Top 15 Most Asked MCQs (Previous Year Papers)

1. Which of the following is diamagnetic in nature?
(A) Co^{3+}, octahedral complex with strong field ligand
(B) Co^{3+}, octahedral complex with weak field ligand
(C) Cr^{3+}, octahedral complex
(D) Fe^{3+}, octahedral complex
[Atomic number: Co = 27, Cr = 24, Fe = 26]

2. The molar ionic conductivities of Ca^{2+} and Cl^- are 119.0 and 76.3 S cm^2 mol^{-1} respectively. The value of limiting molar conductivity of $CaCl_2$ will be:
(A) 195.3 S cm^2 mol^{-1}
(B) 43.3 S cm^2 mol^{-1}
(C) 314.3 S cm^2 mol^{-1}
(D) 271.6 S cm^2 mol^{-1}

3. The compound which undergoes SN1 reaction most rapidly is:
(A) CH_3CH_2Cl
(B) $CH_2=CHCH_2Cl$
(C) C_6H_5Cl
(D) $(CH_3)_3CCl$

4. Assertion (A): When NaCl is added to water a depression in freezing point is observed.
Reason (R): NaCl undergoes dissociation in water.
(A) Both (A) and (R) are true and (R) is the correct explanation of (A).
(B) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
(C) (A) is true, but (R) is false.
(D) (A) is false, but (R) is true.

5. Which of the following compounds will give a ketone on oxidation with chromic anhydride (CrO_3)?
(A) $(CH_3)_2CHCH_2OH$
(B) $CH_3CH_2CH_2OH$
(C) $(CH_3)_3COH$
(D) $CH_3CH_2CH(OH)CH_3$

6. The relative lowering of vapour pressure of an aqueous solution containing non-volatile solute is 0.0225. The mole fraction of the non-volatile solute is:
(A) 0.80
(B) 0.725

(C) 0.15
(D) 0.0225

7. Match the cell in Column I with its use in Column II

Column I (Cell)	Column II (Use)
(i) Mercury cell	(a) Transistors
(ii) Fuel cell	(b) Watches
(iii) Dry cell	(c) Apollo space project

Options:

(A) i–b, ii–c, iii–a
(B) i–a, ii–b, iii–c
(C) i–c, ii–a, iii–b
(D) i–b, ii–a, iii–c

8. In the Haworth structure of glucose, the anomeric carbon is:
(A) C-1
(B) C-2
(C) C-5
(D) C-4

9. Assertion (A): Separation of Zr and Hf is difficult.
Reason (R): Zr and Hf have similar radii due to lanthanoid contraction.
(A) Both (A) and (R) are true and (R) is the correct explanation of (A).
(B) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
(C) (A) is true, but (R) is false.
(D) (A) is false, but (R) is true.

10. The correct name of the given reaction is:

Ar-N2+X-CuCN/KCNAr-CN+N2

(A) Sandmeyer’s reaction
(B) Gabriel Phthalimide synthesis
(C) Carbyl amine reaction
(D) Hoffmann bromamide reaction

11. For a zero order reaction, if the concentration of the reactant is doubled, its half-life is:
(A) Doubled
(B) Halved
(C) Remains same
(D) Tripled

12. Which of the following is most acidic?
(A) Benzyl alcohol
(B) Cyclohexanol
(C) Phenol
(D) m-Chlorophenol

13. Assertion (A): Aniline is a weaker base than ammonia.
Reason (R): The unshared electron pair on nitrogen atom in aniline becomes less available for protonation due to resonance.
(A) Both (A) and (R) are true and (R) is the correct explanation of (A).
(B) Both (A) and (R) are true, but (R) is not the correct explanation of (A).
(C) (A) is true, but (R) is false.
(D) (A) is false, but (R) is true.

14. Match the reaction with the product:

(i) CH3CH2OHH2SO4,443K_____

(ii) CH3CH2OHH2SO4,413K_____

Products: (a) Ethene, (b) Ethoxyethane
(A) i-a, ii-b
(B) i-b, ii-a
(C) Both result in (a)
(D) Both result in (b)

15. The vitamin whose deficiency causes increased blood clotting time is:
(A) Vitamin A
(B) Vitamin E
(C) Vitamin K
(D) Vitamin D