CUET 2026 May 31 Shift 2 Chemistry

Question Paper (Memory-Based)

Conducted by National Testing Agency (NTA)

1. A compound A having molecular formula C_7H_8O gives a violet colour with neutral $FeCl_3$. On treatment with excess CH_3I/K_2CO_3, it forms compound B. Ozonolysis of B followed by reductive workup (Zn/H_2O) gives one mole of methanal and one mole of anisaldehyde. The number of phenolic compounds among A, B, and the ozonolysis products is:

(A) 0

(B) 1

(C) 2

(D) 3

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2. Aldehyde A undergoes Cannizzaro reaction to give compounds B and C. Compound B on oxidation gives benzoic acid. Compound C gives positive iodoform test after suitable oxidation. Compound A is:

(A) Benzaldehyde

(B) Formaldehyde

(C) Acetaldehyde

(D) Propanal

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3. The molar conductivity of CH_3COOH at a certain concentration is $39.0\ \Omega^{-1}\,cm^2\,mol^{-1}$. Given that the limiting molar conductivities are:

$$\Lambda_m^\circ(HCl) = 426.0\ \Omega^{-1}\,cm^2\,mol^{-1}$$

$$\Lambda_m^\circ(CH_3COONa) = 91.0\ \Omega^{-1}\,cm^2\,mol^{-1}$$

$$\Lambda_m^\circ(NaCl) = 126.0\ \Omega^{-1}\,cm^2\,mol^{-1}$$

The degree of dissociation of acetic acid at this concentration is:

(A) 0.25

(B) 0.40

(C) 0.50

(D) 0.60

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4. For the cell reaction

$$Zn(s) + Cu^{2+}(aq) \rightarrow Zn^{2+}(aq) + Cu(s)$$

the standard cell potential is $1.10\ V$**. If**

$$[Zn^{2+}] = 0.10\ M$$

and

$$[Cu^{2+}] = 1.0 \times 10^{-3}\ M$$

at $298\ K$**, the cell potential is closest to:**

(A) $0.98\ V$

(B) $1.04\ V$

(C) $1.16\ V$

(D) $1.22\ V$

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5. A first-order reaction has a rate constant of $2.0 \times 10^{-3}\ s^{-1}$ **at** $300\ K$ **and** $8.0 \times 10^{-3}\ s^{-1}$ **at** $330\ K$**. Assuming the Arrhenius equation to be valid, the activation energy of the reaction is closest to:**

(A) $28.5\ kJ\ mol^{-1}$

(B) $38.0\ kJ\ mol^{-1}$

(C) $57.0\ kJ\ mol^{-1}$

(D) $76.0\ kJ\ mol^{-1}$

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6. A coordination compound has the formula

$$[Co(NH_3)_4Cl_2]Cl$$

The magnetic moment of the complex is found to be approximately $4.9\ BM$**. The hybridization and geometry of the complex ion are respectively:**

(A) dsp^2, square planar

(B) sp^3, tetrahedral

(C) d^2sp^3, octahedral

(D) sp^3d^2, octahedral

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7. EDTA forms a stable complex with a metal ion M^{3+}**. The complex formed is octahedral and represented as** $[M(EDTA)]^-$**. Which of the following statements is correct?**

(A) EDTA acts as a tetradentate ligand and the complex shows geometrical isomerism only

(B) EDTA acts as a hexadentate ligand and the complex can show optical isomerism

(C) EDTA acts as a bidentate ligand and the complex shows linkage isomerism

(D) EDTA acts as a monodentate ligand and the complex is tetrahedral

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8. Which of the following statements regarding lanthanoids is correct?

(A) Basicity of lanthanoid hydroxides increases from $La(OH)_3$ to $Lu(OH)_3$

(B) Lanthanoid contraction occurs because of poor shielding by $4f$-electrons

(C) Ce^{4+} is less stable than Ce^{3+} because of its noble gas configuration

(D) Atomic size increases regularly from La to Lu

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9. Phenol is subjected to the following sequence of reactions:

$$\text{Phenol} \xrightarrow[\text{NaOH}]{CO_2} A \xrightarrow{H^+} B \xrightarrow[\text{Zn(Hg)}]{\text{Conc. HCl}} C \xrightarrow[\Delta]{NH_2NH_2/KOH} D$$

If A **is formed via Kolbe–Schmitt reaction and the final product** D **is obtained after the given sequence, then** D **is:**

(A) Benzene

(B) Toluene

(C) Cyclohexane

(D) Phenol

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10. Consider the following statements regarding carbohydrates:

Assertion (A): Sucrose is a non-reducing sugar.

Reason (R): In sucrose, both the anomeric carbon atoms of glucose and fructose participate in glycosidic bond formation.

Choose the correct option.

(A) Both Assertion and Reason are true, and Reason is the correct explanation of Assertion

(B) Both Assertion and Reason are true, but Reason is not the correct explanation of Assertion

(C) Assertion is true, but Reason is false

(D) Assertion is false, but Reason is true
