

A. 0.1 M

B. 0.05 M

C. 0.2 M

D. 0.15 M

Answer: B

Watch Video Solution

146. 1 g-atom of sodium is equivalent to

A. 1 gram equivalent of Na

B. 13 g

C. 23 g

D. 1 g

Answer: A::C

Watch Video Solution

147. The mol-fraction of NaCl of aqueous solution is 0.2. The solution is

A. 13.9 m

B. mol-fraction of H_2O is 0.8

C. acidic in nature

D. neutral

Answer: A::B::D

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148. Which of the following contain(s) the greatest number of atoms ?

A. 1 g of O

B. 1 g of O_2

C. 1 g O_3

D. 1 g F_2

Answer: A::B::C

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149. A 5 L vessel contain 2.8 g of N_2 when heated to 1800 K, 30% molecules are dissociated into atoms

A. The total no. of moles of N_2 in the container will be 0.13

B. The total no N_2 of molecules in the container will be close to

0.421×10^{23}

C. Total no. of moles in the container will be 0.13

D. All of these are correct

Answer: B::C

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150. 100 mL of 0.06 M $Ca(NO_3)_2$ is added to 50 mL of 0.06 M $Na_2C_2O_4$

After the reaction is complete

A. 0,003 moles of calcium oxalate will get precipitated

B. 0.003 M of Ca^{++} will remain in excess

C. $Na_2C_2O_4$ is limiting reagent

D. $Ca(NO_3)_2$is excess reagent

Answer: A::B::C::D

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151. Chloride of an element is given by the formula MCl_x and it is $100\,\%$ ionised in 0.01 M aqueous solution. Then,

A. if [Cl^-]` = 0.03 M then the value of x is 3

B. if `[Cl^-] = 0.05 then the value of x is 5

C. $\left[M^{x+} = 0.01M\right.$. Irrespectively of $\left[Cl^{-}\right]$

D. $\left[M^{x+}\right.$ depends on [Cl^-]

Answer: A::B::C

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152. 10 g carbon (C) reacts with 100 g of Cl_2 of form $\mathbb{C}l_4$ The correct statement(s) is/are

A. carbon is the limiting reagent

B. Cl_2 is the limiting reagent

C. $108.45g\mathbb{C}l_4$ is formed

D. 0.833 moles of $\mathbb{C}l_4$ is formed

Answer: B::C

Watch Video Solution

153. The pair of species having different mass percentage of carbon is

A. $CH_3COOH \& C_6H_{12}O_6$

B. $CH_3COOH \& C_2H_5OH$

C. $HCOOCH_3 \& HCOOH$

D. $C_2H_5OH \text{ and } CH_3CH_3$

Answer: B::C::D

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154. Write down the structure of Chloroprene.

Watch Video Solution

155. What happens when Green Vitriol is heated strongly?

Watch Video Solution

156. This question has Statement I and Statement II, Of the four choices given after the Statement, choose the one that best describes the two Statements

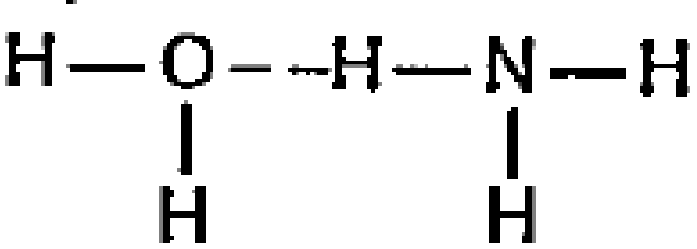
(1) Statement - I is true, Statement - II is true, Statement - II is a correct explanation of Statement - I

(2) Statement - I is true - II is true, Statement - II is not a correct explanation of Statement - I

(3) Statement - I is true, Statement - II is false

Statement - I is false Statement - II is true

Statement - I : The H-bonding of NH_3 and H_2O is represented as :



Statement - II : H_2O is more acidic than NH_3 and thus, H_2O is a proton donor

Watch Video Solution

157. This question has Statement I and Statement II, Of the four choices given after the Statement, choose the one that best describes the two Statements

(1) Statement - I is true, Statement - II is true, Statement - II is a correct explanation of Statement - I

(2) Statement - I is true - II is true, Statement - II is not a correct explanation of Statement - I

(3) Statement - I is true, Statement - II is false

Statement - I is false Statement - II is true

Statement - I : Molarity is temperature dependent ut molality does not

depend on temperature

Statement - II : `Molarity is the function of volume, which depends on temperature but molality is volume independent

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158. This question has Statement I and Statement II, Of the four choices given after the Statement, choose the one that best describes the two Statements

(1) Statement - I is true, Statement - II is true, Statement - II is a correct explanation of Statement - I

(2) Statement - I is true - II is true, Statement - II is not a correct explanation of Statement - I

(3) Statement - I is true, Statement - II is false

Statement - I is false Statement - II is true

Statement - I : Atomicity of phosphorus is four

Statement - II : Atomicity is the number of atoms present in 1 molecule.

Watch Video Solution

159. This question has Statement I and Statement II, Of the four choices given after the Statement, choose the one that best describes the two Statements

(1) Statement - I is true, Statement - II is true, Statement - II is a correct explanation of Statement - I

(2) Statement - I is true - II is true, Statement - II is not a correct explanation of Statement - I

(3) Statement - I is true, Statement - II is false

Statement - I is false Statement - II is true

Statement - I : Density is expressed as gL^{-1} whereas specific gravity is dimensionless.

Statement - II : Specific gravity is the ratio of the masses of solution and solvent.

Watch Video Solution

160. What happens when potassium permanganate is strongly heated?

Watch Video Solution

161. This question has Statement I and Statement II, Of the four choices given after the Statement, choose the one that best describes the two Statements

(1) Statement - I is true, Statement - II is true, Statement - II is a correct explanation of Statement - I

(2) Statement - I is true - II is true, Statement - II is not a correct explanation of Statement - I

(3) Statement - I is true, Statement - II is false

Statement - I is false Statement - II is true

Statement - I : 1 equivalent of H_2SO_4 contains 1 equivalent of H, S and O each

Statement - II : A species contains same number of equivalents of its components

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162. This question has Statement I and Statement II, Of the four choices given after the Statement, choose the one that best describes the two Statements

(1) Statement - I is true, Statement - II is true, Statement - II is a correct explanation of Statement - I

(2) Statement - I is true - II is true, Statement - II is not a correct explanation of Statement - I

(3) Statement - I is true, Statement - II is false

Statement - I is false Statement - II is true

Statement - I :Equivalent weight of ozone in the change $O_3 \rightarrow O_2$ is 8

Statement - II : 1 mole of O_3 on decomposition gives 3/2 mole of O_2

Watch Video Solution

163. 2 g of $O-2$ at $0^{\circ}C$ and 760 mm of Hg pressure has volume

Watch Video Solution

164. This question has Statement I and Statement II, Of the four choices given after the Statement, choose the one that best describes the two Statements

(1) Statement - I is true, Statement - II is true, Statement - II is a correct explanation of Statement - I

(2) Statement - I is true - II is true, Statement - II is not a correct explanation of Statement - I

(3) Statement - I is true, Statement - II is false

Statement - I is false Statement - II is true

Statement - I :Acidimetry and alkalimetry are the terms used in volumetric analysis

Statement - II : The reactant left after the chemical reaction is called limiting reagent

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165. This question has Statement I and Statement II, Of the four choices given after the Statement, choose the one that best describes the two

Statements

(1) Statement - I is true, Statement - II is true, Statement - II is a correct explanation of Statement - I

(2) Statement - I is true - II is true, Statement - II is not a correct explanation of Statement - I

(3) Statement - I is true, Statement - II is false

Statement - I is false Statement - II is true

Statement - I :$NaNO_3$ has no definite molecule

Statement - II : Its formula weight is 85

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166. Explain the process of preparation of $K_2Cr_2O_7$.

Watch Video Solution

167. An aqueous solution of NaOH having density $1.1.\ k\frac{g}{d}m^3$ contains 0.02 mole fraction of NaOH.

The molality and molarity of NaOH solution respectively are

A. 0.986, 1.134

B. 1.134, 1.193

C. 1.134, 1.02

D. 1.034, 1.134

Answer: B

Watch Video Solution

168. An aqueous solution of NaOH having density $1.1.\ k\frac{g}{d}m^3$ contains 0.02 mole fraction of NaOH.

Number of molecules of NaOH present in its s10 mL solution is

A. 6.023×10^{23}

B. 5.94×10^{25}

C. 6.023×10^{20}

D. 7.18×10^{21}

Answer: D

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169. What happens when $FeCl_3$ reacts with NH_4SCN?

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170. What happens when copper reacts with dilute nitric acid?

