CUET 2026 May 19 Shift 1 Chemisty

Question Paper (Memory-Based)

Conducted by National Testing Agency (NTA)

General Instructions

(i) The examination will be conducted in Computer-Based Test (CBT) mode.

(ii) Each question carries +5 marks for correct answer and -1 mark for wrong answer.

(iii) The total number of questions are 50.

(iv) Duration of the exam is 1 hour (60 minutes).

1. For a first-order reaction, if the time taken for 90% completion is t, what will be the approximate time taken for 99.9% completion of the same reaction?

(A) $2t$

(B) $3t$

(C) $4t$

(D) $1.5t$

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2. According to collision theory, increasing the starting concentration of a collection of reacting molecules directly results in a change in which of the following system factors?

(A) Activation energy

(B) Collision frequency

(C) Rate constant

(D) Fraction of molecules with energy greater than activation energy

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3. What is the cell potential (E_{cell}) for a concentration cell consisting of two hydrogen electrodes at 298 K, where the anode compartment is at pH = 3 and the cathode compartment is at pH = 1 under standard pressure conditions?

(A) 0.0591 V

(B) 0.1182 V

(C) −0.1182 V

(D) 0.0000 V

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4. Which of the following expressions correctly relates the limiting molar conductivity (Λ_m°) of aluminum sulfate, $Al_2(SO_4)_3$, to its individual ionic components according to Kohlrausch's Law?

(A) $\Lambda_m^\circ = \lambda^\circ(Al^{3+}) + \lambda^\circ(SO_4^{2-})$

(B) $\Lambda_m^\circ = 2\lambda^\circ(Al^{3+}) + 3\lambda^\circ(SO_4^{2-})$

(C) $\Lambda_m^\circ = 3\lambda^\circ(Al^{3+}) + 2\lambda^\circ(SO_4^{2-})$

(D) $\Lambda_m^\circ = \frac{1}{2}\lambda^\circ(Al^{3+}) + \frac{1}{3}\lambda^\circ(SO_4^{2-})$

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5. What is the correct increasing order of basic strength for the following amines when measured inside an aqueous medium?

(I) CH_3NH_2, (II) $(CH_3)_2NH$, (III) $(CH_3)_3N$, (IV) NH_3

(A) IV < III < I < II

(B) IV < I < II < III

(C) III < I < II < IV

(D) I < II < III < IV

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6. An organic compound with the molecular formula C_7H_8O is completely insoluble in water but dissolves readily in an aqueous NaOH solution. When treated with bromine water, it forms a white precipitate. Identify the compound.

(A) Benzyl alcohol

(B) Anisole

(C) *o*-Cresol

(D) Methoxybenzene

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7. Which of the following coordination complex ions exhibits structural asymmetry leading to optical isomerism?

(A) $trans-[Co(en)_2Cl_2]^+$

(B) $cis-[Co(en)_2Cl_2]^+$

(C) $[Co(NH_3)_4Cl_2]^+$

(D) $[Cr(NH_3)_5Cl]^{2+}$

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8. Using Crystal Field Theory (CFT), what is the correct electronic configuration and magnetic behavior of the high-spin complex $[Fe(H_2O)_6]^{2+}$?

(A) $t_{2g}^4 e_g^2$, Paramagnetic

(B) $t_{2g}^6 e_g^0$, Diamagnetic

(C) $t_{2g}^3 e_g^3$, Paramagnetic

(D) $t_{2g}^5 e_g^1$, Paramagnetic

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9. Which of the following alkyl halides will undergo the fastest rate of nucleophilic substitution via an S_N1 mechanism when treated with an aqueous nucleophile?

(A) CH_3Cl

(B) $(CH_3)_3CCl$

(C) CH_3CH_2Cl

(D) $(CH_3)_2CHCl$

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10. When phenol is treated with chloroform ($CHCl_3$) in the presence of an aqueous sodium hydroxide solution followed by acidification, a prominent aromatic aldehyde is generated. What is the name of this organic reaction?

(A) Kolbe's Reaction

(B) Reimer-Tiemann Reaction

(C) Rosenmund Reduction

(D) Friedel-Crafts Acylation