

Arjuna NEET 2026

Physical Chemistry

DPP: 1

Some Basic Concepts of Chemistry

- Q1** Name the particles which make up matter.
 (A) Non-metals (B) Metals
 (C) Metalloids (D) Atoms
- Q2** What is matter?
 (A) Anything which has mass but does not occupies space
 (B) Anything which has mass and occupies space
 (C) Anything which neither has mass nor occupies space
 (D) Anything which does not have mass but it occupies space
- Q3** Which of the following statement is **correct**?
 (A) Liquids have definite volume but not the definite shape
 (B) Gases have neither definite volume nor definite shape
 (C) Both A and B
 (D) None of the above
- Q4** Which of the following conditions is most favorable for converting a gas into liquid?
 (A) High pressure, low temperature
 (B) Low pressure, low temperature
 (C) Low pressure, high temperature
 (D) High pressure, high temperature
- Q5** Which one of the following **cannot** be separated by the process of sublimation?
 (A) camphor
 (B) Iodine
 (C) Ammonium chloride
 (D) Copper sulphate
- Q6** Mass of 1amu in g
 (A) 1.66×10^{24}
 (B) 1.66×10^{-24}
 (C) 1.008
 (D) 9.1×10^{-28}
- Q7** Which of the following species has more electrons than neutrons?
 (A) C
 (B) F^-
 (C) O^{2-}
 (D) Al^{3+}
- Q8** Which property of an element is always a whole number?
 (A) Atomic weight
 (B) Equivalent weight
 (C) Atomic number
 (D) Atomic volume
- Q9** The ratio between the neutrons in C and Si with respect to atomic masses 12 and 28 is
 (A) 2 : 3 (B) 3 : 2
 (C) 3 : 7 (D) 7 : 3
- Q10** The atomic weight of chlorine is 35.5. It has two isotopes of atomic weight 35 and 37. What is the percentage of the heavier isotope in the sample?
 (A) 5 (B) 10
 (C) 25 (D) 20
- Q11** B has two isotopes ^{10}B (19%) and ^{11}B (81%). The atomic mass of B is
 (A) 10.81 (B) 11.5
 (C) 11 (D) 10.5
- Q12** If an element Z exist in two isotopic form Z^{50} and Z^{52} . The average atomic mass of Z is 51.7. Calculate the abundance of each isotopic forms
 (A) Z^{50} (15%), Z^{52} (85%)
 (B) Z^{50} (85%), Z^{52} (15%)
 (C) Z^{50} (5%), Z^{52} (95%)
 (D) Z^{50} (95%), Z^{52} (5%)



Q13 Atomic mass of boron is 10.81. It has two isotopes with 80% and 20% abundance respectively. The atomic mass of the isotope having 80% abundance is 11.01. The atomic mass of the other isotope is

- (A) 10.80 (B) 11.01
(C) 10.01 (D) 21.82

Q14 Naturally occurring chlorine is 75% Cl^{35} which has an atomic mass of 35 amu and 25% Cl^{37} which has a mass of 37 amu. Calculate the average atomic mass of chlorine –

- (A) 35.5amu
(B) 36.5amu
(C) 71amu
(D) 72amu

Q15 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 C12 in nature?

- (A) 99.8% (B) 98.9%
(C) 97.6% (D) 98.5%

Q16 The nucleus of the element having atomic number 25 and atomic weight 55 will contain

- (A) 25 protons and 30 neutrons
(B) 25 neutrons and 30 protons
(C) 55 protons
(D) 55 neutrons

Q17 An atoms has 26 electrons and its atomic weight is 56. The number of neutrons in the nucleus of the atom will be

- (A) 26 (B) 30
(C) 36 (D) 56

Q18 An element, X has the following isotopic composition,

$$^{200}\text{X} : 90\%$$

$$^{199}\text{X} : 8\%$$

$$^{202}\text{X} : 2\%$$

the weighted average atomic mass of the naturally occurring element X is closest to
(A) 201amu

(B) 202amu

(C) 199amu

(D) 200amu

Q19 Chlorine atom differs from chloride ions in the number of

- (A) Proton
(B) Neutron
(C) Electrons
(D) Protons and electrons

Q20 The nitrogen atom has 7 protons and 7 electrons, the nitride ion (N^{3-}) will have

- (A) 7 protons and 10 electrons
(B) 4 protons and 7 electrons
(C) 4 protons and 10 electrons
(D) 10 protons and 7 electrons

Q21 Sodium atom differs from sodium ion in the number of

- (A) Electron
(B) Protons
(C) Neutrons
(D) Does not differ

Q22 The atomic number of an element represents

- (A) Number of neutrons in the nucleus
(B) Number of protons in the nucleus
(C) Atomic weight of element
(D) Valency of element

Q23 Chlorine atom differs from chloride ion in the number of

- (A) Proton
(B) Neutron
(C) Electrons
(D) Protons and electrons

Q24 The number of electrons in one molecule of CO_2 are

- (A) 22 (B) 44
(C) 66 (D) 88

Q25 The number of electrons in the atom which has 20 protons in the nucleus is

- (A) 20 (B) 10



(C) 30 (D) 40

Q26 An atom which has lost one electron would be

- (A) Negatively charged
- (B) Positively charged
- (C) Electrically neutral
- (D) Carry double positive charge

Q27 Positive ions are formed from the neutral atom by the

- (A) Increase of nuclear charge
- (B) Gain of protons
- (C) Loss of electrons
- (D) Loss of protons

Q28 The nucleus of the atom consists of

- (A) Proton and neutron
- (B) Proton and electron
- (C) Neutron and electron
- (D) Proton, neutron and electron

Q29 The number of electrons in ${}_{19}\text{K}^{40}$ is

- (A) 19 (B) 20
- (C) 18 (D) 40

Q30 Number of neutrons in 1 molecule of CO_2 are

- (A) 22 (B) 20
- (C) 12 (D) 16

Q31 Sum of proton, electron and neutron in 1 molecule of $\text{H}_2\text{S}_2\text{O}_8$

- (A) 290 (B) 292
- (C) 294 (D) 296

Q32 The number of electrons in Cl^- ion is

- (A) 19 (B) 20
- (C) 18 (D) 35

Q33 In the nucleus of ${}_{20}\text{Ca}^{40}$ there are

- (A) 40 protons and 20 electrons
- (B) 20 protons and 40 electrons
- (C) 20 protons and 20 neutrons
- (D) 20 protons and 40 neutrons

