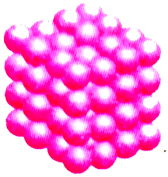
CHEMISTRY

BOOKS - MTG CHEMISTRY (HINGLISH)

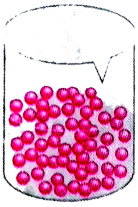
SOME BASIC CONCEPTS OF CHEMISTRY

Nature Properties Of Matter And Their Measurements

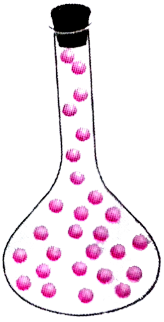
1.



Solid I



Liquid II



Gas III

Choose the correct statement about I, II and III.

A. I and II have definite volume but III does not have this property

B. I, II and III are interconvertible by changing the conditions of temperature by pressure.

C. In the particles of I, freedom of movement is large.

D. Both (a) and (b)

Answer:

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2. Few quantities with their units are listed below. Mark the units which are not correctly matched.

(i) Density : kg m^{-3}

(ii) Velocity of light : m s^{-1}

(iii) Planck's constant : $J^{-1}s^{-1}$

(iv) Acceleration : ms^{-2}

A. (ii) and (iv)

B. (i) and (iii)

C. (iii) and (v)

D. (iv) and (v)

Answer:

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3. Match the prefixes present in coloumn I with their multiples in coloumn II and mark the appropriate choice.

Column I (Prefixes)		Column II (Multiples)	
(A)	pico	(i)	10^{9}
(B)	femto	(ii)	10^{-3}
(C)	milli	(iii)	10^{-12}
(D)	giga	(iv)	10^{-15}

A. $(A) \rightarrow (i), (B) \rightarrow (ii), (C) \rightarrow (iii), (D) \rightarrow (iv)$

B. $(A) \rightarrow (ii), (B) \rightarrow (i), (C) \rightarrow (iv), (D) \rightarrow (iii)$

C. $(A) \rightarrow (iv), (B) \rightarrow (iii), (C) \rightarrow (i), (D) \rightarrow (ii)$

D. $(A) \rightarrow (iii), (B) \rightarrow (iv), (C) \rightarrow (ii), (D) \rightarrow (i)$

Answer:

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4. Mark the conversion factor which is not correct.

A. 1 atm $= 1.01325 \times 10^5$ pa

B. 1 metre = 39.37 inches

C. 1 litre $= 10^{-3} m^3$

D. 1 inch =3.33 cm

Answer:

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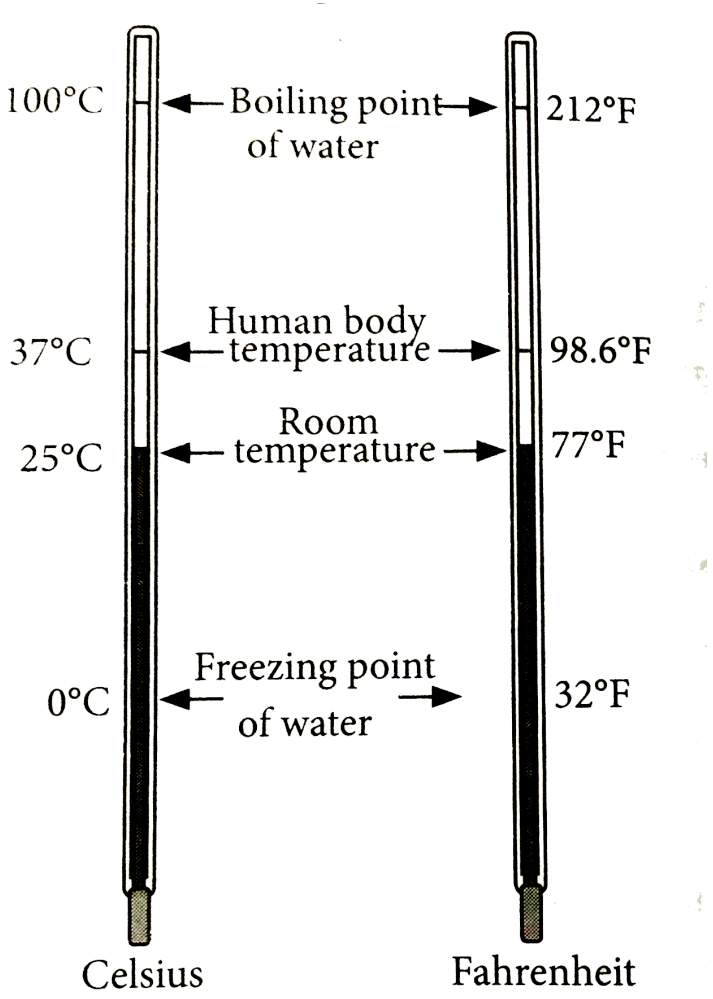
5. Consider the following figure,



The correct relationship between fahrenheit and celsius scale is

A. $^\circ F = ^\circ C + 273.15$

B. $^\circ F = \frac{2}{5}^\circ C + 16$

C. $^\circ F = \frac{9}{5}^\circ C + 32$

D. $^\circ F = \frac{1}{3}^\circ C + 32$

Answer:

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Uncertainty Of Measurement

1. Few figures are expressed in scientific notation. Mark the incorrect one.

A. $234000 = 2.34 \times 10^5$

B. $8008 = 8 \times 10^3$

C. $0.0048 = 4.8 \times 10^{-3}$

D. $500.0 = 5.00 \times 10^2$

Answer:

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2. Markthe rule which is not correctly stated about determination of significant figures.

