CHEMISTRY

BOOKS - S DINESH & CO CHEMISTRY (HINGLISH)

SOME BASIC CONCEPTS OF CHEMISTRY

MCQ

1. The number of significant figures in 0.0500 are

A. One

B. Three

C. Two

D. Four

Answer: B

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2. The correctly reported answer of the addition of $29 \cdot 4406, 3 \cdot 2$ and $2 \cdot 25$ will have significant figures

A. Three

B. Four

C. Two

D. Five

Answer: A

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3. The correctly reported answer of the addition of $294 \cdot 406, 280 \cdot 208$ and 24 will be

A. $598 \cdot 61$

B. $599 \cdot$

C. $598 \cdot 6$

D. $598 \cdot 614$

Answer: B

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4. On dividing 0*25 by 22*1176, the actual answer is 0*011303. The correctly reported answer will be

A. $0 \cdot 011$

B. $0 \cdot 01$

C. $0 \cdot 0113$

D. $0 \cdot 013$

Answer: A

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5. Two student X and Y report the mass of the same substance as $7.0g$ and $7.00g$ respectively. Which of the following statement is correct?

A. Both are equally accurate

B. X is more accurate than Y

C. Y is more accurate than X

D. Both are inaccurate scientifically

Answer: C

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6. The number of significant figures in π are

A. One

B. Two

C. Three

D. Infinite

Answer: D

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7. Given the number $786 \cdot , 0 \cdot 786$ and $0 \cdot 0786$. The number of significant figures for the three numbers is

A. 3, 4 and 5 respectively

B. 3, 3 and 3 respectively

C. 3, 3 and 4 respectively

D. 3, 4 and 4 respectively

Answer: B

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8. One torr is equal to

A. 1 atm. Pressure

B. 1 mm of Hg

C. 1 cm of Hg

D. 1 m of Hg

Answer: B

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9. Area of nuclear cross-section is measured in 'Barn'. It is equal to

A. $10^{-20}m^2$

B. $10^{-30}m^2$

C. $10^{-28}m^2$

D. $10^{-14}m^2$

Answer: C

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10. Fermi is a unit of length for measuring the nuclear diameter.

It is equal to

A. $10^{-10}m$

B. $10^{-13}m$

C. $10^{-15}m$

D. $10^{-12}m$

Answer: C

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11. In which of the following numbers all zeros are significant ?

A. 0.0005

B. 0.0500

C. 50.000

D. 0.00050

Answer: C

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12. Which of the following is correct?

A. $1L = 1m^3$

B. $1L = 1dm^3$

C. $10L = 1dm^3$

D. $1L = 10dm^3$

Answer: B

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13. Light travels with a speed of $3 \times 10^8 ms^{-1}$. The distance travelled by light in 1 femto second is

A. $0 \cdot 03mm$

B. $0 \cdot 003mm$

C. $3mm$

D. $0 \cdot 0003mm$

Answer: D

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14. A mixture of naphthalene and benzoic acid can be separated by:

A. Extraction with cold water

B. Sublimation

C. Extraction by hot water

D.

Answer: C

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15. A mixture of NH_4Cl and I_2 can be separated by

A. Fractional crystallisation

B. Extraction with water

C. Sublimation

D. Chromatography

Answer: B

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16. A mixture that can be separated by sublimation is

A. $AgCl + NaCl$

B. $BaCl_2 + NaCl$

C. $HgCl_2 + NaCl$

D. $MgCl_2 + NaCl.$

Answer: C

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17. 6 g of carbon combines with 32 g of sulphur to form CS_2. 12 g of C also combine with 32 g of oxygen to form carbon dioxide. 10 g of sulphur combines with 10 g of oxygen to form sulphur dioxide. Which law is illustrated by them?

A. Law of multiple proportions

B. Law of constant composition

C. Law of reciprocal proportions

D. Gay Lussac's law.

Answer: C

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18. Which of the following data illustrates the law of conservation of mass?

A. 56 g of CO reacts with 32 g oxygen to produce 44 g of CO_2

B. 1.70 g of $AgNO_3$ reacts with 100 mL of 0.1 MHCl to produce 1.435 g of AgCl and 0.63 g of HNO_3.

C. 12 g of C is heated in vaccume and on cooling there is no change on mass.

D. None of the above.

Answer: B

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19. If law of conservation of mass was to hold true, then $20 \cdot 8g$ of $BaCl_2$ on reaction with $9 \cdot 8g$ of H_2SO_4 will produce $7 \cdot 3$ of HCl and $BaSO_4$ equal to

A. $11 \cdot 65g$

B. $23 \cdot 3g$

C. $25 \cdot 5g$

D. $30 \cdot 6g$

Answer: B

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20. 1.5 g of hydrocarbon on combustion in excess of oxygen produces 4.4 g of CO_2 and 2.7 g of H_2O, the data illustrates

A. Law of conservation of mass

B. Law of multiple proportions

C. Law of constant composition

D. Law of reciprocal proportions.

Answer: A

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21. The law of multiple proportion is illustrated by

A. carbon monoxide and carbon dioxide

B. potassium bromide and potassium chloride

C. water and heavy water

D. calcium hydroxide and barium hydroxide

Answer: A

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22. Hydrogen and oxygen combine to form H_2O_2 and H_2O containing $5.93\,\%$ and $11.2\,\%$ hydrogen respectively. The data illustrates

A. Law of conservation of mass

B. Law of constant proportion

C. Law of reciprocal proportions

D. Law of multiple proportions

Answer: D

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23. Two elements X (atomic mass 16) and Y(atomic mass 14) combine to form compounds A,B and C. The ratio of different masses of Y which combine with a fixed mass of X in A,B and C is

1:3:5. If 32 parts by mass of X combines with 84 parts by mass of Y in B, then in C, 16 parts by mass of X will combine with :

A. 14 parts by mass of Y

B. 42 parts by mass of Y

C. 70 parts by mass of Y

D. 84 parts by mass Y

Answer: C

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24. $4 \cdot 4g$ of an oxide of nitrogen gives $2 \cdot 24L$ of nitrogen and 60 g of another oxide of nitrogen gives $22 \cdot 4L$ of nitrogen at STP. The data illustrates

A. Law of conservation of mass

B. Law of constant proportion

C. Law of multiple proportions

D. Law of reciprocal proportions.

Answer: C

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25. Which one of the following pair of substances illustrates law of multiple proportions?

A. CO, CO_2

B. $NaCl, NaBr$

C. H_2O, D_2O

D. $MgO, Mg(OH)_2$

Answer: A

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26. One of the following combinations which illustrates the law of reciprocal proportions?

A. N_2O_3, N_2O_4, N_2O_5

B. $NaCl$, $NaBr$, NaI

C. CS_2, CO_2, SO_2

D. PH_3, P_2O_3, P_2O_5

Answer: C

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27. Two elements X and Y combine in gaseous state to form XY in the ratio $1:35\cdot5$ by mass. The mass of Y that will be required to reat with 2 g of X is

A. $7\cdot1g$

B. $3\cdot55g$

C. $71g$

D. $35\cdot5g$

Answer: C

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28. Two compounds A and B have some percentage composition. The compouds A and B

A. are identical

B. are isomers

C. are neither identical nor isomers

D. All the three are correct

Answer: D

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29. 1 g-atom of nitrogen represents

A. $6.02 \times 10^{23} N_2$ molecules

B. $22 \cdot 4L$ of N_2 at S.T.P.

C. $11 \cdot 2L$ of N_2 at S.T.P.

D. 28 g of nitrogen

Answer: C

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30. $5 \cdot 6$ L of a gas at S.T.P. weights equal to 8 g. The vapour density of gas is

A. 32

B. 16

C. 8

D. 40

Answer: B

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31. The maximum volume at STP is occupied by

A. $12 \cdot 8$ g of SO_2

B. $6 \cdot 02 \times 10^{23}$ molecules of CH_4

C. $0 \cdot 5$ mol of NO_2

D. 1 g-molecule of CO_2

Answer: D

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32. A sample of Na_2CO_3 contains 6.02×10^{23} of Na^+ ions. The mass of the sample is (Atomic Mass $Na = 23, C = 12, O = 16$)

A. 53 g

B. 106 g

C. 165 g

D. 212 g

Answer: A

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33. What is correct for 10 g of $CaCO_3$?

A. It contains 1 g atom of carbon

B. It contains $0 \cdot 3$ g atoms of oxygen

C. It contains 12 g of calcium

D. It refers to $0 \cdot 1$ g-equivalent of $CaCO_3$

Answer: B

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34. Which of the following is not correct regarding 14 gram of carbon monoxide?

A. It corresponds to $0 \cdot 5$ mole of CO

B. It occupies $2 \cdot 24$ litres at S.T.P.

C. It corresponds to $3 \cdot 01 \times 10^{23}$ molecules of CO

D. It corresponds to same number of moles of CO_2 and nitrogen (I) oxide gases

Answer: B

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35. 4.48 litre of methane at S.T.P. corresponds to

A. $1 \cdot 2 \times 10^{22}$ molecules of methane

B. $0 \cdot 5$ mole of methane

C. $3 \cdot 2$ g of methane

D. $0 \cdot 1$ mole of methane

Answer: C

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

A. $18cm^3$

B. $22400cm^3$

C. $6 \cdot 02 \times 10^{-23}cm^3$

D. $3 \cdot 0 \times 10^{-23}cm^3$

Answer: C

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37. Which of the following has the highest mass?

A. 20 g of sulphur

B. 4 mol of carbon dioxide

C. 12×10^{24} atoms of hydrogen

D. $11 \cdot 2$ L of helium at N.T.P.

Answer: B

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38. If N_A is Avogadro's number, then the number of oxygen atom in one g-equivalent of oxygen is

A. N_A

B. $N_A/2$

C. $N_A/4$

D. $2N_A$

Answer: C

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39. Which of the following represents 1 g-molecule of the substance?

A. $6 \cdot 02 \times 10^{24}$ molecules of NH_3

B. 4 g of helium

C. 40 g of CaO

D. 127 g of iodine.

Answer: B

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40. One atom of an element weighs $1 \cdot 8 \times 10^{-22}$ g its atomic mass is

A. $29 \cdot 9$

B. 18

C. $108 \cdot 36$

D. 154

Answer: C

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41. The number of sodium atoms in 2 moles of sodium ferrocyanide is

A. 2

B. $6 \cdot 02 \times 10^{23}$

C. $8 \times 6 \cdot 02 \times 10^{23}$

D. $4 \times 6 \cdot 02 \times 10^{23}$

Answer: C

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42. Four containers of 2L capacity contains dinitrogen as described below. Which one contains maximum number of molecules?

A. $2 \cdot 5$ g-molecule of N_2

B. 4 g-atom of nitrogen

C. $3 \cdot 01 \times 10^{24}$ N atoms

D. 82 g of dinitrogen

Answer: D

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43. The number of oxygen atoms present in $14 \cdot 6g$ of magnesium bicarbonate is

A. $6N_0$

B. $0 \cdot 6N_0$

C. N_0

D. $N_0 / 2$

Answer: B

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44. If isotopic distribution of C-12 and C-14 is 98% and 2% respectively, then the number of C-14 atoms in 12 g of carbon is

A. $1 \cdot 032 \times 10^{22}$

B. $3 \cdot 01 \times 10^{22}$

C. $5 \cdot 88 \times 10^{23}$

D. $6 \cdot 02 \times 10^{23}$

Answer: A

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45. Out of $1 \cdot 0$ g dioxygen, $1 \cdot 0$ g (atomic) oxygen and $1 \cdot 0$ g ozone, the maximum number of oxygen atoms are contained in

A. $1 \cdot 0$ g of atomic oxygen

B. $1 \cdot 0$ g of ozone

C. $1 \cdot 0$ g of oxygen gas

D. All the contain same number of atoms.

Answer: D

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46. $4 \cdot 0$ g of caustic soda (Mol. Mass 40) contains same number of sodium ions as are present in

A. $10 \cdot 6$ g of Na_2CO_3 (Mol. mass 106)

B. $58 \cdot 5$ g of $NaCl$ (Formula mass $58 \cdot 5$)

C. 100 mL of $0 \cdot 5M Na_2SO_4$ (Formula mass = 142)

D. 1 g-equivalent of $NaNO_3$ (Mol. mass 85)

Answer: C

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47. If H_2SO_4 ionises as $H_2SO_4 + 2H_2O \rightarrow 2H_3O^+ + SO_4^{-2}$. Then total number of ions produced by $0 \cdot 1M$ of H_2SO_4 will be

A. $9 \cdot 03 \times 10^{21}$

B. $3 \cdot 01 \times 10^{22}$

C. $6 \cdot 02 \times 10^{22}$

D. $1 \cdot 8 \times 10^{23}$

Answer: D

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48. Total number of atoms in 44 g CO_2 is

A. $6 \cdot 02 \times 10^{23}$

B. $6 \cdot 02 \times 10^{24}$

C. $1 \cdot 806 \times 10^{22}$

D. $18 \cdot 06 \times 10^{22}$.

Answer: C

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49. The flask A and B of equal size contain 2 g of H_2 and 2 g of N_2 respectively at the same temperature. The number of molecules in flask A is

A. same as those in flask B

B. less than those in flask B

C. greater then those in flask B

D. exactly half than those in flask B

Answer: C

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50. A person adds $1 \cdot 71$ gram of sugar $(C_{12}H_{22}O_{11})$ in order to sweeten his tea. The number of carbon atoms added are (mol. mass of sugar - 342)

A. $3 \cdot 6 \times 10^{22}$

B. $7 \cdot 2 \times 10^{21}$

C. $0 \cdot 05$

D. $6 \cdot 6 \times 10^{22}$

Answer: A

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51. Which of the following contains maximum number of atom?

A. $2 \cdot 0$ mol of S_8

B. $6 \cdot 0$ mol of S

C. $5 \cdot 5$ mol of SO_2

D. $44 \cdot 8L$ of CO_2 at S.T.P.

Answer: C

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52. A sample of AlF_3 contains 3.0×10^{24} of F^- ions. The number of formula units of the sample are

A. $9 \cdot 0 \times 10^{24}$

B. $3 \cdot 0 \times 10^{24}$

C. $0 \cdot 75 \times 10^{24}$

D. $1 \cdot 0 \times 10^{24}$

Answer: D

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53. The number of atoms present in $0 \cdot 1$ mole of P_4 (at. Mass = 31) are

A. $2 \cdot 4 \times 10^{24}$ atoms

B. same as in $0 \cdot 05$ mol of S_8

C. $6 \cdot 02 \times 10^{22}$

D. same as in $3 \cdot 1$ g of phosphorus

Answer: B

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54. Out of the following the largest number of atoms are contained in

A. 11 g of CO_2

B. 4 g of H_2

C. 5 g of NH_3

D. 8 g of SO_2

Answer: B

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55. Which of the following will not have a mass of 10 g?

