KCET 2026 Chemistry Code D3

Question Paper

Conducted by KEA

General Instructions

(i) **Duration:** The total duration of the examination is 80 minutes.

(ii) **Total Marks:** The complete paper carries a maximum of 60 marks.

(iii) **Compulsory Questions:** All 60 questions are compulsory.

(iv) Each question has four options. Only **one** option is correct.

(v) **Correct Answer:** +1 marks.

(vi) **Incorrect Answer:** There is no Negative marking for incorrect answers.

1. R-CH_2OH is converted into R-CHO by reacting with _____.

(A) Alkaline $KMnO_4$

(B) $LiAlH_4$

(C) Na/C_2H_5OH

(D) PCC (Pyridinium Chlorochromate)

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2. Glycerol is a trihydric alcohol. It contains _____.

(A) One primary, one secondary and one tertiary alcoholic groups

(B) Two primary and one secondary alcoholic groups

(C) Two secondary and one primary alcoholic groups

(D) One primary and two tertiary alcoholic groups

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3. The correct IUPAC name of CH_3 - $C(CH_3)_2$ - O - C_2H_5 is

(A) Tertiary butoxy ethane

(B) 1, 1-Dimethyl-1-ethoxyethane

(C) 2-ethoxy-2-methyl propane

(D) Ethoxy tertiary butane

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4. $C_4H_{10} \xrightarrow{\text{i) } (BH_3)_2, \text{ii) } H_2O_2/NaOH} P \xrightarrow{CrO_3, \text{anhydrous medium}} Q \xrightarrow{\text{i) } CH_3MgBr, \text{ ii) } H_3O^+} R + Mg(OH)Br$

The organic compounds P, Q and R are

(A) P = CH_3-CH(OH)-CH_2-CH_3, Q = CH_3-C(=O)-CH_3, R = CH_3-C(OH)(CH_3)-CH_2-CH_3

(B) P = CH_3-CH_2-CH_2-OH, Q = CH_3-CH_2-CHO, R = CH_3-CH_2-CH(OH)-CH_3

(C) P = CH_3-CH_2-CH_2-OH, Q = CH_3-CH_2-COOH, R = CH_3-CH_2-C(=O)-OCH_3

(D) P = CH_3-CH(OH)-CH_3, Q = CH_3-C(=O)-CH_3, R = CH_3-CH(OCH_3)-CH_3

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5. Match the reagents in List - I with products obtained from their carbonyl compounds in List - II.

List - I		List - II	
(a)	NH_2OH	(i)	Cyanohydrin
(b)	R-NH_2	(ii)	Oxime
(c)	R-OH	(iii)	Schiff base
(d)	H-C≡N	(iv)	Acetal

Codes:

(A) a – ii, b – iii, c – iv, d – i

(B) a – i, b – ii, c – iii, d – iv

(C) a – iii, b – ii, c – i, d – iv

(D) a – i, b – iii, c – ii, d – iv

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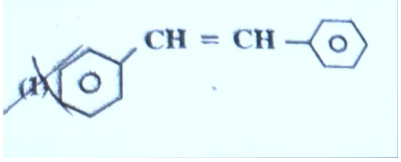
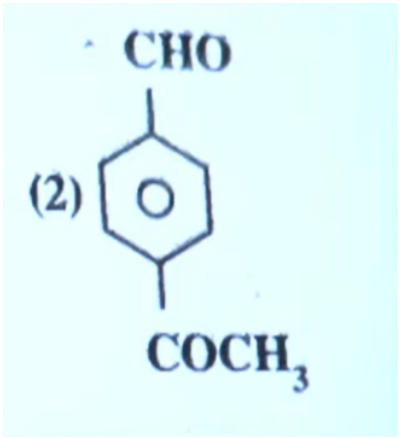
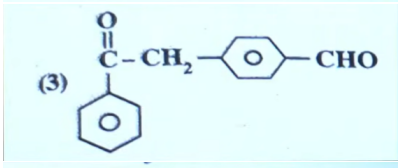
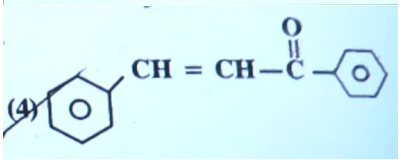
6. The major product 'A' in the given reaction is

