KD EDUCATION ACADEMY [9582701166]

Time : 6 Hour | STD 11 Science Chemistry | Total Marks : 120

kd 90+ Questions ch-1 some basic concepts of chemistry

*** Choose The Right Answer From The Given Options.[1 Marks Each]** **[67]**

1. What will be the molarity of a solution, which contains 5.85g of NaCl(s) per 500mL?
   (A) 4mol L^{-1} (B) 20mol L^{-1} (C) 0.2mol L^{-1} (D) 2mol L^{-1}
2. 18 carat gold contains ?
   (A) 18% gold (B) 4% gold (C) 75% gold (D) 60% gold
3. Who is given the credit for creation of first nuclear reactor.
   (A) Fermi (B) Niels Bohr (C) Einstein (D) openheimer
4. Cortisone is a molecular substance containing 21 atoms of carbon per molecule. The mass percentage of carbon in cortisone is 69.98%. It's molar mass is:
   (A) 176.5 (B) 252.2 (C) 287.6 (D) 360.1
5. What is the mass percent of carbon in carbon dioxide?
   (A) 0.034% (B) 27.27% (C) 3.4% (D) 28.7%
6. The National Physical Laboratory is situated at:
   (A) Kolkata (B) New Delhi
   (C) Bombay (D) None of these
7. 1g of M_2CO_3 on treatment with excess HCl produces 0.01186 moles of CO_2 The molar mass of M_2CO_3 in g mor^{-1} is:
   (A) 1186 (B) 84.3 (C) 118.6 (D) 11.86
8. A sample of H_2SO_4 contains 3.2 kg of sulphur. The weight (in g) of hydrogen present in the sample is:
   (A) 100 (B) 200 (C) 50 (D) 150
9. Which of the following solutions have the same concentration?
   (A) 20g of NaOH in 200mL of solution. (B) 0.5mol of KCl in 200mL of solution.
   (C) 40g of NaOH in 100mL of solution. (D) 20g of KOH in 200mL of solution.
10. How many number of aluminium ions are present in 0.051g of aluminium oxide?
    (A) 6.023×10^{23} ions. (B) 3 ions.
    (C) 6.023×10^{20} ions.
    (D) 9 ions.
11. Which is the 1st organic compound synthesized in lab?
    (A) Urea (B) Methanol
    (C) Ammonia (D) Sulphuric Acid
12. Which of the following pairs have the same number of atoms?
    (A) 16g of O_2(g) and 4g of H_2(g) (B) 16g of O_2 and 44g of CO_2
    (C) 28g of N_2 and 32g of O_2 (D) 12g of C(s) and 23g of Na(s)
13. One mole of any substance contains 6.022×10^{23} atoms/ molecules. Number of molecules of H_2SO_4 present in 100mL of 0.02M H_2SO_4 solution is _____.

(A) 12.044×10^{20} molecules. (B) 6.022×10^{23} molecules.

(C) 1×10^{23} molecules. (D) 12.044×10^{23} molecules.

14. The solution of A and B are 0.1 and 0.2 molar in a substance. If 100ML of 'A' are mixed with 25mL of B and there is no change in volume, then the final molarity of solution is:

(A) 0.15M (B) 0.18M (C) 0.12M (D) 0.30M

15. Who is considered as the founding father of chemistry?

(A) Boyle (B) Aristotle (C) Sir Francis (D) John Mayow

16. The mass of one mole a chloride formed by metal 'X' is 111.0g. Which one could be formula of chloride?

(A) XCl (B) XCl_2 (C) XCl_3 (D) XCl_4

17. The number of Cl^- and Ca^{2+} ions in 222g of $CaCl_2$ is:

(A) $4N_A$, $2N_A$ (B) $2N_A$, $4N_A$ (C) $1N_A$, $2N_A$ (D) $2N_A$, $1N_A$

18. A measured temperature on Fahrenheit scale is 200°F. What will this reading be on Celsius scale?

(A) 40°C (B) 94°C (C) 93.3°C (D) 30°C

19. When two molecules of hydrogen react with one molecule of oxygen, the mass of reactants is 36, what is the mass of products?

(A) 18 (B) 36 (C) 9 (D) 32

20. Which of the following represents largest number of particles.

(A) Atoms in mole of CH_4 (B) Atoms in 0.5 mol of SO_3

(C) Atoms in 0.5 mole of CO_2 (D) Atoms in 1 mol of CO.