A. $0 \cdot 1$ mol $CaCO_3$

B. $1 \cdot 51 \times 10^{23}$ Ca^{2+} ions

C. $0 \cdot 16$ mol of CO_3^2 ions

D. $7 \cdot 525 \times 10^{22}$ Br atom.

Answer: C

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56. The number of neutrons in $1 \cdot 8$ g of water will approximately be

A. $4 \cdot 216 \times 10^{23}$

B. $8 \cdot 432 \times 10^{23}$

C. $4 \cdot 816 \times 10^{23}$

D. $4 \cdot 216 \times 10^{24}$

Answer: C

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57. x L of N_2 at STP contains 3×10^{22} molecules. The number of molecules in $x/2$ L of ozone at STP will be

A. 3×10^{22}

B. $1 \cdot 5 \times 10^{22}$

C. $1 \cdot 5 \times 10^{21}$

D. $1 \cdot 5 \times 10^{11}$

Answer: B

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58. The moles of O_2 required for reacting with $6 \cdot 8$ g ammonia $(...NH_3 + ... O_2 \rightarrow .... NO + ... H_2O)$ is

A. 5

B. $2 \cdot 5$

C. 1

D. $0 \cdot 5$

Answer: D

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59. If $3 \cdot 01 \times 10^{20}$ molecules are removed from 98 mg of H_2SO_4, then the number of moles of H_2SO_4 left are

A. $0 \cdot 1 \times 10^{-3}$

B. $0 \cdot 5 \times 10^{-3}$

C. $1 \cdot 66 \times 10^{-3}$

D. $9 \cdot 95 \times 10^{-2}$

Answer: B

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60. x g of Ag was dissolved in HNO_3 and the solution was treated with excess NaCl when 2.87 gm. of AgCl was precipitated precipitated. The value of x is

A. $1 \cdot 08g$

B. $2 \cdot 16g$

C. $2 \cdot 70g$

D. $1 \cdot 62g$

Answer: B

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61. The mass of CaO that shall be obtained by heating 20 kg of 90% pure lime stone $(CaCO_3)$ is

A. $11 \cdot 2kg$

B. $8 \cdot 4kg$

C. $10 \cdot 08kg$

D. $16 \cdot 8kg$

Answer: C

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62. The mass of $CaCO_3$ produced when carbon dioxide is bubbled through 500 mL of $0 \cdot 5M\ Ca(OH)_2$ will be

A. 10 g

B. 20 g

C. 50 g

D. 25 g

Answer: D

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63. What mass of calcium chloride in grams would be enough to produce $14 \cdot 35$ g of AgCl? (At. mass: Ca=40, Ag=108)

A. $5 \cdot 55g$

B. $8 \cdot 295g$

C. $16 \cdot 59g$

D. $11 \cdot 19g$

Answer: A

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64. If LPG cylinder contains mixture of butane and isobutane, then the amount of oxygen that would be required for combustion of 1 kg of it will be

A. $1 \cdot 8kg$

B. $2 \cdot 7kg$

C. $4 \cdot 5kg$

D. $3 \cdot 58kg$

Answer: D

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65. The mass of 70% H_2SO_4 required for neutralization of one mole of NaOH is:

A. 49 g

B. 98 g

C. 70 g

D. $34 \cdot 3g$

Answer: C

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66. If potassium chlorate is 80% pure, then 48 g of oxygen would be produced from (atomic mass of K = 39)

A. $153 \cdot 12g$ of $KClO_3$

B. $122 \cdot 5g$ of $KClO_3$

C. $245g$ of $KClO_3$

D. $98 \cdot 0$ g of $KClO_3$

Answer: A

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67. A sample of hard water is found to contain 40 mg of Ca^{2+} ions per litre. The amount of washing shoda (Na_2CO_3) required to soften $5 \cdot 0$L of the sample would be

A. $1 \cdot 06g$

B. $5 \cdot 3g$

C. $53mg$

D. $530mg$

Answer: D

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68. The mass of oxygen that would be required to produce enough CO which completely reduces $1 \cdot 6$ kg Fe_2O_3 (at. mass of Fe = 56)

A. 240 g

B. 480 g

C. 720 g

D. 960 g

Answer: B

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69. NO reacts with O_2 to form NO_2. When 10 g of NO_2 is formed during the reaction, the mass of O_2 consumed is

A. $1 \cdot 90g$

B. $5 \cdot 0g$

C. $3 \cdot 48g$

D. $13 \cdot 9g$

Answer: C

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70. The mass of 60% HCl by mass required for the neutralisation of 10 L of $0 \cdot 1$ M NaOH is

A. $60 \cdot 8g$

B. $21 \cdot 9g$

C. $100g$

D. $219g$

Answer: A

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71. 100 tons of Fe_2O_3 containing 20% impurities will give iron by reduction with H_2 equal to

A. 112 tons

B. 80 tons

C. 160 tons

D. 56 tons'

Answer: D

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72. In a given sample of H_2O_2 each 100 mL of solution contains 68 mg of H_2O_2. The molarity of the solution is

A. $0 \cdot 02M$

B. $0 \cdot 2M$

C. $2M$

D. $20M$

Answer: A

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73. A mixture containing $2 \cdot 0$ mol each of H_2 and O_2 is ignited so that water is formed. The amount of water formed is

A. $18 \cdot 0g$

B. $36 \cdot 0g$

C. $1 \cdot 80g$

D. $3 \cdot 60g$

Answer: B

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74. $1 \cdot 2g$ of Mg (At mass 24) will produce MgO equal to

A. $0 \cdot 05$ mol

B. $40g$

C. $40mg$

D. $4g$

Answer: A

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75. A solution of $0 \cdot 1$ M of a metal chloride MCl_x requires 500 mL of $0 \cdot 6$ M $AgNO_3$ solution for complete precipitation. The value of x is

A. 1

B. 2

C. 4

D. 3

Answer: D

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76. The vapour density of gas A is four times that of B. If moelcular mass of B is M, then molecular mass of A is

A. M

B. 4 M

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

D. 2 M

Answer: B

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77. A compound made of two elements A and B are found to contain 25 % A (at. mass $12 \cdot 5$) and 75% B (at. mass $37 \cdot 5$) The simplest formula of the compound is

A. AB

B. AB_2

C. AB_3

D. A_3B

Answer: A

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78. On analysis a certain compound was found to contain iodine and oxygen in the ratio of 254 g of iodine (at. mass 127) and 80 g oxygen (at. mass 16). What is the formula of the compound?

A. IO

B. I_2O

C. I_5O_3

D. I_2O_5

Answer: D

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79. A container of volume V, contains $0 \cdot 28$ g of N_2 gas. If same volume of an unknown gas under similar conditions of temperature and pressure weighs $0 \cdot 44$ g, the molecular mass of the gas is

A. 22

B. 44

C. 66

D. 88

Answer: B

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80. Insulin contains 3.4% sulphur. Calculate minimum mol.wt. of insulin.

A. $94 \cdot 117$

B. 1884

C. $941 \cdot 176$

D. $976 \cdot$

Answer: C

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81. B_1 g of an element gives B_2 g of its chloride, the equivalent mass of the element is

A. $\frac{B_1}{B_2 - B_1} \times 35 \cdot 5$

B. $\frac{B_2}{B_2 - B_1} \times 35 \cdot 5$

C. $\frac{B_2 - B_1}{B_1} \times 35 \cdot 5$

D. $\frac{B_2 - B_1}{B_2} \times 35 \cdot 5$

Answer: A

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82. The haemoglobin from the red blood corpuscles of most mammals contains approximately $0.33\ \%$ of iron by weight. The

molecular weight of haemoglobin as $67,200$.

The number of iron atoms in each molecule of haemoglobin is (atomic weight of iron $=56$):

A. 3

B. 4

C. 2

D. 6

Answer: B

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

A. MO_2

B. MO_3

C. M_2O

D. M_2O_5

Answer: B

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84. 60 g of a compound on analysis gave 24 g C, 4 g H and 32 g O.

The empirical formula of the compound is

A. $C_2H_4O_2$

B. $C_2H_2O_2$

C. CH_2O_2

D. CH_2O

Answer: D

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

A. $8 \cdot 2\ \%$

B. $25\ \%$

C. $16\ \%$

D. unpredictable

Answer: A

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86. An unsaturated hydrocarbon weighing 1.68 g has a volume of 488 mL at S.T.P. If it contains 14 $\%$ of hydrogen. Then the family to which hydrocarbon belongs is

A. Alkane

B. Alkene

C. Alkyne

D. Benzene

Answer: B

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87. $0 \cdot 5$ mol of potassium ferrocyanide contains carbon equal to

A. $1 \cdot 5$ mol

B. $36g$

C. $18g$

D. $3 \cdot 6g$

Answer: B

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

A. 3

B. 4

C. 5

D. 6

Answer: B

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89. 0.16 g of dibasic acid required 25 ml of decinormal NaOH solution for complete neutralisation. The molecular weight of the acid will be

A. 256

B. 64

C. 32

D. 128

Answer: D

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90. In a certain reaction ferrous oxalate is oxidised to ferric sulphate and CO_2 by acidified potassium permanganate, the equivalent mass of ferrous oxalate is

A. $\frac{\text{Mol. mass}}{3}$

B. $\frac{\text{Mol. mass}}{1}$

C. $\frac{\text{Mol. mass}}{2}$

D. $\frac{\text{Mol. mass}}{0 \cdot 5}$

Answer: A

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91. $224mL$ of a triatomic gas weights 1 g at $273K$ and $1atm$. The mass of one atom of this gas is:

A. $8 \cdot 30 \times 10^{-23} g$

B. $2 \cdot 08 \times 10^{-23}$ g

C. 5.53×10^{-23} g

D. 6.24×10^{-23} g

Answer: C

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92. Potassium chromate is isomorphous to potassium sulphate (K_2SO_4). It is found to contain $26 \cdot 78\,\%$ chromium. Calculate the atomic mass of chromium (K = $39 \cdot 10$).

A. 58

B. 52

C. 48

D. 49

Answer: B

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93. Which one of the following properties of an element is not variable ?

A. Valency

B. Equivalent mass

C. Atomic mass

D. All of three

Answer: C

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94. Divide a pieca of ice into half. Divide it further and keep on dividing it many times. The smallest piece of ice that you can get by this division is

A. an atom

B. a molecule

C. a particle

D. a crystal

Answer: B

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95. The notations of symbols for element that we use today was started by

A. Boyle

B. Dalton

C. Berzelius

D. Lavoisier

Answer: C

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96. Atomicity of mercury vapour is

A. 1

B. 2

C. 3

D. 4

Answer: A

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97. If atomic mass of oxygen were taken as 100, the moleuclar mass of water would be approximately

A. $6 \cdot 25$

B. $112 \cdot 5$

C. 102

D. $106 \cdot 25$

Answer: B

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98. The answer to the following problem in standard exponential form is : $\left(2.0 \times 10^{13}\right) + \left(1.5 \times 10^{14}\right)$

A. 3.5×10^{13}

B. 3.5×10^{14}

C. 2.15×10^{13}

D. 1.7×10^{14}

Answer: D

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99. $24.8\tilde{A} \cdot 12.4 - ?$ The correct answer to this problem in proper number of significant digit is

A. 2

B. 2.0

C. 2.00

D. 2.000

Answer: C

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100. $152.06 \times 0.24 = 36.4944$. The correct answer to this problem is proper number of significant digit is

A. 36.4944

B. 36.494

C. 37

D. 36.5

Answer: C

View Text Solution

101. $1280\tilde{A} \cdot 2.0 = ?$ The correct answer to this problem in proper number of significant digits is

A. 64

B. 6.40×10^2

C. 640.0

D. 640

Answer: D

View Text Solution

102. Number of significant figures in $200cm^3$ is/are

A. one

B. two

C. three

D. All are correct

Answer: D

View Text Solution

103. $108\tilde{A} \cdot 7.2 = 14.583$. The correct answer to this problem in proper number of significant digits is

A. 15

B. 14.58

C. 14.5

D. None of these

Answer: A

View Text Solution

104. $14.90 + 0.0070 + 1.0 + 0.081 = 15.9880$. The sum to proper number of significant digit is

A. 15.9

B. 16.0

C. 15.99

D. 16

Answer: B

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105. $1m^3 = ?\,\text{L}$

A. $10L$

B. 10^2L

C. 10^3L

D. $1L$

Answer: C

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106. When a sample of human blood is diluted 200 time its initial volume and microscopically examined in a layer 0.10 mm thick, an

average of 30 RBC are found in 100×100 micrometer square. The number of RBC in 1 mm^3 of undiluted blood is

A. 10^6

B. 6×10^6

C. 2×10^6

D. 3×10^6

Answer: B

Watch Video Solution

107. 1 L atm=? J

Given 1 atm = 101325 Pa

A. 101.325 J

B. 10.1325 J

C. 1013.25 J

D. 10132.5 J

Answer: A

Watch Video Solution

108. Density of mercury is $13.6gcm^{-3}$. Its density in kg m^{-3} is

A. $1.36kgm^{-3}$

B. $13.6kgm^{-3}$

C. $136.0kgm^{-3}$

D. $13.6 \times 10^3 kgm^3$

Answer: D

Watch Video Solution

109. Vanadium metal is added to steel to impart strength. Its density is $5.96 gcm^{-3}$. In SI system it is equal to

A. $5.96 kg/m^{-3}$

B. $5.96 \times 10^2 kg/m^3$

C. $5.96 \times 10^3 kg/m^3$

D. $59.6 kg/m^3$

Answer: C

View Text Solution

110. Which of the following has largest volume?

A. 445 g of water at $4^\circ C$ (density $1 g/cm^3$)

B. 600 g of chloroform at $20^\circ C$ (density $1.5 g / m^3$)

C. $155 cm^3$ of steel

D. 0.50 L of milk

Answer: D

Watch Video Solution

111. The percentage of sodium in a breakfast careal labelled as $110 mg$ of sodium per $100 g$ of cereal is:

A. $1.10\ \%$

B. $0.110\ \%$

C. $0.011\ \%$

D. $11.0\ \%$

Answer: B

Watch Video Solution

112. A mixture of petrol and ethyl alcohol contains 22.0 % alcohol. The density of the mixture is $0.800 gmL^{-1}$. What mass of alcohol is there in 40.0 mL of the mixture?

A. 7.04 g

B. 4.40 g

C. 11

D. None of these

Answer: A

Watch Video Solution

113. The density of salt solution is $1.13 gcm^{-3}$ at 298 K. The solution contains 17.0 % sodium chloride. What volume of solution will contain 38.42 g of NaCl?