A. Zeros preceding to first non-zero digit are not significant.

B. Zero between two non-zero digits are not significant.

C. Zero at the end or right of the number are significant if they are on the right side of decimal point.

D. All non - zero digits are significant.

Answer:

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3. Which of the following rules regarding the significant figures and calculations involving them is not correct?

A. The result of an addition or subtraction is reported to the same number of decimal places as present in number with least decimal places.

B. Result of multiplication or division should have same number of significant figures as present in most precise figure.

C. The result of multiplication or division should be rounded off to same number of significant figures as present in least precise figure.

D. The non-significant figures in the measurements are rounded off.

Answer:

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4. The result of the operation 2.5×1.25 should be which of the following on the basis of significant figures?

A. 3.125

B. 3.13

C. 3.1

D. 31.25

Answer:

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5. How many significant figures are present in 0.010100×10^3 ?

A. 7

B. 5

C. 3

D. 10

Answer:

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6. What will be the answer in appropriate significant figures as a result of addition of 3.0223 and 5.041 ?

A. 80.633

B. 8.0633

C. 8.063

D. 806.33

Answer:

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7. Which of the following is the most accurate measurement?

A. 9m

B. 9.0m

C. 9.00m

D. 9.000m

Answer:

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8. Which set of figures will be obtained after rounding up the following up to three significant figures?

34.216, 0.04597, 10.4107

A. 34.3, 0.0461, 10.4

B. 34.2, 0.0460, 10.4

C. 34.20, 0.460, 10.40

D. 34.21, 4.597, 1.04

Answer:

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9. Which of the following option is not correct ?

A. 2.300+0.02017+0.02015=2.340

B. 126, 000 has 3 significant figures.

C. $15.15\mu s = 1.515 \times 10^{-5}$ s

D. $0.0048 = 48 \times 10^{-3}$

Answer:

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10. What should be the volume of the milk (in m^3) which measures 5L?

A. $5 \times 10^{-3} m^3$

B. $5 \times 10^3 m^3$

C. $5 \times 1000 m^3$

D. $5 \times 10^6 m^3$

Answer:

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11. How many seconds are there in 3 days?

A. 259200 s

B. 172800 s

C. 24800 s

D. 72000 s

Answer:

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12. 18.72 g of a substance 'X' occupies 1.81 cm^3. What will be its density measured in correct significant figures?

A. $10.3gcm^{-3}$

B. $10.34gcm^{-3}$

C. $10.4gcm^{-3}$

D. $10.3425gcm^{-3}$

Answer:

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Laws Of Chemical Combination

1. 4.88 g of $KClO_3$ when heated produced 1.92 g of O_2 and 2.96 g of KCl. Which of the following statements regarding the experiment is correct?

A. The result illustrates the law of conservation of mass.

B. The result of illustrates the law of multiple proportions.

C. The result illustrates the law of constant proportion.

D. None of the above laws is followed.

Answer: A

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2. How much mass of silver nitrates will react with 5.85 g of sodium chloride to produce 14.35 g of silver chloride and 8.5 g of sodium nitrates if law of conservation of mass is followed?

A. 22.85 g

B. 108 g

C. 17.0 g

D. 28.70 g

Answer: C

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3. What mass of hydrochloric acid is needed to decompose 50 g of limestone?

A. 36.5 g

B. 73 g

C. 50 g

D. 100 g

Answer:

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4. Which one of the following best explains the law of conservation of mass ?

A. 100 g of water is heated to give steam.

B. A sample of N_2 gas is heated at constant pressure without any change in mass.

C. 36 g of carbon combines with 32 g of oxygen to form 68 g of CO_2

D. 10 g of carbon is heated in vacuume without any change in mass.

Answer:

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5. What mass of sodium chloride would be decomposed by 9.8 g of sulphuric acid if 12 g of sodium bisulphate and 2.75

g of hydrogen chloride were produced in a reaction?

A. 14.75 g

B. 3.8 g

C. 4.95 g

D. 2.2 g

Answer: C

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6. In an experiment 2.4g of iron oxide in reduction with hydrogen gave 1.68 g of iron. In another experimet, 2.7 g of iron oxide gave 1.89 g of iron on reduction. Which law is illustrated from the above data?

A. Law of constant proportions

B. Law of multiple proportions

C. Law of reciprocal proportions

D. Law of conservation proportions

Answer:

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7. The following data are obtained when dinitrogen and dioxygen react together to form different compounds:

Mass of dinitrogen	Mass of dioxygen
14 g	16 g
14 g	32 g
28 g	32 g
28 g	96 g

Which law of chemical combination is obeyed by the above experimental data ?

