CHEMISTRY

BOOKS - NCERT CHEMISTRY (ENGLISH)

SOME BASIC CONCEPTS OF CHEMISTRY

Others

1. Two students performed the same experiment separately and each one of them recorded two readings of mass which are given below. Correct reading of mass is 3.0 g. On the basis of given data, mark the correct option

out of the following statements.

Student	Readings	
	(I)	(II)
A	3.01	2.99
B	3.05	2.95

A. Results of both the students are neither accurate nor precise

B. Results of student A are both precise and accurate

C. Results of student B are neither precise nor accurate

D. Results of student B are both precise and accurate.

Answer:

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2. A measured temperature on Fahrenheit scale is $200^\circ F$.

What will this reading be on clesius scale?

A. $40^\circ C$

B. $94^\circ C$

C. $93.3^\circ C$

D. $30^\circ C$

Answer:

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3. What will be the molarity of a solution, which contains 5.85g of $NaCl(s)$ per 500mL?

A. $4 \text{mol} L^{-1}$

B. $20 \text{mol} L^{-1}$

C. $0.2 \text{mol} L^{-1}$

D. $2 \text{mol} L^{-1}$

Answer: C

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

A. 1.5M

B. 1.66M

C. 0.017M

D. 1.59M

Answer:

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5. The number of atoms present in one mole of an element is equal to Avogadro number. Which of the following element contains the greatest number of atom?

A. 4g He

B. 46g Na

C. 0.40g Ca

D. 12 g He

Answer: D

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

A. 5M

B. 50M

C. 0.005M

D. 0.5M

Answer:

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

A. 0.1m

B. 1M

C. 0.5m

D. 1m

Answer:

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8. 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} molecuels

C. 1×10^{23} molecuels

D. 12.044×10^{23} molecules

Answer:

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9. What is the mass per cent of carbon in carbon dioxide?

A. 0.00034

B. 0.2727

C. 0.034

D. 0.287

Answer:

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10. The empirical formula and molecule mass of a compound are CH_2O and 180g respectivel. What will be the molecular formula of the compound?

A. $C_9H_{18}O_9$

B. CH_2O

C. $C_6H_{12}O_6$

D. $C_2H_4O_2$

Answer:

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11. If the density of a solu tion is 3.12 g mL^{-1} , the mass of 1.5mL solution in significant figures is.....

A. 4.7g

B. $4680 \times 10^{-3} g$

C. $4.680 g$

D. $46.80g$

Answer:

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12. Which of the following statements about a compound is incorrect?

A. A molecule of a compound has atoms of different elements

B. A compound cannot be separated into its constituent elements by physical methods of separation

C. A compound retains the physical proepreties of its constituent elements

D. the ratio of atoms of different elements in a compound is fixed.

Answer:

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13. Which of the following statements is correct about the reaction given below:-

$4Fe(s) + 3O_2(g) \rightarrow 2Fe_2O_3(g)$

A. Total mass of iron and oxygen in reactant =total mass of iron and oxygen in product tehrefore it follows law of conservation of mass

B. Total mass of reactants =total mass of product, therefore, law of multiple proportions is followed

C. Amount of Fe_2O_3 can be increased by taking any one of the reactants (iron or oxygen) in excess.

D. Amount of Fe_2O_3 produced will decrease if the amount of any one of the reactants (iron or oxygen) is taken in excess

Answer:

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14. Which of the following reactions isnot correct according to the law of conservation of mass?

A. $2Mg(s) + O_2(g) \rightarrow 2MgO(s)$

B. $C_3H_6(g) + O_2(g) \rightarrow CO_2(g) + H_2O(g)$

C. $P_4(s) + 5O_2(g) \rightarrow P_4O_{10}(s)$

D. $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$

Answer:

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15. Which of the following statements indicates that law of multiple proportion is being followed?

A. a) Sample of carbon dioxide taken from any source will always have carbon and oxygen in the ratio 1:2

B. b) Carbon forms two oxides namely CO_2 and CO where masses of oxygen which combine with fixed mass of carbon are in the simple ratio 2:1

C. c) When magnesium burns in oxygen, the amount of magnesium taken for the reaction is equal to the amount of magnesium in magnesium oxide formed

D. d) At constant temperature and pressure 200mL of hydrogen will combine with 100mL oxygen to

produce 200mL of water vapour

Answer:

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16. One mole of oxygen gas at STP is equal to .....

A. 6.022×10^{23} molecuels of oxygen

B. 6.022×10^{23} atoms of oxygen

C. 16 of oxygen

D. 32 g of oxygen

Answer:

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17. Sulphuric acid reacts with sodium hydroxide as follows

$H_2SO_4 + 2NaOH \rightarrow Na_2SO_4 + 2H_2O$

when 1L of 0.1M sulphuric acid solution is allowed to react with 1L of 0.1M sodium hydroxide solution, the amount of sodium solphate formed and its molarity in the solution obtained is

A. $0.1 \text{mol} L^{-1}$

B. $7.10g$

C. $0.025 \text{mol} L^{-1}$

D. 3.55g

Answer:

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18. Which of the following pairs have the same number of atoms?

A. 16 of $O_2(g)$ and 4 g of $H_2(g)$

B. 16 g of O_2 and 44 g of CO_2

C. 28 g of N_2 and $32g$ of O_2

D. 12 g of $C(s)$ and 23 g of $Na(s)$

Answer:

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19. Which of the following solutions have the more concentration?