A. $255.38 cm^3$

B. $200 cm^3$

C. $578 cm^3$

D. None of these

Answer: B

Watch Video Solution

114. Units of a and b in van der Waal's equation $\left(P + \frac{an^2}{V^2}\right)(V - nb) = nRT$ are

A. L^2atm^{-1}, L

B. $atmL^{-2}, L^{-1}$

C. $L^2atm^{-1}mol^{-2}, Lmol^{-1}$

D. $atmL^2mol^{-2}, Lmol^{-1}$

Answer: D

Watch Video Solution

115. Molar conductance of a solution is given by the expression

$$\wedge m = \frac{k \times 1000mLL^{-1}}{c}$$

Here c is the concentration in mol L^{-1} and k is expressed in $ohm^{-1}cm^{-1}$. Units of molar conductance are

A. $ohmmol^{-1}$

B. $Ohmcm^{-1}mol^{-1}$

C. $ohmcm^2mol$

D. None of these

Answer: A

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116. The physical quantity which has same dimensions as that of Planck's constant is

A. momentum

B. angular momentum

C. angular velocity

D. None of these

Answer: B

Watch Video Solution

117. "The Star of India" sapphire weighs 563 carats. If one carat is equal to 200 mg, the weight of the gemstone in grams is

A. 112.6 g

B. 11.26 g

C. 1.126 g

D. 1126 g

Answer: A

Watch Video Solution

118. If 6.3 g of $NaHCO_3$ are added to 15.0 g of CH_3COOH solution, the residue is found to weigh 18.0 g. The mass of CO_2

released in the reaction is

A. 9.3 g

B. 39.3 g

C. 3.3 g

D. None of these

Answer: C

View Text Solution

119. KBr contains 32,9 % potassium by mass. If 6.40 g of Br_2 is made to react with 3.60 g of potassium, the actual mass of potassium which reacted with Br_2 is

A. 3.14 g

B. 1.76 g

C. 3.6 g

D. None of these

Answer: A

View Text Solution

120. Chlorophyll, the green colouring matter of plants responsible for photosynthesis contains 2.68 % of magnesium by mass. The number of magnesium atoms in 2.00 g of chlokrophyll are

A. 1.33×10^{23}

B. 6.02×10^{23}

C. 3.01×10^{21}

D. 1.34×10^{21}

Answer: D

Watch Video Solution

121. If 224 mL of triatomic gas has a mass of 1 g at 273 K and 1 atm. Pressure, then the mass of one atom is

A. 8.30×10^{-23}g

B. 6.24×10^{-23}g

C. 2.08×10^{-23}g

D. 5.54×10^{-23}g

Answer: D

Watch Video Solution

122. Sodium chloride contains 60.68% chlorine by mass. If 7.1 g chlorine is made to react with 5.2 g of sodium, the number of moles of sodium which reacted with Cl_2 is

A. 0.2

B. 0.1

C. 0.21

D. 0.12

Answer: A

View Text Solution

123. Select the correct statement

A. At S.T.P. volume occupied by 1 mole liquid water is 22.4 L

B. 1 mole of every substance at S.T.P. has 22.4 L as volume

C. Volume occupied by 1 g H_2 gas at S.T.P. is equal to volume occupied by 2g He at S.T.P.

D. CH_4 is a real gas if 1 g of it at S.T.P. has volume 1.4 L

Answer: C

Watch Video Solution

124. Which has maximum volume at S.T.P.?

A. 1.5×10^{23} molecules of CO_2

B. 1 g H_2

C. 4 g O_2

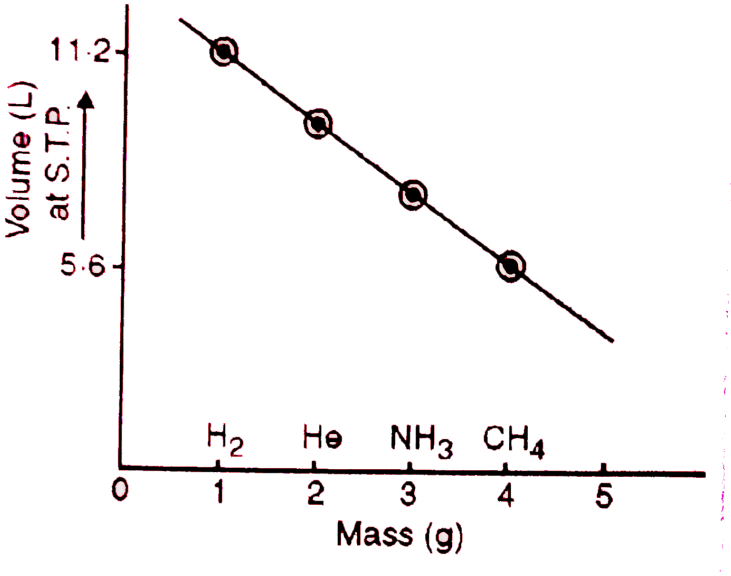
D. 16 g SO_3

Answer: B

View Text Solution

125. Following is the graphical presentation of volumes occupied by different gases at S.T.P.

Which is/are not placed at correct position?



A. H_2, He

B. He, NH_3

C. NH_3, CH_4

D. CH_4, H_2

Answer: B

View Text Solution

126. In a test-tube, there is 18 g of glucose $(C_6H_{12}O_6)$ 0.08 mole of glucose is taken out. Glucose left in the test tube is

A. 0.10 g

B. 0.02 g

C. 0.10 mol

D. 3.60 g

Answer: D

View Text Solution

127. One required 0.01 mole of Na_2CO_3. Mass of $Na_2CO_3.10H_2O$ to be taken is

A. 1.06 g

B. 2.86 g

C. 1.80 g

D. 3.02 g

Answer: B

Watch Video Solution

128. Compute the value of x :

x = 9.4g of phenol $(C_6H_5OH) + 6.02 \times 10^{23}$ molecules of phenol - 0.2 mole of phenol

Here x is:

A. 0.9 mol

B. 9.2 g

C. 0.1 mol

D. 6.02×10^{23} molecules

Answer: A

Watch Video Solution

129. If Avogadro's number would have been $1 \times 10^{23} mol^{-1}$, then mass of one atom of $._8 O^{16}$ would have been

A. 16 amu

B. $\frac{16}{6.02} a\mu$

C. $(16 \times 6.02) a\mu$

D. 16×10^{-23} amu

Answer: B

Watch Video Solution

130. Number of atoms in 12 g of $^{24}_{12}Mg$ is equal to

A. oxygen atoms in 11 g CO_2

B. hydrogen atoms in 4g CH_4

C. nitrogen atom in 46 g N_2O_4

D. sulphur atom in 79 g $Na_2S_2O_3$

Answer: A

Watch Video Solution

131. The rest mass of an electron is 9.11×10^{-31} kg. Molar mass of the electron is

A. $1.5 \times 10^{-31} kgmol^{-1}$

B. $9.11 \times 10^{-31} kgmol^{-1}$

C. $5.5 \times 10^{-7} kgmol^{-1}$

D. $6.02 \times 10^{23} kgmol^{-1}$

Answer: C

Watch Video Solution

132. Mass of one atom of an element is $2.66 \times 10^{-23} g$. This mass is equal to

A. 16 amu

B. $2.39 \times 10^{-9} J$

C. Both are correct

D. None is correct

Answer: C

Watch Video Solution

133. Mass of one atom of the element X is $1.66 \times 10^{-24} g$. Number of atoms in 1 g of the element is:

A. 1.66×10^{-24}

B. 1.66×10^{24}

C. $1.66 \times 10^{-24} \times N_A$

D. 6.02×10^{23}

Answer: D

Watch Video Solution

134. A compound has hemoglobin-like structure. It has one Fe and contains $4.6\,\%$ of Fe. The approximate molecular mass is

A. $100 gmol^{-1}$

B. $1200 gmol^{-1}$

C. $1600 gmol^{-1}$

D. $1400 gmol^{-1}$

Answer: B

Watch Video Solution

135. Which of the following samples contains the largest number of atoms ? .

A. 1 g of Ni(s)

B. 1 g of Ca(s)

C. 1 g of N_2 (g)

D. 1 g of B (s)

Answer: D

Watch Video Solution

136. Which one of the following samples contains the smallest number of atoms ?

A. 1 g of CO_2(g)

B. 1 g of C_8H_{18}(l)

C. 1 g of C_2H_6 (g)

D. 1 g of LiF(s)

Answer: A

Watch Video Solution

137. A sample of ammonium phosphate, $(NH_4)_3PO_4$ contains 3.18 mol of hydrogen atoms. The number of moles of oxygen atoms in the sample is .

A. 0.265

B. 0.795

C. 1.06

D. 3.18

Answer: C

Watch Video Solution

138. A sample of copper sulphate pentahydrate, $CuSO_4.5H_2O$ contains $3.782g$ of Cu. How many grams of oxygen are in this sample?

A. $0.952g$

B. $3.809g$

C. $4.761g$

D. $8.576g$

Answer: D

Watch Video Solution

139. A sample of argentite ore contains 1.34% of Ag_2S by mass. How many grams of this ore would give 1g of Ag on extraction?

A. $74.6g$

B. $85.7g$

C. $107.9g$

D. $134.0g$

Answer: B

Watch Video Solution

140. Ethanol, C_2H_5OH, is the substance commonly called "alcohol". The density of liquid ethanol is 0.789 g mL^{-1} at $20^{\circ}C$. If 1.2 moles of ethanol are needed for a particular experiment, what volume of ethanol should be measured out?

A. 55 mL

B. 58 mL

C. 70 mL

D. 79 mL

Answer: C

Watch Video Solution

141. What is the total number of atoms present in 25.0 mg of camphor, $C_{10}H_{16}O$?

A. 9.89×10^{19}

B. 6.02×10^{20}

C. 9.89×10^{20}

D. 2.67×10^{21}

Answer: D

Watch Video Solution

142. A gaseous hydrocarbon on complete combustion gives 3.38 g of CO_2 and 0.690 g of H_2O and no other product. The empirical formula of the hydrocarbon is

A. CH

B. CH_2

C. CH_3

D. The data is not complete

Answer: A

Watch Video Solution

143. A compound having the empirical formula $(C_3H_4O)_n$ has a molar mass of 170 ± 5. The molecular formula of this compound is

A. C_3H_4O

B. $C_6H_8O_2$

C. $C_6H_{12}O_3$

D. $C_9H_{12}O_3$

Answer: D

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Watch Video Solution

144. Cortisone is a molecular substance containing 21 atoms of carbon per molecule. The mas percentage of carbon in cortisone is $69.98\ \%$. Its molar mass is :

A. 176.5

B. 252.2

C. 287.6

D. 360.1

Answer: D

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145. A metal nitride M_3N_2 contains 28 % of nitrogen. The atomic mass of metal M is

A. 24

B. 54

C. 9

D. 87.62

Answer: A

Watch Video Solution

146. The simplest formula of a compound containing $50\,\%$ of element $X($ at $wt.\ 10)$ and $50\,\%$ of element $Y($ at $wt.20)$ is $-$

A. XY

B. X_2Y

C. XY_2

D. X_2Y_3

Answer: B

Watch Video Solution

147. A sample of pure compound contains 1.15 g of sodium, 3.01×10^{22} atoms of carbon and 0.1 mol of oxygen atom. Its empirical formula is

A. Na_2CO_3

B. $NaCO_2$

C. Na_2CO

D. Na_2CO_2

Answer: B

Watch Video Solution

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

A. $22.4L$

B. $8.80g$

C. $4.40g$

D. $2.24L$

Answer: B

Watch Video Solution

149. 500 mL of 0.250 M Na_2SO_4 solution is treated with 15.00 g of $BaCl_2$. Moles of $BaSO_4$ formed are

A. 0.72

B. 0.072

C. 0.168

D. 0.0168

Answer: B

Watch Video Solution

150. If 0.30 mol of zinc are added to 0.52 mol of HCl, the moles of H_2 formed are

A. 0.52

B. 0.30

C. 0.26

D. 0.60

Answer: C

Watch Video Solution

151. What mass of $CaCO_3$ is required to react completely with 25 ml of $0.75MHCI$?

A. $0.94g$

B. $9.4g$

C. $0.094g$

D. $0.49g$

Answer: A

Watch Video Solution

152. The mass of NaCl produced when 200 mL of 2.00 M HCl solution is neutralised with NaOH is

A. $2.34g$

B. $23.4g$

C. $234g$

D. None of these

Answer: B

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153. 1 mol of SO_2 and 1 mol of H_2S react completely to form H_2O and S as follows:

$SO_2 + 2H_2S \rightarrow 2H_2O + 3S$

(At. mass S = 32, O = 16)

The mass of S obtained is:

A. 96 g S

B. 48 g S

C. 24 g S

D. 64 g S

Answer: B

Watch Video Solution

154. Under S.T.P. 1 mol of N_2 and 3 mol of H_2 will form on complete reaction

A. 4 moles of NH_3

B. 89.6 L of NH_3

C. 22.4 L of NH_3

D. 44.8 L of NH_3

Answer: D

Watch Video Solution

155. 100 mL of PH_3 on decomposition produced phosphorus and hydrogen. The change in volume is

A. 50 mL increase

B. 500 ml decrease

C. 900 mL decrease

D. nil

Answer: A

Watch Video Solution

156. The ratio of the molar amounts of H_2S needed to precipitate the metal ions from 20 mL each 1 M Cd $(NO_3)_2$ and 0.5 M $CuSO_4$ is

A. $1:1$

B. $2:1$

C. $1:2$

D. indefinite

Answer: B

Watch Video Solution

157. 10.0 g of a mixture of BaO and CaO require 100 mL of 2.50 M HCl to react with it completely. Amount of BaO in the mixture is (At mass Ca = 40, Ba = 137, O = 16)

A. $47.3\ \%$

B. $43.7\ \%$

C. $37.4\ \%$

D. $74.37\ \%$

Answer: A

Watch Video Solution

158. The reaction between yttrium metal Y and dilute hydrochloric acid produce H_2(g) and Y^{3+} ions. The molar ratio of yttrium used to hydrogen produced is

A. $1:2$

B. $1:3$

C. $2:1$

D. $2:3$

Answer: D

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159. If 0.5 mol of $BaCl_2$ is mixed with 0.2 mol of Na_3PO_4, the maximum number of moles of $Ba_3(PO_4)_2$ that can be formed is

A. 0.7

B. 0.5

C. 0.1

D. 0.2

Answer: C

Watch Video Solution

160. Sulphuryl chloride, SO_2Cl_2, reacts with H_2O to give mixture of H_2SO_4 and HCl. Aqueous solution of 1 mol SO_2Cl_2 will be neutralised by

A. 3 moles of NaOH

B. 2 moles of $Ca(OH)_2$

C. Both (A) and (B)

D. None of these

Answer: B

Watch Video Solution

161. One mole of potassium chlorate is thermally decomposed and excess of aluminium is burnt in the gaseous product. How many moles or aluminium oxide are formed?