Q34 Nitrogen atom has an atomic number of 7 and oxygen has an atomic number 8. The total

number of electrons in a nitrate ion (NO_3^-) will be

- (A) 8 (B) 16
- (C) 32 (D) 64



Answer Key

Q1 (D)
Q2 (B)
Q3 (C)
Q4 (A)
Q5 (D)
Q6 (B)
Q7 (C)
Q8 (C)
Q9 (C)
Q10 (C)
Q11 (A)
Q12 (A)
Q13 (C)
Q14 (A)
Q15 (B)
Q16 (A)
Q17 (B)

Q18 (D)
Q19 (C)
Q20 (A)
Q21 (A)
Q22 (B)
Q23 (C)
Q24 (A)
Q25 (A)
Q26 (B)
Q27 (C)
Q28 (A)
Q29 (A)
Q30 (A)
Q31 (B)
Q32 (C)
Q33 (C)
Q34 (C)



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Physical Chemistry

DPP: 2

Some Basic Concepts of Chemistry

- Q1** The unit of intensity is
 (A) Mole
 (B) kg
 (C) Candela
 (D) Ampere
- Q2** A measured temperature on Fahrenheit scale is 300° . What will this reading be on Celsius scale?
 (A) 40°C
 (B) 94°C
 (C) 148.8°C
 (D) 30°C
- Q3** At what temperature are Celsius and Fahrenheit the same?
 (A) -30
 (B) 30
 (C) -40
 (D) 40
- Q4** Convert 15.15 pm to basic unit
 (A) $15.15 \times 10^{-13}\text{ m}$
 (B) $1.515 \times 10^{-12}\text{ m}$
 (C) $15.15 \times 10^{-12}\text{ m}$
 (D) $1.515 \times 10^{-13}\text{ m}$
- Q5** How many significant figures are in 0.0008?
 (A) 1
 (B) 2
 (C) 3
 (D) 4
- Q6** Round off 0.1525 upto three significant figures
 (A) 0.153
 (B) 0.152
 (C) 0.16
 (D) 0.15
- Q7** The multiple 5×0.2 after rounding off will be
 (A) 1
 (B) 1.0
 (C) 1.00
 (D) 1.000
- Q8** Add $(0.001 + 0.02)$ upto the correct number of significant figures
 (A) 0.021
 (B) 0.02
 (C) 0.003
 (D) 0.001
- Q9** One fermi is
 (A) 10^{-13} cm
 (B) 10^{-15} cm
 (C) 10^{-10} cm
 (D) 10^{-12} cm
- Q10** A picometre is written as
 (A) 10^{-9} m
 (B) 10^{-10} m
 (C) 10^{-11} m
 (D) 10^{-12} m
- Q11** Significant figures in 0.00051 are
 (A) 5
 (B) 3
 (C) 2
 (D) 4
- Q12** 1 m^3 is equal to
 (A) 100 litre
 (B) 10000 litre
 (C) 10 litre
 (D) 1000 litre
- Q13** Which state has maximum intermolecular force?
 (A) Solid
 (B) Liquid
 (C) Gas
 (D) Plasma
- Q14** The state of matter can be changed by varying
 (A) pressure
 (B) volume
 (C) mass
 (D) temperature



Answer Key

Q1 (C)

Q2 (C)

Q3 (C)

Q4 (C)

Q5 (A)

Q6 (B)

Q7 (A)

Q8 (B)

Q9 (A)

Q10 (D)

Q11 (C)

Q12 (D)

Q13 (A)

Q14 (D)



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Physical Chemistry

DPP: 3

Some Basic Concepts of Chemistry

- Q1** Vanadium metal is added to steel to impart strength. The density of vanadium is 5.96 g/cm^3 . Express this in the SI unit.
 (A) 5.96×10^3
 (B) 59.6×10^3
 (C) 596×10^3
 (D) 0.596×10^3
- Q2** Convert 30 cm^3 to dm^3 .
 (A) 0.03 (B) 0.003
 (C) 0.30 (D) 30
- Q3** 1 m^3 is equal to
 (A) 100 litre (B) 10000 litre
 (C) 10 litre (D) 1000 litre
- Q4** Mass of one atom of an element is $8 \times 10^{-24} \text{ g}$. This is equal to
 (A) 4.8u
 (B) 48u
 (C) 0.048u
 (D) 0.48u
- Q5** 1u is equal to
 (A) $1.66 \times 10^{-24} \text{ g}$
 (B) $1.66 \times 10^{-27} \text{ kg}$
 (C) $\frac{1}{N_A} \text{ g}$
 (D) All of these
- Q6** The weight of a molecule of the compound $\text{C}_6\text{H}_{12}\text{O}_6$ is about:
 (A) 180 g
 (B) $3 \times 10^{-22} \text{ g}$
 (C) $22 \times 10^{-22} \text{ g}$
 (D) 132 g
- Q7** What is the charge of 96 amu of S^{2-} ?
 (A) 2C
 (B) $3.2 \times 10^{-19} \text{ C}$
 (C) $9.6 \times 10^{-19} \text{ C}$
 (D) 6C
- Q8** Number of atoms present in 49 g of H_2SO_4 ?
 (A) $N_A/7$
 (B) $7N_A$
 (C) $7N_A/2$
 (D) $14N_A$
- Q9** Calculate number of oxygen atoms in 126 g of HNO_3 ?
 (A) $6 N_A$
 (B) $12 N_A$
 (C) $3 N_A$
 (D) $14 N_A$
- Q10** Calculate total number of electrons in 88 g of CO_2 ?
 (Gram atomic mass of C = 12g, O = 16g and atomic number of C=6, O=8)
 (A) N_A
 (B) $32 N_A$
 (C) $44 N_A$
 (D) $22 N_A$
- Q11** Calculate total number of valence electrons in 2.8 g of N^{3-} ion
 (A) $2.6 N_A$
 (B) $1.6 N_A$



- (C) $7.8 N_A$
 (D) $0.8 N_A$

Q12 Calculate weight occupied by 12.04×10^{24} molecules of N_2 (g) ?

- (A) 280 g
 (B) 560 g
 (C) 112 g
 (D) 200 g

Q13 Calculate charge on 1.6 g of O^{2-} ion?

- (A) $3.2 \times 10^{-19} C \times N_A$
 (B) $3.2 \times 10^{-20} C \times N_A$
 (C) $3.2 \times 10^{-18} C \times N_A$
 (D) $0.032 \times 10^{-19} C \times N_A$

Q14 The number of atoms present in 16 g of oxygen gas is: (Gram atomic mass of O = 16 g)

- (A) $6.02 \times 10^{11.5}$
 (B) 3.01×10^{23}
 (C) $3.01 \times 10^{11.5}$
 (D) 6.02×10^{23}

Q15 Number of atoms in 560 g of Fe (atomic mass 56 g mol^{-1}) is

- (A) Twice that of 70 g N_2
 (B) Half that of 20 g H_2
 (C) Both are correct
 (D) None of these

Q16 How many H-atoms are present in 0.046 g of ethanol?