Benzaldehyde + Acetophenone $\xrightarrow{OH^-/293K}$ **'A' (Major product)**









(A) (1)

(B) (2)

(C) (3)

(D) (4)

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7. Carboxylic acids are more acidic than phenols because

(A) Formation of dimers

(B) Intermolecular hydrogen bonding

(C) More covalent nature

(D) More resonance stabilisation of their conjugate base

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8. The compound that does not answer iodoform test is

(A) Ethanal

(B) Acetone

(C) Ethanoic acid

(D) Acetophenone

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9. Nitration of aniline in strong acidic medium gives significant amount of m-nitroaniline because

(A) In electrophilic substitution reaction, amino group is meta directing

(B) In strong acidic medium, aniline is present as anilinium ion

(C) -NH_2 group always directs to meta position

(D) m-nitroaniline has higher molar mass than o&p nitroanilines

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10. Basic strength of alkylamines in aqueous phase is not decided by

(A) Inductive effect

(B) Solvation effect

(C) Steric hindrance

(D) Hyperconjugation effect

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11. The reaction sequence is: Benzene $\xrightarrow{Conc.HNO_3, Conc.H_2SO_4, 323-333K}$ **A** $\xrightarrow{Fe/HCl}$ **B** $\xrightarrow{NaNO_2/HCl, 273K}$ **C** $\xrightarrow{C_2H_5OH}$ **Benzene + D + HCl +** N_2**. Organic compound 'D' is**

(A) Phenol (C_6H_5OH)

(B) Acetic acid (CH_3COOH)

(C) Ethanal (CH_3CHO)

(D) N-ethylaniline (C_6H_5NH-C_2H_5)

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12. Statement I: Staggered conformation of ethane is more stable than the eclipsed conformation.

Statement II: The torsional strain in staggered conformation is more.

Read the above statements and choose the correct answer from the options given below.

(A) Both Statement I and Statement II are false

(B) Both Statement I and Statement II are true

(C) Statement I is true but Statement II is false

(D) Statement I is false but Statement II is true

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13. From the given information, select the suitable law of chemical combination:

Cupric Carbonate	% of Cu	% of C	% of O
Natural Sample	51.35	9.74	38.91
Synthetic Sample	51.35	9.74	38.91

(A) Law of Multiple Proportions

(B) Gay Lussac's Law of Gaseous Volumes

(C) Law of Definite Proportions

(D) Law of Conservation of Mass

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14. Match List - I with List – II and select the correct option (Based on mole concept):

List - I		List - II	
(a)	2 moles of ethene	(i)	11.2 L volume at STP
(b)	Molar mass is equal to 66 g	(ii)	56 g
(c)	1 g of H_2	(iii)	12.04×10^{23} molecules
(d)	2 moles of water vapours	(iv)	1.5 mole of CO_2

Codes:

(A) a – ii, b – iv, c – i, d – iii

(B) a – iii, b – i, c – iv, d – ii

(C) a – i, b – iv, c – ii, d – iii

(D) a – ii, b – iii, c – i, d – iv

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15. Match List – I with List – II:

List - I (Element-Atomic number)		List - II (Position in periodic table)	
(a)	Ra - 88	(i)	4^{th} period, 13^{th} group
(b)	Ga - 31	(ii)	6^{th} period, 6^{th} group
(c)	W - 74	(iii)	5^{th} period, 10^{th} group
(d)	Pd - 46	(iv)	7^{th} period, 2^{nd} group

Choose the correct answer from the options given below.

(A) a – iv, b – i, c – ii, d – iii

(B) a – i, b - ii, c - iii, d – iv

(C) a – iv, b – ii, c – iii, d – i

(D) a – iii, b – iv, c – i, d – ii

16. The types of hybrid orbitals of nitrogen in NO_2^+, NO_3^-, and NH_4^+ respectively are

(A) sp, sp^2 and sp^3

(B) sp, sp^3 and sp^2

(C) sp^2, sp and sp^3

(D) sp^2, sp^3 and sp

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17. In which of the following option/options, the order of arrangement does not agree with the variation of property indicated against it?