A. 1

B. 2

C. 1.5

D. 3

Answer: A

View Text Solution

162. $2H_2 + O_2 \rightarrow 2H_2O$

2 g H_2 and 1 g O_2 react to form H_2O

A. $3.0g$

B. $1.125g$

C. $4.5g$

D. $2.50g$

Answer: B

Watch Video Solution

163. Sulphuric acid and orthophosphoric acid have the same molecular mass. Ratio of the masses of these acids needed to neutralise the same amount of an alakli if the sulphate and dihydrogen orthophosphate were formed, is:

A. $1:2$

B. $2:1$

C. $1:3$

D. $1:1$

Answer: A

Watch Video Solution

164. $3BaCl_2 + 2Na_3PO_4 \rightarrow Ba_3(PO_4)_2 + 6NaCl$

Maximum amount of $Ba_3(PO_4)_2$ formed when 2 moles each of Na_3PO_4 and $BaCl_2$ react is

A. 4 mol

B. 1 mol

C. $\frac{2}{3}mol$

D. $\frac{1}{3}mol$

Answer: C

View Text Solution

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165. 50 mL solution of $BaCl_2$ (20.8% w//v) and 100 mL solution of H_2SO_4 (9.8% w//v) are mixed (Ba = 137, Cl = 35.5, S=32)

$$BaCl_2 + H_2SO_4 \rightarrow BaSO_4 \downarrow 2HCl$$

Weight of $BaSO_4$ formed is:

A. $23.3g$

B. $46.6g$

C. $29.8g$

D. $11.65g$

Answer: D

Watch Video Solution

166. 2 mol of H_2S and 11.2 L of SO_2 at N.T.P. react to form x moles of sulphur, x is

$SO_2 + 2H_2S \rightarrow 3S + 2H_2O$

A. 1.5

B. 3

C. 11.2

D. 6

Answer: A

Watch Video Solution

167. Volume of H_2 gas occupied by its one equivalent at S.T.P. is

A. $22.4L$

B. $11.2L$

C. $5.6L$

D. $1.0L$

Answer: B

Watch Video Solution

168. In the combustion of 5.00 g of a metal, 9.44 g of metal oxide are formed. Hence, equivalent mass of the metal is

A. $4.44g$

B. $9.00g$

C. $5.00g$

D. $2.22g$

Answer: B

Watch Video Solution

169. The same amount of a metal combines with 0.20 g of oxygen and with 3.17 g of a halogen. Hence equivalent mass of halogen is

A. $127g$

B. $80g$

C. $35.5g$

D. $9g$

Answer: A

Watch Video Solution

170. 8.34 g of a divalent metal is oxidised by 0.680 L of oxygen (in standard conditions). Hence, atomic mass of the metal is

A. 68.7

B. 34.3

C. 137.4

D. 274.7

Answer: C

Watch Video Solution

171. Arsenic forms two oxides, one of which contains 65.2 % and the other 75.7% of the element. Hence, equivalent masses of arsenic are in the ratio

A. $1:2$

B. $3:5$

C. $13:15$

D. $2:1$

Answer: B

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172. The equivalent mass of chlorine is 35.5, and the molar mass of copper is 63.5. The equivalent mass of copper chloride is 99.0. Hence, formula of copper chloride is

A. $CuCl$

B. Cu_2Cl

C. $CuCl_2$

D. None of these

Answer: A

Watch Video Solution

173. A certain amount of a metal whose equivalent mass is 28 displaces 0.7 L of H_2 at S.T.P. from an acid. Hence, mass of the element is:

A. $1.75g$

B. $0.875g$

C. $3.50g$

D. $7.00g$

Answer: A

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Revision Questions From Competitive Exams

1. How many moles of Helium gas occupy 22.4 L at $0^{\circ}C$ at 1 atm pressure?

A. 0.11

B. 0.90

C. 1.0

D. 1.11

Answer: C

Watch Video Solution

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

A. 0.1 mol of CO_2 gas

B. 11.2 L of CO_2 gas at N.T.P.

C. 22 g of CO_2 gas

D. $22.4 \times 10^3 mL$ of CO_2 gas

Answer: A

Watch Video Solution

3. The number of atoms contained in 11.2 L of SO_2 at S.T.P. are

A. $3/2 \times 6.02 \times 10^{23}$

B. $2 \times 6.02 \times 10^{23}$

C. 6.02×10^{23}

D. $4 \times 6.02 \times 10^{23}$

Answer: A

Watch Video Solution

4. The volume of 1.0 g of hydrogen in litres at N.T.P. is

A. 2.24

B. 22.4

C. 1.12

D. 11.2

Answer: D

Watch Video Solution

5. The number of oxygen atoms in 4.4 g of CO_2 is approximately

A. 1.2×10^{23}

B. 6×10^{22}

C. 6×10^{23}

D. 12×10^{23}

Answer: A

Watch Video Solution

6. The total number of gm-molecules of SO_2Cl_2 in 13.5 g of sulphuryl chloride is

A. 0.1

B. 0.2

C. 0.3

D. 0.4

Answer: A

Watch Video Solution

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

A. 1.5057×10^{24}

B. 2.0478×10^{24}

C. 3.0115×10^{24}

D. 4.0956×10^{24}

Answer: C

Watch Video Solution

8. The number of moles of sodium oxide in 620 g of it is

A. 1 mol

B. 10 moles

C. 18 moles

D. 100 moles

Answer: B

Watch Video Solution

9. 2g of oxygen contains number of atoms equal to that in

A. 0.5 g of hydrogen

B. 4g of sulphur

C. 7 g of nitrogen

D. 2.3 g of sodium

Answer: B

Watch Video Solution

10. The number of molecules in 8.96L of a gas at $0^\circ C$ and 1 atmosphere pressure is approximately

A. 6.02×10^{23}

B. 12.04×10^{23}

C. 18.06×10^{23}

D. 24.08×10^{22}

Answer: D

Watch Video Solution

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

A. $2.4N_A$

B. $4.2N_A$

C. $1.6N_A$

D. $3.2N_A$

Answer: A

Watch Video Solution

12. In a chemical reaction

$$K_2Cr_2O_7 + xH_2SO_4 + ySO_2 \rightarrow K_2SO_4 + Cr_2(CO_4)_3 + zH_2O$$

the values of x,y,z are

A. $1, 3, 1$

B. $4, 1, 4$

C. $3, 2, 3$

D. $2, 1, 2$

Answer: A

View Text Solution

13. The hydrogen phosphate of certain metal has formula $MHPO_4$. The formula of metal chloride wouble be

A. MCl

B. MCl_2

C. M_2Cl_2

D. MCl_3

Answer: B

View Text Solution

14. The number of moles of oxygen in 1 L of air containing 21% oxygen by volume, in standard conditions, is

A. 0.186 mol

B. 0.21 mol

C. 2.10 mol

D. 0.0093 mol

Answer: D

Watch Video Solution

15. The number of atoms in 4.25 g of NH_3 is approximately

A. 1×10^{23}

B. 1.5×10^{23}

C. 2×10^{23}

D. 6×10^{23}

Answer: D

Watch Video Solution

16. 4.4 g of an unknown gas occupies 2.24 L of volume at standard temperature and pressure, The gas may be

A. Carbon dioxide

B. Carbon monoxide

C. Oxygen

D. Sulphur dioxide

Answer: A

Watch Video Solution

17. The maximum amount of $BaSO_4$ precipitated on mixing $BaCl_2$ (0.5 M) with H_2SO_4 (1M) will correspond to

A. 0.5 M

B. 1.0 M

C. 1.5 M

D. 2.0 M

Answer: A

Watch Video Solution

18. Volume of a gas at S.T.P. is 1.2×10^{-7} cc. Calculate the no. of molecules in it

A. 3.01×10^{20}

B. 3.01×10^{12}

C. 3.01×10^{23}

D. 3.01×10^{24}

Answer: B

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19. The largest no. of molecules is in

A. 34 g of water

B. 28 g of CO_2

C. 46g of CH_3OH

D. 54 g of N_2O_5

Answer: A

Watch Video Solution

20. The number of molecules in 16 g of methane is

A. 3.0×10^{23}

B. 6.02×10^{23}

C. $\frac{16}{6.02} \times 10^{23}$

D. $\frac{16}{3.0} \times 10^{23}$

Answer: B

Watch Video Solution

21. The volume in litres of CO_2 liberated at STP when 10 grams of 90% pure limestone is heated cmpletely is

A. 22.4

B. 2.24

C. 20.6

D. 2.016

Answer: D

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22. Which is correct statement about proton?

A. Proton is the nucleus's of deutrium

B. Proton is alpha particle

C. Proton is ionized hydrogen molecule

D. Proton is ionized hydrogen atom

Answer: D

Watch Video Solution

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

A. 0.84 L

B. 0.24 L

C. 4.06 L

D. 1.12 L

Answer: D

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24. The number of equivalents of $N_2S_2O_3$ required for the volumetric estimation of one equivalent of Cu^{2+} is

A. 1

B. 2

C. $3/2$

D. 3

Answer: B

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25. In a mole of water vapours at STP, the volume actually occupied or taken by the molecules (i.e., Avogadro's No. $\times$ volume of one molecule) is

A. zero

B. less than 1% of 22.4 litres

C. about 10% of the volume of container

D. 1% to 2% of 22.4 litres

Answer: B

Watch Video Solution

26. Complete combustion of 0.858 g of compound X gives 2.63 g of CO_2 and 1.28 g of H_2O. The lowest molecular mass X can have

A. 43 g

B. 86 g

C. 129 g

D. 172 g

Answer: A

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27. An organic compound contains 49.3% carbon. 6.84% hydrogen and its vapour density is 73. Molecular formula of compound is

A. $C_3H_5O_2$

B. $C_6H_{10}O_4$

C. $C_3H_{10}O_2$

D. $C_4H_{10}O_2$

Answer: B

Watch Video Solution

28. In the following reaction, which choice has value twice that of the equivalent mass of the oxidising agent

$SO_2 + H_2O \rightarrow 3S + 2H_2O$

A. 64

B. 32

C. 16

D. 48

Answer: B

Watch Video Solution

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

A. 33

B. 22

C. 44

D. 11

Answer: C

Watch Video Solution

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

A. CH_2O

B. CH_2O_2

C. $C_2H_4O_2$

D. $C_4H_6O_4$

Answer: B

Watch Video Solution

31. 1.5 mol of O_2 combine with Mg to form oxide MgO. The mass of Mg (at mass 24) that has combined is

A. 72g

B. 36g

C. 48g

D. 24g

Answer: A

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32. 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

33. The volume of water to be added to $100cm^3$ of 0.5 NH_2SO_4 to get decinormal concentration is

A. $400cm^3$

B. $500cm^3$

C. $450cm^3$

D. $100cm^3$

Answer: A

Watch Video Solution

34. The reaction of calcium with water is represented by the equation

$Ca + 2H_2O \rightarrow Ca(OH)_2 + H_2$

What volume of H_2, at STP would be liberated when 8 g of calcium completely reacts with water

A. $4480cm^3$

B. $2240cm^3$

C. $1120cm^3$

D. $0.4cm^3$

Answer: A

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35. Among the following pairs, the one which illustrates the law of multiple proportion is

A. NH_3, HCl

B. H_2S, SO_2

C. CuO, Cu_2O

D. $CS_2, FeSO_4$

Answer: C

Watch Video Solution

36. Mixture of sand and sulphur may best be separated by

A. Fractional crystallisation from aqueous solution

B. Magnetic method

C. Fractional distillation

D. Sublimation

Answer: B

Watch Video Solution

37. The set of numerical coefficients that balances the chemical equation

$K_2CrO_4 + HC < oK_2Cr_2O_7 + KCl + H_2O$

A. $1, 1, 2, 2, 1$

B. $2, 2, 1, 1, 1$

C. $2, 1, 1, 2, 1$

D. $2, 2, 1, 2, 1$

Answer: D

Watch Video Solution

38. 0.126 g of acid required 20 mL of 0.1 N NaOH for complete neutralisation. The equivalent mass of an acid is

A. 45

B. 53

C. 40

D. 63

Answer: D

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39. Which law directly explains the law of conservation of mass?

A. Dalton's law

B. Avogadro's law

C. Berzelius law

D. Hund's rule

Answer: A

View Text Solution

40. Molarity of liquid HCl with density equal to 1.17g/cc is

A. 36.5

B. 18.25

C. 32.05

D. 4.65

Answer: C

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41. The modern atomic weight scale is based on

A. C^{12}

B. O^{16}

C. H^{1}

D. C^{13}

Answer: A

Watch Video Solution

42. The prefix 10^{18} is

A. giga

B. exa

C. kilo

D. nano

Answer: B

Watch Video Solution

43. Difference in density is the basis of

A. Ultrafiltration

B. Molecular sieving

C. Gravity separation

D. Molecular attraction

Answer: C

Watch Video Solution

44. A mixture of sand and iodine can be separated by

A. Crystallisation

B. Sublimation

C. Distillation

D. Fractional Distillation

Answer: B

Watch Video Solution

45. Irrespective of the source, pure sample of water always yeilds 88.89% mass of oxygen and 11.11% mass of hydrogen. This is explained by the law of

A. conservation of mass

B. constant composition

C. multiple proportions

D. constant volume

Answer: B

Watch Video Solution

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

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

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

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

D. None of these

Answer: A

Watch Video Solution

47. The weight of one molecule of a compound $C_{60}H_{12}$ is

A. 1.3×10^{-20}g

B. 5.01×10^{-21}g

C. 3.72×10^{23}g

D. 1.4×10^{-21}g

Answer: D

Watch Video Solution

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

A. 200

B. 400

C. 155

D. 355

Answer: B

Watch Video Solution

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

A. twice that in 60g carbon

B. 6.022×10^2

C. half that in 8 g of He

D. $558.5 \times 6.022 \times 10^{23}$

Answer: A

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50. Accurate determination of atomic masses is done with the instrument called as

A. spectrophotometer

B. mass spectrometer

C. atomic absorption spectrometer

D. calorimeter

Answer: B

Watch Video Solution

51. To differentiat between C-12, C-13 and C-14 the instrument that you would use is

A. infra-red spectrometer

B. atomic absorption spectrometer

C. mass spectrometer

D. ultraviolet spectrometer

Answer: C

Watch Video Solution

52. 32 g O_2, 2g H_2 and 28 g N_2 at S.T.P. occupy separately a volume of

A. 1L

B. 2L

C. 22.4 L

D. 2.24 L

Answer: C

Watch Video Solution

53. 0.56 g of a gas occupies $280cm^3$ at N.T.P., then its molecular mass is

A. 4.8

B. 44.8

C. 2

D. 22.4

Answer: B

Watch Video Solution

54. The equivalent mass of Fe in FeO is

A. 56

B. 28

C. 36

D. 18.66

Answer: B

Watch Video Solution

55. Which one of the following is ambiguous ?

A. A mole of electrons

B. A mole of sodium atoms

C. A mole of potassium ions

D. A mole of hydrogen

Answer: D

Watch Video Solution

56. Chemical equations convey quantitative information on the

A. type of atoms/molecules taking part in the reaction

B. number of atoms/molecules of the reac-tants and products involved in the reaction

C. relative number of moles in the reaction

D. quantity of reactant consumed and quantity of product envolved

Answer: C

Watch Video Solution

57. X litres of carbon monoxide is present at S.T.P. It is completely oxidised to CO_2. The volume of CO_2 formed is 11.207 L at S.T.P. What is the value of X in litres?