- (A) 6×10^{20}
 (B) 1.2×10^{21}
 (C) 3×10^{21}
 (D) 3.6×10^{21}

Q17 Number of atoms of oxygen present in 10.6 g of Na_2CO_3 will be

- (A) 6.02×10^{23}
 (B) 12.04×10^{22}

- (C) 1.806×10^{23}
 (D) 31.80×10^{28}

Q18 The number of water molecules in 1 L of water is

- (A) 18
 (B) 18×1000
 (C) N_A
 (D) $55.55 N_A$

Q19 The least number of molecules are contained in:

- (A) 2 g hydrogen
 (B) 8 g oxygen
 (C) 4 g nitrogen
 (D) 16 g CO_2

Q20 Find mass of 18.066×10^{23} molecules of NH_3 ?
 (If atomic mass of N and H are 14 and 1)

- (A) 51 g
 (B) 34 g
 (C) 17 g
 (D) None of these

Q21 Find mass of CO_2 which have same molecules as present in 68 g of NH_3 ?

- (A) 88 g
 (B) 176 g
 (C) 44 g
 (D) 132 g

Q22 The number of atoms in 4.25 g of NH_3 is approximately

- (A) 6×10^{23}
 (B) 2×10^{23}
 (C) 1.5×10^{23}
 (D) 1×10^{23}

Q23 Find total number of neutrons in 56 g of CO ? If $^{12}_6C$ and $^{16}_8O$ if Avogadro's No. = N_A

- (A) $28 N_A$
 (B) $22 N_A$
 (C) $11 N_A$



(D) None of these

Q24 1amu is equal to

(A) $\frac{1}{12}$ of C – 12

(B) $\frac{1}{14}$ of O – 16

(C) 1 g of H₂

(D) 1.66×10^{-23} kg



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Answer Key

Q1 (A)

Q2 (A)

Q3 (D)

Q4 (A)

Q5 (D)

Q6 (B)

Q7 (C)

Q8 (C)

Q9 (A)

Q10 (C)

Q11 (B)

Q12 (B)

Q13 (B)

Q14 (D)

Q15 (C)

Q16 (D)

Q17 (C)

Q18 (D)

Q19 (C)

Q20 (A)

Q21 (B)

Q22 (A)

Q23 (A)

Q24 (A)



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Physical Chemistry

DPP: 4

Some Basic Concepts of Chemistry

- Q1** 1 mole of atom X has mass, 0.444 times the mass of 1 mole of atom Y. Atomic mass of X is 2.96 times the mass of one atom of C — 12. What is the atomic weight of Y.
 (A) 15.77amu
 (B) 80amu
 (C) 46.66amu
 (D) 40amu
- Q2** 16 g of oxygen has same number of molecules as in
 (A) 16 g of CO
 (B) 28 g of N₂
 (C) 24 g of C₂
 (D) 1.0 g of H₂
- Q3** The number of molecules in 89.6 liters of a gas at NTP are
 (A) 6.02×10^{23}
 (B) $2 \times 6.02 \times 10^{23}$
 (C) $3 \times 6.02 \times 10^{23}$
 (D) $4 \times 6.02 \times 10^{23}$
- Q4** Aspirin has the formula C₉H₈O₄. How many atoms of oxygen are there in a tablet weighing 360mg ?
 (A) 1.204×10^{23}
 (B) 1.08×10^{22}
 (C) 1.204×10^{24}
 (D) 4.81×10^{21}
- Q5** The volume occupied by 4.4 g of CO₂ at STP is
 (A) 22.4 L
 (B) 2.24 L
 (C) 0.224 L
 (D) 0.1 L
- Q6** 44.8 L of SO₂ (g) weigh how much gram at STP ?
 (A) 128 g
 (B) 95 g
 (C) 24 g
 (D) 50 g
- Q7** 11.2 L of O₃ (g) contains how many numbers of molecules?
 (A) N_A molecules
 (B) N_A/2 molecules
 (C) 2 N_A molecules
 (D) 3 N_A molecules
- Q8** The volume occupied by one molecule of water (density 1 g cm⁻³) is:
 (A) 18 cm³
 (B) 22400 cm³.
 (C) 6.023×10^{-23} cm³
 (D) 3.0×10^{-23} cm³
- Q9** Find volume of CO₂ (g) at STP if it weighs 88 g ? (Atomic mass of C and O are 12 g and 32 g)
 (A) 44.8 L
 (B) 67.2 L
 (C) 22.4 L
 (D) 89.6 L
- Q10** Which sample contains the largest number of atoms?



- (A) 1mg of C_4H_{10}
 (B) 1mg of N_2
 (C) 1mg of Na
 (D) 1 mL of water

Q11 5.6 litre of oxygen gas at STP contains

- (A) 6.02×10^{23} atoms
 (B) 3.01×10^{23} atoms
 (C) 1.505×10^{23} atoms
 (D) 0.7525×10^{23} atoms

Q12 Which one of the following pairs of gases contains the same number of molecules

- (A) 16 g of O_2 and 14 g of N_2
 (B) 8g of O_2 and 22 g of CO_2
 (C) 28 g of N_2 and 22 g of CO_2
 (D) 32 g of O_2 and 32 g of N_2

Q13 The number of water molecules present in a drop of water (volume 0.0018 ml) at room temperature is

- (A) 6.023×10^{19}
 (B) 1.084×10^{18}
 (C) 4.84×10^{17}
 (D) 6.023×10^{23}

Q14 Gram molecular mass of H_2S is (Gram atomic mass of S = 32 g and H = 1 g)

- (A) 34 g
 (B) 32 g
 (C) 34u
 (D) 32u

Q15 3.011×10^{22} atoms of an element weighs 1.15gm. The atomic mass of the element is:

- (A) 10amu
 (B) 2.3amu
 (C) 35.5amu
 (D) 23amu

Q16

If the atomic mass of Sodium is 23, the number of moles in 46 g of sodium is

- (A) 1
 (B) 2
 (C) 2.3
 (D) 4.6

Q17 Which one of the following is the lightest?

- (A) 0.2 mole of hydrogen gas
 (B) 6.023×10^{22} molecules of nitrogen
 (C) 0.1 g of silver
 (D) 0.1 mole of oxygen gas

Q18 The number of mol of N-atom in 18.066×10^{23} nitrogen atoms is

- (A) 1 mol
 (B) 2 mol
 (C) 3 mol
 (D) 4 mol

Q19 What weight in grams is represented by 1.5 moles of Sulphur dioxide?