A. Law of conservation of mass

B. Law of definite proportions

C. Law of multiple proportions

D. Avogadro's law

Answer: C

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

A. An element forms two oxides, XO and XO_2 containing 50% and 60% oxygen respectively. The ratio of masses of oxygen which combines with 1 g of element is 2 : 3.

B. Hydrogen sulphide contains 5.89% hydrogen, water contains 11.1% hydrogen and sulphur dioxyde contains 50% oxygen.

C. 3.47 g of $BaCl_2$ reacts with 2.36g of Na_2SO_4 to give 3.88 of $BaSO_4$ and 1.95 g of NaCl.

D. 20mL of ammonia gives 10 volumes of N_2 and 30 volumes of H_2 at constant temperature and pressure.

Answer: A

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

A. H_2O, Na_2O

B. MgO, Na_2O

C. Na_2O, BaO

D. $SnCl_2$, $SnCl_4$

Answer: D

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10. The statements for laws of chemical combinations are given below. Mark the option which is not correctly matched.

A. Matter can neither be created nor destroyed: Law of conservation of mass

B. A compound always contains exactly the same proportions of elements by weight : Law of definite proportions

C. When gases combine they do so in a simple ratio by weight : Gay Lussac's Law

D. Equal volumes of gases at same temperature and pressure contain same number of molecules:

Avogadro's Law

Answer: C

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11. Give below are few statements. Mark the statement which is not correct.

A. Atoms are neigther created nor destroyed in a chemical reaction.

B. Law of definite proportion state that a given compound always contains exactly the same proportion of elements by weight.

C. Gay Lussac's law of chemical combination is valid for all substances.

D. A pure compund has always a fixed proportion of masses of its constituents.

Answer:

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12. A balanced equation for combustion of methane is given below:

$$CH_{4(g)} + CO_{2(g)} \rightarrow CO_{2(g)} + 2H_2O_g$$

Which of the following statements is not correct on the basis of the above chemical equation?

A. One mole of CH_4 reacts with 2 moles of oxygen to give one mole of CO_2 and 2 moles of water.

B. One molecules of CH_4 reacts with 2 molecules of oxygen to give one molecule of CO_2 and 2 molecules of water.

C. 22.4 L of methane reacts with 44.8 L of oxygen to give 44.8 L of CO_2 and 22.4 L of water.

D. 16 g of methane reacts with 64 g of O_2 to give 44 g of CO_2 and 36 g of water.

Answer: C

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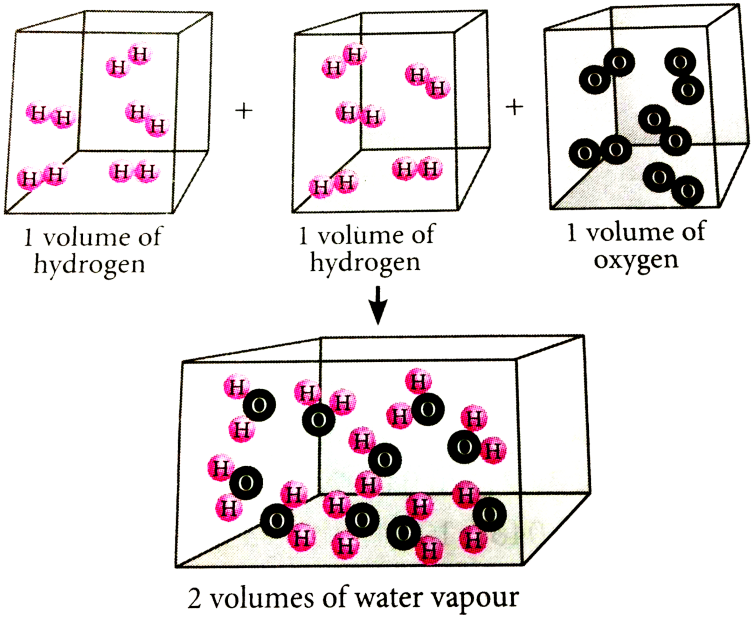
13. Which of the following law of chemical combination is satisfied by the figure?



A. Law of multiple proportion

B. Dalton's law

C. Avogadro law

D. Law of conservation of mass

Answer: C

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14. Which of the following statements about Avogadro's hypothesis is correct ?

A. Under similar condition of temperature and pressure, gases react with each other in simple ratio.

B. Under similar conditions of temperature and pressure, equal volume of all gases contain same number of molecules.

C. At NTP all gases contain same number of molecules

D. Gases always react with gases only at the given temperature and pressure.

Answer: B

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Atomic And Molecular Masses

1. The reference standard used for defining atomic mass is

A. H-1

B. C-12

C. C-13

D. C-14

Answer: B

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2. Are the atomic masses of some elements actually fractional ?

A. They exist as a mixture of isotopes of different masses

B. They contain impurities of other atoms

C. They are mixtures of isobars

D. They cannot be weighted accurately.

Answer: A

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3. Oxygen occurs in nature as a mixture of isotopes $^{16}O, ^{17}O \text{ and } ^{18}O$ having masses of 15.995 u, 16.999 u and 17.999 u and relative abundance of 99.763%, 0.037% and 0.0200% respectively. What is the average atomic mass of oxygen?