A. 22.414 L

B. 11.207 L

C. 5.6035L

D. 44.828 L

Answer: B

Watch Video Solution

58. One mole of fluorine is reacted with two moles of hot and concentrated KOH. The product formed are KF, H_2O and O_2. The molar ratio of KF, H_2O and O_2 is respectively

A. $1:1:2$

B. $2:1:0.5$

C. $1:2:1$

D. $2:1:2$

Answer: B

Watch Video Solution

59. 0.078 g of a hydrocarbon occupy 22.414 mL of volume at S.T.P. The empirical formula of the hydrocarbon is CH. The molecular formula of hydrocarbon is

A. C_2H_2

B. C_6H_6

C. C_8H_8

D. C_4H_4

Answer: B

Watch Video Solution

60. Two grams sulphur is completely burnt in oxygen to form SO_2. In this reaction, what is the volume (in litres) of oxygen consumed at S.T.P. ?(at mass of S and O are 32 and 16 respectively)

A. $\frac{16}{22.414}$

B. $\frac{22.414}{16}$

C. $\frac{22.414}{32}$

D. $\frac{32}{22.414}$

Answer: B

Watch Video Solution

61. In the Haber process, $30L$ of dhyrgen and $30L$ of dintrogen were taken for reaction which yielded only $50\ \%$ of the expectedf

product. What will be the xomposition of the gaseous mixturre under the aforesaid condition in the end?

A. 20 L of ammonia, 25 L of nitrogen, 15 L of hydrogen

B. 20 L of ammonia, 20L of nitrogen, 20 L hydrogen

C. 10L of ammonia, 25 L of nitrogen, 15 L of hydrogen

D. 20L of ammonia, 10 L of nitrogen, 30 L of hydrogen

Answer: C

 Watch Video Solution

62. 25 mL of a solution of barium hydroxide on titration with 0.1 molar solution of hydrochloric acid gave a titre value of 35 mL. The molarity of barium hydroxide solution was

A. 0.07

B. 0.14

C. 0.28

D. 0.35

Answer: A

Watch Video Solution

63. What volume of hydrogen gas at 273 K and 1 atm. Pressure will be consumed in obtaining 21.6 g elemental boron (Atomic mass=10.8) from the reduction of boron trichloride by hrogen?

A. $89.6L$

B. $67.2L$

C. $44.8L$

D. $22.4L$

Answer: B

Watch Video Solution

64. A signature written with carbon pencil weighs 1 mg. What is the number of carbon atoms present in the signature?

A. 6.02×10^{20}

B. 0.502×10^{20}

C. 5.02×10^{23}

D. 5.02×10^{20}

Answer: B

Watch Video Solution

65. The equivalent weight of a certain trivalent element is 20. Molecular weight of its oxide is

A. 168

B. 68

C. 152

D. 56

Answer: A

Watch Video Solution

66. $Mg + 2HCl \rightarrow MgCl_2 + H_2$. The ration of Mg used to H_2 produced by weight is

A. $1:12$

B. $12:1$

C. $24:1$

D. $1:6$

Answer: B

Watch Video Solution

67. There are two isotopes of an element with atomic mass z. Heavier on has atomic mass z+2 and lighter one has z-1, then abundance of lighter one is

A. 66.6%

B. 96.7%

C. 6.67%

D. 33.3%

Answer: A

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68. A metal M of equivalent mass E forms an oxide of molecular formula M_xO_y. The atomic mass of the metal is given by the correct equation.

A. 2E(y/x)

B. xy/E

C. E/y

D. E/2(x/y)

Answer: A

Watch Video Solution

69. In an acidic medium dichromate ion oxidises ferrous ion to ferric ion. If the gram molecular mass of potassium dichromate is 294 g, its gram equivalent mass is..... Grams.

A. 294

B. 127

C. 49

D. 24.5

Answer: C

Watch Video Solution

70. O_2^{2+} is the symbol of ..... Ion

A. oxide

B. superoxide

C. peroxide

D. monoxide

Answer: C

Watch Video Solution

71. In a balanced equation

$$H_2SO_4 \rightarrow xHI \rightarrow H_2S + yI_2 + zH_2O$$

The values of x,y,z are

A. $x = 3, y = 5, z = 2$

B. $x = 4, y = 8, z = 5$

C. $x = 8, y = 4, z = 4$

D. $x = 5, y = 3, z = 4$

Answer: C

Watch Video Solution

72. Empirical formula of a compound is CH_2O and its molecular mass is 90. The molecular formula of the compound is

A. $C_2H_4O_2$

B. $C_3H_6O_3$

C. $C_4H_8O_4$

D. CH_2O

Answer: C

Watch Video Solution

73. The coefficient of viscosity n of a fluid moving steadily between two surfaces is given by the formula, $f = nA\frac{dV}{dx}$ where f is the frictional force on the fluid, A is an area in the fluid and dV/dx is the velocity gradient inside the fluid at that area. The SI unit of viscosity coefficient n is given as.

A. $kgm^{-1}s^{-1}$

B. $Nm^{-2}s^{-2}$

C. Nil, it is dimensionless constant

D. newtons

Answer: A

Watch Video Solution

74. 2g of aluminium is treated, separately with excess of dilute H_2SO_4, and excess of $NaOH$, the ratio of volumes of hydrogen evolved is

A. $1:1$

B. $2:3$

C. $1:2$

D. $2:1$

Answer: A

Watch Video Solution

75.

$aK_2Cr_2O_7 + bKCl + cH_2SO_4 \rightarrow xCrO_2Cl_2 + yKHSO_4 + zH_2$

The above equation balances when

A. $a = 2, b = 4, c = 6$ and $x = 2, y = 6, z = 3$

B. $a = 4, b = 2, c = 6$ and $x = 6, y = 2, z = 2$

C. $a = 6, b = 4, c = 2$ and $x = 2, y = 3, z = 2$

D. $a = 1, b = 4, c = 6$ and $x = 2, y = 6, z = 3$

Answer: D

View Text Solution

76. Which of the following contains maximum number of molecules?

A. 100 cc of CO_2 at S.T.P.

B. 150 cc of N_2 at S.T.P.

C. 50 cc of SO_2 at S.T.P.

D. 150 cc of O_2 at S.T.P

Answer:

View Text Solution

77. The numerical value of N/n (where N is the number of molecules in a give sample of gas and n is the number of moles of gas) is

A. 8.314

B. 6.02×10^{23}

C. 0.0821

D. 1.66×10^{-19}

Answer:

Watch Video Solution

78. The mass of 11.2 L of ammonia gas at S.T.P. is

A. $8.5g$

B. $85g$

C. $17g$

D. $1.7g$

Answer: A

View Text Solution

79. A sample of phosphorus trichloride (PCl_3) contains 1.4 moles of the substances. How many atoms are there in the sample?

A. 4

B. 5.6

C. 8.431×10^{23}

D. 3.373×10^{24}

Answer: D

View Text Solution

80. A mixture of NO_2 and N_2O_4 has a vapor density of 38.3 at 300 K. What is the number of moles of NO_2 in 100 g of themixture ?

A. 0.043

B. 4.4

C. 3.4

D. 3.68

Answer:

Watch Video Solution

81. A gaseous mixture contains 50% helium and 50% methane by volume. What is the percent by weight of methane in the mixture?

A. $19.97\ \%$

B. $20.05\ \%$

C. $50\ \%$

D. $75\ \%$

Answer:

View Text Solution

82. What is the equivalent mass of IO_4^- when it is converted into I_2 in acid medium ?

A. $M/6$

B. $M/7$

C. $M/5$

D. $M/4$

Answer: B

Watch Video Solution

83. How will you separate a mixture of two gases ?

A. Fractional distillation technique

B. Graham's law of diffusion technique

C. Osmosis

D. Chromatography

Answer: B

View Text Solution

84. 4.4 g of CO_2 contains how many litres of CO_2 at S.T.P

A. $2.4L$

B. $2.24L$

C. $44L$

D. $22.4L$

Answer: B

View Text Solution

85. What is the net charge on ferrous ion?

A. $+2$

B. $+3$

C. $+4$

D. $+5$

Answer: A

View Text Solution

86. The maximum number of molecules is present in

A. 10 g of O_2 gas

B. 15L of H_2 gas at S.T.P.

C. 5L of N_2 gas at S.T.P.

D. 0.5 g of H_2 gas

Answer: B

View Text Solution

87. 6.0×10^{20} molecules of urea are present in 100 L of his solution. The concentration of urea solution is

A. 0.001 M

B. 0.1 M

C. 0.02 M

D. 0.01 M

Answer: D

View Text Solution

88. one gram mole of a gas at N.T.P. occupies 22.4 L. This fact was derived from

A. Law of gaseous volumes

B. Avogadro's hypothesis

C. Berzerlius hypothesis

D. Dalton's hypothese

Answer: B

View Text Solution

89. Volume of 0.1 M $K_2Cr_2O_7$ required to oxidise 35 mL of 0.5 M Fe SO_4 solution is

A. 29.2 mL

B. 17.5 mL

C. 175 mL

D. 145 mL

Answer: A

View Text Solution

90. Number of atoms of oxygen present in 10.6 g of Na_2CO_3 will be

A. 6.02×10^{22}

B. 12.04×10^{22}

C. 1.806×10^{23}

D. 31.80×10^{28}

Answer: C

View Text Solution

91. For decolourisation of $1\text{mol of}KMnO_4$, the moles of H_2O_2 required is

A. $1/2$

B. $3/2$

C. $5/2$

D. $7/2$

Answer: C

Watch Video Solution

92. A solution contain1.2046×10^{24}hydrochloric acid molecules in one $dm^3$of the solution . The strength of the solution is

A. 6N

B. 2N

C. 4N

D. 8N

Answer: B

Watch Video Solution

93. 4g of copper was dissolved in conc. Nitric acid. The copper nitrate so obtained on strong heating gave 5 g of its oxide. The equivalent weight of copper is

A. 23

B. 32

C. 12

D. 20

Answer: B

View Text Solution

94. Dulong and Petit's law is valid only for

A. metals

B. non-metals

C. gaseous elements

D. solid elements

Answer: D

Watch Video Solution

95. In alkanline medium ClO_2 oxidises H_2O_2 to O_2 and itself gets reduced to Cl^-. How many moles of H_2O_2 are oxidised by 1 mol of ClO_2?

A. 1.0

B. 1.5

C. 2.5

D. 3.5

Answer: C

View Text Solution

96. When 32.25 g of ethyl chloride is subjected to dehydrohalogenation reaction, the yield of alkene formed is 50%. The mass of the product formed is (at mass of chlorine = 35.5)

A. $14g$

B. $28g$

C. $64.5g$

D. $56g$

Answer: B

View Text Solution

97. $100gCaCO_3$ reacts with $1litre1NHCl$. On completion of reaction how much weight of CO_2 will be obtain

A. $5.5g$

B. $11g$

C. $22g$

D. $33g$

Answer: C

Watch Video Solution

98. The mass of carbon anode consumed (giving only carbon dioxide) in the production of 270 kg of aluminium metal from bauxite by Hall process is

A. $180kg$

B. $270kg$

C. $540kg$

D. $90kg$

Answer: D

View Text Solution

99. If we consider that $\frac{1}{6}$ in place of $\frac{1}{12}$, mass of carbon atom is taken to be the relative atomic mass unit, the mas of one mole of a substance will

A. decrease twice

B. increase two fold

C. remain unchanged

D. be a function of the molecular mass of substance

Answer: C

Watch Video Solution

100. How will you separate a solution (miscible) of benzene + $CHCl_3$?

A. Sublimation

B. Filtration

C. Distillation

D. Crystallisation

Answer: C

View Text Solution

101. If 30 mL of H_2 and 20 mL of O_2 reacts to form water, what is left at the end of the reaction?

A. 10 mL of H_2

B. 5 mL of H_2

C. 10 mL of O_2

D. 5 mL of O_2

Answer: D

View Text Solution

102. For the formation of 3.65 g of hydrogen chloride gas, what volume of hydrogen and chlorine gas are required to N.T.P. conditions?

A. 1.12L, 1.12L

B. 1.12L, 2.24L

C. 3.65 L, 1.83 L

D. 1L, 1L

Answer: A

View Text Solution

103. An alkaloid contains 17.28% of nitrogen and its molecular mass is 162. The number of nitrogen atoms present in on molecule of alkaloid is

A. five

B. four

C. three

D. two

Answer: D

View Text Solution

104. x' grams of calcium carbonate was completely burnt in air. The weight of the solid residue formed is 28 g. what is the value of 'x' in grams?

A. 44

B. 200

C. 150

D. 50

Answer: D

View Text Solution

105. The decomposition of a certain mass of $CaCO_3$ gave $11.2dm^3$ of a CO_2 at S.T.P. The mass of KOH required to completely neutralize the gas is

A. $56g$

B. $28g$

C. $42g$

D. $20g$

Answer: A

View Text Solution

106. 4 moles each of SO_2 and O_2 gases are allowed to react to form SO_3 in a closed vessel. At equilibrium, 25% of O_2 is used up. The total number of moles of all the gases at equilibrium is

A. 6.5

B. 7.0

C. 8.0

D. 2.0

Answer: B

View Text Solution

107. Which among the following is the heaviest?

A. one mole of oxygen

B. one molecule of sulphur dioxide

C. 100 a.m.u. of uranium

D. ten moles of hydrogen

Answer: B

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108. $1.520g$ of the hydroxide of a metal on ignition gave $0.995g$ of oxide. The equivalent weight of metal is

A. 1.52

B. 0.995

C. 190

D. 9

Answer: D

Watch Video Solution

109. The number of gram atoms of oxygen in $0.2 \times 10^{24} CO$ molecules is

A. 1

B. 0.5

C. 5

D. 9

Answer: D

View Text Solution

110. 500 mL of NH_3 contain 6.00×10^{23} molecules at a certain temperature and pressure. How many molecules are present in 100 mL of CO_2 at same temperature and pressure?