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171. Match Column - I with Column - II

Column - I		Column - II	
(A)	H_3PO_3	(P)	$m = 2.79\ mol\ kg^{-1}$
(B)	10.88 gm H_2O_2 in 100 ml	(Q)	Unitless
(C)	3 M NaCl Solution with $d = 1.25\ gcm^{-3}$	(R)	$3.2\ mol\ L^{-1}$
(D)	Vapour density	(S)	Dibasic

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172. Match Column - I with Column - II

	Column - I		Column - II
(A)	5·4 g of Al	(P)	0·5 N_A electron
(B)	1·2 g of Mg^{++}	(Q)	15·9999 amu
(C)	Exact atomic weight of oxygen present in a mixture of isotopes, O^{16} and O^{17}	(R)	0·2 mol atoms
(D)	0·9 ml of H_2O	(S)	0·05 moles

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173. Match Column - I with Column - II

	Column - I		Column - II
(A)	0.5 mole of $SO_2(g)$	(P)	Occupy 11.2 L at STP
(B)	1 g of $H_2(g)$	(Q)	Weighs 24 g
(C)	0.5 mole of $O_3(g)$	(R)	Total no. of atoms $= 1.5 \times N_A$
(D)	1 g molecule of $O_2(g)$	(S)	Weighs 32 g

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174. Match Column - I with Column - II

	Column - I		Column - II
(A)	4 gm NaOH in 500 ml solution	(P)	0.5 M
(B)	9.8 gm H_2SO_4 in 200 ml solution	(Q)	0.2 M

(C) 3.65 gm HCl in 100 ml solution (R) 0.4 M

(D) 12 gm CH_3COOH in 500 ml solution. (S) 1.0 M

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175. If 5 g H_2 is mixed with 14 g of nitrogen for the following reaction

$N_2 + 3H_2 \rightarrow 2NH_3$

At the end, mass of H_2 left unreacted is

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176. If mole fraction of ethanol-water mixture is 0.125. The number of mole of water per mol of ethanol in the mixture is

View Text Solution

177. If 5 g of sulphur is reacted with oxygen to produce 8 g of SO_2 mass of oxygen must be greater than X gm X is :

View Text Solution

178. 1.9 gm of CH_3Br_y has the same number of atoms as in 0.6 gm of H_2O. The value of y is :

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179. A complex compound of iron has molar mass = 2800 and it contains $8\,\%$ iron by weight. The number of iron atoms in one formula unit of complex compound is :

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180. P and Q are two elements which forms P_2Q_3 and PO_2 If 0.15 mole of P_2Q_3 weighs 15.9 g and 0.15 mole of PQ_2 weighs 9.3 g. What are atomic weights of P and Q ?

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181. Calculate the weight of iron, which will be converted to its oxide by the action of 18 g steam

Watch Video Solution

182. The reaction, $2C + O_2 \rightarrow 2CO$ is carried out by taking 24 g of carbon and 96 g O_2, find out

Which reactant is left in excess ?

Watch Video Solution

183. The reaction, $2C + O_2 \rightarrow 2CO$ is carried out by taking 24 g of carbon and 96 g O_2, find out

How much of the excess reactant is left ?

Watch Video Solution

184. The reaction, $2C + O_2 \rightarrow 2CO$ is carried out by taking 24 g of carbon and 96 g O_2, find out

How many moles of CO are formed ?

Watch Video Solution

185. The reaction, $2C + O_2 \rightarrow 2CO$ is carried out by taking 24 g of carbon and 96 g O_2, find out

How many g of other reactant should be taken so that nothing is left at the end of reaction ?

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186. Give the formula of Chalcopyrite.

Watch Video Solution

187. 1.5276 g of $CdCl_2$ was found to contain 0.9367 g of Cd. Calculate atomic weight of Cd.

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188. Copper forms two oxides. For the same amount of copper, twice as much oxygen was used to form first oxide than to form second one. What is the ratio of the valencies of copper in first and second oxides ?

Watch Video Solution

189. A hydrated sulphate of metal contains 8.1% metal and 43.2% SO_4^{2-} y weight. The specific heat of metal is $0.24cal/g$ What is

the formula of the hydrated sulphate ?

View Text Solution

190. A sample of gaseous hydrocarbon occupying 1.12 litre at NTP, when completely burnt in air produced 2.2 g CO_2 and 1.8 g H_2O Calculated the weight of hydrocarbon taken and the volume of O_2 at NTP required for its combustion.

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191. 4g C_3H_8 and 14 g O_2 are allowed to react to the maximum possible extent to form only CO and H_2O Find the weight of CO formed.

Watch Video Solution

192. A sample of a pure compound contains 2.04 g of Na, 2.65×10^{22} atoms of C and 0.132 mole of oxygen atoms. Find the empirical formula of

the compound.

Watch Video Solution

193. The molecular formula of a commercial resin used for exchanging ions in water softening is $C_8H_7SO_3Na$ (Mol.wt. 206) what would be the maximum uptake of Ca^{2+} ions by the resin when expressed in mole per gram resin ?

A. 1/216

B. 2/309

C. 1/412

D. 1/103

Answer: C

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194. 20.0 g of a magnesium carbonate sample decomposes on heating to give carbon dioxide and 8.0 g magnesium oxide. What will be the percentage purity of magnesium carbonate in the sample

A. 75

B. 96

C. 60

D. 84

Answer: D

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195. The number of water molecules is maximum in-

A. 18 molecules of water

B. 1.8 gram of water

C. 18 gram of water

D. 18 moles of water

Answer: D

Watch Video Solution

196. What is the mole fraction of the solute in a 1.00 m aqueous solution ?

A. 0.177

B. 1.77

C. 0.0354

D. 0.0177

Answer: D

Watch Video Solution

197. 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

the definiton of mass in units of grams

Watch Video Solution

198. 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

the mass of one mole of carbon

Watch Video Solution

199. 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

the ratio of chemical species to each other in a balanced equation

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200. 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

the ratio of chemical species to each other in a balanced equation

A. the definition of mass in units of grams

B. the mass of one mole of carbon

C. the ratio of chemical species to each other in a balanced equation

D. the ratio of elements to each other in a compound

Answer: 2

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201. What is the mass of precipitation formed when 50 mL of $16.9\,\%$ solution of $AgNO_3$ is mixed with 50 mL of $5.8\,\%$ NaCl solution ?

A. 26 g

B. 3.5 g

C. 7 g

D. 14 g

Answer: C

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202. The ratio of masses of oxygen and nitrogen in a particular gaseous mixture is 1: 4. The ratio of number of their molecule is

A. $1:4$

B. $7:32$

C. $1:8$

D. 0.13611111111111

Answer: B

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203. The system that contains the maximum number of atoms is

A. 4.25 g of NH_3

B. 8 g of O_2

C. 2 g of H_2

D. 4 g of He

Answer: C

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204. The volume of ethyl alcohol (density= 1.15 g//cc) that has to be added to prepare 100 cc of 0.5 M ethyl alcohol solution in water is

A. 1.15 cc

B. 2 cc

C. 2.15 cc

D. 2.30 cc

Answer: B

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205. 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. Mg, 0.016 g

B. O_2 0.16 g

C. Mg, 0.44 g

D. O_2. 0.28 g

Answer: A

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206. In acidic medium,H_2O_2 changes $Cr_2O_7^{-2}$ to CrO_5 which has two (-O-O-) bonds. Oxidation state of Cr in CrO_5

A. $+5$

B. $+3$

C. $+6$

D. -10

Answer: C

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207. Number of molecules in one litre of water is close to

A. $\frac{18}{22.4} \times 10^{23}$

B. $5.55 \times 6.023 \times 10^{23}$

C. $\frac{6.023}{23.4} \times 10^{23}$

D. $18 \times 6.023 \times 10^{23}$

Answer: B

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208. If 20 g of $CaCO_3$ is treated with 100 mL of 20% HCl solution, the amount of CO_2 produced is

A. 22.4 L

B. 8.80 g

C. 4.40 g

D. 2.24 L

Answer: B

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209. 0.56 g of a gas occupies $280cm^3$ at NTP, then its molecular mass is

A. 4.8

B. 44.8

C. 2

D. 22.4

Answer: B

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210. The equivalent mass of Fe in FeO is

A. 56

B. 28

C. 36

D. 18.66

Answer: B

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211. 10^{21} molecules are removed from 200 mg of CO_2. The moles of CO_2 left are

A. 2.88×10

B. 28.8×10^{-3}

C. 288×10^{-3}

D. 28.8×10^{3}

Answer: A

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212. What is the atomic weight of an element X for which a sample containing containing 1.58×10^{22} atoms weigh 1.05 g ?

A. 28

B. 20

C. 40

D. 23

Answer: C

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213. Cyclohexanol is dehydrated to cyclohexene on heating with conc. H_2SO_4 If the yield of this reaction is $75\ \%$ how much cyclohexene will be obtained from 100g of cyclohexanol ?

