



Question Paper (Memory-Based)

Conducted by National Testing Agency (NTA)

1. In a reaction sequence involving haloalkanes, the compound $\text{CH}_3\text{CH}_2\text{Br}$ is treated with alcoholic KOH followed by ozonolysis. If the final product obtained is methanal, then identify the alkene formed in the intermediate step.

- (A) Ethene
 - (B) Propene
 - (C) But-1-ene
 - (D) 2-Methylpropene
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2. A compound shows optical isomerism and has molecular formula $\text{C}_4\text{H}_{10}\text{O}$. Which of the following compounds can exhibit chirality?

- (A) Butan-1-ol
 - (B) Butan-2-ol
 - (C) 2-Methylpropan-2-ol
 - (D) Methoxypropane
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3. The magnetic moment of a transition metal ion is found to be 5.92 BM. The number of unpaired electrons present in the ion is:

- (A) 3
 - (B) 4
 - (C) 5
 - (D) 6
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4. The order of basic strength among the following amines is: Aniline, Methylamine, Dimethylamine, and Ammonia.

- (A) Dimethylamine > Methylamine > Ammonia > Aniline
- (B) Methylamine > Dimethylamine > Ammonia > Aniline
- (C) Ammonia > Methylamine > Dimethylamine > Aniline
- (D) Aniline > Ammonia > Methylamine > Dimethylamine

5. For a first-order reaction, the unit of rate constant is:

- (A) $\text{mol L}^{-1}\text{s}^{-1}$
 - (B) s^{-1}
 - (C) $\text{L mol}^{-1}\text{s}^{-1}$
 - (D) $\text{mol}^{-2}\text{L}^2\text{s}^{-1}$
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6. Which of the following complexes is expected to be diamagnetic?

- (A) $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$
 - (B) $[\text{CoF}_6]^{3-}$
 - (C) $[\text{Ni}(\text{CN})_4]^{2-}$
 - (D) $[\text{Mn}(\text{H}_2\text{O})_6]^{2+}$
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7. The number of stereoisomers possible for the compound $\text{CH}_3\text{CHBrCHBrCH}_3$ is:

- (A) 2
 - (B) 3
 - (C) 4
 - (D) 5
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8. Which of the following reagents converts aldehydes into primary alcohols?

- (A) PCC
 - (B) LiAlH_4
 - (C) KMnO_4
 - (D) Tollen's reagent
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9. Which of the following complexes shows the highest crystal field stabilization energy (CFSE) in octahedral geometry?

- (A) d^3
- (B) d^5 high spin
- (C) d^8
- (D) d^{10}

10. The reagent used in Sandmeyer reaction for converting benzene diazonium chloride into chlorobenzene is:

(A) $CuCl/HCl$

(B) $NaCl$

(C) $Cl_2/FeCl_3$

(D) $SOCl_2$