(a) $BF_3 > NF_3 > NH_3$ (Dipole moment)

(b) $HgCl_2 > NH_4^+ > SF_4$ (Bond angle)

(c) $NH_3 < H_2O < HF$ (Strength of intermolecular hydrogen bonding)

(d) H - I > H - Br > H – Cl (Bond length)

(A) a, b and c

(B) a only

(C) c and d only

(D) d only

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18. With respect to resonance structures of CO_3^{2-} ion, which of the following statements are correct?

(a) All C-O bonds in CO_3^{2-} are equivalent

(b) There are three resonance structures possible for CO_3^{2-} ion

(c) The position of carbon and oxygen should change in every resonance structure

(d) The formal charge on carbon atom is -2

(A) a, b and c

(B) a and b only

(C) b and d only

(D) a, b and d

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19. Given below are two statements.

Statement I : In H_2O_2, each oxygen atom is assigned an oxidation number of -1, In RbO_2, each oxygen atom is assigned an oxidation number of - $\frac{1}{2}$.

Statement II : Representation of $HAuCl_4$ and MnO_2 in stock notation is $HAu(III)Cl_4$ and $Mn(II)O_2$, respectively.

Examine the above statements and choose the correct answer.

(A) Both Statement I and Statement II are correct

(B) Both Statement I and Statement II are incorrect

(C) Statement I is correct but Statement II is incorrect

(D) Statement I is incorrect but Statement II is correct

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20. a $C_2O_4^{2-}$ + b MnO_4^- + c H^+ → x Mn^{2+} + y H_2O + z CO_2

a and x respectively are

(A) 5, 2

(B) 4, 1

(C) 3, 2

(D) 4, 2

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21. Which of the following will not act as an oxidising agent?

(A) CrO_3

(B) MoO_3

(C) CrO_4^{2-}

(D) $Cr_2O_7^{2-}$

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22. The highest oxidation state of manganese in fluoride is +4 (MnF_4), but the highest oxidation state in oxides is +7 (Mn_2O_7), because

(A) Fluorine is more electronegative than oxygen

(B) Fluorine possesses d-orbitals

(C) Fluorine stabilises lower oxidation state

(D) In covalent compounds, fluorine can form single bond only, while oxygen forms double bond

23. The calculated spin only magnetic moment of Cr^{2+} ion is

(A) 3.87 BM

(B) 4.90 BM

(C) 5.92 BM

(D) 2.84 BM

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24. Which of the following is the most stable complex?

(A) $[Fe(CO)_5]$

(B) $[Fe(CN)_6]^{4-}$

(C) $[Fe(C_2O_4)_3]^{3-}$

(D) $[Fe(H_2O)_6]^{3+}$

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25. How many ions per molecule are produced from the complex $[Co(NH_3)_6]Cl_3$ in solution?

(A) 6

(B) 4

(C) 3

(D) 2

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26. Given below are two statements:

Statement I: The M – C σ bond is formed by the donation of lone pair of electrons on the carbonyl carbon into a vacant d-orbital of the metal

Statement II: The M – C π bond is formed by the donation of a pair of electrons from a filled d-orbital of metal into the vacant antibonding π^* orbital of carbon monoxide.

In the light of the above statements, choose the correct answer from the options given below:

(A) Both Statement I and Statement II are correct

(B) Both Statement I and Statement II are incorrect

(C) Statement I is correct but Statement II is incorrect

(D) Statement I is incorrect but Statement II is correct

27. Match List - I with List - II

List - I (Complex)		List - II (Geometry)	
(a)	$[Co(NH_3)_6]^{3+}$	(i)	Trigonal bipyramidal
(b)	$[NiCl_4]^{2-}$	(ii)	Octahedral
(c)	$[Ni(CN)_4]^{2-}$	(iii)	Tetrahedral
(d)	$[Fe(CO)_5]$	(iv)	Square planar

Choose the correct answer from the options given below.

(A) a - ii, b – iii, c – iv, d - i

(B) a - ii, b - i, c - iii, d – iv

(C) a – iii, b – ii, c – iv, d – i

(D) a – i, b – iii, c – iv, d – ii

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28. Match List - I with List – II

List - I (Vitamins)		List - II (Deficiency Diseases)	
(a)	B_1	(i)	Convulsions
(b)	B_2	(ii)	RBC deficiency in haemoglobin
(c)	B_6	(iii)	Retarded growth
(d)	B_{12}	(iv)	Burning sensation of the skin

Choose the correct answer from the options given below.