A. 61.5 g

B. 75.0 g

C. 20.0 g

D. 41.0 g

Answer: A

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214. The mass of $112cm^3$ of CH_4 gas at STP is

A. 0.16 g

B. 0.8 g

C. 0.08 g

D. 1.6 g

Answer: C

Watch Video Solution

215. Number of molecules in 1 litre of water is close to

A. $\frac{18}{22.4} \times 10^{23}$

B. $55.5 \times 6.023 \times 10^{23}$

C. $\frac{6.023}{23.4} \times 10^{23}$

D. $18 \times 6.023 \times 10^{23}$

Answer: B

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216. The percentage of N_2 in urea is about

A. 28

B. 18

C. 85

D. 46

Answer: D

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217. The V.D of a gas is 11.2 . The volume occupied by one gram of the gas at STP is

A. 1.0 L

B. 11.2 L

C. 22.4 L

D. none of these

Answer: A

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218. For 14 g of CO the wrong statement is

A. it occupies 2.24 L at NTP

B. it corresponds to $\frac{1}{2}$ mole of CO

C. it corresponds to same mole of CO and nitrogen gas

D. it corresponds to 3.01×10^{23} molecules of CO

Answer: A

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219. The weight of 112 mL of oxygen at NTP is

A. 0.064 g

B. 0.96 g

C. 0.32 g

D. 0.16 g

Answer: D

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220. The oxygen obtained from 72 kg of water is

A. 72 kg

B. 46 kg

C. 50 kg

D. 64 kg

Answer: D

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221. One mole of CH_4 contains

A. 4 g atoms of hydrogen

B. 3.0 g of carbon

C. 6.02×10^{23} atom of hydrogen

D. 1.81×10^{23} molecules of CH_4

Answer: A

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222. The total number of electrons in 18 mL of water (density = $1g.\ mL^{-1}$) is

A. 6.02×10^{25}

B. 6.02×10^{24}

C. $6.02 \times 18 \times 10^{23}$

D. 6.02×10^{23}

Answer: B

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223. The equivalent mass of a certain bivalent metal is 20 . The molecular mass of its anhydrous chloride is

A. 111

B. 55.5

C. 75.5

D. 91

Answer: A

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224. A compound has the molecular formula X_4O_6 If 10 g of X_4O_6 has 5.72 g X, then calculate atomic mass of X

A. 32 u

B. 64 u

C. 67 u

D. 98 u

Answer: A

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225. 5 moles of $Ba(OH)_2$ are treated with excess of CO_2 How much $BaCO_3$will be formed ?

A. 39.4 g

B. 197 g

C. 591 g

D. 580 g

Answer: D

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226. A metal oxide has the formula A_2O_3 It can be reduced by hydrogen to give free metal and water 0.1596 g of this metal oxide required 6 mg of hydrogen for complete reduction. What is the atomic weight of metal ?

A. 52.3

B. 57.3

C. 55.8

D. 59.3

Answer: C

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227. How many moles of magnesium phosphate, $Mg_3(PO_4)_2$ will contain 0.25 mole of oxygen atom ?

A. 0.02

B. 3.125×10^{-2}

C. 1.25×10^{-2}

D. 2.5×10^{-2}

Answer: B

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228. The number of sodium atom in 2 moles of sodium ferrocyanide is

A. 12×10^{23}

B. 26×10^{23}

C. 34×10^{23}

D. 48×10^{23}

Answer: D

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

I. One atom of oxygen

II. One atom of nitrogen

III. $1 \times 10^{-10} mol$ of oxygen atom

(IV) $1 \times 10^{-10} mol$ of copper

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230. 20.0 kg of N_2 (g) and 3.0 kg of H_2(g) are mixed to produce NH_3(g) formed is

(1) 17 kg

(2) 34 kg

(3) 20 kg

(4) 3 kg

(5) 23 kg

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231. Stoichiometric ratio of sodium dihydrogen orthophosphate and sodium hydrogen orthophosphate required for synthesis of $Na_5P_3O_{10}$ is

A. $1:2$

B. $3:16$

C. $1:1$

D. $2:3$

Answer: A

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232. Which of the following sets of compounds correctly illustrate the law of reciprocal proportions ?

(1) $P_2O_3. PH_3, H_2O$

(2) P_2O_5, PH_3, H_2O

(3) N_2O_5, NH_3, H_2O

(4) N_2O, NH_3, H_2O

(5) NO_2, NH_3, H_2O

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233. If the value of Avogadro number is $6.023 \times 10^{23} mol^{-1}$ and the value of Boltzmann constant is $1.380 \times 10^{-23} JK^{-1}$, then the number of significant digits in the calculated value of the universal gas constant is

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234. A compound H_2X with molar weight of 80 g is dissolved in a solvent having density of $0.4gml^{-1}$ Assuming no change in volume upon sdissolution, the molality of a 3.2 molar solution is

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235. Determine the oxidation number of the underlined element. $K\underline{Mn}O_4, K_4\left[\underline{Fe}(CN)_6\right]$

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236. Determine the oxidation number of S in H_2SO_4.

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237. What is the normality of $96\ \%$ solution of H_2SO_4 od specific gravity 1.84?

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238. How many mL of $96\ \%\ h_2SO_4$ solution is necessary to prepare one litre o.1 N h_2So_4?

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239. Determine the number of gram equivalents of solute in

100 mL of 5N HCl

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240. Calculate equivalent mass (E) of the following-

K-Alum (molar mass = M_1)

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241. Calculate equivalent mass (E) of the following -

H_3PO_3 (molar mass = M_2) in the reaction :

$H_3PO_3 + NaOH \rightarrow Na_2HPO_3 + H_2O$

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242. Calculate equivalent mass (E) of the following-

FeS_2 (Molar mass = M_3) in the reaction :

$FeS_2 + O_2 \rightarrow Fe_2O_3 + SO_2$

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243. Calculate equivalent mass (E) of the following-

$KMnO_4$(Molar mass = M_4) as an oxidising agent in different medium

acidic

alkaline

neutral.

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244. For the redox reaction,

$MnO_4^- + C_2O_4^{2-} + H^+ \rightarrow Mn^{2+} + CO_2 + H_2O$ The correct coefficients of the reactants for the balanced reaction are:

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245. Balance $Cl_2 + OH^- \rightarrow Cl^- + ClO_3^- + H_2O$

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246. Balance the following equation by ion electron method : $Cr_2O_7^{2-} + H^+ + C_2O_4^2 \rightarrow + Cr^{3+}CO_2 + H_2O.$

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247. Balance $ClO^- + CrO_2^- + OH^- \rightarrow Cl^- + CrO_4^{2-} + H_2O$

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248. 1 g of a mixture of NaOH and Na_2CO_3 and inert impurities was first titrated with phenolphthalein and $N/10HCl$, 17.5 mL of HCl was required at the end point. After this methyl orange was added and 2.5 mL of same HCl was again required . Find out percentage of NaOH and Na_2CO_3 in the mixture.

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249. 10 g of a sample of $Ca(OH)_2$ is dissolved in 10 mL of 0.5 N HCL solution . The excess of HCl was titrated with 0.2 N NaOH. The volume of NaOH used was 10 cc. Calculate the percentage of $Ca(OH)_2$ in the sample.

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250. What is the mass of sodium bromate and molarity of the solution necessary to prepare 85.5 mL of 0.672 N solution when the half reaction is, $BrO_3^- + 6H^+ + 6e \rightarrow Br^- + 3H_2O$ (Atomic mass of Br = 80)

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251. What happens when barium azide is heated ?

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252. A solution of 0.1 M $KMnO_4$ is used for the reaction : $s_2O_3^{2-} + 2MnO_4^- + H_2O \rightarrow MnO_2 + SO_4^{2-} + OH^-$ What volume of solution in mL will be required to react with 0.158 g of $Na_2S_2O_3$?

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253. 0.804 g sample of iron was dissolved in acid , Iron was reduced to $+2$ state and it required 47.2 mL of 0.112 N $KMnO_4$ solution for titration. Calculate the percentage of iron and Fe_3O_4 in the ore.

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254. 1.325 g of anhydrous sodium carbonate is dissolved in water and the solution is made up to 250 mL. On titration 25 mL of this solution neutralises 20 mL of a solution of H_2SO_4. HOW much water should be added to 450 mL of this acid solution to make it exactly $\frac{N}{12}$?

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255. 0.1 M $KMnO_4$ solution completely reacts with 0.05M $FeSO_4$ solution under acidic conditions. The volume of $FeSO_4$ used is 100 ml. What volume of KMnO4 was used ?

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256. Give the Formula of $Dolomite$.

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257. For the redox reaction,

$MnO_4^- + C_2O_4^{2-} + H^+ \rightarrow Mn^{2+} + CO_2 + H_2O$ The correct coefficients of the reactants for the balanced reaction are:

A. $MnO_4 - 2, C_2O_4^{2-} 5, H^+ 16$

B. $MnO_4 - 16, C_2O_4^{2-} 5, H^+ 2$

C. $MnO_4 - 5, C_2O_4^{2-} 16, H^+ 2$

D. $MnO_4 - 2, C_2O_4^{2-} 16, H^+ 5$

Answer: A

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258. In an experiment, 50 ml of 0.1 M solution of a salt reacted with 25 ml of 0.1 M solution of sodium sulphite. The half equation for the oxidation of sulphite ion :

$$SO_{3\,(aq)}\,H_2O \rightarrow SO^{2-}_{4\,(aq)} + 2H^{+}_{(aq)}$$

If the oxidation number of the metal in the salt was 3, what would be the new oxidation number of the metal ?