A. a) 20g of NaOH in 20mL of solution

B. b) 0.5mol of KCl in 200mL of solution

C. c) 40g of NaOH in 100mL of solution

D. d) 20g of KOH in 200mL of solution

Answer:

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20. 16 of oxygen has same number of molecules as in

A. 16 g of CO

B. 28 g of N_2

C. $14 g \text{of} N_2$

D. $1.0 g \text{of} H_2$

Answer:

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21. Which of the following terms are unitless?

A. Molality

B. Molarity

C. Mole fraction

D. Mass per cent

Answer:

22. One of the statements of Dalton's atomic theory is given below "Compound are formed when atoms of different element combine in a fixed ratio "

Which of the following laws is not related to this statement?

A. Law or conservation of mass

B. Law of definite proportion

C. Law of multiple proportions

D. Avogadro law

Answer:

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23. What will be the mass of one $.^{12}C$ atom in g?

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24. How many significant figures should be present in the answer of the following calculations?

$$\frac{2.5 \times 1.25 \times 3.5}{2.01}$$

A.

B.

C.

D.

Answer:

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25. What is the symbol for SI unit of mole? How is the mole defined?

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26. Distinguish between molarity and molality.

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27. Calculate the mass per cent of calcium, phosphorus and oxygen in calcium phosphate $Ca_3(PO_4)_2$.

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28. 45.4L of dinitrogen reacted with 22.7L of dioxygen and 45.4 L of nitrous oxide was formed the reaction is given below

$2N_2(g) + O_2(g) \rightarrow 2N_2O(g)$

Which law is being obeyed in this experiment? Write the statement of the law?

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29. If two elements can combine to form more than one compound, the masses of one element that combine with a fixed mass of the other element, are in whole number ratio.

(a) Is this statement true?

(b) It yes, according to which law?

(c) Give one example related to this law.

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30. Calculate the average atomic mass of hydrogen using the following data

Isotope % Natural abundance Molar mass

.[1] $H99.9851$

.[2] $H0.0152$

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31. Hydrogen gas is prepared in the laboratory by reacting dilute HCl with granulated zinc, Following reaction takes place

$Zn + 2HCl \rightarrow ZnCl_2 + H_2$

Calculate the volume of hydrogen gas liberated at STP when 32.65 g of zinc reacts with HCl. 1 mole of a gas occupies 22.7 L volume at STP, atomic mass of Zn=65 .3u

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32. The density of 3 molal solution of NaOH is 1.110g mL^{-1}. Calculate the molarity of the solution.

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33. Volume of a solution chagnes with chagne in temperature, then what will the molality of the solution be affected by temperature? Give reason for your answer.

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34. If 4 g of NaOH dissovles in 36g of H_2O, calculate the mole fraction of each component in the solution. Also

determine the molarity of the solution (specific gravity of solution is $1gmL^{-1}$).

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35. The reactant which is entirely consumed in reaction is known as limiting reagent. In the reaction $2A + 4B \rightarrow 3C + 4D$, when 5 moles of A react with 6 moles of B, then

(a) which is the limiting reagent?

(b) calculate the amount of C formed?

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36. Match the following.

A. 88 g of CO_2	1. 0.2 mol
B. 6.022×10^{23} molecules of H_2O	2. 2 mol
C. 5.6 L of O_2 at STP	3. 1 mol
D. 64 g of O_2	4. 6.022×10^{23} molecules
E. 1 mole of any gas	5. 3 mol

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37. Match the following physical quantities with units.

Physical quantity		Unit	
A.	Molarity	1.	$g\ mL^{-1}$
B.	Mole fraction	2.	mol
C.	Mole	3.	Pascal
D.	Molality	4.	Unitless
E.	Pressure	5.	$mol\ L^{-1}$
F.	Luminous intensity	6.	Candela
G.	Density	7.	$mol\ kg^{-1}$
H.	Mass	8.	Nm^{-1}
		9.	kg

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38. Assertion(A) The empirical mass of ethene is half of its molecular mass.

Reason(R) The empirical formula represents the simplest whole number ratio of various atoms present in a compound.

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

B. A is true but R is false.

C. A is false but R is true.

D. Both A and R are flase.

Answer:

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

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

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

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

C. A is true but R is false.

D. Both A and R are false.

Answer:

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40. Assertion(A) Significant figures for 0.200 is 3 where as for 200 it is 1.

Reason(R) Zero at the end or right of a number are significant provided they are not on the right side of the decimal point.

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

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

C. A is true but R is false.

D. Both A and R are flase.

Answer:

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41. Assertion(A) Combustion of 16g of methane give18 g of water.

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

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

B. A is true but R is false.

C. A is false but R is true.

D. Both A and R are flase.

Answer: B

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42. A vessel contains 1.6g of dioxygen at STP(273.15k,1atm pressure). The gas is now trasnferred to another vessel at constnat temperature. Whre pressure becomes half of the original pressure. Calculate

(a) Volume of the new vessel.

(b) number of molecuels of dioxygen.

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43. Calcium carbonate reacts with aqueous HCl to give $CaCl_2$ and CO_2 according to the reaction given below

$CaCO_3(s) + 2HCl(aq) \rightarrow CaCl_2(aq) + CO_2(g) + H_2O(l)$

What mass of $CaCl_2$ will be formed when 250mL of 0.76 M HCl reacts with 1000 g of $CaCO_3$? Name the limiting reagent. Calculate the number of moles of $CaCl_2$ formed in the reaction.

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44. Define the law of multiple proportions, Explain it with examples. How does this law point to the existence of atoms?

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45. A box contains some identical red coloured balls. Labelled as A, each weighing 2g. Another box contains identiclal blue coloured balls. Labelled as B, each weighing 5g. Consider combination AB ,AB_2, A_2B and A_2B_3 and show that law of multiple proportions is applicable.

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