

JEE MAIN Sample Paper Chemistry

Duration: 1 Hour

Maximum Marks: 100

Instructions

1. This paper contains TWO sections: Section A and Section B.
2. Section A contains 20 Multiple Choice Questions (MCQs).
3. Section B contains 5 Numerical Value Questions.
4. All questions are compulsory.
5. Each correct answer carries **+4 marks**.
6. Each incorrect answer carries **-1 mark**.
7. No negative marking for unattempted questions.

Section A — Multiple Choice Questions

- Q1.** Total number of chiral centers in molecule: [2024]
- (A) 2
(B) 3
(C) 4
(D) 5
- Q2.** Compounds exhibiting geometrical isomerism: [2023]
- (A) 1-phenylpropene
(B) 2-methylbut-2-ene
(C) Propene
(D) 1,1-dichloroethene
- Q3.** Major product with 2-bromopentane + alcoholic KOH: [2022]
- (A) Pent-1-ene
(B) trans-Pent-2-ene
(C) cis-Pent-2-ene
(D) Pentan-2-ol
- Q4.** Reagent for hex-3-yne \rightarrow trans-hex-3-ene: [2025]
- (A) $Na/liq. NH_3$
(B) $H_2, Pd/BaSO_4$
(C) $LiAlH_4$
(D) $NaBH_4$
- Q5.** Order of acid strength of substituted phenols: [2024]
- (A) p-nitrophenol ; p-chlorophenol ; phenol ; p-cresol
(B) p-cresol ; phenol ; p-chlorophenol ; p-nitrophenol
(C) phenol ; p-cresol ; p-chlorophenol ; p-nitrophenol
(D) p-nitrophenol ; phenol ; p-chlorophenol ; p-cresol

- Q6.** Organic compound C_3H_6O , no Tollen's but 2,4-DNP derivative: [2021]
- (A) Propanal
(B) Propanone
(C) Ethylmethyl ether
(D) Allyl alcohol
- Q7.** Best reagent for $R - CH_2 - OH \rightarrow R - CHO$: [2023]
- (A) $KMnO_4$
(B) $K_2Cr_2O_7$
(C) CrO_3 in anhydrous medium (PCC)
(D) $LiAlH_4$
- Q8.** Base NOT present in DNA: [2022]
- (A) Adenine
(B) Guanine
(C) Cytosine
(D) Uracil
- Q9.** Carbylamine reaction is given by: [2025]
- (A) Primary amines
(B) Secondary amines
(C) Tertiary amines
(D) Both Primary and Secondary amines
- Q10.** Molecule with highest dipole moment: [2024]
- (A) NF_3
(B) NH_3
(C) BF_3
(D) CCl_4
- Q11.** Diamagnetic species according to MO theory: [2021]
- (A) O_2
(B) B_2
(C) C_2
(D) N_2^+
- Q12.** Bond order of O_2^{2-} : [2023]
- (A) 1
(B) 1.5
(C) 2
(D) 2.5
- Q13.** Spin-only magnetic moment of $[CoF_6]^{3-}$ (BM): [2022]
- (A) 4.90
(B) 5.92
(C) 2.83
(D) 0
- Q14.** Number of geometric isomers of $[Co(en)_2Cl_2]^+$: [2025]
- (A) 2
(B) 3
(C) 4
(D) 1
- Q15.** Oxoacid of Phosphorus with P-P bond: [2024]
- (A) $H_4P_2O_7$
(B) $H_4P_2O_5$
(C) $H_4P_2O_6$
(D) H_3PO_4
- Q16.** Color of $KMnO_4$ is due to: [2021]
- (A) d-d transition
(B) Charge transfer from ligand to metal
(C) Charge transfer from metal to ligand
(D) Presence of unpaired electrons in d-orbital

Q17. Highest electron gain enthalpy: [2023]

- (A) F
(B) Cl
(C) Br
(D) I

Q18. Reaction order w.r.t B if rate doubles with $[A] \times 2$, $8 \times$ when $[A][B] \times 2$: [2022]

- (A) 1
(B) 2
(C) 3
(D) 0

Q19. Energy to excite Li^{2+} electron 1st \rightarrow 4th orbit: [2025]

(A) 12.75 eV

(B) 114.75 eV

(C) 13.6 eV

(D) 122.4 eV

Q20. Thermodynamic parameters for $H_2O(s) \rightarrow H_2O(l)$ at 273 K, 1 atm: [2024]

(A) $\Delta G = 0, \Delta S > 0$

(B) $\Delta G > 0, \Delta S > 0$

(C) $\Delta G < 0, \Delta S < 0$

(D) $\Delta G = 0, \Delta S < 0$

Section B — Numerical Value Questions

Q21. 0.1 molal aqueous solution of weak acid HA, 30% ionized, $K_f = 1.86$. Freezing point $-0.x^\circ C$. Find x : [2024]

Q22. FCC lattice, atom A corners, atom B face centers. One B missing. Formula A_2B_x . Find x : [2023]

Q23. Isothermal reversible expansion, 2 moles ideal gas, $V : 10L \rightarrow 100L$, $T = 300K$. Work $X \times 10^3$ J. Find X : [2025]

Q24. Wavelength of first Balmer line, H atom is X nm. Find $X/10$: [2022]

Q25. Moles of $K_2Cr_2O_7$ required to oxidize 6 moles Fe^{2+} to Fe^{3+} : [2024]

Answer Key

Section A

1.(B)	2.(A)	3.(B)	4.(A)	5.(B)
6.(B)	7.(C)	8.(D)	9.(A)	10.(B)
11.(C)	12.(A)	13.(A)	14.(A)	15.(C)
16.(B)	17.(B)	18.(B)	19.(B)	20.(A)

Section B

21. 0.2418	22. 5	23. 11.49	24. 65	25. 1
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