A. 0

B. 1

C. 2

D. 4

Answer: C

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259. The number of moles of $K_2Cr_2O_7$ reduced by one mole of Sn^{2+} ions is

A. $1/3$

B. 3

C. $1/6$

D. 6

Answer: A

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260. In a reaction, 4 moles of electrons are transferred to one mole of HNO_3 when acted as an oxidant. The possible reduction product is

A. 1.5 moles of N_2

B. 0.5 mole of N_2O

C. 1 mole of NO_2

D. 1 mole of NH_3

Answer: B

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261. Equivalent mass of $Fe_{0.9}$ O in reaction with acidic $K_2Cr_2O_7$ is $\left(Fe^{2+} + Cr_2O_7^{2-} + 14H^+ \rightarrow 6Fe^{3+} + 2Cr^{3+} + 7H_2O\right)$

A. $7m/10$

B. $10m/7$

C. $7m/9$

D. $9m/7$

Answer: B

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262. Equivalent weight of oxalic acid salt in following reaction is (O = 16, C = 12, K = 39)

$H_2C_2O_4 + Ca(OH)_2 \rightarrow CaC_2O_4 + H_2O$

A. 90

B. 45

C. 64

D. 128

Answer: B

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263. Which of the following is not a disproportionation reaction .

A. $P_4 + NaOH \rightarrow NaH_2PO_2 + PH_3$

B. $BaC_2 + N_2 \rightarrow Ba(CN)_2$

C. $Hg_2l_2 \rightarrow Hgl_2 + Hg$

D. $Ca(OH)_2 + Cl_2 \rightarrow CaOCl_2 + CaCl_2$

Answer: B

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264. The chloride of a metal contains 71% chlorine by weight and the vapour density of it is 50. The atomic weight of the metal will be

A. 29

B. 58

C. 35.5

D. 71

Answer: A

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265. 10 mL of 0.1 N HCI was added to 20 mL of 0.1 N KOH. .The excess of KOH was neutralised by 0.05 N H_2SO_4. The amount of H_2SO_4 consumed was :

A. 10.0 mL

B. 15.0 mL

C. 20.0 mL

D. 30.0 mL

Answer: C

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266. The number of moles of $KMnO_4$ required to oxidise one mole of FeC_2O_4 in an acidic medium is

A. 0.6

B. 1.67

C. 0.2

D. 0.4

Answer: A

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267. The normality and the volume strength of the solution which made by mixing of 5.6 V & 11.2 VH_2O_2 solution.

A. 8.4 V

B. 1.5 N

C. 4.8 V

D. 1 N

Answer: A::B

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268. 0.1 M solution of KI reacts with excess of H_2SO_4 and KIO_3 solutions, according to equation $5I^- + lO_3^- + 6H^+ \rightarrow 3l_2 + 3H_2O$, which of the following statement is correct

A. 200 ml of the KI solution react with 0.004 mole KlO_3

B. 100 ml of the Kl solution reacts with 0.006 mole of H_2SO_4

C. 0.5 litre of the Kl solution produced 0.005 mole of l_2

D. Equivalent weight of KlO_3 is equal to $\left(\frac{\text{Molecular Weight}}{5}\right)$

Answer: A::B::D

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269. In which of the following compound transition metal has zero oxidation state

A. CrO_5

B. NH_2NH_2

C. $Ni(ClO_4)_2$

D. $[Fe(CO)_5]$

Answer: D

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270. It takes 0,15 mole of CIO^- to oxidize 12.6 g of chromium oxide of a specific formula to $Cr_2O_7^{2-}$. CIO^- became CL^- The formula of the oxide is (atomic weight Cr = 52, 0= 16)

A. CrP_3

B. CrO_2

C. CrO_4

D. CrO

Answer: B

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271. 1 mol of ferrous oxalate is oxidized by x mol of MnO_4^- and also 1 mol of ferrous oxalate is oxidized by y mol of MnO_4^- in acidic medium. The ratio (x/y) is :

A. $2:1$

B. $5:6$

C. $3:1$

D. $6:5$

Answer: D

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272. Which reaction does not involve neither oxidation nor reduction ?

A. $VO^{2+} \rightarrow V_2O_3$

B. $Na \rightarrow Na^+$

C. $CrO_4^{2-} \rightarrow Cr_2O_7^{2-}$

D. $Zn^{2+} \rightarrow Zn$

Answer: C

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273. Consider the following reactions :

$C_2O_4^{2-} \rightarrow CO_2$

$SO_4^{2-} \rightarrow SO_3^{2-}$

$MnO_4^{2-} \rightarrow MnO_4^-$

$Fe^{3+} \rightarrow Fe^{2+}$

A. (i) & (ii) shows oxidation

B. (iii) & (iv) shows reduction

C. (i) & (iii) shows oxidation

D. (iii) & (iv) shows oxidation

Answer: C

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274. Which of the following reaction represents disproportionation ?

A. $CrO_5 \rightarrow Cr^{3+} + O_2$

B. $IO_3^- + I^- + H^+ \rightarrow l_2$

C. $CrO_2Cl_2 + NaOH \rightarrow NaCrO_4 + NaCl + H_2O$

D. $Na_2S_2O_3 + H_2SO_4 \rightarrow Na_2SO_4 + SO_2 + S_8 + H_2O$

Answer: D

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275. 6x10^{-3} mole $K_2Cr_2O_7$ reacts completely with 9x10^{-3} mole X^{n+} to give XO_3^{-1} and Cr^{3+}. the value of n is :

A. 3

B. 1

C. 0

D. 4

Answer: B

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276. A certain ion X^{n+} is oxidized successively to XO_4^{2-} and then XO_4^- by a powerful oxidizing agent. If the number of moles of the oxidizing agent required in the successive steps of oxidation are in the ratio 4:1, n is :

A. 3

B. 1

C. 2

D. 4

Answer: C

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277. Write the common method of preparation of N_2O.

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278. How many moles of electrons are needed for the reduction of each mole of Cr in the reaction,

$CrO_5 + H_2\,SO_4 \rightarrow Cr_2(SO_4)_3 + H_2O + O_2$

A. 4

B. 3

C. 5

D. 7

Answer: B

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279. .What volume of H_2O_2 solution of 22,4 “vol strength" is required to liberate 2240 mL of O_2 at NTP ?

A. 300 mL

B. 200 mL

C. 100 mL

D. 500 mL

Answer: C

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280. In the reaction, $2CuSO_4 + 4KI \rightarrow Cu_2l_2 + 2K_2SO_4 + I_2$ the ratio of equivalent weight of $CuSO_4$ to its molecular weight is :

A. $1/8$

B. $1/4$

C. $1/2$

D. 1

Answer: D

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281. Hydroxylamine reduces iron (lll) according to following equation

$NH_2OH + Fe_2(SO_4)_3 \rightarrow N_2(g) + H_2O + FeSO_4 + H_2SO_4$ which statement is correct ?

A. n-factor for hydroxyl amine is 1

B. equivalent weight of $Fe_2(SO_4)_3$ is M/3

C. 6 meq of $Fe_2(SO_4)_3$ is contained in 3 millimoles of ferric sulphate

D. all of these

Answer: A

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282. In the following reaction (unbalanced) equivalent wt. of As_2S_3 is related to molecular wt. M By

$As_2S_3 + H^+NO_3^- \rightarrow NO + H_2O + AsO_4^{3-} + SO_4^{2-}$

A. $M/2$

B. $M/4$

C. $M/28$

D. $M/24$

Answer: C

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283. 60 ml 0.1 M $KMnO_4$ is treated with excess FeC_2O_4 in presence of H_2SO_4. The volume of CO_2 gas (measured at STP) obtained is :

A. 448 ml

B. 672 ml

C. 224 ml

D. 112 ml

Answer: A

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284. What happens when iron is heated in presence of O_2?

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285. What volume of 2 N $K_2Cr_2O_7$ solution is required to oxidise 0.81 g of H_2S in acidic medium?

A. 47.8 ml

B. 23.8 ml

C. 40 ml

D. 72 ml

Answer: B

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286. 600 ml of a 0.1 (N) solution of $AgNO_3$ is added to 500 mL of 0.1 (N) KCI solution. The concentration of nitrate in the resulting solution is

A. 0.0545 (N)

B. 0.0455 (N)

C. 0.05 (N)

D. 0.1 (N)

Answer: A

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287. 1.60g of a metal were dissolved in HNO_3 to prepare its nitrate. The nitrate on strong heating gives 2g oxide. The equivalent weight of metal is

A. 16

B. 32

C. 48

D. 12

Answer: B

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288. A100 ml solution of 0.1 N HCl was titrated with 0.2 N NaOH solution. The titration was discontinued after adding 30 ml of NaOH solution. The remaining titration was completed by adding 0.25 N KOH solution. The volume of KOH required for completing the titration is

A. 70 ml

B. 32 ml

C. 35 ml

D. 16 ml

Answer: D

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289. What volume of 0.1 M $KMnO_4$ is needed to oxidize 100 mg of FeC_2O_4 in acidic solution ?