A. 15.999 u

B. 16.999 u

C. 17.999 u

D. 18.999 u

Answer: A

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4. For every one ^{37}Cl isotopes there are three ^{35}Cl isotopes in a sample of chlorine. What will be the average atomic mass of chlorine?

A. 35

B. 37

C. 35.5

D. 35.6

Answer:

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5. Carbon occur in nature as a mixture of $C-12$ and $C-13$. Average atomic mass of carbon is 12.011 what is the $\%$ abundance of $C-12$ in nature ?

A. 0.889

B. 0.989

C. 0.899

D. 0.799

Answer:

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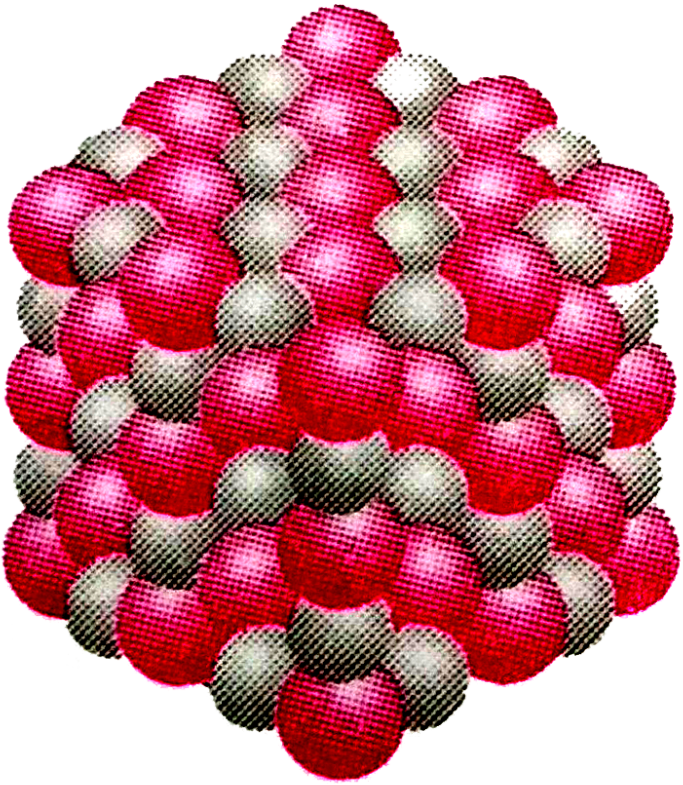
6. Packing of Na^+ and Cl^- ions in sodium chloride is depicted by the given figure. Choose the correct option regarding formula mass of sodium chloride.



A. In the solid, sodium chloride does not exist as a single entity.

B. Formula mass of NaCl is 68.0 u.

C. Formula mass of NaCl is the sum of atomic masses of Na and Cl

D. Both (a) and (c)

Answer:

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Mole Concept And Molecular Masses

1. Which of the following formula is not correctly depicted ?

A. Molar mass $= \frac{\text{Mass of substance}}{\text{Moles of substance}}$

B. Mass of one molecule of a substance

$$= \frac{\text{Gram molecular mass of the substance}}{\text{Avogadro's number}}$$

C. Number of molecules

$$= \frac{\text{Mass of the substance}}{\text{Molar mass}} \times \text{Avogadro's no.}$$

D. Mole x Molar mass = Number of molecules

Answer: D

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2. What is the mass of carbon dioxide which contains the same number of molecules as are contained in 40 g of oxygen?

A. 40g

B. 55g

C. 32g

D. 44g

Answer: B

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3. Match the coloumn I with coloum II and mark the appropriate choice.

Column I		Column II	
(A)	Mass of H_2 produced when 0.5 mole of zinc reacts with excess of HCl	(i)	3.01×10^{23} molecules
(B)	Mass of all atoms of a compound with formula $C_{70}H_{22}$	(ii)	6.023×10^{23} molecules
(C)	Number of molecules in 35.5 g of Cl_2	(iii)	1.43×10^{-21} g
(D)	Number of molecules in 64 g of SO_2	(iv)	1 g

A. $(A) \rightarrow (ii), (B) \rightarrow (i), (C) \rightarrow (iv), (D) \rightarrow (iii)$

B. $(A) \rightarrow (i), (B) \rightarrow (ii), (C) \rightarrow (iii), (D) \rightarrow (iv)$

C. $(A) \rightarrow (iv), (B) \rightarrow (iii), (C) \rightarrow (i), (D) \rightarrow (ii)$

D. $(A) \rightarrow (iv), (B) \rightarrow (iii), (C) \rightarrow (ii), (D) \rightarrow (i)$

Answer:

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4. The number of oxygen atoms present in 1 mole of oxalic acids dihydrate is

A. 6×10^{23}

B. 6.022×10^{34}

C. 7.22×10^{23}

D. 36.13×10^{23}

Answer: D

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5. The measured density at NTP of He is $0.1784 gL^{-1}$. Calculate the weight of 1mole of He.

A. 39.9 g

B. 22.4 g

C. 3.56 g

D. 29 g

Answer:

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6. Which of the following gases will have least volume if 10g of each gas is taken at same temperature and pressure?