21. The relative atomic masses of many elements are not whole numbers because:

(A) Of different natural abundance of different isotopes

(B) Of the concept average atomic masses

(C) Of the existence of isotopes

(D) All of these

22. Elements X, Y and Z have atomic numbers 5, 9 and 11 respectively. Which one forms an anion?

(A) X (B) Y

(C) Z (D) Both B and C

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

(A) 5 (B) 4 (C) 3 (D) 2

24. How many moles are present in 6.023×10^{22} molecules of CO_2?

(A) 0.2 (B) 0.01 (C) 0.1 (D) 0.02

25. An organic compound on analysis was found to contain 10.06% carbon, 0.84% hydrogen and 89.10% chlorine. What will be the empirical formula of the substance?

(A) CH_2Cl_2 (B) $CHCl_3$ (C) CCl_4 (D) CH_3Cl

26. A solution is prepared by adding 2g of a substance A to 18g of water. Calculate the mass percent of the solute.

(A) 8% (B) 9% (C) 10% (D) 11%

27. 4.6×10^{22} atoms of an element weight 13.8g. What is the atomic mass of the element?

(A) 290u (B) 180.6u (C) 34.4u (D) 104u

28. Arrange the following in the order of increasing mass (Atomic mass of O = 16, Cu = 63 and 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 < I < III < IV. (B) I < II < III < IV.

(C) III < II < IV < I. (D) IV < II < III < I.

29. $25cm^3$ of oxalic acid completely neutrelised 0.064g of NaOH. Molarity of oxalic acid solution is:

(A) 0.064. (B) 0.045. (C) 0.015. (D) 0.032.

30. Active mass of 6% solution of compound X is 2. Molecular weight of X would be:

(A) 6 (B) 30 (C) 60 (D) 90

31. If the concentration of glucose ($C_6H_{12}O_6$) in blood is 0.9g L^{-1}, what will be the molarity of glucose in blood?

(A) 5M (B) 50M (C) 0.005M (D) 0.5M

32. The volume of 0.5M aqueous NaOH solution required to neutralize 10ml of 2M aqueous HC1solution is:

(A) 20ml (B) 40ml (C) 80ml (D) 120ml

33. When magnesium is burnt in air, the weight of magnesium:

(A) Increases (B) Decreases

(C) Remains same (D) Depends on the atmosphere

34. 16g of oxygen has same number of molecules as in:

(A) 16g of CO (B) 28g of N_2 (C) 14g of N_2 (D) 1.0g of H_2

35. If 1mL of water contains 20 drops then number of molecules in a drop of water is:

(A) 6.023×10^{23} molecules. (B) 1.376×10^{26} molecules.

(C) 1.62×10^{21} molecules. (D) 4.346×10^{20} molecules.

36. An organic compound containing C, H and O has 49.3% carbon, 6.84% hydrogen and its vapour density is 73. Molecular formula of the compound is:

(A) $C_3H_5O_2$ (B) $C_4H_{10}O_2$ (C) $C_6H_{10}O_4$ (D) $C_3H_{10}O_2$

37. Chemistry is sometimes called as:

(A) Biological Science (B) Central Science

(C) Biochemistry (D) Both A and C

38. Which is the lightest element in the universe?

(A) Helium (B) Hydrogen (C) Nitrogen (D) Silicon

39. At same temperature and pressure, equal volumes of gases contain the same number of:

(A) Molecules (B) Electrons (C) Protons (D) Particles

40. What will be the molarity of pure water?

(A) 18M. (B) 50.0M. (C) 55.6M. (D) 100M.

41.

A compound contains 69.5% oxygen, 30.5% nitrogen and its molecular weight is 92. The formula of compound is:

(A) N_2O (B) NO_2 (C) N_2O_4 (D) N_2O_5

42. X g of Ag was dissolved in HNO_3 and the solution was treated with excess of NaCl, when 2.87g of AgCl was precipitated. The value of x is:

(A) 1.08g. (B) 2.16g. (C) 2.70g. (D) 1.62g.

43. How many grams of concentrated nitric acid solution should be used to prepare 250mL of 2.0M HNO_3? The concentrated acid is 70% HNO_3.

(A) 45.0g conc. HNO_3 (B) 90.0g conc. HNO_3

(C) 70.0g conc. HNO_3 (D) 54.0g conc. HNO_3

44. Who is called father of modern chemistry ?

(A) Antoine Lavoisier. (B) Gilbert Lewis.

(C) Gibbs. (D) Otto Hahn.