A. 4.1 mL

B. 8.2 mL

C. 10.2 mL

D. 4.6 mL

Answer: A

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290. The oxidation state of A, B and C in a compound are $+2$, $+5$ and -2 respectively. The compound is

A. $A_2(BC)_2$

B. $A_2(BC)_3$

C. $A_3(BC_4)_3$

D. $A_2(BC)_3$

Answer: C

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291. Which of the following is intermolecular redox reaction?

A. 2OCH−CHO− → −−OH−HOCH2−CH2OH

B. $2C_6H_5CHO \xrightarrow{Al(OC_2H_5)_3} C_6H_5COOH + C_6H_5CH_2OH$

C. $4CrO_5 + 6H_2SO_4 \rightarrow 2Cr_2(SO_4)_3 + 6H_2O + 7O_2$

D. $As_2S_3 + HNO_3 \rightarrow H_3AsO_4 + H_2SO_4 + NO$

Answer: B

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292. In the standardisation of $Na_2S_2O_3$ using $K_2Cr_2O_7$ equivalent wt of $K_2Cr_2O_7$ is

A. $M/2$

B. $M/6$

C. $M/3$

D. M

Answer: B

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293. Equivalent weight of As_2S_3 in $As_2S_3 + HNO_3 \rightarrow H_2SO_4 + NO_2 + H_3AsO_4 + H_2O$ is

A. $M/28$

B. $M/40$

C. $M/10$

D. $M/5$

Answer: B

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294. For the reaction : $4CrO_5 + 6H_2SO_4 \rightarrow 2Cr_2(SO_4)_3 + 6H_2O + 7O_2$. Which statement is wrong?

A. It is disproportionation reaction

B. It is intramolecular redox

C. CrO_5 acts as oxidant and reductant both

D. Cr acts as oxidant whereas O acts as reductant

Answer: A

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295. Titration of I_2 produced from 0.1045 g of primary standard KlO_3 require 30.72 mL of sodium thiosulphate as shown below : (Atomic mass of iodine = 127) $lO_3^- + 5l^- + 6H^+ \rightarrow 3l_2 + 3H_2O$

$l_2 + 2S_2O_3^{2-} \rightarrow 2l^- + S_4O_6^{2-}$ The molarity of sodium thiosulphate Ion is :

A. 0.095

B. 0.079

C. 0.084

D. 0.064

Answer: A

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296. What is wrong about $6.07\ \%$ strength H_2O_2 ?

A. Its normality is 3.57 N

B. Its molarity is 1.785 M

C. Its volume strength is 20 volume

D. Volume strength = 5.6 x molarity

Answer: D

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297. When BrO_3^- ion reacts with Br^- ion in acid medium, Br_2 is llberated. The equivalent weight of Br_2 in the reaction is

A. $\frac{5M}{3}$

B. $\frac{3M}{6}$

C. $\frac{4M}{6}$

D. $\frac{5M}{8}$

Answer: B

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298. 1 mole of equimolar mixture of $Fe_2(C_2O_4)_3$ and FeC_2O_4 requires X mole of $KMnO_4$ In acid medium for complete oxidation. The value of X is

A. 0.9

B. 0.6

C. 1.2

D. 0.8

Answer: A

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299. The oxidation number of Cr is $+6$ in :

A. K_2CrO_4

B. $K_2Cr_2O_7$

C. $KCrO_3Cl$

D. CrO_5

Answer: A::B::C::D

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300. Dichromate ion in acidic medium oxidizes stannous ion as

$$xSn^{2+} + yCr_2O_7^{2-} + zH^+ \rightarrow aSn^{4+} + bCr^{3+} + cH_2O$$

A. the value of x : y is 1 : 3

B. the value of $x + y + z$ is 18

C. a : b is 3 : 2

D. the value of $z - c$ is 7

Answer: B::C::D

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301. " 20 volume" of H_2O_2 is equal to

A. $6.06\ \%\ H_2O_2(w/v)$

B. $3.57NH_2O_2$

C. $20mlH_2O_2$

D. $3.57MH_2O_2$

Answer: A::B

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302. Draw the structure of $H_2S_2O_8$.

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303. For the following balanced redox reaction, $2MnO_4^- + 4H^+ + BR_2 \rightarrow 2Mn^{2+} + 2BrO_3^- + 2H_2O$ if the molecular wt. of $MnO_4^-\ Br_2$ be M_xM_y respectively, then

A. equivalent wt. of MnO_4^- is $\frac{M_x}{5}$

B. equivalent wt. of Br_2 is $\frac{M_y}{10}$

C. the n-factor ratio of Mn^{2+} to BrO_3^- is 1 : 1

D. none of these

Answer: A::B::C

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304. x mmol of KIO3 reacts completely with y mmol of KI to give I2 quantitatively. If z mmol of hypo(Na2S2O3) are required for complete titration against this I2 then which relation is not correct ?

A. z = 6x

B. 6y = 5z

C. x = 5y

D. $x + y = z$

Answer: C::D

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305. Which one is not correct about the reaction :

$FeS_2 + O_2 \rightarrow Fe_2O_3 + SO_2$

A. Eq. weight of FeS_2 is M/11

B. Eq. wt of $SO_2 = M/5$

C. 1 mole of FeS_2 requires 7/4 mole of O_2

D. S has -2 oxidation state in FeS_2

Answer: A::B::C

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306. Write the actual formula of bleaching powder.

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307. What happens when xenon and fluorine are reacted in the ratio 2:1 respectively?

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308. Match Column-I with Column-II

	Column-I		Column-II
(A)	$NH_3 \rightarrow NO_3^-$	(P)	M/3
(B)	$FeC_2O_4 \rightarrow Fe^{3+} + 2CO_3^{2-}$	(Q)	M/6
(C)	$H_2SO_5 \rightarrow S_8$	(R)	M/8
(D)	$KMnO_4 \rightarrow Mn^{2+}$	(S)	M/5
		(T)	reducing agent

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309. Match Column-I with Column-II

Column-I		Column-II	
(A)	$KMnO_4 \xrightarrow{H^+} Mn^{+2}$	(P)	M/2
(B)	$MgC_2O_4 \rightarrow Mg^{2+} + CO_2$	(Q)	M/5
(C)	$K_2Cr_2O_7 \rightarrow Cr^{+3}$	(R)	M/6
(D)	$CrO_5 \rightarrow Cr_2O_3$	(S)	M/3
		(T)	Oxidising agent

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310. Match Column-I with Column-II

View Text Solution

311. A solution containing 2.68 x10^{-3} mol of a solution containing an A^{n+} ion requires 1.61x10^{-3} mol of MnO_4^{-1} for the complete oxidation of A^{n+} to AO_3^- in acidic medium. What is the value of n ?

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312. 1.575 g of oxalic acid $(COOH)_2.xH_2O$ are dissolved in water and the volume made upto 250 mL. On titration 16.68 mL of this solution requires 25 mL of N/15 NaOH solution for complete neutralization. Calculate x.

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313. 0.63 g of dibasic acid was dissolved in water. The volume of the solution was made 100 mL. 20 mL of this acid solution required 10 mL $\frac{N}{5}$ NaOH solution. What is the normality of acid.

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314. A 3M solution of $Na_2S_2O_3$ (Relative Formula Mass = 158) has density of 1.25 g/mL. Calculated its molality.

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315. To a 25 ml H_2O_2 solution, excess of 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.

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316. In 100 ml sample of hard water, 100 ml of $\left(\frac{N}{50}\right)$ Na_2CO_3 was added and the mixture was boiled and filtered The filtrate was neutralized with 60 ml of $\left(\frac{N}{50}\right)$ HCI. Calculate the permanent hardness of water, (sp gr. of hard water = 1)

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317. A mixture of NaCI and Na_2CO_3 is given. On heating 12 g of the mixture with dil. HCI. 2.241 g of CO_2 is evolved at normal temperature. Calculate the amounts of each in the mixture

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318. Brass is an alloy of Cu-Zn. A sample of brass weighing 5.793 g, when treated with excess of dil. H_2SO_4 gives 324 mi of dry H_2 at $20^\circ C$ and 750 mm pressure. What is the percentage of Cu by mass in the alloy ?

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319. 0.324 g of copper was dissolved in HNO_3 and the copper nitrate so produced was burnt till all copper nitrate converted to 0.406 g of copper oxide. Calculate the equivalent mass of copper.

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320. 10 ml of $NaHC_2O_4$ solution is neutralized by 10 ml of 0.1 M NaOH solution. 10 ml of same $NaHC_2O_4$ solution is oxidised by 10 ml of

$KMnO_4$ solution in acidic medium. Calculate the molarity of $KMnO_4$ solution.

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321. A sample of a mixture of CaCI2 and NaCI weighing 4.22 g was treated to precipitate all the Ca as $CaCO_3$, which was then heated and quantitatively converted to 0.959 g of CaO. Calculate $CaCI_2\,\%$ in the mixture.

Watch Video Solution

322. Calculate the concentration of $Na_2S_2O_{3.5}H_2O$ solution in gL^{-1} 10 ml of which just decolourised 15 ml of $\frac{N}{20}$ iodine solution.