A. CO_2

B. N_2

C. CH_4

D. HCl

Answer: A

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7. How many number of molecules and atoms respectively are present in 2.8 liters of a diatomic gas at STP ?

A. $6.023 \times 10^{23}, 7.5 \times 10^{23}$

B. $6.023 \times 10^{23}, 15 \times 10^{22}$

C. $7.5 \times 10^{22}, 15 \times 10^{22}$

D. $15 \times 10^{22}, 7.5 \times 10^{23}$

Answer: C

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8. Total number of atoms present in 34 g of NH_3 is

A. 4×10^{23}

B. 4.8×10^{21}

C. 2×10^{23}

D. 48×10^{23}

Answer: D

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9. What will be the mass of 100 atoms of hydrogen?

A. 100g

B. $1.66 \times 10^{-22} g$

C. $6.023 \times 10^{23} g$

D. $100 \times 6.023 \times 10^{23} g$

Answer: B

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10. How many atoms in total are present in 1kg of sugar?

A. 7.92×10^{25} atoms

B. 6×10^{23} atoms

C. 6.022×10^{25} atoms

D. 1000 atoms

Answer:

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11. 1.4 moles of phosphorus trichloride are present in a sample. How many atoms are there in the sample?

A. 5.6

B. 34

C. 2.4×10^{23}

D. 3.372×10^{24}

Answer: D

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12. What will be the standard molar volume of He, if its density is 0.1784 g/L at STP?

A. 11.2 L

B. 22.4 L

C. 5.6 L

D. 2.8 L

Answer: B

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13. In a mixture of gases, the volume content of a gas is 0.06% at STP. Calculate the number of molecules of the gas in 1 L of the mixture.

A. 1.613×10^{23}

B. 6.023×10^{23}

C. 1.61×10^{27}

D. 1.61×10^{19}

Answer:

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14. What will be the weight of CO having the same number of oxygen atoms at present in 22 g of CO_2?

A. 28g

B. 22g

C. 44g

D. 72g

Answer:

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15. Match the mass of elements given in coloumn I with the no. of moles given in column II and mark the appropriate

choice.

Column I		Column II	
(A)	28 g of He	(i)	2 moles
(B)	46 g of Na	(ii)	7 moles
(C)	60 g of Ca	(iii)	1 mole
(D)	27 g of Al	(iv)	1.5 moles

A. $(A) \rightarrow (iv), (B) \rightarrow (iii), (C) \rightarrow (ii), (D) \rightarrow (i)$

B. $(A) \rightarrow (i), (B) \rightarrow (iii), (C) \rightarrow (ii), (D) \rightarrow (iv)$

C. $(A) \rightarrow (iii), (B) \rightarrow (ii), (C) \rightarrow (i), (D) \rightarrow (iv)$

D. $(A) \rightarrow (ii), (B) \rightarrow (i), (C) \rightarrow (iv), (D) \rightarrow (iii)$

Answer:

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16. Calculate the number of aluminium ions present in 0.051 g of aluminium oxide.

(Hint: The mass of an ion is the same as that of an atom of the same element. Atomic mass of Al = 27 u)

A. 6.023×10^{20} ions

B. 3 ions

C. 6.023×10^{23} ions

D. 9 ions

Answer:

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17. Which of the following correctly represents 180 g of water ?

5 moles of water

(ii) 10 moles of water

(iii) 6.023×10^{23} molecules of water

(iv) 6.023×10^{24} molecules of water

A. (i) and (ii)

B. (i) and (iv)

C. (ii) and (iv)

D. (ii) and (iii)

Answer: C

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18. How many oxygen atoms will be present in 88 g of CO_2 ?

A. 24.08×10^{23}

B. 6.023×10^{23}

C. 44×10^{23}

D. 22×10^{24}

Answer: A

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19. Calculate the total number of electrons present in 1.6 g of methane

A. 6.023×10^{23}

B. 16

C. 12.04×10^{23}

D. 6.023×10^{24}

Answer: A

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20. A mixture having 2 g of hydrogen and 32 oxygen occupies how much volume at NTP?

A. 44.8 L

B. 22.4 L

C. 11.2 L

D. 76.2 L

Answer: A

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21. One atom of an element weight 3.32×10^{-25} g. How many number of gram atoms are in 20 kg of the element?

A. 2000

B. 20

C. 200

D. 1000

Answer:

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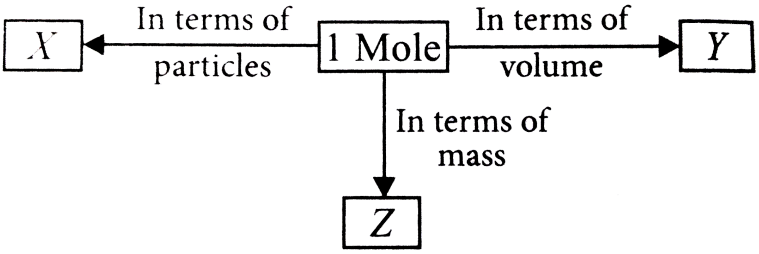
22. Fill in the blanks by choosing the correct option.