45. A hydrocarbon was found to contain 75% by mass of carbon and 25% by mass of hydrogen. What is empirical formula of the compound?

(A) C_2H_4 (B) C_2H_6 (C) CH_4 (D) C_6H_6

46. The mass of a sand and powdered mixture along with a beaker is 56g. If the mass of the dried mixture is 20g, find the % composition of the mixture in 100g?
(weight of beaker = 20g).

(A) 20% (B) 36% (C) 55% (D) 60%

47. If 500mL of a 5M solution is diluted to 1500mL, what will be the molarity of the solution obtained?

(A) 1.5M (B) 1.66M (C) 0.017M (D) 1.59M

48. An organic compound containing C and H has 92.3% of carbon, its empirical formula is:

(A) CH (B) CH_3 (C) CH_2 (D) CH_4

49. 1u= ?

(A) The mass of one atom of the carbon -12 isotope

(B) $\frac{1}{12}^{\text{th}}$ the mass of one atom of the carbon -16 isotope

(C) $\frac{1}{12}^{\text{th}}$ the mass of one atom of the carbon -12 isotope

(D) The mass of one atom of the carbon -16 isotope

50. A compound was found to contain 5.37% nitrogen. What is the minimum molecular weight of compound ?

(A) 26.07 (B) 2.607

(C) 260.7 (D) None of these

51. What is % composition of a substance?

(A) Sum of all the components.

(B) % composition of the sum of two components.

(C) % of the total mass of a substance.

(D) None of the above.

52. The matter is neither created nor destroyed during any physical or chemical change. This statement is of the:

(A) Law of constant proportion. (B) Law of conservation of mass.

(C) Law of reciprocal proportion. (D) Law of multiple proportion.

53. $Na_2SO_3 \cdot xH_2O$ has 50% H_2O by mass. Hence, x is:

(A) 4 (B) 5 (C) 6 (D) 7

54. Addition of 6.65×10^4 and 8.95×10^3, in terms of scientific notation will be:

(A) 7.545×10^4 (B) 75.45×10^3 (C) 754.5×10^2 (D) 75.45×10^0

55. What will be the molality of the solution containing 18.25g of HCl gas in 500g of water?

(A) 0.1m (B) 1M (C) 0.5m (D) 1m

56. What is the mass of the solvent present in 200g of 25% (w/ W) calcium hydroxide solution?

(A) 150g (B) 125g (C) 175g (D) 100g

57. When an inflated tyre bursts, the air escaping out will:

(A) Get heated up (B) Be cooled

(C) Not undergo any change in its temperature (D) Be liquified

58. India's uranium supply comes mainly from the Jaduguda mines in:

(A) Bihar (B) Madhya Pradesh

(C) Maharashtra (D) None of these

59. Who performed the gold foil experiment?

(A) Thomson (B) Goldstein (C) Chadwick (D) Rutherford

60. 800 g of a 40% solution by weight was cooled. 100g of solute was precipitated. The percentage composition of remaining solution is:

(A) 31.4% (B) 20.0% (C) 23.0% (D) 24%

61. What will be the ratio of Cl^{35} and Cl^{37} respectively in ordinary chlorine if the atomic weight of chlorine is 35.5

(A) 1 : 3 (B) 3 : 1 (C) 1 : 2 (D) 2 : 1

62. What is the percentage by weight of sulphuric acid if 13g of H_2SO_4 is dissolved to make 78g of solution?

(A) 13.2% (B) 14.28% (C) 20% (D) 16.6%

63. Which of the following expression of concentration of a solution is independent of temperature?

(A) Molarity (B) Normality (C) Formality (D) Molality

64. A solution is prepared by dissolving 5.64g of glucose in 60g of water. Calculate the mass percent of glucose.

(A) 8.59% (B) 6.85% (C) 9.34% (D) 3.59%

65. A certain metal sulphide, MS_2, is used extensively as a high temperature lubricant. If MS_2 is 40.06% by mass of sulphur, metal M has atomic mass:

(A) 160amu (B) 64amu (C) 40amu (D) 96amu

66. If $3.01 \times 10_{20}$ molecules are removed from 98 mg of H_2SO_4, then number of moles of H_2SO_4 left are:

(A) 0.5×10^{-3}mol. (B) 0.1×10^{-3}mol.

(C) 9.95×10^{-3}mol. (D) 1.66×10^{-3}mol.

67. Avogadro's law finds an application in the determination of:

(A) Atomicity of gas.
(B) Molecular weights of gases.
(C) Molecular formula of certain gaseous compoun.
(D) All the above.