- (A) 60 g
 (B) 74 g
 (C) 96 g
 (D) 91 g

Q20 The number of atoms in 20 g of SO_3 is approximately

- (A) 1×10^{23}
 (B) 1.5×10^{23}
 (C) 2×10^{23}
 (D) 6×10^{23}

Q21 Calculate total number of electrons and protons in 32 g of SO_2

- (A) $32 N_A$
 (B) $64 N_A$
 (C) $16 N_A$
 (D) $8 N_A$

Q22 Maximum number of moles are present in

- (A) 49 g of H_2SO_4
 (B) 63 g of HNO_3
 (C) 8.8 g of CO_2



(D) 192 g of SO_4^{2-}

Q23 Calculate the minimum number of moles in which option?

- (A) 18.06×10^{23} atom of C
- (B) 12.04×10^{23} ions of SO_4^{2-}
- (C) 24.08×10^{23} ions of SO_4^{2-}
- (D) 3.01×10^{23} molecules of O_3

Q24 NH_3 contains 12 moles of hydrogen. Calculate moles of nitrogen present in it

- (A) 12 moles
- (B) 3 moles
- (C) 4 moles
- (D) 5 moles

Q25 $\text{K}_4[\text{Fe}(\text{CN})_6]$ contains 2 moles. Calculate number of moles of nitrogen in it?

- (A) 6 moles
- (B) 12 moles
- (C) 3 moles
- (D) 9 moles

Q26 One mole electron means:

- (A) N_A electrons
- (B) 6.023×10^{23} electrons
- (C) 0.55mg electrons
- (D) All of these

Q27 Mass of 0.1 mole of methane is

- (A) 1 g
- (B) 16 g
- (C) 1.6 g
- (D) 0.1 g

Q28 Find total number of electrons in 51 g of NH_3 ?

If ${}^{14}_7\text{N}$ and ${}^1_1\text{H}$ if Avogadro's No. = N_A

- (A) $20 N_A$
- (B) $30 N_A$
- (C) $10 N_A$
- (D) $5 N_A$



Answer Key

Q1 (B)
Q2 (D)
Q3 (D)
Q4 (D)
Q5 (B)
Q6 (A)
Q7 (B)
Q8 (D)
Q9 (A)
Q10 (D)
Q11 (B)
Q12 (A)
Q13 (A)
Q14 (A)

Q15 (D)
Q16 (B)
Q17 (C)
Q18 (C)
Q19 (C)
Q20 (D)
Q21 (A)
Q22 (D)
Q23 (D)
Q24 (C)
Q25 (B)
Q26 (D)
Q27 (C)
Q28 (B)



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Physical Chemistry

DPP: 5

Some Basic Concepts of Chemistry

- Q1** The law of conservation of mass is valid for all the following, except
(A) All chemical reactions
(B) Nuclear reactions
(C) Endothermic reactions
(D) Exothermic reactions
- Q2** After a chemical reaction, the total mass of reactants and products
(A) Is always increased
(B) Is always decreased
(C) Is not changed
(D) Is always less or more
- Q3** Which of the following is the best example of law of conservation of mass
(A) 12 g of carbon combines with 32 g of oxygen to form 44 g of CO_2
(B) When 12 g of carbon is heated in a vacuum there is no change in mass
(C) A sample of air increases in volume when heated at constant pressure but its mass remains unaltered
(D) The weight of a piece of platinum is the same before and after heating in air
- Q4** A sample of pure carbon dioxide, irrespective of its source contains 27.27% carbon and 72.73% oxygen. The data support
(A) Law of constant composition
(B) Law of conservation of mass
(C) Law of reciprocal proportions
(D) Law of multiple proportions
- Q5** n g of substance X reacts with m g of substance Y to form p g of substance R and q g of substance S . This reaction can be represented as $X + Y = R + S$. The relation which can be established in the amounts of the reactants and the products will be
(A) $n - m = p - q$
(B) $n + m = p + q$
(C) $n = m$
(D) $p = q$
- Q6** Chemical equation is balanced according to the law of
(A) Multiple proportion
(B) Reciprocal proportion
(C) Conservation of mass
(D) Definite proportions
- Q7** The percentage of hydrogen in water and hydrogen peroxide is 11.1 and 5.9 respectively. These figures illustrate
(A) Law of multiple proportions
(B) Law of conservation of mass
(C) Law of constant proportions
(D) Law of combining volumes
- Q8** The percentage of copper and oxygen in samples of CuO obtained by different methods were found to be the same. This illustrates the law of
(A) Constant proportions
(B) Conservation of mass
(C) Multiple proportions
(D) Reciprocal proportions
- Q9** How A sample of calcium carbonate (CaCO_3) has the following percentage composition: $\text{Ca} = 40\%$; $\text{C} = 12\%$; $\text{O} = 48\%$
If the law of constant proportions is true, then the weight of calcium in 4g of a sample of calcium carbonate obtained from another source will be
(A) 0.016 g
(B) 0.16 g



- (C) 1.6 g
(D) 16 g
- Q10** Cu forms two oxides cuprous and cupric oxides, which law can be proved by the weights of Cu and O ?
(A) Constant composition
(B) Multiple proportions
(C) Reciprocal proportions
(D) Definite proportions
- Q11** Which of the following pairs of compound illustrate law of multiple proportions?
(A) KOH, CsOH
(B) H₂O, D₂O
(C) Ethane, benzene
(D) KCl, KBr
- Q12** Element X forms five stable oxides with oxygen of formula X₂O, XO, X₂O₃, X₂O₄, X₂O₅. The formation of these oxides explains
(A) Law of definite proportions
(B) Law of partial pressures
(C) Law of multiple proportions
(D) Law of reciprocal proportions
- Q13** The statement, '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 the ratio of small whole numbers' is in accordance with;
(A) Avogadro's law
(B) Law of constant proportions
(C) Law of multiple proportions
(D) Law of conservation of mass
- Q14** Different proportions of oxygen in the various oxides of nitrogen prove the
(A) Equivalent proportion
(B) Multiple proportion
(C) Constant proportion
(D) Conservation of matter
- Q15** Among the following pairs of compounds, the one that illustrates the law of multiple proportions is
(A) NH₃ and NCl₃
(B) H₂S and SO₂
(C) CuO and Cu₂O
(D) CS₂ and FeSO₄
- Q16** Which of the following pairs of substances illustrate the law of multiple proportions
(A) CO and CO₂
(B) H₂O and D₂O
(C) NaCl and NaBr
(D) MgO and Mg(OH)₂
- Q17** 1.0 g of an oxide of A contained 0.5 g of A. 4.0 g of another oxide of A contained 1.6 g of A. The data indicate the law of
(A) Reciprocal proportions
(B) Constant proportions
(C) Conservation of energy
(D) Multiple proportions
- Q18** 2 g of hydrogen combine with 16 g of oxygen to form water and with 6 g of carbon to form methane. In carbon dioxide 12 g of carbon are combined with 32 g of oxygen. These figures illustrate the law of
(A) Multiple proportions
(B) Constant proportions
(C) Reciprocal proportions
(D) Conservation of mass
- Q19** Equal volume of different gases at any definite temperature and pressure have
(A) Equal atoms
(B) Equal masses
(C) Equal densities
(D) Equal molecules
- Q20** Gay Lussac's law is not valid in the chemical reaction:
(A) H₂(g) + Cl₂(g) → 2HCl(g)
(B) 3H₂(g) + N₂(g) → 2NH₃(g)
(C) 2SO₂(g) + O₂(g) → 2SO₃(g)
(D) CaCO₃(s) $\xrightarrow{\Delta}$ CaO(s) + CO₂(g)
- Q21** Which of the following represents Avogadro's hypothesis?