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323. If the equivalent mass of a metal (M) is x and the formula of its oxide is M_mO_n,then show that the atomic mass of M is $\frac{2nx}{M}$

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324. The oxidation number of sulphur in S_8, S_2F_2, H_2S and H_2SO_4 respectively are:

A. $0, +1, -2$ and 6

B. $+2, 0, +2$ and 6

C. $0, +1, +2$ and 4

D. $-2, 0, +2$ and 6

Answer: A

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325. Calculate the oxidation no of the following

Cl in $CaOCl_2$ (Bleaching powder)

A. $+1$ only

B. -1 only

C. $+1$ and -1

D. none of these

Answer: C

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326. Fe shows an oxidation state of $+1$ in

A. $Fe(CO)_5$

B. $\left[Fe(H_2O)_5NO\right]SO_4$

C. $FE_4\left[Fe(CN)_6\right]_3$

D. $FeCl_4^-$

Answer: B

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327. 2 mole of N_2H_4 loses 16 mole of election is being converted to a new compound X . Assuming that all of the N-appears in the new compound. What is the oxidation state of 'N' in X?

A. -1

B. -2

C. $+2$

D. $+4$

Answer: C

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328. $N_2 + 3H_2 \rightarrow 2NH_3$ Molecular weight of NH_3 and N_2 are X, and X_2 , their equivalent masses are $\_ Y1$ and Y_2. Then $(Y_1 - Y_2)$ is

A. $\left(\frac{2X_1 - X_2}{6}\right)$

B. $(x_1 - x_2)$

C. $(3x_1 - x_2)$

D. $(x_1 - 3x_2)$

Answer: A

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329. In a chemical reaction, $K_2Cr_2O_7 + xH_2SO_4 + ySO_z \rightarrow K_2SO_4 + Cr_2(SO_4)_3 + zH_2O$ the value of x,y and z respectively

A. x = 1, y = 3, z = 1

B. x = 4, y = 1, z = 4

C. x = 3, y = 2, z = 1

D. x = 2, y =, z = 1

Answer: A

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330. For the redox reaction,

$MnO_4^- + C_2O_4^{2-} + H^+ \rightarrow Mn^{2+} + CO_2 + H_2O$ The correct coefficients of the reactants for the balanced reaction are:

A. 2, 5,16

B. 16, 3, 12

C. 15,16, 12

D. 2,16,5

Answer: A

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331. Ratio of moles of Fe (II) oxidised by equal volumes of equimolar $KMnO_4$ and $K_2Cr_2O_7$ solutions in acidic medium will be :

A. $5:3$

B. $1:1$

C. $1:2$

D. $5:6$

Answer: D

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332. CrO_7^{2-} is reduced to Cr^{3+} by Fe^{2+}. Identify the incorrect statement from the following.

A. 6 moles of Fe^{2+} are oxidised to Fe^{3+} ions.

B. The solution becomes yellow.

C. The solution becomes green.

D. It is a redox reaction.

Answer: B

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333. 6x10^{-3} mole $K_2Cr_2O_7$ reacts completely with 9x10^{-3} mole X^{n+} to give XO_3^{-1} and Cr^{3+}. the value of n is :

A. 1

B. 2

C. 3

D. None of these

Answer: A

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334. In a reaction, 4 moles of electrons are transferred to one mole of HNO_3 when acted as an oxidant. The possible reduction product is

A. 1 mol of NH_3

B. 1 mol of NO_2

C. $\frac{1}{2}$ mol of N_2

D. $\frac{1}{2}$ mol of N_2O

Answer: D

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335. W_1 g of an element combines with oxygen forming W_2 g of its oxide. The equivalent weight of the element is :

A. $\left[\frac{W_1}{W_2}\right] \times 8$

B. $\left[\frac{W_1}{W_1 - W_2}\right] \times 8$

C. $\left[\frac{W_2 - W_1}{W_1}\right] \times 8$

D. $\left[\frac{W_1}{W_1 - W_2}\right] \times 8$

Answer: B

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336. Equivalent weight of H_3PO_2 when it disproportionate into PH_3 and H_3PO_3 is :

A. M

B. $M/2$

C. $M/4$

D. $3M/4$

Answer: D

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337. When BrO_3^- ion reacts with Br^- in acid medium, Br_2 is liberated. The equivalnt weight of Br_2 in this reaction is : [M = molecular wt of bromine]

A. $5\frac{M}{8}$

B. $5\frac{M}{3}$

C. $3\frac{M}{5}$

D. $4\frac{M}{6}$

Answer: C

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338. A metal oxide has the formula A_2O_3 It can be reduced by hydrogen to give free metal and water 0.1596 g of this metal oxide required 6 mg of hydrogen for complete reduction. What is the atomic weight of metal ?

A. 15.58

B. 155.8

C. 5.58

D. 55.8

Answer: D

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339. 0.3 g of an oxalate salt was dissolved in 100 ml solution. The solution required 90 m! of $\frac{N}{20} KMnO_4$ for complete oxidation. The $\%$ of oxalate ion in salt is

A. $33\ \%$

B. $66\ \%$

C. $70\ \%$

D. $40\ \%$

Answer: B

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340. When potassium permanganate is titrated against ferrous ammonium sulphate in acidic medium, the equivalent weight of potassium permanganate is :

A. $\frac{\text{molecular weight}}{3}$

B. $\frac{\text{molecular weight}}{5}$

C. $\frac{\text{molecular weight}}{2}$

D. $\frac{\text{molecular weight}}{10}$

Answer: B

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341. The volume of 0.2M solution of MnO_4^- which will react with 50.0 ml of 0.1 M solution of $C_2O_4^{2-}$ in acidic medium is

$2MnO_4^- + 5C_2O_4^{2-} + 16H^+ \rightarrow 10CO_2 + 2Mn^{2+} + 8H_2O$

A. 1 ml

B. 5 ml

C. 100 ml

D. 10 ml

Answer: D

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342. in an attempt to establish the formula of an oxide of nitrogen , a known volume of the pure gas was mixed with hydrogen and passed over a catalyst at a suitable temperature. 100% conversion of the oxide to ammonia and water was shown to have taken place. NxHy gives xNH3 + YH20 2400 cm3 of the nitrogen oxide measured at rtp produced 7.20g of water.The ammonia produced was neutralised by 200 cm3 of 1 mol per dm3. What was the oxidation number of the nitrogen in the nitrogen oxide ?

A. $+1$

B. $+2$

C. $+3$

D. $+4$

Answer: D

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343. 3.92 g of a sample of Mohr's salt (ferrous ammonium sulphate, Mol. wt.-392) reacts completely with 50 ml of $\frac{N}{10}KMnO_4$ solution in an acidic medium. The percentage purity of the sample is

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344. 2.75 g $Na_2CO_3.xH_2O$ is dissolved in water and diluted upto 250 ml. 10 ml of this solution is completely neutralised with 15 ml (N/19.5) HCI. The value of x is

A. 12

B. 2

C. 10

D. 9

Answer: C

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345. V ml solution of Fe^{2+} can be oxidised by 60 ml of $KMnO_4$ in acidic medium. What will be the volume of $K_2Cr_2O_7$ required to oxidise V ml of the same Fe^{2+} solution in an acidic medium ? Consider the molarity of $KMnO_4$ and $K_2Cr_2O_7$ to be the same.

A. 50 ml

B. 60 ml

C. 72 ml

D. 25 ml

Answer: A

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346. 2 ml of 5 M H_3PO_4 is mixed with 3 ml of 2 M $Ca(OH)_2$. What will be the strength of the resulting solution ?

A. 7 N

B. 3.5 N

C. 3.6 N

D. 7.2 N

Answer: C

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347. Equal volumes of 1 M each of $KMnO_4$ and $K_2Cr_2O_7$ are used to oxidize Fe(II) solution in acidic medium. The amount of Fe oxidized will be

A. more with $KMnO_4$

B. more with $K_2Cr_2O_7$

C. equal with both oxidizing agents

D. cannot be determined

Answer: B

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348. Which one is not correct about the change given below?