*** a statement of Assertion (A) is followed by a statement of Reason (R). [2]**

Choose the correct option.

68. **Note:** In the following questions a statement of Assertion (A) followed by a statement of Reason (R) is given. Choose the correct option out of the choices given below each question.

Assertion (A): One atomic mass unit is defined as one twelfth of the mass of one carbon-12 atom.

Reason (R): Carbon-12 isotope is the most abundunt isotope of carbon and has been chosen as standard.

i. Both A and R are true and R is the correct explanation of A.
ii. Both A and R are true but R is not the correct explanation of A.
iii. A is true but R is false.
iv. Both A and R are false.

69. **Note:** In the following questions a statement of Assertion (A) followed by a statement of Reason (R) is given. Choose the correct option out of the choices given below each question.

Assertion (A): Combustion of 16g of methane gives 18g of water.

Reason (R): In the combustion of methane, water is one of the products.

i. Both A and R are true but R is not the correct explanation of A.
ii. A is true but R is false.
iii. A is false but R is true.
iv. Both A and R are false.

*** Answer The Following Questions In One Sentence.[1 Marks Each] [4]**

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

$N_{2(g)} + H_{2(g)} \rightarrow 2NH_{3(g)}$

Will any of the two reactants remain unreacted?

71. How many significant figures are present in the following?

5005

72. A substance has molecular formula $C_6H_{12}O_6$. What is its empirical formula?

73. Boron occurs in nature in the form of two isotopes, $^{11}_{5}\mathrm{B}$ and $^{10}_{5}\mathrm{B}$, in ratio of 81% and 19% respectively. Calculate its average atomic mass.

*** Given Section consists of questions of 2 marks each. [8]**

74. A sample of drinking water was found to be severely contaminated with chloroform, $CHCl_3$, supposed to be carcinogenic in nature. The level of contamination was 15ppm (by mass).

Determine the molality of chloroform in the water sample.

75. A sample of drinking water was found to be severely contaminated with chloroform, $CHCl_3$, supposed to be carcinogenic in nature. The level of contamination was 15ppm (by mass).

Express this in percent by mass.

76. Calculate the average atomic mass of hydrogen using the following data:

Isotope	% Natural abundance	Molar mass
^{1}H	99.985	1
^{2}H	0.015	2

77. How much copper can be obtained from 100g of copper sulphate ($CuSO_4$)?

*** Given Section consists of questions of 3 marks each. [9]**

78. Calculate the mass of sodium acetate (CH_3COONa) required to make 500mL of 0.375 molar aqueous solution. Molar mass of sodium acetate is 82.0245 g mol^{-1}.

79. Two oxides of a metal contain 27.6% and 30.0% of oxygen respectively. If the formula of the first oxide is M_3O_4, find that of the second.

80. For precious stone, carat is used for specifying its mass. If 1 carat = 3.08647 grains (a unit of mass) and 1 gram = 15.4324 grains. Find the total mass in kilogram of a ring that contains 0.700 carat diamond and 5.00 gram gold.

*** Given Section consists of questions of 5 marks each. [30]**

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

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

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

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

84. Calcium carbonate reacts with aqueous HCl to give $CaCl_2$ and CO_2 according to the reaction, $CaCO_{3(s)} + 2\ HCl_{(aq)} \rightarrow CaCl_{2(aq)} + CO_{2(g)} + H_2O_{(l)}$
What mass of $CaCO_3$ is required to react completely with 25mL of 0.75M HCl?

85. A welding fuel gas contains carbon and hydrogen only. Burning a small sample of it in oxygen gives 3.38g carbon dioxide, 0.690 g of water and no other products. A volume of 10.0L (measured at STP) of this welding gas is found to weigh 11.6g. Calculate.
    i. Empirical formula.
    ii. Molar mass of the gas.
    iii. Molecular formula.

86. What volume of 0.1 M NaOH solution is required to neutralise 100ml of concentrated aqueous sulphuric acid which contains 98% H_2SO_4 by mass. The density of concentrated sulphuric acid solution is 1.84g ml^{-1} NaOH reacts with H_2SO_4 according to the following reaction:
$2NaOH + H_2SO4 \rightarrow Na_2SO_4 + 2H_2O$
(Atomic mass/ g mol^{-1} H = 1, S = 32, O = 16).

----- अगर आप सूरज की तरह चमकना चाहते हो, तो सूरज की तरह जलना सीखो। ... -----