A. 6×10^{23}

B. 1.5×10^{21}

C. 1.2×10^{23}

D. None of these

Answer: C

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

A. 1.0 mole of H_2O is produced

B. all the oxygen is consumed

C. 1.5 mole of NO is formed

D. all ammonia is consumed

Answer: B

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112. The crystalline salt $Na_2SO_4.xH_2O$ on heating loses 55.9 % of its weight. The formula of the crystalline salt is

A. $Na_2SO_4.5H_2O$

B. $Na_2SO_4.7H_2O$

C. $Na_2SO_4.2H_2O$

D. $Na_2SO_4.10H_2O$

Answer: D

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113. 10 litres of O_2 gas is reacted with 30 litres of CO at S.T.P. The volumes of each gas present at the end of the reaction are

A. $CO = 10$ litres, $CO_2 = 20$ litres

B. $O_2 = 10$ litres, $CO = 30$ litres

C. $CO = 20$ litres, $CO_2 = 10$ lites

D. $O_2 = 10$ litres, $CO_2 = 20$ litres

Answer: A

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114. 0.3 g of an acid is neutralized by $40cm^3$ of 0.125 N NaOH. Equivalent mass of the acid is

A. 60

B. 45

C. 30

D. 63

Answer: A

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115. $0.1mol$ of a carbonhydrate with empirical formula CH_2O contains $1g$ of hydrogen. What is its molecular formula?

A. $C_5H_{10}O_5$

B. $C_6H_{12}O_6$

C. $C_4H_8O_4$

D. $C_3H_6O_3$

Answer: A

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116. The percentage of element M is 53 in its oxide of molecular formula M_2O_3. Its atomic mass is about

A. 45

B. 9

C. 18

D. 36

Answer: C

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117. 80 g of oxygen contains as many atoms as in

A. 10 g of hydrogen

B. 5 g of hydrogen

C. 80 g of hydrogen

D. 1g of hydrogen

Answer: B

Watch Video Solution

118. 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

Watch Video Solution

119. The number of significant figures in 10.3106 g is

A. 2

B. 3

C. 1

D. 4

Answer: A

Watch Video Solution

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

A. $5L$

B. $10L$

C. $7L$

D. $6L$

Answer: A

Watch Video Solution

121. 10 g of hydrogen and 64 g of oxygen were filled in a steel vessel and exploded. Amount of water produced in this reaction will be

A. $3mol$

B. $4mol$

C. $1mol$

D. $2mol$

Answer: B

Watch Video Solution

122. An organic compound made up of C, H, and N contains $20\ \%\ N$. The molecular mass of the organic compound is

A. 70

B. 140

C. 100

D. 65

Answer: A

Watch Video Solution

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

A. 55.85

B. 55.95

C. 55.75

D. 56.05

Answer: B

Watch Video Solution

124. A bivalent metal has an equivalent mass of 32. The molecular mass of the metal nitrate is

A. 168

B. 192

C. 188

D. 182

Answer: C

Watch Video Solution

125. $100mL$ of phosphine (PH_3) on hearing forms phosphorous (P) and hydrogen (H_2). The volume change in the reaction is

A. an increase of 50 mL

B. an increase of 110 mL

C. an increase of 150 mL

D. a decrease of 50 mL

Answer: A

Watch Video Solution

126. $0.1mol$ of a carbonhydrate with empirical formula CH_2O contains $1g$ of hydrogen. What is its molecular formula?

A. $C_5H_{10}O_5$

B. $C_6H_{12}O_6$

C. $C_4H_8O_2$

D. $C_2H_4O_2$

Answer: A

Watch Video Solution

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

A. 0.044

B. 0.333

C. 0.011

D. 0.029

Answer: D

Watch Video Solution

128. Express of CO_2 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 carbonated was completely neutralized with 0.1 N hydrochloric acid. The volume of hydrochloric acid required is (At mass of carbon = 40)

A. $200mL$

B. $500mL$

C. $400mL$

D. $300mL$

Answer: B

Watch Video Solution

129. In the reaction of sodium thiosulphate with I_2 in aqueous medium, the equivalent mass of sodium sulphate

A. molar mass of sodium thiosulphate

B. the average of molecular masses of $Na_2S_2O_3$ and I_2

C. half the molecular mass of sodium thiosulphate

D. molar pass of sodium sulphate X_2

Answer: C

Watch Video Solution

130. Which of the following sets of compounds correctly ltbr. Illustrate the law of reciprocal proportions?

A. P_2O_3, PH_3, H_2O

B. P_2O_5, PH_3, H_2O

C. N_2O_5, NH_3, H_2O

D. N_2O, NH_3, H_2O

Answer: A

Watch Video Solution

131. The mass of $2.24 \times 10^{-3} m^3$ of a gas is 4.4 g at 273.15 K and 101.325 Kpa pressure. The gas may be

A. NO

B. NO_2

C. C_3H_8

D. NH_3

Answer: C

Watch Video Solution

132. The total number of atoms of all elements present in mole of ammonium dichromate is

A. 19

B. 6.023×10^{23}

C. 114.473×10^{23}

D. 84.322×10^{23}

Answer: C

Watch Video Solution

133. If 1 ml of water contains 20 drops. Then no. of molecules in a drop of water is

A. 6.023×10^{23}

B. 1.376×10^{26}

C. 1.673×10^{21}

D. 4.346×10^{20}

Answer: C

Watch Video Solution

134. 25.3 g of sodium carbonate, Na_2CO_3 is dissolved in enough water to make 250 mL of solution. If sodium carbonate dissociates completely, molar concentration of sodium ions,

Na^+ and carbonate ions, CO_3^{2-} are respectively (Molar mass of $NaCO_3 = 106gmol^{-1}$)

A. 0.477 M and 0.477 M

B. 0.955 M and 1.910 M

C. 1.910 M and 0.955 M

D. 1.90 M and 1.910 M

Answer: C

Watch Video Solution

135. The number of molecules in 100 mL of 0.02 NH_2SO_4 is:

A. 6.02×10^{22}

B. 6.02×10^{21}

C. 6.02×10^{20}

D. 6.02×10^{18}

Answer: C

Watch Video Solution

136. For reaction $A + 2B \rightarrow C$. The amount of C formed by starting the reaction with 5 mole of A and 8 mole of B is :

A. 5 moles

B. 8 moles

C. 16 moles

D. 4 moles

Answer: D

Watch Video Solution

137. A mixture of ethane and ethene occupies 41 L at atm and 500 K. The mixture reacts compeletly with 10/3 mole of oxygen to produce CO_2 and water. The mole fraction of ethane and ethene in the mixture are (R=0.0821L atm $K^{-1}mol^{-1}$ respectively

A. 0.50, 0.50

B. 0.75, 0.25

C. 0.67, 0.33

D. 0.25, 0.75

Answer: C

Watch Video Solution

138. A mixture of $CaCl_2$ and NaCl weighing 4.44 is treated with sodium carbonate solution to precipitate all the Ca^{2+} ions as

calcium carbonate. The calcium carbonate so obtained is heated strongly to get 0.56 g of CaO. The percentage of NaCl in the mixture of (atomic mass of Ca=40) is

A. 75

B. 30.6

C. 25

D. 69.4

Answer: A

Watch Video Solution

139. Which has the maximum number of molecules among the following

A. 44g of CO_2

B. 48g of O_2

C. 8g H_2

D. 64g SO_2

Answer: C

Watch Video Solution

140. The mole fraction of the solute in one molal aqueous solution is:

A. 0.1770

B. 0.0177

C. 0.0344

D. 1.770

Answer: B

Watch Video Solution

141. Arrange the following in the order of increasing mass (at. Mass of O=16, Cu=63, N=14)

(I) one atom of oxygen (II) one atom of nitrogen

(III) 1×10^{-10} mole of oxygen (IV) 1×10^{-10} mole of copper

A. II lt I lt III lt IV

B. I lt II lt III lt IV

C. III lt II lt IV lt I

D. IV lt II lt III lt I

Answer: A

Watch Video Solution

142. 2g of metal carbonate is neutralized by 100 mL of 0.1 N HCl. The equivalent weight of metal carbonate is

A. 50

B. 100

C. 150

D. 200

Answer: D

Watch Video Solution

143. In acidic medium, equivalent weight of $K_2Cr_2O_7$ (molecular weight $= M$) is

A. $M/3$

B. $M/4$

C. $M/6$

D. $M/7$

Answer: C

Watch Video Solution

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

A. $1.78M$

B. $1.02M$

C. $2.05M$

D. $0.50M$

Answer: C

Watch Video Solution

145. What is the volutme of CO_2 liberted in litres at 1 atmosphere and $0^\circ C$ when 10% of 100 pure calcium carbonate is treated with excess dilute sulphuric acid? (at mass of Ca=40, C=12, O=16)

A. 0.224

B. 2.24

C. 22.4

D. 224

Answer: B

Watch Video Solution

146. Which one of the following is the highest?

A. 0.2 mole of hydrogen gas

B. 6.023×10^{22} molecules of nitrogen

C. 0.1 g of silver

D. 0.1 g mole of oxygen

Answer: C

Watch Video Solution

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

A. 91

B. 111

C. 55.5

D. 75.5

Answer: B

Watch Video Solution

148. 20 mL of methane is completely burnt using 50 mL of oxygen. The volume of the gas left after cooling to room temperature is

A. 80 mL

B. 40 mL

C. 60 mL

D. 30 mL

Answer: D

Watch Video Solution

149. A 100% pure sample of a divalent metal carbonate weighing 2g on complete thermal decomposition releases $44gcc$ of carbon dioxide at STP. The equivalent mass of the metal is

A. 40

B. 20

C. 28

D. 12

Answer: B

Watch Video Solution

150. The mole fraction of methanol in its 4.5 molal acqueous solution is

A. 0.250

B. 0.125

C. 0.100

D. 0.075

Answer: B

Watch Video Solution

Selected Stright Objective Type Mcqs

1. The number of molecules in 11 g of CO_2 is same as that in

A. 8g of oxygen

B. 16 g of oxygen

C. 7g of CO

D. 3.5 g of CO

Answer: A::C

Watch Video Solution

2. Which of the following is/are mixtures?

A. Iodised salt

B. Bees wax

C. Steam

D. Bronze

Answer: A::B::D

Watch Video Solution

3. Which of the following has there significant figures?

A. 6.60×10^{-30}

B. 1.70

C. 0.28

D. 6.02×10^{23}

Answer: A::B::D

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4. Which of the following weighs equal to 32 g

A. 1 mole of sulphur atoms

B. 1 mole of oxygen atoms

C. 1 mole of carbon dioxide

D. 22.4 L of oxygen at S.T.P.

Answer: A::D

Watch Video Solution

5. Among the species given below which have same mass?

A. 0.1 g-molecule of sulphur dioxide

B. 0.1 g-molecule of N_2O

C. 0.1 g-molecule of dry ice

D. Avogadro number of CO molecules.

Answer: B::C

Watch Video Solution

6. Which of the following have the same number of significant figures ?

A. 0.40

B. 4.0

C. 400

D. 0.040

Answer: A::D

Watch Video Solution

7. Among the species given below which have same number of molecules?

A. 3.2 g of O_2

B. 0.1 mol of NH_3

C. 4.0 g of He

D. 11.2 L of Cl_2 at S.T.P.

Answer: A::B::D

Watch Video Solution

8. A solution is prepared by dissolving 5.3 g of Na_2CO_3 in 250 cm^3 of solution. The solution can be described as

A. Decinormal solution

B. Decimolar solution

C. 0.4 N solution

D. 0.2 M solution

Answer: C::D

Watch Video Solution

9. Mass of 6.02×10^{23} electrons is

A. 0.55 mg

B. 55 mg

C. $5.5 \times 10^{-4} g$

D. 9.8×10^{-31} g

Answer: A::C

Watch Video Solution

10. Which among the following pairs contains isomorphous substances?

A. $FeSO_4.7H_2O$ and $CuSO_4.5H_2O$

B. $FeSO_4.7H_2O$ and $MnSO_4.4H_2O$

C. $FeSO_4.7H_2O$ and $ZnSO_4.7H_2O$

D. $CuSO_4.5H_2O$ and $MnSO_4.4H_2O$

Answer: C

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11. The sulphate of a metal M contains 20% of M. This sulphate is isomorphous with $ZnSO_4.7H_2O$. The atomic mass of M is

A. 12

B. 24

C. 36

D. 48

Answer: B

Watch Video Solution

12. Which of the following has the largest number of atoms?

A. 0.5 g atoms of Cu

B. 0.635 g of Cu

C. 0.25 moles of Cu atoms

D. 1 g of Cu

Answer: A

Watch Video Solution

13. 27 g of Al (at. Mass 27) will react completely with oxygen equal to

A. $24g$

B. $8g$

C. $40g$

D. $10g$

Answer: A

Watch Video Solution

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

A. 2.16 g

B. 2.48 g

C. 2.32 g

D. 2.64 g

Answer: A

Watch Video Solution

15. Total number of electrons present in 18 mL of water (density of water is 1 g/mL) is

A. 6.02×10^{23}

B. 6.02×10^{22}

C. 6.02×10^{24}

D. 6.02×10^{25}

Answer: C

Watch Video Solution

16. If M is the molecular weight of $KMnO_4$, its equivalent weight will be when it is converted into K_2MnO_4

A. M

B. $M/3$

C. $M/5$

D. $M/7$

Answer: A

Watch Video Solution

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

A. 0.7

B. 0.5

C. 0.3

D. 0.1

Answer: D

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18. If 10^{21} molecules are removed from 200 mg of CO_2, then maximum number of moles of $Ba_3(PO_4)_2$ that can be formed is

A. 2.88×10^{-3}

B. 1.66×10^{-3}

C. 4.54×10^{-3}

D. 1.66×10^{-2}

Answer: A

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19. The equivalent mass of $MnSO_4$ is half its molecular mass when it is converted to

A. Mn_2O_3

B. MnO_2

C. MnO_4

D. MnO_4^{2-}

Answer: B

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20. The number of gram molecules of oxygen in 6.02×10^{24} CO molecules is/are

A. 10 g-molecule

B. 5 g- molecule

C. 1 g- molecule

D. 0.5 g-molecule

Answer: B

Watch Video Solution

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

A. $41.59g$

B. $415.9g$

C. $4.159g$

D. None of these

Answer: C

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22. The law of multiple proportion was proposed by

A. Lavoisier

B. Dalton

C. Proust

D. Gay Lussac

Answer: D

Watch Video Solution

23. 1.12 ml of a gas is produced at STP by the action of 4.12 mg of alcohole, with methyl magnesium iodide. The molecular mass of alcohol is

A. 16.0

B. 41.2

C. 82.4

D. 156.0

Answer: C

Watch Video Solution

24. Rearrange the following (I to IV) in the order of increasin masses and choose the correct answer from (A), (B), (C) and (D)

(At. Mass N=14, O=16, Cu=63)

(I) 1 molecule of O

(II) 1 atom of nitrogen

(III) 1×10^{-10}g molecular mass of oxygen

(IV) 1×10^{-7} atomic mass of copper.