- (A) Gases react together in volumes which bear a simple ratio to one another
- (B) Equal volumes of all gases under same conditions of temperature and pressure contain equal number of molecules
- (C)

- Equal volumes of all gases under same conditions of temperature and pressure contain equal number of atoms
- (D) The rates of diffusion of gases are inversely proportional to the square root of their densities



Answer Key

Q1 (B)
Q2 (C)
Q3 (A)
Q4 (A)
Q5 (B)
Q6 (C)
Q7 (A)
Q8 (A)
Q9 (C)
Q10 (B)
Q11 (C)

Q12 (C)
Q13 (C)
Q14 (B)
Q15 (C)
Q16 (A)
Q17 (D)
Q18 (C)
Q19 (D)
Q20 (D)
Q21 (B)



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Physical Chemistry

DPP: 6

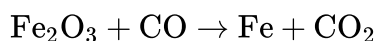
Some Basic Concepts of Chemistry

- Q1** When 200 g of lime stone is strongly heated, it undergoes thermal decomposition to form 112 g of lime an unknown mass of carbon dioxide gas as $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$ What will be the mass of CO_2 formed?
 (A) 88 g
 (B) 24 g
 (C) 64 g
 (D) 40 g
- Q2** The volume CO_2 gas evolved at STP on heating 50 g CaCO_3 : (Gram atomic mass of Ca = 40 g, C = 12 g and O = 16 g)
 $\text{CaCO}_3(\text{s}) \xrightarrow{\Delta} \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$
 (A) 11.2 litre (B) 22.4 litre
 (C) 5.6 litre (D) 24.4 litre
- Q3** According to the following reaction the minimum quantity in g of H_2S needed to precipitate 63.5gm of Cu^{2+} ions will be nearly?
 $\text{Cu}^{+2} + \text{H}_2\text{S} \rightarrow \text{CuS} + 2\text{H}^+$
 (A) 63.5 g
 (B) 31.75g
 (C) 34g
 (D) 20g
- Q4** A quantity of 2.76 g of silver carbonate on being strongly heated yields a residue(Solid/liquid) weighing Gramatomicmassof(Ag = 108), C=12g and O=16 g)
 $\text{Ag}_2\text{CO}_3(\text{s}) \xrightarrow{\Delta} 2\text{Ag}(\text{s}) + \text{CO}_2(\text{g}) + \frac{1}{2}\text{O}_2(\text{g})$
 (A) 2.16 g
 (B) 2.48 g
 (C) 2.32 g
 (D) 2.64 g
- Q5** How many grams of H_2 are required to consume 2 mol of CO ?
 (Gram atomic mass of H = 1 g, C = 12 g and O = 16 g)
 $\text{CO}(\text{g}) + 2\text{H}_2(\text{g}) \rightarrow \text{CH}_3\text{OH}(\text{g})$
 (A) 2 g
 (B) 4 g
 (C) 8g
 (D) 16 g
- Q6** The volume of O_2 at STP required for the complete combustion of 4g CH_4 is
 (A) 5.6 litre (B) 2.88 litre
 (C) 22.4 litre (D) 11.2 litre
- Q7** What is the weight of oxygen required for the complete combustion of 2.8 kg of ethylene?
 (A) 2.8 kg
 (B) 6.4 kg
 (C) 9.6 kg
 (D) 96 kg
- Q8** When a certain amount of octane, C_8H_{18} , is burnt completely, 7.04 g CO_2 is formed. What is the mass of H_2O formed simultaneously?
 (A) 1.62 g (B) 6.48 g
 (C) 3.24 g (D) 2.28 g
- Q9** The amount of zinc required to produce 224 mL of H_2 at STP on treatment with dilute H_2SO_4 will be
 (Gram atomic mass of H = 1 g, O = 16 g, S = 32 g, and Zn = 65 g)
 $\text{Zn}(\text{s}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{H}_2(\text{g})$
 (A) 65 g
 (B) 0.065 g
 (C) 0.65 g



(D) 6.5 g

- Q10** What volume at STP of CO is required to reduce one mole of Fe_2O_3 in the following reaction

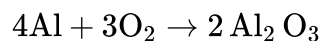


(Gram atomic mass of C = 12 g, O = 16 g, and Fe = 56 g)

- (A) 11200 cm^3
 (B) 22400 cm^3
 (C) 67200 cm^3
 (D) 33600 cm^3
- Q11** Calculate the mass of hydrogen formed when 27 g of aluminum reacts with excess hydrochloric acid according to the balanced equation below.
 $2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2$.
 (Gram atomic mass of Al = 27g, H = 1g and Cl = 35.5 g)
 (A) 1.5 g
 (B) 2.0 g
 (C) 3.0 g
 (D) 6.0 g
- Q12** The volume of oxygen required for complete combustion of 20 ml of ethene is;
 $\text{C}_2\text{H}_4(\text{aq}) + 3\text{O}_2(\text{g}) \rightarrow 2\text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{l})$
 (Gram atomic mass of C = 12g, H = 1g and O = 16g)
 (A) 30mL
 (B) 60mL
 (C) 40mL
 (D) 50mL
- Q13** The volume of gas at STP produced by 100 g of CaC_2 with water.
 $\text{CaC}_2(\text{s}) + 2\text{H}_2\text{O}(\text{l}) \rightarrow \text{C}_2\text{H}_2(\text{g}) + \text{Ca}(\text{OH})_2(\text{aq})$
 (Gram atomic mass of Ca = 40g, C=12g, H=1g and O= 16g)
 (A) 70 litre (B) 35 litre
 (C) 17.5 litre (D) 22.4 litre

Q14

If 1/2 moles of oxygen combine with aluminium to form Al_2O_3 then weight of Aluminium metal used in the reaction is (Al = 27g, O = 16g).