(A) a – ii, b – iv, c – iii, d – i

(B) a – iii, b – iv, c – i, d – ii

(C) a – i, b – ii, c – iii, d – iv

(D) a – iv, b – iii, c – ii, d – i

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29. Consider the following statements:

Statement I: All monosaccharides are reducing sugars.

Statement II: Sucrose can reduce ammoniacal silver nitrate solution.

Choose the correct answer from the options given below.

(A) Both Statement I and Statement II are correct

(B) Both Statement I and Statement II are incorrect

(C) Statement I is correct but Statement II is incorrect

(D) Statement I is incorrect but Statement II is correct

30. Incorrect statement about α-amino acids of proteins among the following is

(A) Methionine is an essential amino acid

(B) Glycine doesn't exhibit enantiomerism

(C) Glycylalanylglutamine has three amide linkages

(D) Zwitterion of valine exhibits amphoteric behaviour

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31. Match List I with List II and select the correct options

List - I (Functional group)		**List - II (Functional group reagent)**	
(a)	Secondary Alcohol	(i)	Neutral ferric chloride test
(b)	$C_6H_5NH_2$ (Aniline)	(ii)	Azo dye test
(c)	CH_3CH_2CHO (Propanal)	(iii)	Ceric ammonium nitrate test
(d)	Phenol	(iv)	Tollen's reagent test

Codes:

(A) a – iv, b – i, c – ii, d – iii

(B) a - iii, b - ii, c - iv, d - i

(C) a – iii, b – ii, c – i, d – iv

(D) a – ii, b – iii, c – iv, d - i

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32. When salt BA is treated with Conc. H_2SO_4, reddish brown gas is liberated. The aqueous solution of BA gives pale yellow precipitate with $AgNO_3$ solution. Which of the following anion(A) is present in the salt BA?

(A) Cl^-

(B) CO_3^{2-}

(C) SO_4^{2-}

(D) Br^-

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33. Which of the following represents de Broglie equation?

(A) $\lambda = \frac{h}{\sqrt{mv}}$

(B) $\lambda = \frac{h}{mv}$

(C) $\lambda = \frac{h}{mp}$

(D) $\lambda = \frac{\mu}{p}$

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34. Which of the following is the CORRECT statement about Ψ^2?

(A) Ψ^2 represents atomic orbit

(B) Probability density of the electron at that point

(C) $\Psi^2 \neq 0$ for nodes

(D) Ψ^2 has no physical meaning

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35. A: Entropy of a perfect crystalline solid at absolute zero approaches zero.

B: For spontaneity of a reaction, $T\Delta S > \Delta H$.

Among the two statements given above, identify the correct answer from the options given below.

(A) Both 'A' and 'B' are true

(B) 'A' is true but 'B' is false

(C) Both 'A' and 'B' are false

(D) 'A' is false but 'B' is true

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36. Which of the following is a correct statement for a thermodynamic system?

(A) The internal energy changes in all processes

(B) Internal energy and entropy are state functions

(C) Work is a state function

(D) The work done in an adiabatic process is always zero

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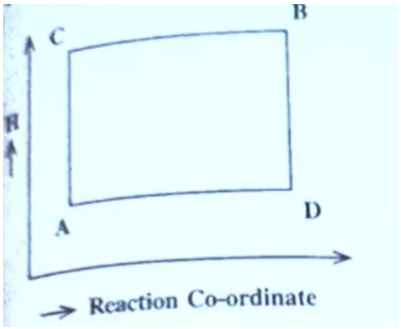
37. A gas can be taken from A to B via two different paths ACB and ADB. When path ACB is used, 60J of heat flows into the system and 30J of work is done by the system. If path ADB is used, work done by the system is 10J. The heat flow into the system in path ADB is



(A) 80J

(B) 20J

(C) 100J

(D) 40J

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38. For the reversible reaction, $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$. When the partial pressure is measured in atmosphere, the value of K_p at 500°C is 1.44×10^{-5}. The value of K_c when the concentration is expressed in mol L^{-1} is:

(A) $\frac{1.44\times10^{-5}}{(0.082\times500)^{-2}}$

(B) $\frac{1.44\times10^{-5}}{(8.314\times773)^{-2}}$

(C) $\frac{1.44\times10^{-5}}{(0.082\times773)^{2}}$

(D) $\frac{1.44\times10^{-5}}{(0.082\times773)^{-2}}$

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39. For the following gaseous reversible reaction: $3A_{(g)} + B_{(g)} \rightleftharpoons A_3B_{(g)}$ (ΔH = -q kJ), The amount of product $A_3B_{(g)}$ is affected by

(A) Temperature alone

(B) Pressure alone

(C) Both temperature and pressure

(D) Temperature, pressure and catalyst

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40. A 0.15 mole of pyridinium chloride has been added to 500 cm^3 of 0.2M pyridine solution (a base). Assuming there is no change in volume upon mixing, the pH of the resulting solution is

(Note: K_b for pyridine is 1.5×10^{-9})

(A) 5

(B) 6

(C) 7

(D) 8

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41. Which of the following is CORRECT with respect to the property mentioned against it?

(A) Osmotic pressure at 298K : 0.1M NaCl solution < 0.1M Urea solution

(B) Concentration of NaCl in the solution : 2ppm > 2M

(C) ΔT_b : 0.02M Urea solution > 0.02M NaCl solution

(D) Vapour pressure at 298K : Salt water < Pure water

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42. Match List - I (Laws) with the List - II (Mathematical expressions):

List - I		**List - II**	
(a)	Henry's law	(i)	$P_1 = x_1 P_1^{\,0}$
(b)	Raoult's law	(ii)	$p = K_H x$
(c)	First law of thermodynamics	(iii)	$\Lambda_m^0 = \nu_+ \lambda_+^0 + \nu_- \lambda_-^0$
(d)	Kohlrausch's law	(iv)	$\Delta U = q + w$

Codes:

(A) a - i, b – ii, c - iii, d - iv

(B) a - ii, b – i, c - iii, d - iv

(C) a - ii, b – i, c – iv, d – iii

(D) a – i, b – ii, c – iv, d - iii

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43. When 0.0106 mole of acetic acid was dissolved in 1 kg of water, the freezing point depression for this strength of acid was 0.0205 K. If the calculated freezing point depression is 0.0197 K, Van't Hoff factor (i) and degree of dissociation of acetic acid respectively are

(A) 0.041 and 1.041

(B) 1.041 and 0.1041

(C) 0.041 and 0.041

(D) 1.041 and 0.041

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44. The relative lowering of vapour pressure produced by dissolving 18 g of urea (Molar mass = 60 g mol^{-1}) in 100 g of water is

(A) 0.025

(B) 0.5

(C) 0.05

(D) 0.25

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45. During the electrolysis of acidified water, 16 g of O_2 gas is formed at anode. The volume of H_2 gas liberated at cathode under STP conditions is

(A) 22.4 L

(B) 11.2 L

(C) 2.24 L

(D) 1.12 L

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46. $\Lambda_m^o(NH_4OH)$ is equal to

(A) $\Lambda_m^o(NH_4OH) + \Lambda_m^o(NH_4Cl)$ - $\Lambda_m^o(HCl)$

(B) $\Lambda_m^o(NH_4Cl) + \Lambda_m^o(NaOH)$ - $\Lambda_m^o(NaCl)$

(C) $\Lambda_m^o(NH_4Cl) + \Lambda_m^o(NaCl)$ - $\Lambda_m^o(NaOH)$

(D) $\Lambda_m^o(NaOH) + \Lambda_m^o(NaCl)$ - $\Lambda_m^o(NH_4Cl)$

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47. Given below are the half-cell reactions:

$Mn^{2+} + 2e^- \rightarrow Mn$ (E° = -1.18 V)

$Mn^{3+} + e^- \rightarrow Mn^{2+}$ (E° = +1.51 V)

The E°_{cell} for 3 $Mn^{2+} \rightarrow Mn + 2Mn^{3+}$ will be _____

(A) - 2.69 V, the reaction will not occur (Non-Spontaneous)

(B) 2.69 V, the reaction will occur (Spontaneous)

(C) - 0.33 V, the reaction will not occur (Non-Spontaneous)

(D) - 0.33 V, the reaction will occur (Spontaneous)

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48. The conductivity of centimolar solution of KCl at 298 K is 0.021 Ohm^{-1} cm^{-1} and the resistance of the cell containing the solution at 298 K is 60 Ω. The value of cell constant (G*) is

(A) 3.28 cm^{-1}

(B) 1.26 cm^{-1}

(C) 3.34 cm^{-1}

(D) 1.34 cm^{-1}

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49. Which one of the following graph is not applicable for a 1st order reaction (R → P)?