A. II lt I lt III lt IV

B. IV lt III lt II lt I

C. II lt III lt I lt IV

D. III lt IV lt I lt II

Answer: A

Watch Video Solution

25. Assume that the nucleus of the fluorine atom is a sphere of radius 5×10^{-3}cm. What is the density of matter in the nucleus?

A. $6.02 \times 10^{23} g/mL$

B. $6.02 \times 10^{13} g/mL$

C. $12.02 \times 10^{23} g/mL$

D. $12.02 \times 10^{13} g/mL$

Answer: B

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

A. XY

B. X_2Y

C. XY_3

D. X_2Y_3

Answer: B

Watch Video Solution

27. One mole of calciium phosphide on reaction with excess water gives

A. One mole of phosphin e

B. Two moles of phosphoric acid

C. Two moles of phosphine

D. One mole of phosphorus pentaoxide

Answer: C

Watch Video Solution

28. An aqueous solution of $6.3g$ oxalic acid dihydrate is made up to $250mL$. The volume of $0.1NNaOH$ required to completely neutralise $10mL$ of this solution is

A. 40 mL

B. 20 mL

C. 10 mL

D. 4 mL

Answer: A

Watch Video Solution

29. How many moles of electrons weigh one kilogram?

A. 6.022×10^{23}

B. $\frac{1}{9.108} \times 10^{31}$

C. $\frac{6.023}{9.108} \times 10^{54}$

D. $\frac{1}{9.108 \times 6.022} \times 10^{8}$

Answer: D

Watch Video Solution

30. Which has maximum number of atom ?

A. 24 g of C (12)

B. 56 g of Fe (56)

C. 27 g of Al (27)

D. 108 g of Ag (108)

Answer: A

Watch Video Solution

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

A. 6L

B. 5L

C. 10L

D. 7L

Answer: B

Watch Video Solution

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

A. 0.333

B. 0.011

C. 0.029

D. 0.044

Answer: C

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33. With increase of temperature, which of these changes?

A. Molality

B. Weight fraction of solute

C. Fraction of solute present in 1L of water

D. Mole fraction

Answer: C

Watch Video Solution

34. One mole of magnesiu nitride on reaction with an excess of water gives

A. two moles of ammonia

B. one mole of nitric acid

C. one mole of ammonia

D. two moles of nitric acid

Answer: A

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35. How many moles of magnesium phosphate, $Mg_3(PO_4\_(2)$ will contain 0.25 mole of oxygen atoms?

A. 1.25×10^{-2}

B. 2.5×10^{-2}

C. 0.02

D. 3.125×10^{-2}

Answer: D

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36. The number of moles of $KMnO_4$ that will be needed to react with one mole of sulphite ion in acidic solution is

A. $4/5$

B. $2/5$

C. 1

D. $3/5$

Answer: B

Watch Video Solution

37. Volume occupied by one molecule of water (density = 1 g cm^3)

A. $3.0 \times 10^{-23} cm^3$

B. $5.5 \times 10^{-23} cm^3$

C. $9.0 \times 10^{-23} cm^3$

D. $6.023 \times 10^{-23} cm^3$

Answer: A

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38. The density (in g mL^{-1}) of a 3.60 M sulphuric acid solution that is 29% of acid by mass is

A. 1.45

B. 1.64

C. 1.88

D. 1.22

Answer: D

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39. An element X has the following isotopic composition $.^{200}X : 90\%, .^{199}X : 8.0\%, .^{202}X : 2\%$. The Weighed average atomic mass of naturally occurring element X is closet to

A. 199 a.m.u.

B. 200 a.m.u.

C. 201 a.m.u.

D. 202 a.m.u.

Answer: B

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40. In the reaction $2Al(s) + 6HCl(aq) \rightarrow 6Cl^{-}(aq) + 3H_2$

A. 11.2 L of H_2 (g) at S.T.P. is product for every mole of HCl (aq) consumed

B. 6 L HCl is consumed for every 3 L H_2 (g) produced

C. 33.6 L H_2 (g) is produced regardless of temperature and pressure for every mole of Al that reacts

D. 67.2 L H_2 (g) at S.T.P. is produced for every mole of Al that reacts

Answer: A

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41. An organic compound contains carbon, hydrogen and oxygen. Its chemical analysis gave C, 38.71% and H, 9.67%. The empirical formula of compound would be

A. CH_3O

B. CH_2O

C. CHO_2

D. CHO

Answer: A

Watch Video Solution

42. 10 g of hydrogen and 64 g of oxygen were filled in a steel vessel and exploded. Amount of water produced in this reaction will be

A. 1 mol

B. 2mol

C. 3 mol

D. 4 mol

Answer: D

Watch Video Solution

Linked Comprehension Type Mcqs

1. Chemical reaction involve interaction of atoms and molecules. A large number of atoms/molecules (approximately 6.022×10^{23})are present in a few grams of any chemical compound varying with their atomic/molrcular mass. To handle such a large numbers conveniently, the mole concept was introduced. This concept has implications in diverse areas such as analytical in diverse areas such as analytical chemistry, biochemistry, electrochemistry and radiochemistry. The following example illustrates a typical case, involving chemical/ electrochemical reaction, which requires a clear understanding of the mole concept.

A 4.0 molar aqueous solution of NaCl is prepared and 500 mL of this solution is electrolysed. This leads to the evolution of chlorine gas at one of teh electrodes (atomic mass: Na=23, Hg=200, 1F=96500 coulombs)

The total number of moles of chlorine gas evolved is

A. 0.5

B. 1.0

C. 2.0

D. 3.0

Answer: B

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2. Chemical reaction involve interaction of atoms and molecules. A large number of atoms/molecules (approximately 6.022×10^{23})are present in a few grams of any chemical compound varying with their atomic/molrcular mass. To handle such a large numbers conveniently, the mole concept was introduced. This concept has implications in diverse areas such as analytical in diverse areas such as analytical chemistry, biochemistry,

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If cathode is a Hg electrode, the maximum weight(g) of amalgam formed from the solution is

A. 200

B. 225

C. 400

D. 446

Answer: D

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3. Chemical reaction involve interaction of atoms and molecules. A large number of atoms/molecules (approximately 6.022×10^{23})are present in a few grams of any chemical compound varying with their atomic/molrcular mass. To handle such a large numbers conveniently, the mole concept was introduced. This concept has implications in diverse areas such as analytical in diverse areas such as analytical chemistry, biochemistry, electrochemistry and radiochemistry. The following example illustrates a typical case, involving chemical/ electrochemical reaction, which requires a clear understanding of the mole concept.

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Hg=200, 1F=96500 coulombs)

The total charge in couloms required to complete the electrolysis

A. 24125

B. 48250

C. 96500

D. 19300

Answer: D

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4. Atoms and molecules are so small in size that it is neither possible to count them individually nor possible to determine their mass. These are counted collectively in terms of Avogadro's number. The mass of Avogadro's number of atoms and molecules of a substance is known as gram atomic mass and gram

molecular mass respectively. The volume occupied by Avogadro's number of molecules of a gas or vapour, is known as molar volume.

If N_A is Avogadro's number, the number of valence electrons in 4.2 g of nitride ions $\left(N^{3-}\right)$ is

A. $4.2N_A$

B. $2.4N_A$

C. $1.6N_A$

D. $3.2N_A$

Answer: B

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5. Atoms and molecules are so small in size that it is neither possible to count them individually nor possible to determine

their mass. These are counted collectively in terms of Avogadro's number. The mass of Avogadro's number of atoms and molecules of a substance is known as gram atomic mass and gram molecular mass respectively. The volume occupied by Avogadro's number of molecules of a gas or vapour, is known as molar volume.

The vapour density of a gas is 11.2. The volume occupied by 11.2 g of a gas at N.T.P. will be

A. 22.4 L

B. 11.2 L

C. 1 L

D. 44.8 L

Answer: B

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6. Atoms and molecules are so small in size that it is neither possible to count them individually nor possible to determine their mass. These are counted collectively in terms of Avogadro's number. The mass of Avogadro's number of atoms and molecules of a substance is known as gram atomic mass and gram molecular mass respectively. The volume occupied by Avogadro's number of molecules of a gas or vapour, is known as molar volume.

The number of molecules in 16 g of methane is

A. 3.0×10^{23}

B. $\frac{16}{6.022} \times 10^{23}$

C. 6.022×10^{23}

D. $\frac{16}{3.0} \times 10^{23}$

Answer: C

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7. Atoms and molecules are so small in size that it is neither possible to count them individually nor possible to determine their mass. These are counted collectively in terms of Avogadro's number. The mass of Avogadro's number of atoms and molecules of a substance is known as gram atomic mass and gram molecular mass respectively. The volume occupied by Avogadro's number of molecules of a gas or vapour, is known as molar volume.

If 3.01×10^{30} molecules are removed from 98 mg of H_2SO_4, then the number of moles of H_2SO_4 left wlil be

A. 0.1×10^{-3}

B. 1.66×10^{-3}

C. 9.95×10^{-2}

D. 0.5×10^{-3}

Answer: D

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8. Earlier the concept of equivalent weight was very common and the concentrations of the solutions were expressed in terms of normolities. The convenience was that the substances reacted in the ratio of their gram equivalents. So there was no need for writing the balanced equations to determine the amounts of the substances reacted. However, determination of equivalent weights posed difficulty in certain cases. Moreover, the equivalent weight of the same substance is not same in different reactions. For example, $KMnO_4$ has different equivalent weight in the basic medium than in teh acidic medium. Hence, now-a-days, mole concept is more common and the concentrations of the

solutions are generally expressed in terms of molarities, though some other methods like molality, molarity, mole fractions etc. are also used

The equivalent mass of Cu

A. will be the same in CuO and Cu_2O

B. will be double in Cu_2O than in CuO

C. will be double in CuO than in Cu_2O

D. depends on whether copper is pure or impure

Answer: B

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9. Earlier the concept of equivalent weight was very common and the concentrations of the solutions were expressed in terms of normolities. The convenience was that the substances reacted in

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The chloride of an element is found to contain 52.8% chlorine. The equivalent mass of the element is

A. 63.4

B. 31.7

C. 47.2

D. 18.7

Answer: B

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10. Earlier the concept of equivalent weight was very common and the concentrations of the solutions were expressed in terms of normolities. The convenience was that the substances reacted in the ratio of their gram equivalents. So there was no need for writing the balanced equations to determine the amounts of the substances reacted. However, determination of equivalent weights posed difficulty in certain cases. Moreover, the equivalent weight of the same substance is not same in different reactions. For example, $KMnO_4$ has different equivalent weight in the basic medium than in teh acidic medium. Hence, now-a-days, mole concept is more common and the concentrations of the

solutions are generally expressed in terms of molarities, though some other methods like molality, molarity, mole fractions etc. are also used

A 40% hydrochloric acid is found to have a density of 1.20 g mL^{-1}. The molarity of the solution is nearly

A. $11M$

B. $12M$

C. $13M$

D. $14M$

Answer: C

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11. Earlier the concept of equivalent weight was very common and the concentrations of the solutions were expressed in terms of

normolities. The convenience was that the substances reacted in the ratio of their gram equivalents. So there was no need for writing the balanced equations to determine the amounts of the substances reacted. However, determination of equivalent weights posed difficulty in certain cases. Moreover, the equivalent weight of the same substance is not same in different reactions. For example, $KMnO_4$ has different equivalent weight in the basic medium than in teh acidic medium. Hence, now-a-days, mole concept is more common and the concentrations of the solutions are generally expressed in terms of molarities, though some other methods like molality, molarity, mole fractions etc. are also used

The molality of the above solution will be nearly

A. $15.3m$

B. $16.3m$

C. $17.3m$

D. $18.3m$

Answer: D

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12. Earlier the concept of equivalent weight was very common and the concentrations of the solutions were expressed in terms of normolities. The convenience was that the substances reacted in the ratio of their gram equivalents. So there was no need for writing the balanced equations to determine the amounts of the substances reacted. However, determination of equivalent weights posed difficulty in certain cases. Moreover, the equivalent weight of the same substance is not same in different reactions. For example, $KMnO_4$ has different equivalent weight in the basic medium than in teh acidic medium. Hence, now-a-days, mole concept is more common and the concentrations of the

solutions are generally expressed in terms of molarities, though some other methods like molality, molarity, mole fractions etc. are also used

The mole fraction of hydrochloric acid in the solution will be

A. 0.25

B. 0.30

C. 0.35

D. 0.40

Answer: A

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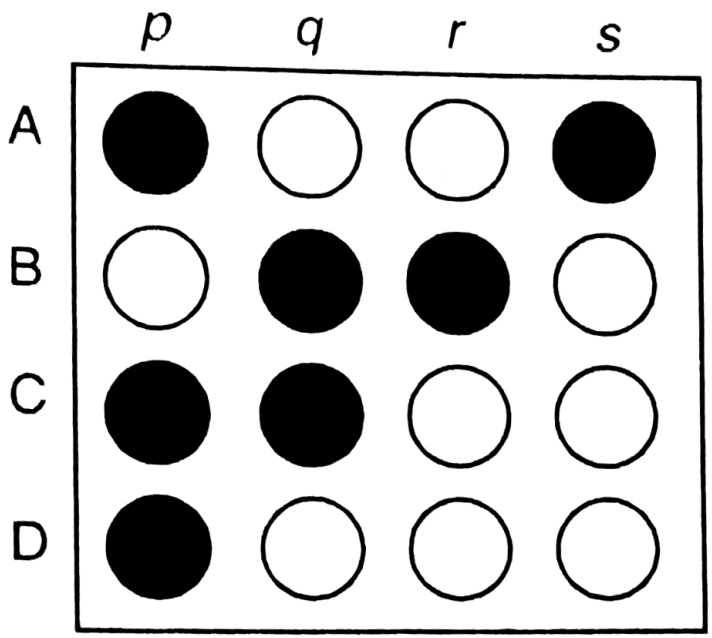
Matrix Match Type Mcqs

1. Here each question contains statements given in two columns which have to be matched. Statements in Column I are labelled as A,B,C and D. Whereas statements in column II are labelled as p,q,r and s. The answers to these questions have to be appropriately bublled as illustrated in the following example.