- (A) 27 g
 (B) 18 g
 (C) 54 g
 (D) 40.5 g

- Q15** The weight of lime obtained by heating 200 kg of 95% pure lime stone is

- (A) 98.4 kg
 (B) 106.4 kg
 (C) 112.8 kg
 (D) 122.6 kg

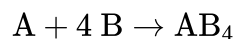
- Q16** In metal oxide, metal is 53% & vapour density of MCl is 66. Then find atomic mass of metal :

- (A) 9 (B) 3
 (C) 18 (D) 27

- Q17** Myoglobin stores oxygen for metabolic process in muscle. Chemical analysis shows that it contains 0.32% Fe by mass. If there is one Fe atom per molecule of myoglobin, what is the molar mass of myoglobin? [At. Mass of Fe = 56u]

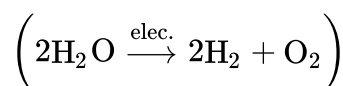
- (A) 1.75×10^4 g/mol
 (B) 3.5×10^5 g/mol
 (C) 1×10^4 g/mol
 (D) 2.5×10^5 g/mol

- Q18** The number of moles of 'B' required to produce 2.5 mole of AB_4 according to equation:



- (A) 1 (B) 10
 (C) 5 (D) 15

- Q19** The number of moles of oxygen obtained by the electrolytic decomposition of 90 g water is



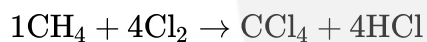
- (A) 2.5 (B) 5
 (C) 7.5 (D) 10



- Q20** The equation $2\text{Al(s)} + \frac{3}{2}\text{O}_2 \longrightarrow \text{Al}_2\text{O}_3 \text{ (s)}$ shows that
- (A) 2 moles of aluminium react with $\frac{3}{2}$ moles of oxygen to produce one mole of aluminium oxide
 - (B) 2 atoms of aluminium react with $\frac{3}{2}$ atoms of oxygen to produce one atom of aluminium oxide
 - (C) 2 g of aluminium react with $\frac{3}{2}$ g of oxygen to produce 1 g of aluminium oxide
 - (D) 2 g of aluminium react with $\frac{3}{2}$ litres of oxygen to produce 1 g of aluminium oxide

- Q21** Write a balanced equation for the combustion of propane, C_3H_8 . When balanced, the equation indicates that moles of O_2 are required for each mole of C_3H_8 .
- (A) 1.5
 - (B) 3
 - (C) 35
 - (D) 5

- Q22** Find maximum moles of CCl_4 formed when 10 moles of CH_4 undergoes chlorination with excess of chlorine:



- (A) 2 moles
- (B) 5 moles
- (C) 8 moles
- (D) 10 moles



Answer Key

Q1 (A)

Q2 (A)

Q3 (C)

Q4 (A)

Q5 (C)

Q6 (D)

Q7 (C)

Q8 (C)

Q9 (C)

Q10 (C)

Q11 (C)

Q12 (B)

Q13 (B)

Q14 (B)

Q15 (B)

Q16 (D)

Q17 (A)

Q18 (B)

Q19 (A)

Q20 (A)

Q21 (D)

Q22 (D)



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Physical Chemistry

Some Basic Concepts of Chemistry

DPP 07

- Q1** How many grams of calcium oxide is obtained on heating 100 g of CaCO_3 (s) ?
 (A) 50 g
 (B) 40 g
 (C) 56 g
 (D) 44 g
- Q2** What is the maximum amount of nitrogen dioxide that can be produced by mixing 4.2g of NO(g) and 3.2g of O_2 (g)?
 (A) 4.60g
 (B) 2.30g
 (C) 3.22g
 (D) 6.44g
- Q3** What is the mass of glucose required to produce 44 g of CO_2 on complete combustion?
 (A) 30 g
 (B) 45 g
 (C) 60 g
 (D) 22 g
- Q4** 12 moles of each A & B are allowed to react as given:
 $3\text{A} + 2\text{B} \rightarrow \text{C} + \frac{1}{2}\text{D}$. If 60 g of D is produced then calculate the atomic mass of D.
 (A) 30 (B) 45
 (C) 60 (D) 15
- Q5** 1.0 g magnesium is burnt with 0.56 g of O_2 in a closed vessel. Which reactant is left in excess and how much?
 (At. wt. Mg = 24, O = 16)
 (A) Mg, 0.16 g
 (B) O_2 , 0.16 g
 (C) Mg, 0.44 g
 (D) O_2 , 0.28 g
- Q6**
- The mass of Mg_3N_2 produced if 48 gm of Mg metal is reacted with 34 gm NH_3 gas is
 $\text{Mg} + \text{NH}_3 \rightarrow \text{Mg}_3\text{N}_2 + \text{H}_2$
 (A) $\frac{200}{3}$ gm
 (B) $\frac{100}{3}$ gm
 (C) $\frac{400}{3}$ gm
 (D) $\frac{150}{3}$ gm
- Q7** The mass of P_4O_{10} produced if 440 gm of P_4S_3 is mixed with 384 gm of O_2 is:
 $\text{P}_4\text{S}_3 + \text{O}_2 \rightarrow \text{P}_4\text{O}_{10} + \text{SO}_2$
 (A) 568gm
 (B) 426gm
 (C) 284gm
 (D) 369gm
- Q8** What is the total mass of products formed when 16 grams of CH_4 is burned with excess oxygen?
 (A) 32 g
 (B) 36 g
 (C) 44 g
 (D) 80 g
- Q9** Which of the following contains the greatest number of atoms?
 (A) 1.0 g of butane (C_4H_{10})
 (B) 1.0 g of nitrogen (N_2)
 (C) 1.0 g of silver (Ag)
 (D) 1.0 g of water (H_2O)
- Q10** The total number of g-molecules of SO_2Cl_2 in 13.5 g of sulphuryl chloride is
 (A) 0.1 (B) 0.2
 (C) 0.3 (D) 0.5
- Q11** Number of atoms in 560 g of Fe (atomic mass 56 g mol^{-1}) is
 (A) Twice that of 70g N
 (B) Half that of 20g H



- (C) Both (A) and (B)
- (D) None of these

Q12 What weight in grams is represented by 1.5 moles of Sulphur dioxide?