$K_4\left[Fe(CN)_6\right] \rightarrow Fe^{3+} + CO_2 + NO_3^-$

A. Fe is oxidised Fe^{2+} to Fe^{3+}

B. Carbon is oxidised from C^{2+} to C^{4+}

C. N is oxidised from N^{3-} to N^{5+}

D. Carbon is not oxidised

Answer:

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349. For the redox reaction,

$MnO_4^- + C_2O_4^{2-} + H^+ \rightarrow Mn^{2+} + CO_2 + H_2O$ The correct coefficients of the reactants for the balanced reaction are:

A. $MnO_4^- = 2, C_2O_4^{2-} = 5, H^+ = 16$

B. $MnO_4^- = 16, C_2O_4^{2-} = 5, H^+ = 2$

C. $MnO_4^- = 5, C_2O_4^{2-} = 16, H^+ = 2$

D. $MnO_4^- = 2, C_2O_4^{2-} = 16, H^+ = 5$

Answer:

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350. How many moles of $KMnO_4$ are needed to oxidise a mixture of 1 mole each of $FeSO_4, FeC_2O_4$ and $Fe_2(C_2O_4)_3$ completely in acid medium :

A. 5

B. 2

C. 4

D. 6

Answer:

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351. If a g is the mass of $NaHC_2O_4$ required to neutralize 100mL of 0.2M NaOH and b g that required to reduce 100mL of 0.02M $KMnO_4$ in acidic medium then:

A. a = b

B. 2a = b

C. a = 2b

D. b = 4a

Answer:

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352. The number of moles of $KMnO_4$ that will be needed to react with one mole of sulfite ions in acidic solutions

A. $2/5$

B. $3/5$

C. $4/5$

D. 1

Answer:

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353. The weight of 1 g-equivalent of V_2O_5 used in the reaction $Zn + V_2O_5 \rightarrow ZnO + V$ is : (at wt of V = A)

A. $\frac{A}{5}$

B. $\frac{A+80}{5}$

C. $\frac{2A+80}{5}$

D. $\frac{2A+80}{10}$

Answer:

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354. Dichromate ion in acidic medium oxidizes stannous ion as $xSn^{2+} + yCr_2O_7^{2-} + zH^+ \rightarrow aSn^{4+} + bCr^{3+} + cH_2O$

A. the value of x:y is 1 :3

B. the value of $x + y + z$ is18

C. a : b is 3 :2

D. the value of z - c is 7

Answer:

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355. The equation for a reaction is shown below : $2MnO_4^- + 5H_2O_2 + 6H^+ \rightarrow 2Mn^{2+} + 8H_2O + 5O_2$ Which of the following statements about this reaction are correct ?

A. Hydrogen ions are oxidised to water.

B. Hydrogen peroxide is oxidised to oxygen.

C. The oxidation number of manganese changes by 6.

D. Hydrogen peroxide is reduced to water.

Answer:

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356. $Cr_2O_7^{2-}$ is reduced to Cr^{3+} by Fe^{+2}. Identify the incorrect statement from the following

A. 6 moles of Fe^{+2} are oxidised to Fe^{3+} ions

B. The solution becomes yellow

C. The solution becomes green

D. 3 moles of Fe^{+2} get oxidised to Fe^{3+}

Answer:

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357. A solution of $KMnO_4$ to be used in acidic medium is prepared by dissolving $1,58gL^{-1}$. The solution is

A. $\frac{M}{100}$

B. $\frac{N}{20}$

C. $\frac{M}{50}$

D. $\frac{N}{50}$

Answer:

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358. In the titration of $K_2Cr_2O_7$ and $FeSO_4$ following data is obtained V_1 of $1.0M_1K_2Cr_2O_7$ requires V_2ml of $1.0M_2FeSO_4$ Which of the following relation is / are true for the above titration

A. $6M_1V_1 = M_2V_2$

B. $M_1V_1 = 6M_2V_2$

C. $N_1V_1 = N_2V_2$

D. $M_1V_1 = M_2V_2$

Answer:

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359. When a equimolar mixture of Cu_2S and CuS is titrated with $Ba(MnO_4)_2$ in acidic medium, the final product contains Cu^{2+} $S0_2$ and

Mn^{2+}. If the mol. wt. of Cu_2S, CuS and $Ba(MnO_4)_2$ are $M_1 M_2$ and M_3 respectively then:

A. eq. wt of Cu_2S is $\frac{M_1}{8}$

B. eq. wt od CuS is $\frac{M_2}{6}$

C. eq. wt. of $Ba(MnO_4)_2$ is $\frac{M_3}{5}$

D. Cu_2S nad CuS both have same equivalents in mixture

Answer:

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360. If 1 mole of H_3PO_4 is reacted with 1 mole of $X(OH)_2$ as: $H_3PO_4 + X(OH)2 \rightarrow XHPO_4 + 2H_2O$ then

A. The equivalent weight of base is $\frac{\text{molwt}}{2}$

B. The eq. wt. of H_3PO_4 is $\frac{98}{3}$

C. The resulting solution is required 1 mofe NaOH for complete neutralization

D. Minimum 1 mole of $X(OH)_2$ more required for complete neutralization of $XHPO_4$

Answer:

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361. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement -I : Copper forms complexes $[CuCl_4]^{2-}$ but not $[\mathrm{Cul\_4}]^{2-}$

Statement - II : $[\mathrm{Cul\_4}]^{2-}$ is not stable because Cu^{2+} is oxidant and l^- is reductant.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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362. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

2. Statement - I : Oxidation number of metals in metal carbonyls is zero.

Statement - II : The oxidation number of CO has been taken to be zero.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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363. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I: In the reaction, $3As_2S_3 + 28HNO_3 + 4H_2O \rightarrow 6H_3AsO_4 + 9H_2SO_4 + 28NO$ electrons transferred are 84.

Statement - II :As is oxidised from $+3$ to $+5$ and sulphur from -2 to $+6$

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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364. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : The equivalent weight of NaCN in its conversion to NaOCN by $KMnO_4$ is M/2

Statement - II: The reaction is : $C^{2+} \rightarrow C^{4+} + ze$

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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365. What happens when xenon and fluorine are reacted in the ratio 1:5 respectively?

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366. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : BrO_3^- shows two reactions as:

$SeO_3^{2-} + BrO_3^- + H^+ \rightarrow SeO_4^{2-} + Br_2 + H_2O$

$AsO_2^{2-} + BrO_3^- + H^+ \rightarrow Br^- + AsO_4^- + H_2O$

Statement - II: The ratio of equivalent weights of BrO_3^- in (i) and (ii) reactions is 5/6

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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367. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : One equivalent of MnO2 reacts with 2 equivalent of HCI in the reaction:

$MnO_2 + 4HCl \rightarrow MnCl_2 + 2H_2O + Cl_2$

Statement - II : One equivalent of MnO_2 reacts with one equivalent of HCI.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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368. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : The equivalence point refers the condition where equivalents of one species react with same number of equivalent of other species.

Statement -II : The end point of titration is exactly equal to equivalence point.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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369. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : In acidic medium, equivalent weight of $K_2Cr_2O_7$ is 49

Statement - II : $\left(Cr^{6+}\right)_2 + 6e \rightarrow 2Cr^{3+}$, Thus, $E - \frac{M}{6}$

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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370. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

10. Statement -I : The redox titrations in which liberated I_2 is used as oxidant are called as iodometric titration.

Statement - II : Addition of KI of $CuSO_4$ liberates I_2 which is estimated against hypo solution.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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371. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement -I : The oxidation state of S in $H_2S_2O_8$ is 6.

Statement - II : Max. oxidation state of S is 6 because the max. oxidation state of an element is it's no. of valence electron.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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372. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : In the balanced redox reaction,

$xAs_2S_3 + yNO_3^- + 4H_2O \rightarrow aAsO_4^{3-} + bNO + cSO_4^{2-} 8H^+$ the n-factor of As_2S_3 and NO^- is 28 and 3 respectively.

Statement - II: Molar ratio is reciprocal of n-factor's ratio sox: yis3 : 28.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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373. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement -I : MnO_2 can act as an oxidizing agent as well as reducing agent.

Statement - II : Oxidation state of Mn lies between highest and lowest oxidation state.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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374. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : Equivalent volume of H_2 is 11.2 Lat1 atm and 273 K.

Statement - II: 1/2 mole H_2 has produced when 1 mole of H^+ (aq) accepted 1 mole of e^-

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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375. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement -I : $\left[Fe(CN)_6\right]^{4-} \rightarrow Fe^{3+} + CO_2 + NO_3^-$ the equivalent weight of reactant is 3.74.

Statement - II: Equivalent weight of reactant $= \frac{\text{Mol.wt}}{61}$

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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376. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : In the titrations of Na_2CO_3 with HCI using methyl orange indicator, the volume required at the equivalence point is twice that of acid required using phenolphthalein indicator.

Statement - II: Two moles of HCI are required for complete neutralization of one mole of Na_2CO_3.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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377. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

17. Statement-I: in the roasting of FeS_2, ore is converted into ferric oxide and SO_2 gas.The equivalent mass of FeS_2 is equal to molecular weight/11

Statement - II: The n-factor for reducing agent is total net change in oxidation number per formula unit.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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378. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement -I : For the reaction, $Na_2CO_3 + HCI \rightarrow NaCI + NaHCO_3$, the suitable indicator is phenolphthalein.

Statement - II: Phenolphthalein provide it's colour in acidic medium.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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379. This question has Statement I and Statement II. Of the four choices given after the Statements, choose the one that best describes the two Statements.

Statement - I : H_3PO_3 is a dibasic acid and its salt Na_3PO_3 does not exist

Statement - II : Being dibasic nature, only two H are replaceable.

A. Statement - I is true, Statement - II us true, Statement = II is a correct explanation of Statement - I

B. Statement - I is true, Statement - II is true, Statement - II is not a correct explanation of Statement - 1.

C. Statement - I is true, Statement - II is false

D. Statement - I is false, Statement - II is true

Answer:

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380. On heating a litre of $\frac{N}{2}HCI$ solution, 2-750 g of HCI is lost and the volume of solution becomes 750 ml. The normality of resulting solution will be.