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23. The mass of one mole of a substance in grams is called its

A. Molecular mass

B. Molar mass

C. Avogadro's mass

D. Formula mass.

Answer: B

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24. How much copper is present in 50 g of $CuSO_4$

A. 19.90 g

B. 39.81 g

C. 63.5 g

D. 31.71 g

Answer: A

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Percentage Composition

1. 0.48 g of a sample of a compound containing boron and oxygen contains 0.192 g of boron and 0.288 g of oxygen. What will be the percentage composition of the compound?

A. 60% and 40% B and O respectively

B. 40% and 60% B and O respectively

C. 30% and 70% B and O respectively

D. 70% and 30% B and O respectively

Answer: B

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2. A compound of magnesium contains 21.9% magnesium, 27.8% phosphorus and 50.3% oxygen. What will be the simplest formula of the compound?

A. $Mg_2P_2O_7$

B. $MgPO_3$

C. $Mg_2P_2O_2$

D. MgP_2O_4

Answer: A

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3. A compound contains two elements 'X' and 'Y' in the ratio of 50% each. Atomic mass 'X' is 20 and 'Y' is 40. what can be its simplest formula?

A. XY

B. X_2Y

C. XY_2

D. X_2Y_3

Answer: B

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4. The empirical formula of a compound is CH_2O_2. What could be its molecular formula?

A. $C_2H_2O_2$

B. $C_2H_2O_4$

C. $C_2H_4O_4$

D. CH_4O_4

Answer: C

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5. A gas has molecular formula $(CH)_n$. If vapour density of the gas is 39, what should be the formula of the compound ?

A. C_3H_3

B. C_4H_4

C. C_2H_2

D. C_6H_6

Answer:

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6. Determine the molecular formula of an oxide of iron in which the mass percent of iron and oxygen are 69.9 and 30.1, respectively.

A. FeO

B. Fe_3O_4

C. Fe_2O_3

D. FeO_2

Answer:

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7. An organic compound on analysis gave C=54.2%, H=9.2% by mass. Its empirical formula is

A. CHO_2

B. CH_2O

C. C_2H_8O

D. C_2H_4O

Answer: D

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8. The relative number of mass of elements, 'X' and 'Y' in a compound is 0.25 and 0.5. The empirical formula of compound is

A. XY

B. X_2Y

C. XY_2

D. X_2Y_2

Answer: C

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9. Two elements 'P' and 'Q' combine to form a compound. Atomic mass of 'p' is 12 and 'Q' is 16. percentage of 'P' in the compound is 27.3. What will be the empirical formula of the compound ?

A. P_2Q_2

B. PQ

C. P_2Q

D. PQ_2

Answer:

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Stoichiometry And Stoichiometry Calculations

1. 1g of Mg is burnt in a closed vessel which contains $0.5 g of O_2$

(i) Which reactants is left in excess

(ii) Find the mass of the excess reactant.

A. O_2 is a limiting reagent and Mg is in excess by 0.25 g.

B. Mg is a limiting reagent and is in excess by 0.5 g.

C. O_2 is a limiting reagent and is in excess by 0.25 g.

D. O_2 is a limiting reagent and Mg is in excess by 0.75 g.

Answer:

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2. In a reaction container, 100g of hydrogen and 100 g of Cl_2 are mixed for the formation of HCl gas. What is the limiting reagent and how much HCl is formed in the reaction ?

A. H_2 is limiting reagent and 36.5 g of HCl are formed.

B. Cl_2 is limiting reagent and 102.8 g of HCl are formed.

C. H_2 is limiting reagent and 142 g of HCl are formed.

D. Cl_2 is limiting reagent and 73 g of HCl are formed.

Answer:

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3. If 40g of $CaCO_3$ is treated with 40g of HCl, which of the reactants will acts as limiting reagent?

A. $CaCO_3$

B. HCl

C. Both (a) and (b)

D. None of these

Answer: A

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4. The weight of AgCl precipitated when a solution containing 5.85 g of NaCl is added to a solution containing

3.4g of $AgNO_3$ is

A. 28g

B. 9.25g

C. 2.870g

D. 58g

Answer: C

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5. How much oxygen is required for complete combustion of 560 g of ethene?

A. 6.4 kg

B. 1.92 Kg

C. 2.8 kg

D. 9.6 kg

Answer:

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6. How many moles of oxygen gas can be produced during electricity decomposition of 180 g of water ?

A. 2.5 moles

B. 5 moles

C. 10 moles

D. 7 moles

Answer:

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7. How many grams of CaO are required to neutralise $852g$ of P_4O_{10} ? Draw the structure of P_4O_{10}.

A. 852g

B. 1008g

C. 85g

D. 7095g

Answer:

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8. What volume of dioxygen is required for complete combustion of 2 volume of acetylene gas at NTP ?

A. 2 volumes

B. 5 volumes

C. 10 volumes

D. 4 volumes

Answer:

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9. What quantity of copper(II) oxide will react 2.80litre of hydrogen at NTP

A. 79.5 g

B. 2 g

C. 9.9 g

D. 22.4 g

Answer:

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10. At NTP, 1L of O_2 reacts with 3L of carbon monoxide. What will be the volume of CO and CO_2 after the reaction?