- (A) 60 g
- (B) 74 g
- (C) 96 g
- (D) 91 g



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Answer Key

Q1 (C)

Q2 (D)

Q3 (A)

Q4 (A)

Q5 (A)

Q6 (A)

Q7 (B)

Q8 (D)

Q9 (A)

Q10 (A)

Q11 (C)

Q12 (C)



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Physical Chemistry

DPP: 8

Some Basic Concepts of Chemistry

- Q1** $\text{Na}_2\text{SO}_4 \cdot x\text{H}_2\text{O}$ has 50% H_2O by mass. Hence, x is
 (A) 4 (B) 5
 (C) 6 (D) 8
- Q2** Calculate the volume by volume percentage of a solution of 15 mL of alcohol in 60 mL of water.
 (A) 20 (B) 25
 (C) 30 (D) 50
- Q3** Rashida dissolved 40 g of sugar in 600 mL of sugar solution. Calculate the mass by volume percentage.
 (A) 66.6 (B) 70
 (C) 6.66 (D) 50
- Q4** A solution is prepared by adding 5 g of a substance x to 18 g of water. Calculate the mass percentage of the solute.
 (A) 21.74% (B) 19%
 (C) 25% (D) 40%
- Q5** What is conc. in ppm if 0.025g of KCl is dissolved in 100 grams of water?
 (A) 25ppm
 (B) 250ppm
 (C) 2.5ppm
 (D) 0.25ppm
- Q6** Which of the following is correct?
 (A) The sum of mole fractions of all the components in a solution is always unity
 (B) Mole fraction depends upon temperature
 (C) Mole fraction is always negative
 (D) Mole fraction is independent of content of solute in solution.
- Q7** A solution is prepared by adding 360 g of glucose to 864 g of water. Calculate mole fraction of glucose (molar mass of glucose = 180)
 (A) 0.02 (B) 0.04
 (C) 0.5 (D) 10.2
- Q8** A 500gm toothpaste sample has 0.2 g fluoride concentration. The conc. of fluoride ions in terms of ppm.
 (A) 25 (B) 250
 (C) 400 (D) 40
- Q9** Given, 5×10^{-3} kg of urea of dissolved in 2×10^{-3} kg of water. Calculate the percent by mass of urea.
 (A) 90% (B) 71.42%
 (C) 70% (D) 80%
- Q10** 3.42 g of a substance of molecular weight 342 g is present in 250 g of water. Molality of this solution is
 (A) 0.04 m
 (B) 0.4 m
 (C) 4.0 m
 (D) 0.8 m
- Q11** Calculate the concentration in terms of mass by volume percentage of the solution containing, 2.5 g potassium chloride in 50 ml of potassium chloride (KCl) solution?
 (A) 25% (B) 20%
 (C) 5% (D) None of these
- Q12** What is the volume percentage of a solution formed by dissolving 75.0 mL of a solute into 155.0 mL of a solvent?
 (A) 4.84% (B) 48.4%
 (C) 32.6% (D) 3.26%
- Q13**



The number of moles of solute per kg of a solvent is called its

- (A) Molarity (B) Normality
(C) Molar fraction (D) Molality

Q14 When W_B gm solute (molecular mass M_B) dissolves in W_A gm solvent. The molality m of the solution is

- (A) $\frac{W_B}{W_A} \times \frac{M_B}{1000}$
(B) $\frac{W_B}{M_B} \times \frac{1000}{W_A}$
(C) $\frac{W_A}{W_B} \times \frac{1000}{M_B}$
(D) $\frac{W_A \times M_B}{W_B \times 1000}$



Answer Key

Q1 (D)

Q2 (A)

Q3 (C)

Q4 (A)

Q5 (B)

Q6 (A)

Q7 (B)

Q8 (C)

Q9 (B)

Q10 (A)

Q11 (C)

Q12 (C)

Q13 (D)

Q14 (B)



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Physical Chemistry

DPP: 9

Some Basic Concepts of Chemistry

- Q1** An aqueous solution of glucose is 10% (w/v). The volume in which 1 mole of glucose is dissolved will be
 (A) 18 L
 (B) 9 L
 (C) 0.9 L
 (D) 1.8 L
- Q2** Calculate the concentration in terms of mass by volume percentage of the solution containing, 2.5 g potassium chloride in 50 ml of potassium chloride (KCl) solution?
 (A) 25% (B) 20%
 (C) 5% (D) None of these
- Q3** A solution is prepared by adding 360 g of glucose to 864 g of water. Calculate mole fraction of glucose (molar mass of glucose = 180)
 (A) 0.02 (B) 0.04
 (C) 0.5 (D) 10.2
- Q4** What is the quantity of water that should be added to 16 g methanol to make the mole fraction of methanol as 0.25? (Gram atomic mass of C = 12 g, O = 16 g, H = 1 g)
 (A) 27 g (B) 12 g
 (C) 18 g (D) 36 g
- Q5** Mole fraction of the solute in a 1.00 molal aqueous solution is
 (A) 0.1770 (B) 0.0177
 (C) 0.0344 (D) 1.7700
- Q6** Which of the following statement(s) is/are true?
 a. Molarity is the number of moles of solute dissolved per litre of solution.
 b. Molarity is temperature independent concentration term.
 c. Molality of a solution is defined as the number of moles of solute dissolved in 1000 g of solution.
 d. The ratio of mole fractions of solute and solvent is in the ratio of their respective moles.
 (A) a and c only (B) a and d only
 (C) b and c only (D) a only
- Q7** **Statement-I:** Molality and mole fraction are not affected by temperature.
Statement-II: Molality (m) = $\frac{W}{GMM} \times \frac{1}{b(Kg)}$
 (where, b = mass of solvent).
 (A) Both Statement-I and Statement-II are correct.
 (B) Both Statement-I and Statement-II are incorrect.
 (C) Statement-I is correct and Statement-II is incorrect.
 (D) Statement-I is incorrect and Statement-II is correct.
- Q8** Assertion (A): Molality and mole fraction concentration units do not change with temperature.
 Reason (R) : These units are not defined in terms of any volume.
 (A) If both Assertion (A) and Reason (R) are True and the Reason (R) is a correct explanation of the Assertion (A).
 (B) If both Assertion (A) and Reason (R) are True but Reason (R) is not a correct explanation of the Assertion (A).
 (C) If Assertion (A) is True but the Reason (R) is False.
 (D) Assertion (A) is False but Reason (R) is True.
- Q9** A solution contains one mole of alcohol and four moles of water. What are the mole fractions of



water and alcohol?

- (A) $1/4, 4/1$
 (B) $4/1, 1/4$
 (C) $4/5, 1/5$
 (D) $1/5, 4/5$

Q10 In a flask at a certain temperature there are 2g H_2 and 8g O_2 . The mole fraction of O_2 in the given mixture is:

- (A) $8/5$
 (B) 0.2
 (C) 0.25
 (D) 1.0

Q11 Assertion (A): The weight percentage of compound A in a solution is given by

$$\% \text{ of } A = \frac{\text{Mass } A}{\text{Total mass of solution}} \times 100$$

Reason (R): The mole fraction of component A is given by,

Mole fraction of A

$$= \frac{\text{No. of moles of A}}{\text{Total no. of moles of all components}}$$

(A) If both Assertion (A) and Reason (R) are True and the Reason (R) is a correct explanation of the Assertion (A).