A. 0.57

B. 0.75

C. 0.057

D. 5.7

Answer: A

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381. The volume of 0 -1M $Ca(OH)_2$ required to neutralize 10 ml of 0 -1N HCI will be

A. 10ml

B. 20 ml

C. 5 ml

D. 40 ml

Answer: C

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382. n-factor of Ba$(MnO_4)_2$ in acidic medium is :

A. 2

B. 6

C. 10

D. None of these

Answer: C

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383. In the reaction, $xVO + yFe_2O_3 \rightarrow FeO + V_2O_5$. What is the value of x and y respectively ?

A. 1, 1

B. 2, 3

C. 3, 2

D. None of these

Answer: B

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384. Match Column-I with Column-II

Column-I		Column-II	
(A)	$FeC_2O_4 \rightarrow Fe^{3+} + CO_2$	(P)	$\frac{M}{8}$
(B)	$Cu_2S \rightarrow Cu^{2+} + SO_2$	(Q)	$\frac{M}{11}$
(C)	$FeS_2 \rightarrow Fe^{3+} + SO_2$	(R)	$\frac{M}{3}$
(D)	$Fe(NO_3)_3 \rightarrow Fe^{2+} + NO$	(S)	$\frac{M}{10}$
		(T)	Intramolecularredox reaction

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385. Match Column-I with Column-II

Column-I		Column-II	
(A)	Iodimetric	(P)	$AgNO_3$ *vs.* KCl
(B)	Iodometric	(Q)	N_2H_4 *vs.* I_2
(C)	Redox	(R)	$CuSO_4$ *vs.* KI
(D)	Acid-Base	(S)	$H_2C_2O_4$ *vs.* $KMnO_4$
(E)	Precipitation	(T)	$H_2C_2O_4$ *vs.* NaOH

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386. Match Column-I with Column-II

Column-I		Column-II	
(A)	$O_2^- \rightarrow O_2 + O_2^{2-}$	(P)	Redox reaction
(B)	$CrO_4^{2-} + H^+ \rightarrow$	(Q)	One of the products has trigonal planar structure
(C)	$MnO_4^- + NO_2^- + H^+ \rightarrow$	(R)	Dimeric bridged tetra-hedral metal ion
(D)	$NO_3^- + H_2SO_4 + Fe^{2+} \rightarrow$	(S)	Disproportionation

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387. 1.9 gm of CH_3Br_y has the same number of atoms as in 0.6 gm of H_2O. The value of y is :

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388. 2.0g of polybasic organic acid(Molecular wt. = 600) required 100 mL of a $\frac{M}{6}$ NaOH solution for complete neutralisation. Find the basicity of acid.

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389. A mixture contains 1.0 mole each of NaOH, Na2CO3 and NaHCO3. When half of mixture is titrated with HCI.it required x mole of HCI in presence of phenolphthalein. In another experiment, half of mixture

required y mole of same HCI in presence of methyl orange. Find the value of(x + y)

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390. What happens when xenon and fluorine are reacted in the ratio 1:20 respectively?

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391. A 2.76g impure sample of copper ore is dissolved and Cu^{2+} is titrated with KI solution. l_2 liberated required 40 mLof $0.1MNa_2S_2O_3$ solution for titration. What is the $\%$ impurity present in the ore ?

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392. The volume of 0.2M solution of MnO_4^- which will react with 50.0 ml of 0.1 M solution of $C_2O_4^{2-}$ in acidic medium is

$2MnO_4^- + 5C_2O_4^{2-} + 16H^+ \rightarrow 10CO_2 + 2Mn^{2+} + 8H_2O$

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393. Titration of 0.2121g of pure $Na_2C_O\_4\left(134gmol^{-1}\right)$ require 43.31 ml of $KMnO_4$ solution. What is the molarity of $KMnO_4$ solution ?

$2MnO_4^{-+}5C_2O_4^{--+}16H^+ \rightarrow 2Mn^+ + + 10CO_2 + 8H_2O$

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394. 1.44g pure FeC_2O_4 was dissolved in dil. H_2SO_4 and solution diluted to 100 ml. Calculate volume of 0.01 M $KMnO_4$ required to oxidise FeC_2O_4 solution completely.

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395. 0.592 g of calcium oxalate was dissolved in dilute acid and the solution was made up to 250 mL. 25 mL of this solution required 8.375 mL

of 0.1 N $KMnO_4$ solution for complete oxidation. Calculate the percentage of calcium oxalate in calcium oxalate sample.

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396. 10 mL of a blood sample (contains calcium oxalate) is dissolved in acid, It required 20 mL of 0.001 M $KMnO_4$ (Which oxidases oxalate to carbon dioxide). What is the amount of $Ca^+ +$ ion in 10 mL blood ?

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397. What is molality of equimolar mixture of water and ethanol ?

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398. 0.56 g of limestone was treated with oxalic acid to give CaC_2O_4. The precipitate decolorized 45 ml of 0.2 N $KMnO_4$ in acid medium. Calculate $\%$ of CaO in limestone.

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399. A, B and C have oxidation number of +6, -2 and -1 respectively. What will be the possible molecular formula when these atoms combine together ?

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400. 5.7 g of bleaching powder was suspended in 500 ml of water. 25 ml of this suspension on treatment with KI and HC1 liberated iodine which reacted with 24.35 ml of $N/10Na_2S_2O_3$. Calculate $\%$ of available Cl_2 in bleaching powder.

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401. A solution of 0.1 M $KMnO_4$ is used for the reaction : $s_2O_3^{2-} + 2MnO_4^{-} + H_2O \rightarrow MnO_2 + SO_4^{2-} + OH^-$ What volume of

solution in mL will be required to react with 0.158 g of $Na_2S_2O_3$?

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402. In aqueous alkaline solution, two electron reduction of HO_2^- gives

A. HO^-

B. H_2O

C. O_2

D. O_2^-

Answer: A

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403. Assuming complete ionization, same moles of which of the following compounds will require the least amount of acidified $KMnO_4$ for complete oxidation

A. $FeSO_4$

B. $FeSO_3$

C. FeC_2O_4

D. $Fe(NO_2)_2$

Answer: A

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404. The equation which is balanced and represents the correct product(s) is :

A. $Li_2O + 2KCI \rightarrow 2LiCI + K_2O$

B. [CoCl(NH_3)_5]^(+) +5H^(+) rarrCo^(2+)+5NH_4^(+)+Cl^-` Cl_

C.

$$\left[Mg(H_2O)_6\right]^{2+} + (EDTA)^{4-} \xrightarrow{excessNaOH} \left[Mg(?(edta)\right]^{2+} + 6H_2O$$

D. $CuSO_4 + 4KCN \rightarrow K_2\left[Cu(CN)_4\right] + K_2SO_4$

Answer: B

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405. If Cl_2 is passed through hot aqueous NaOH, the products formed have Cl in different oxidation states. These are indicated as

A. -1 and +1

B. -1 and +5

C. +1 and +5,

D. -1 and +3

Answer: B

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406. The equivalent weight of $K_2Cr_2O_7$ in acidic medium is expressed in terms.of its molecular weight M.as—

A. $\frac{M}{3}$

B. $\frac{M}{4}$

C. $\frac{M}{6}$

D. $\frac{M}{7}$

Answer: C

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407. 5 moles of $Ba(OH)_2$ are treated with excess of CO_2 How much $BaCO_3$will be formed ?

A. 39.4 g

B. 197 g

C. 580 g

D. 985 g

Answer: C

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408. The equivalent weight of potassium permangante in alkaline solution is equal to

A. $\frac{1}{5}$ th of the molar mass of $KMnO_4$

B. $\frac{1}{6}$ th of the molar mass of $KMnQ_4$

C. $\frac{1}{3}$ rd of the molar mass of $KMnO_4$

D. $\frac{1}{10}$ th of the molar mass of $KMnO_4$

Answer: C

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409. The mass of potassium dichromate crystals required to oxidise 750 cm^3 of 0.6 M Mohr's salt solution is (Given, molar mass : Potassium dichromate = 294, Mohr's salt=392)

A. 0.49 g

B. 0.45 g

C. 22.05 g

D. 2.2 g

Answer: C

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410. An aqueous solution containing 6.5 g of NaCI of 90% purity was subjected to electrolysis. After the complete electrolysis, the solution was evaporated to get solid NaOH. The volume of 1 M acetic acid required to neutralise NaOH obtained above is

A. 1000 cm^3

B. 2000 cm^3

C. 100 cm^3

D. 200 cm^3

Answer: C

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411. Excess of carbon dioxide is passed through 50 mL of 0.5 M calcium hydroxide solution. After the completion of the reaction, the solution was evaporated to dryness. The solid calcium carbonate was completely neutralised with 0.1 N hydrochloric acid. The volume of hydrochloric acid required is (Atomic mass of calcium = 40)

A. 300 cm^3

B. 200 cm^3

C. 500 cm^3

D. 400 cm^3

Answer: C

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412. Consider the following list of reagents : Acidified $K_2Cr_2O_7$, alkaline $KMnO_4$, $CuSO_4$, H_2O_2, Cl_2. $O3$, $FeCI_3$, HNO_3 and $Na_2S_2O_3$. The total number of reagents that can oxidise aqueous iodide to iodine is

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