A. 1L CO_2, 1L CO

B. 2L CO_2, 2L CO

C. 1L CO_2, 2L CO

D. 2L CO_2, 1L CO

Answer:

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11. Calcium carbonate decomposes on heating to give calcium oxide and carbon dioxide. How much volume of CO_2 will be obtained by thermal decomposition of 50g $CaCO_3$?

A. 1L

B. 11.2 L

C. 44 L

D. 22.4 L

Answer:

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12. Chlorine gas is prepared by reaction of H_2SO_4 with MnO_2 and NaCl. What volume of Cl_2 will be produced at STP if 50 g of NaCl is taken in the reaction ?

A. 1.915 L

B. 22.4 L

C. 11.2 L

D. 9.57 L

Answer:

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13. HCl is produced in the stomach which can be neutralised by $Mg(OH)_2$ in the form of milk of magnesia. How much $Mg(OH)_2$ is required to neutralise one mole of stomach acid?

A. 29.16 g

B. 34.3 g

C. 58.33 g

D. 68.66g

Answer:

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14. Magnetite, Fe_3O_4, can be converted into metallic iron by heating with carbon monoxide as represented by this equation:

$$Fe_3O_4(s) + CO(g) \rightarrow Fe(s) + CO_2(g)$$

The kilograms of Fe_3O_4 which must be processed in this way to obtain $5.00kg$ of iron, if the process is $85\ \%$ efficient is closest to? $[M: = Fe = 56]$

A. 8.12 kg

B. 4.14 kg

C. 6.94 kg

D. 16.8 kg

Answer: A

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15. What is the mass percent of oxygen in ethanol ?

A. 0.5214

B. 0.1313

C. 0.16

D. 0.3473

Answer:

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16. How much mass of sodium acetate is required to make 250 mL of 0.575 molar aqueous solution?

A. 11.79 g

B. 15.38 g

C. 10.81 g

D. 25.35 g

Answer:

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17. A solution is prepared by adding 5g of a solute 'X' to 45 g of solvent 'Y'. What is the mass percent of the solute 'X' ?

A. 0.1

B. 0.111

C. 0.9

D. 0.75

Answer: A

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18. A 1.50g sample of an ore containing silver was dissolved and all of the Ag^+ was converted to 0.124 g of Ag_2S. What was the percentage of silver in the ore?

A. 14.23%

B. 8.27%

C. 10.8%

D. 7.2%

Answer: D

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19. 2.82g of glucose is dissolved in 30g of water. The mole fraction of glucose in the solution is

A. 0.01

B. 0.99

C. 0.52

D. 1.66

Answer: A

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20. What volume of water is to be added to 100 cm^3 of 0.5M NaOH solution to make it 0.1 M solution?

A. $200cm^3$

B. $400cm^3$

C. $500cm^3$

D. $100cm^3$

Answer:

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21. The final molarity of a solution made by mixing 50 mL of 0.5 M HCl, 150 mL of 0.25 M HCl and water to make the

volume 250 mL is

A. 0.5 M

B. 1M

C. 0.75 M

D. 0.25 M

Answer: D

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22. A solution is made by dissolving 49g of H_2SO_4 in 250 mL of water. The molarity of the solution prepared is

A. 2 M

B. 1 M

C. 4 M

D. 5 M

Answer:

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23. What is the concertration of copper sulphate (in mol L^{-1}) if 80 of it is dissolved in enough water to make a final volume of 3 L?

A. 0.0167

B. 0.167

C. 1.067

D. 10.67

Answer:

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24. 4.28g of NaOH is dissolved in water and the solution is made to 250 cc. what will be the molarity of the solution ?

A. 0.615 mol L^{-1}

B. 0.428 mol L^{-1}

C. 0.99 mol L^{-1}

D. 0.301 mol L^{-1}

Answer:

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25. What volume of 5M Na_2SO_4 must be added to 25 mL of 1M $BaCl_2$ to produce 10 g of $BaSO_4$?

A. 8.58 mL

B. 7.2 mL

C. 10 mL

D. 12 mL

Answer:

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26. What will be the molarity of the solution in which 0.365 g of HCl gas is dissolved in 100 mL of solution ?

A. 2 M

B. 0.2 M

C. 1 M

D. 0.1 M

Answer: D

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27. What will be the molality of the solution made by dissolving 10 g of NaOH in 100g of water ?

A. 2.5 m

B. 5 m

C. 10 m

D. 1.25 m

Answer: A

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28. What will be the molarity of chloroform in the water sample which contains 15 ppm chloroform by mass?

A. 1.25×10^{-4} m

B. 2.5×10^{-4} m

C. 1.5×10^{-3} m

D. 1.25×10^{-5}m

Answer:

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Mcq

1. Which mode of concentration does not change with temperature ?

A. Molarity

B. Normality

C. Molality

D. All of these

Answer: C

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Higher Order Thinking Skills

1. 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?

