

CHEMISTRY 2024

(Science Pre-Engineering & Pre-Medical Groups)

TIME: 3 Hours

(85 Marks)

SECTION 'A' (Multiple Choice Questions)(17)

- NOTE:** i) This section consists of 17 part questions and all are to be answered. Each question carries one mark.
ii) Do not copy the part questions in your answer book. Write only the answer in full against the proper number of the question and its part.
iii) The use of scientific calculator is allowed.

1. Choose the correct answer for each from the given options:

i) Significant figures in 0.0880 are:

- * 2 * 3 ✓ * 4 * 5

ii) Alpha rays consist of:

- * Two protons and two electrons
* Two neutrons and two electrons
* Two protons and two neutrons ✓
* Two neutrons and one proton

iii) The number of orbitals in fourth energy level is:

- * 4 * 9 * 16 ✓ * 32

iv) The number of sigma and pi bonds in C_2H_2 are:

- * 2 and 3 * 2 and 2 * 3 and 2 ✓ * 3 and 3

v) This molecule has minimum bond angle:

- * CS_2 ✓ * H_2O * NH_3 * BF_3

vi) The geometry of NH_4^+ and SO_4^{2-} ions is:

- * Tetrahedral ✓ * Trigonal
* Pyramidal * Square Planer

vii) These pairs do not obey Dalton's Law:

- * He and H_2 * H_2 and Ar
* HCl and NH_3^{1-} ✓ * He and NH_3

viii) The vapour pressure of H_2O at $100^\circ C$ is:

- * 76 torr * 5 atms * 101325 Pascal ✓ * 12.5 psi

ix) London dispersion force is stronger in:

- * F_2 * Cl_2 * Br_2 ✓ * I_2 ✓

x) Diamond is an example of:

- * Metallic Solid * Molecular Solid
* Ionic Solid * Covalent Solid ✓

xi) If $a \neq b \neq c$ and $\alpha = \gamma = 90^\circ$ but $\beta \neq 90^\circ$, then the crystal structure is:

- * Orthorhombic * Hexagonal
* Monoclinic ✓ * Triclinic

xii) If a catalyst is added in a chemical system at equilibrium, the value of K_c :

- * will decrease * will increase
* will become zero * will not be changed ✓

xiii) This oxide is amphoteric:

- * K_2O * CO_2 * CaO * Al_2O_3 ✓

xiv) If the rate law of reaction is $R = K$, its order of reaction is:

- * Zero * first * second * third

xv) The oxidation numbers of N in NH_4NO_3 are:

- * -3, +5 ✓ * -3, +3 * -5, +5 * -1, +1

xvi) This compound gives acidic solution when dissolved in water:

- * NaCl * NH_4Cl ✓ * CH_3COONH_4 * Na_2SO_4

xvii) At pH = 0, the universal indicator shows this colour:

- * Red ✓ * Orange * Yellow * Green

Atomic Masses:

(H = 1amu, C = 12 amu, Al = 27amu, O = 16amu,)
(Cl = 35.5 amu, S = 32amu, Na = 23 amu, Mg = 24 amu)