If the correct matches are A-p, A-s, B-q, B-r, C-p, C-q and D-p, then the correctly bubbled 4×4 matrix should look like the following.



	Column I		Column II
A	$0.1mol$	p	4480 mL of CO_2 at S.T.P.
B	$0.2mol$	q	$0.1g$ atom of iron
C	$0.25mol$	r	1.5×10^{23} molecules of oxygen gas
D	$0.5mol$	s	$9mL$ of water

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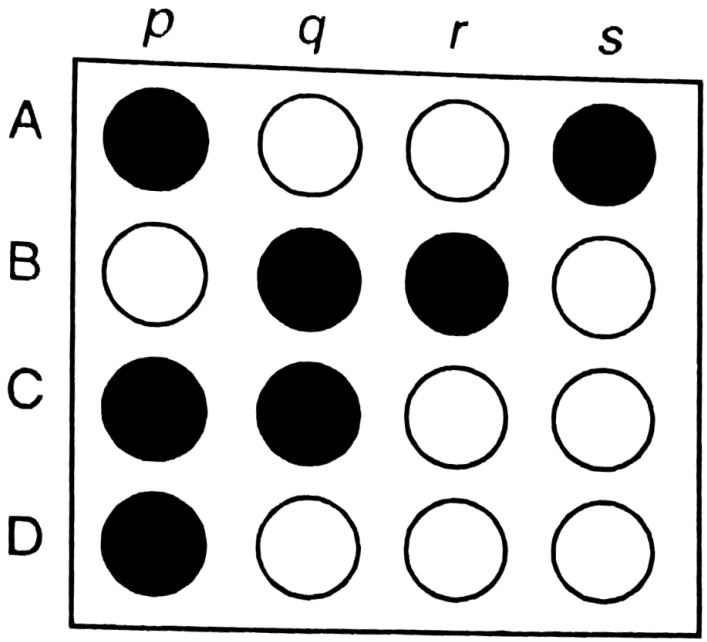
2. Here each question contains statements given in two columns which have to be matched. Statements in Column I are labelled as

A,B,C and D. Whereas statements in column II are labelled as p,q,r and s. The answers to these questions have to be appropriately bublled as illustrated in the following example.

If the correct matches are A-p, A-s, B-q, B-r, C-p, C-q and D-p, then the correctly bubbled 4×4 matrix should look like the following.



	Column I		Column II
(A)	Atomic mass in grams	p	Mole
(B)	Grams molar mass	q	Grams atoms
(C)	Avogadro's number	r	Molecular mass in grams
(D)	22.4 litres of any gas at NTP	s	6.022×10^{23}

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Integer Type Questions

1. The answer to each of the following questions is a single digit integer, ranging from 0 to 9. If correct answers to the question number A,B,C and D (say) are 4,0,9 and 2 respectively, then correct darkening of bubbles should be as shown on the side.

(A) Silver (atomic weight = 108 g mol^{-1}) has a density of 10.5 g cm^{-3}. The number of silver atoms on a surface are of $10^{-12}m^2$ can be expressed in scientific notation as $y \times 10^x$. The value x is .....

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2. The answer to each of the following questions is a single digit integer, ranging from 0 to 9. If correct answers to the question number A,B,C and D (say) are 4,0,9 and 2 respectively, then correct darkening of bubbles should be as shown on the side.

(B) A student performs a titration with different buretters and finds titre values of 25.2 mL, 25.25 mL and 25.0 mL. The number of significant figures in the average titre value is .....

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3. The answer to each of the following questions is a single digit integer, ranging from 0 to 9. If correct answers to the question number A,B,C and D (say) are 4,0,9 and 2 respectively, then correct darkening of bubbles should be as shown on the side.

(C) Reaction of Br_2 with Na_2CO_3 in aqueous solution gives sodium bromide and sodium bromate with evolution of CO_2 gas.

The number of sodium bromide molecules involved in the balanced chemical equation is .....

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4. The answer to each of the following questions is a single digit integer, ranging from 0 to 9. If correct answers to the question number A,B,C and D (say) are 4,0,9 and 2 respectively, then correct darkening of bubbles should be as shown on the side.

(D) 29.2 (w/w) HCl stock solution has a density of 1.25 g mL^{-1}. The molecular weight of HCl is 36.5 g mol^{-1}. The volume (mL) of stock solution required to prepare a 200 mL solution of 0.4 M HCl is .....

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Reason Assertion Type Mcqs

1. In each of the following two questions two statements are given one labelled as the Assertion(A) or Statement I and the other labelled as the reason (R) or statement II. Examine these statements carefully and mark the correct choice as per following instructions

Assertion (A) - Both 12 g of carbon and 27 g of aluminium will have 6.12×10^{23} atoms

Reason (R) - Gram atomic mass of an element contains Avogadro number of atoms

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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2. In each of the following two questions two statements are given one labelled as the Assertion(A) or Statement I and the other labelled as the reason (R) or statement II. Examine these statements carefully and mark the correct choice as per following instructions

Assertion (A) - The atomic mass of an element is not only relative but is average relative mass of an atom

Reason (R) - The average word is essential because the element, in general, is a mixture of different isotopes and atomic mass is the average of these relative atomic mass.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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3. In each of the following two questions two statements are given one labelled as the Assertion(A) or Statement I and the other labelled as the reason (R) or statement II. Examine these statements carefully and mark the correct choice as per following instructions

Assertion (A) - Pure water obtained from different sources, such as river, well, spring, sea etc. always contains hydrogen and

oxygen in ratio of 1:8 by mass

Reason (R) - Mass of reactants and products during chemical or physical changes is always constant

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: B

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4. In each of the following two questions two statements are given one labelled as the Assertion(A) or Statement I and the

other labelled as the reason (R) or statement II. Examine these statements carefully and mark the correct choice as per following instructions

Assertion (A) - In a gaseous reaction, the ratio by volumes of reactant and gaseous products is in agreement with their molar ratio

Reason (R) - Volume of gas is inversely proportional to its number of moles at particular temperature and pressure.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: C

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5. In each of the following two questions two statements are given one labelled as the Assertion(A) or Statement I and the other labelled as the reason (R) or statement II. Examine these statements carefully and mark the correct choice as per following instructions

Assertion (A) - The standard unit for expressing the mass of an atom is a.m.u.

Reason (R) - a.m.u. is also called avogram

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: B

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6. In each of the following two questions two statements are given one labelled as the Assertion(A) or Statement I and the other labelled as the reason (R) or statement II. Examine these statements carefully and mark the correct choice as per following instructions

Assertion (A) - Both 106 g of sodium carbonate and 12 g of graphite have same number of carbon atoms

Reason (R) - Both 106 g sodium carbonate and 12 g of graphite contain 1 g-atom of carbon

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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7. In each of the following two questions two statements are given one labelled as the Assertion(A) or Statement I and the other labelled as the reason (R) or statement II. Examine these statements carefully and mark the correct choice as per following instructions

Assertion (A) - One mole of water molecules at $4^{\circ}C$ should occupy the volume of 18 mL

Reason (R) - Water contains H_2O molecules bonded by intermolecular H-bonds.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: B

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8. In each of the following two questions two statements are given one labelled as the Assertion(A) or Statement I and the other labelled as the reason (R) or statement II. Examine these

statements carefully and mark the correct choice as per following instructions

Assertion (A) - Relative atomic mass of boron is 10.8

Reason (R) - Boron has two isotopes B-10 and B-11 with percentage abundance of 19.6% and 80.4% respectively.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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9. In each of the following two questions two statements are given one labelled as the Assertion(A) or Statement I and the other labelled as the reason (R) or statement II. Examine these statements carefully and mark the correct choice as per following instructions

Assertion (A) - Both 32 g of SO_2 and 8g of CH_4 have same number of molecules

Reason (R) - Equal moles of substances have equal number of molecules

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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10. Assertion : Empirical and molecular formulae of $NaHCO_3$ are the same

Reason : Upon heating, $NaHCO_3$ evolves CO_2 gas.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: C

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11. In each of the following two questions two statements are given one labelled as the Assertion(A) or Statement I and the other labelled as the reason (R) or statement II. Examine these statements carefully and mark the correct choice as per following instructions

Assertion (A) - In gaseous reactions, the ratio of the volumes of gaseous reactants and products are in agreement with their molar ratio.

Reason (R) - This is accrodance with Avogadro's law.

A. Both A and R are true and R is the correct explanation of A

B. Both A and R are true but R is not a correct explanation of A

C. A is true but R is false

D. A is false but R is true

Answer: A

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Ultimate Preparatory Package

1. A flask contains 2.0×10^{13} molecules of CO_2. To this 1.5×10^{14} molecules of CO_2 are added.

The number of molecules in the flask now is

A. 3.5×10^{13}

B. 3.5×10^{14}

C. 1.7×10^{14}

D. None of these

Answer: C

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2. A flask contains 3.0×10^{16} atoms of He. From This 6.6×10^{15} atoms of He are removed. The flask now contains atoms of He

A. 3.6×10^{16}

B. 2.3×10^{16}

C. $+3.6 \times 10^{15}$

D. None of these

Answer: B

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3. If one mole of rupees is distributed equally amongst all the poputlation of earth (6 billion), each person will get rupees

(approximately)

A. 1000000

B. 10000000

C. 10^{20}

D. 10^{14}

Answer: D

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4. Polyethene can be produced from calcium carbide according to the following sequence of reactions

$$CaC_2 + 2H_2O \rightarrow Ca(OH)_2 + C_2H_2$$

$$C_2H_2 + H_2 \xrightarrow{Pd/BaSO_4/S} C_2H_4$$

$$\underset{\text{Ethene}}{C_2H_4} \rightarrow \underset{\text{Polythene}}{CH_2 - CH_2 n}$$

Calculate the mass of polyethene produced from 20 kg of $CaCO_2$.

A. 18.25 kg

B. 8.75 kg

C. 8.25 kg

D. 28.25 kg

Answer: B

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5. If law of conservation of mass holds good, 2.00 g of Na_2SO_4 will react with 3.00 g of $BaCl_2$ to produce $BaSO_4$ equal to

A. $5.00g$

B. $3.36g$

C. $3.29g$

D. None of these

Answer: C

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6. If atomic mass of carbon was set at 100 u, what would be the value of Avogadro's number ?

A. 6.02×10^{23}

B. 6.02×10^{25}

C. 5.01×10^{24}

D. 6.02×10^{21}

Answer: C

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7. A borane on analysis was found to contain 88.45% boron. Its empirical formula is

A. B_2H_6

B. BH_3

C. B_5H_6

D. B_5H_7

Answer: D

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8. A sample of pure compound contains 2.04 g of sodium, 2.65×10^{22} atoms of carbon and 0.132 mol of oxygen atoms. Its

empirical formula is

A. $NaCO_2$

B. $Na_2C_2O_4$

C. Na_2CO_3

D. None of these

Answer: C

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9. A purified cytochrome protein was found to contain 0.376 % iron. What is the minimum molecular mass of the protein?

A. $14,800u$

B. $1480u$

C. $148,000u$

D. $148u$

Answer: A

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10. A purified pepsin was subjected to amino acid analysis. The amino acid present in smallest amount was lysine, $C_6H_{14}N_2O_2$ and the amount of lysine was found to be 0.43 g per 100 g of protein. The minimum molecular mass of protein is

A. $3400u$

B. $34,000u$

C. $340,000u$

D. $340u$

Answer: B

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11. A peroxidase enzyme isolated from red blood cells was found to contain 0.28% selenium. The minimum molecular mass of the enzyme is (at. Mass of selenium = 78.96 u).

A. 3.67×10^3

B. 2.7×10^4

C. 2.90×10^7

D. 2.9×10^4

Answer: B

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12. A sample of hydrolysed potato starch is found to contain 0.086% phosphorus. If each molecule is assumed to contain one atom of phosphorus, the molecular mass of hydrolysed potato starch is (at. Mass of phosphorus = 31 u).

A. 8.6×10^3

B. 3.6×10^4

C. 8.6×10^4

D. None of these

Answer: B

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13. Manganese forms non-stoichiometric oxides having the gereral formula formula MnO_x. The value of x for the compound

that analyzed 64% by mass mn :

A. 1.958

B. 1.859

C. 1.598

D. 2.859

Answer: A

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14. Before 1961, an atomic mass unit scale was used whose basis was an assignment of the value 16.0000 to $.^{16}O$. The atomic mass of $.^{12}C$ on this old scale is (at. Mass of oxygen on new scale = 15.9949).

A. 12

B. 11.9938

C. 12.0038

D. 12.1138

Answer: C

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15. At one time, there was a atomic mass scale on the assignment of the value 16.0000 to naturally occuring oxygen. The atomic mass of silver on this scale will be (atomic masses of silver and oxygen on the present scale are 107.868 and 15.9994 respectively).

A. 108.000

B. 107.872

C. 108.012

D. 107.909

Answer: B

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16. A flask contains 10^{20} atoms of He (At. Mass =4) at S.T.P. (760 mm Hg pressure and 273.15 K). The number of CO_2 molecules (Mol. Mass = 44) present in the same flask under similar conditions of temperature and pressure are

A. 2.3×10^{18}

B. 2.2×10^{20}

C. 1.00×10^{20}

D. None of these

Answer: C

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17. Eq. mass of A_xB_y is

A. $x \times \text{Eq. mass of A} + y \times \text{Eq. mass of B}$

B. $y \times \text{Eq. mass of A} + x \times \text{Eq. mass of B}$

C. Eq. mass of A + Eq. mass of B

D. None of these

Answer: C

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18. According to Dulong and Petit's rule, in case of solid elements.

Approximate atomic mass $= \dfrac{6.4}{\text{specific heat}}$

In this rule, specific heat is in

A. $kJkg^{-1}K^{-1}$

B. $calg^{-1}K^{-1}$

C. $Jg^{-1}.^{\circ}C^{-1}$

D. None of these

Answer: B

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19. Out of atomic mass, mass number and atomic number, the physical quantities which are not fundamental physical constants is/are

A. Atomic mass

B. Atomic mass and mass number

C. Mass number

D. Atomic number

Answer: A

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20. Law of constant composition doesnot hold good for

A. Exothermic compounds

B. Endothermic compounds

C. Non stoichiometric compounds

D. Stoichiometric compounds

Answer: C

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