A. Gay Lussac's law

B. Law of definite proportion

C. Law of multiple proportions

D. Avogadro's law

Answer:

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

A. 10.03 L

B. 11.35 L

C. 11.57 L

D. 9.53 L

Answer:

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

chemistry, biochemistry, electrochemistry adn radiochemistry. The following examples illustrate a typical case involving chemical/electrochemical reaction which requires a clear understanding of mole concept.

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

The total number of moles of chlorine gas evolved is :

A. 0.5

B. 1

C. 2

D. 3

Answer:

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evolution of chlorine gas at one of electrodes (atomis mass : Na = 23 , Hg = 200 , 1F = 96500 C)

If the 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:

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5. The total charge (coulombs) required for complete electrolysis is

A. 24125

B. 48250

C. 96500

D. 193000

Answer:

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6. A compound on analysis was found to contain the following composition :

$Na = 14.31\,\%$, $S = 9.97\,\%$, $O = 69.50\,\%$ and $H = 6.22\,\%$

Calculate the molecular formula of the compound assuming that the whole of hydrogen in the compound is present as water of crystallisation. Molecular mass of the compound is 322.

A. Na_2SO_4

B. $Na_2SO_4.\,10H_2O$

C. $Na_2SH_{10}O_{12}$

D. $Na_2SO_4.\,7H_2O$

Answer:

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7. 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?

A. C, 4.5 mol

B. B, 4.5 mol

C. B, 3.5 mol

D. C, 4.0 mol

Answer:

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

A. 2.69 M

B. 2.97 M

C. 4.57 M

D. 6.70 M

Answer: B

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9. $1L$ of $0.1MNaOH$, $1L$ of $0.2MKOH$, and $2L$ of $0.05MBa(OH)_2$ are mixed togther. What is the final

concentration of the solution.

A. 0.01 M

B. 0.01 N

C. 0.1 N

D. 0.001 M

Answer:

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Ncert Exemplar

1. Two students performed the same experiment separately and each one of them recovered 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 optioin 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. What will be the molarity of a solution, which contains 5.85g of $NaCl(s)$ per 500mL?

A. 4 mol L^{-1}

B. 20 mol L^{-1}

C. 0.2 mol L^{-1}

D. 2 mol L^{-1}

Answer:

Watch Video Solution

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

A. 1.5 M

B. 1.66 M

C. 0.017 M

D. 1.59 M

Answer:

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

A. 4 g He

B. 46 g Na

C. 0.4 g Ca

D. 12 g He

Answer:

Watch Video Solution

5. 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. 5 M

B. 50 M

C. 0.005 M

D. 0.5 M

Answer:

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

A. 0.1 m

B. 1 M

C. 0.5 m

D. 1 m

Answer:

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7. 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}

B. 6.022×10^{23}

C. 1×10^{23}

D. 12.044×10^{23}

Answer:

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8. The empirical formula and molecular mass of a compound are CH_2O and 180 g respectively. 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: C

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9. If the density of a solution is $3.12 \mathrm{g\ mL^{-1}}$, the mass of 1.5 mL solution in significant figures is

A. 4.7 g

B. 4680×10^{-3} g

C. 4.680 g

D. 46.80 g

Answer: A

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10. 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 properties of its constituents elements.

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

Answer:

View Text Solution

11. 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 reactants = total mass of iron and oxygen in product, therefore, it follows law of conservation of mass.

B. Total mass of reactant = 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 axcess.

D. Amount of Fe_2O_3 produced will decreased if the amount of any one of the reactants (iron or oxygen)

is taken in excess.

Answer:

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Assertion And Reason

1. Assertion: On heating, a solid usually change to a liquid and the liquid on further heating change to the gaseous state.

Reason : Arrangement of constituent particles is different in solid, liquid and gaseous state.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer:

View Text Solution

2. Assertion : Components of a homogeneous mixture cannot be separated by using physical methods

Reason : Composition of homogeneous mixture is uniform

throughtout as the components react to form a single compound.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer:

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3. Assertion: Elements and compound are the examples of pure substances.

Reason : The properties of a compound are different from those of its constituent elements.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer:

View Text Solution

4. Assertion : Temperature below $0^{\circ} C$ is possible on celsius scale but in Kelvin scale negative temperature is not possible

Reason : The Kelvin scale is related to celsius scale as $K = .^{\circ} C - 273.$

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer:

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5. Assertion: Scientific notation for the number 100 is expressed as 1×10^2

Reason : The number 1×10^2 has two significant figures.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer:

View Text Solution

6. Assertion: Matter can neither be created nor be destroyed.

Reason : This is law of definite proportions.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer: C

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer:

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8. Assertion: Molecular formula shows the exact number of different types of atoms present in a molecule of a compound.

Reason : Molecular formula can be obtained directly from empirical formula which represents the simplest whole number ratio of various atoms present in a compound.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer:

View Text Solution

9. Assertion: The reactant which is present in large amount limits the amount of product formed is called limiting reagent.

Reason : Amount of product formed does not depend upon the amount of reactants taken.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer:

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10. Assertion: In laboratory, a solution of a desired concentration is prepared by diluting a stock solution.

Reason : Stock solution is the solution of higher concentration.

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

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

C. If assertion is true but reason is false.

D. If both assertion and reason are false.

Answer:

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