(B) If both Assertion (A) and Reason (R) are True but Reason (R) is not a correct explanation of the Assertion (A).

(C) If Assertion (A) is True but the Reason (R) is False.

(D) Assertion (A) is False but Reason (R) is True.

Q12 Which of the following terms are unitless?

- (A) Molality (B) Molarity
 (C) Mole fraction (D) Mass percent

Q13 What volume of a 0.8M solution contains 100 millimoles of the solute

- (A) 100 mL
 (B) 125 mL
 (C) 500 mL
 (D) 62.5 mL

Q14

For preparing 0.1M solution of H_2SO_4 in one litre, we need H_2SO_4

- (A) 0.98 g
 (B) 4.9 g
 (C) 49.0 g
 (D) 9.8 g

Q15 How many moles of HCl are present in 1 litre of 1M HCl solution?

- (A) 2 mole (B) 3 mole
 (C) 1 mole (D) 5 mole

Q16 1.26 g of hydrated oxalic acid was dissolved in water to prepare 250ml of solution. Calculate molarity of solution.

- (A) 0.04M
 (B) 0.02M
 (C) 0.01M
 (D) 0.50M

Q17 6.025×10^{20} molecules of acetic acid are present in 500ml of its solution.

The concentration of solution is

- (A) 0.002M
 (B) 10.2M
 (C) 0.012M
 (D) 0.001M

Q18 8 g NaOH is dissolved in one litre of solution, its molarity is (Gram atomic mass of Na = 23 g, O = 16 g, H = 1 g)

- (A) 0.8M
 (B) 0.4M
 (C) 0.2M
 (D) 0.1M

Q19 If 1.8 g glucose is present in 200 mL of solution. Calculate molarity.

- (A) 0.05M
 (B) 1.0M
 (C) 2.0M
 (D) 0.25M

Q20 The molarity of pure water is:

- (A) 100 M (B) 55.6M
 (C) 50 M (D) 18 M



- Q21** What is the molarity of NaOH solution if 250 mL of it contains 1mg of NaOH ?
 (A) 10^{-1} M
 (B) 10^{-2} M
 (C) 10^{-4} M
 (D) 10^{-3} M
- Q22** 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
- Q23** H_2O_2 is sold as a solution of approximately 5.0 g H_2O_2 per 100 mL of the solution. The molarity of this solution is approximately:
 (A) 0.15 M
 (B) 1.5 M
 (C) 3.0 M
 (D) 3.4 M
- Q24** Dissolving 120 g of urea (mol. wt. 60) in 1000 g of water gave a solution of density 1.15 g/mL . The molarity of the solution is
 (A) 1.78 M
 (B) 2.00 M
 (C) 2.05 M
 (D) 2.22 M
- Q25** The concentration of $CaCl_2$ solution is 0.5 mole L^{-1} . The moles of $CaCl_2$ in 500 mL in the solution is
 (A) 0.25
 (B) 0.45
 (C) 0.3
 (D) 0.5
- Q26** Suppose 5 g of acetic acid are dissolved in one liter of ethanol. Assume no reaction in between them. Calculate the molality of resulting solution if density of ethanol is 0.789 g/mL ?
 (A) 0.1056
 (B) 0.056
 (C) 0.156
 (D) 0.16
- Q27** A molal solution is one that contains one mole of a solute in:
 (A) 1000g of the solvent
 (B) one litre of the solvent
 (C) one litre of the solution
 (D) 22.4 litres of the solution
- Q28** The density (in g mL^{-1}) of a 3.60 M sulphuric acid solution that is 29% (H_2SO_4 molar mass = 98 g mol^{-1}) by mass will be :
 (A) 1.22
 (B) 1.45
 (C) 1.64
 (D) 1.88
- Q29** Concentrated aqueous sulphuric acid is 98% H_2SO_4 (w/v) and has a density of 1.80 g mL^{-1} . Molarity of solution
 (A) 1M
 (B) 1.8M
 (C) 10M
 (D) 1.5M
- Q30** Mole fraction of A in H_2O is 0.2. The molality of A in H_2O is:
 (A) 13.8
 (B) 15.5
 (C) 14.5
 (D) 16.8
- Q31** The molarity of the solution containing 2.8% mass-volume solution of KOH is (Gram atomic mass of K = 39 g, O = 16 g, H = 1 g)
 (A) M/10
 (B) M/2
 (C) M/5
 (D) 1M
- Q32** The mole fraction of a given sample of I_2 in C_6H_6 is 0.2. The molality of I_2 in C_6H_6 is-
 (A) 0.32
 (B) 3.2
 (C) 0.032
 (D) 0.48
- Q33** What is the mole fraction of solvent in aqueous solution of NaOH having molality equal to 3?
 (A) 0.5
 (B) 0.95
 (C) 0.7
 (D) 0.05
- Q34** Where M_A , M_B are molar masses, n_A , n_B are no of moles & X_A , X_B is mole fractions of solute and solvent respectively. Match the List-I with List-II.



List-I		List-II	
A.	Molarity	P.	Dependent on temperature
B.	Molality	Q.	$\frac{M_A \times n_A}{n_A M_A + n_B M_B} \times 100$
C.	Mole fraction	R.	Independent of temperature
D.	Mass %	S.	$\frac{X_A}{X_B M_B} \times 1000$

- (A) A-(Q); B-(P,R); C-(S); D-(R,S)
 (B) A-(Q,S); B-(R); C-(P,R); D-(S)
 (C) A-(P); B-(R,S); C-(R); D-(Q,R)
 (D) A-(P,R); B-(R); C-(S); D-(Q,S)

Q35 Density of a 2.05M solution of acetic acid in water is 1.02 g/ml. The molality of the solution is (Atomic mass: H = 1, C = 12, O = 16)

- (A) 3.28 mol kg⁻¹
 (B) 2.28 mol kg⁻¹
 (C) 0.44 mol kg⁻¹
 (D) 1.14 mol kg⁻¹



Answer Key

Q1 (D)
Q2 (C)
Q3 (B)
Q4 (A)
Q5 (B)
Q6 (B)
Q7 (A)
Q8 (A)
Q9 (C)
Q10 (B)
Q11 (B)
Q12 (C)
Q13 (B)
Q14 (D)
Q15 (C)
Q16 (A)
Q17 (A)
Q18 (C)

Q19 (A)
Q20 (B)
Q21 (C)
Q22 (C)
Q23 (B)
Q24 (C)
Q25 (A)
Q26 (A)
Q27 (A)
Q28 (A)
Q29 (C)
Q30 (A)
Q31 (B)
Q32 (B)
Q33 (B)
Q34 (C)
Q35 (B)



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