(A) A graph of [R] vs t with a downward sloping curve.

(B) A graph of ln[R] vs t with a downward sloping straight line.

(C) A graph of $\log_{10}$[R] vs t with an upward sloping straight line.

(D) A graph of $\log_{10}([R]_0/[R])$ vs t with an upward sloping straight line through the origin.

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50. For a reaction having three steps, the overall rate constant is $K = \frac{k_1 k_3}{k_2}$. The values of E_{a1}, E_{a2}, and E_{a3} (activation energies stepwise) are 40, 50 and 60 kJ mol^{-1} respectively. Then the overall E_a (activation energy) of the reaction is

(A) 30 kJ mol^{-1}

(B) 40 kJ mol^{-1}

(C) 50 kJ mol^{-1}

(D) 60 kJ mol^{-1}

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51. For a 1st order change R → P, the concentration of Reactant R changes from 0.1 M to 0.025 M in 40 minutes. The rate of reaction when the concentration of R is 0.01 M is

(A) 1.73×10^{-5} M min^{-1}

(B) 3.47×10^{-4} M min^{-1}

(C) 3.47×10^{-5} M min^{-1}

(D) 1.73×10^{-4} M min^{-1}

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52. The activation energy for the reaction X → Y is 150 kJ mol^{-1}. The change in enthalpy for

the above reaction is -135 kJ mol^{-1}. Then the activation energy for Y → X is

(A) 280 kJ mol^{-1}

(B) 285 kJ mol^{-1}

(C) 270 kJ mol^{-1}

(D) 15 kJ mol^{-1}

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53. The intermediates in heteropolar reactions are

(A) Free radicals only

(B) Cations only

(C) Anions only

(D) Both anions and cations

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54. Statement I: Nitrogen in pyridine cannot be estimated by Kjeldahl's method

Statement II: Nitrogen in pyridine changes to ammonium sulphate when heated with conc. H_2SO_4 in Kjeldahl's method.

Read the above given statements and choose the correct answer from the given options.

(A) Statement I is true but Statement II is false

(B) Both Statement I and Statement II are false

(C) Both Statement I and Statement II are true

(D) Statement I is false but Statement II is true

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55. The number of chain isomers possible for the hydrocarbon with molecular formula C_5H_{12} is

(A) 4

(B) 3

(C) 2

(D) 1

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56. The compound with molecular formula $C_{20}H_{42}$ is

(A) Decane

(B) Dodecane

(C) Eicosane

(D) Hicosane

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57. C-Cl bond in methyl chloride compared to C-Cl bond in chlorobenzene is

(A) Longer and stronger

(B) Shorter and stronger

(C) Shorter and weaker

(D) Longer and weaker

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58. The compound from which chlorobenzene cannot be prepared easily is

(A) Aniline

(B) Benzene

(C) Phenol

(D) Benzene diazonium chloride

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59. In S_N1 reaction, the alkyl halide that on hydrolysis produces racemic mixture is

(A) Tertiary butyl bromide

(B) 2-bromobutane

(C) Isopropyl bromide

(D) Methyl bromide

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60. Match the compounds of List-I with their effects in List-II

List-I		List-II	
(a)	Chloramphenicol	(i)	Malaria
(b)	Thyroxine	(ii)	Anesthetic
(c)	Chloroquine	(iii)	Goiter
(d)	Chloroform	(iv)	Typhoid fever

Codes:

(A) a – i, b – ii, c – iii, d – iv

(B) a - iv, b - iii, c - i, d - ii

(C) a – i, b – iii, c – iv, d – ii

(D) a – iv, b – iii, c – ii, d - i