MDU M.Sc Entrance: 2017

Chemistry

Note: Owing to the combined nature of the entrance for Haryana universities, this paper was also for the following universities: Kurukshetra University, Kurukshetra; Chaudhary Devi Lal University, Sirsa; Bhagat Phool Singh Mahila Vishwavidyalya, Khanpur Kalan; Indira Gandhi University, Meerpur; Chaudhary Ranbir Singh University, Jind; Chaudhary Bansi Lal University, Bhiwani.

❖ Question Paper

All questions are compulsory (One mark each) **Total Marks: 100 (1.5 Hours)**

Q.1 If kinetic energy of a proton is increased nine times, the wavelength of the de-Broglie wave associated with it would become:

(a) 3 times (b) 9 times (c) 1/3 times (d) 1/9 times

Q.2 For which one of the following set of quantum numbers an electron will have the highest energy?

(a) 3, 2, 1, ½ (b) 4, 2, –1, 1/2 (c) 4, 1, 0, –1/2 (d) 5, 0, 0, 1/2

Q.3 when an electron is added to a gaseous atom

(a) Its size decreases (b) Energy is increased

(c) It changes to positive ion (d) Its tendency to accept electron increases

Q.4 which of the following is arranged in order of increasing second ionisation energy?

(a) C < N < O < F (b) F < C < N < O

(c) C < N < F < O (d) F < O < N < C

Q.5 The crystal showing Frenkel defect:

(a) Cannot show metal excess defect (b) Show increase in density

(c) Shows increase in dielectric constant (d) Have high coordination number

Q.6 A solution of sodium metal in liquid ammonia is blue and is a strong reducing agent, due to the presence of

(a) Sodium atoms
(b) Sodium hydride
(c) Sodium amide
(d) Solvated electrons and solvated metal ions

Q.7 Hydride as well as halides of alkaline earth metal tend of polymerize

(a) Strontium (b) Calcium (c) Beryllium (d) Magnesium

Q.8 On hydrolysis, diborane produces

(a) $H_3BO_2 + H_3O_2$
(b) $H_3BO_3 + H_2$
(c) $B_2O_3 + O_2$
(d) $H_3BO_3 + H_2O_2$

Q.9 Which of the following pairs of ions represent cyclic and chain silicates?

(a) $Si_2O_7^{2-}$ and $(SiO_3)_n^{2n-}$
(b) $Si_3O_9^{6-}$ and $(Si_4O_{11})_n^{6n-}$
(c) $Si_2O_7^{2-}$ and $(SiO_5)_n^{2n-}$
(d) $Si_2O_7^{7-}$ and $(SiO_3)_n^{2n-}$

Q.10 White phosphorous has

(a) Six P-P single bonds
(b) Four P-P single bonds
(c) Three lone pairs of electrons
(d) PPP angle of 90°C

Q.11 The structure of thiosulphuric acid is

(a) $H_2S_2O_3$ (b) $H_2S_2O_4$ (c) H_2SO_4 (d) $H_2S_2O_2$

Q.12 Among the following conjugate bases of oxoacids of chlorine, which arrangement shows the correct order of increasing hydration energy and basic character?

(a) $ClO^- < ClO_2^- < ClO_3^- < ClO_4^-$
(b) $ClO^- < ClO_2^- < ClO_3^- < ClO_4^-$

(c) $ClO^- < ClO_2^- < ClO_3^- < ClO_4^-$ (d) $ClO^- < ClO_2^- < ClO_3^- < ClO_4^-$

Q.13 XeO_3 contains:

(a) Four π-bonds and the remaining four electron pair of a tetrahedron with one corner occupied by a lone pair

(b) Six electron pairs and two lone pairs

(c) Two π-bonds, two corners of a tetrahedron occupied by a lone pair

(d) Three π-bonds and the remaining four electron pairs form a tetrahedron with one corner occupied by a lone pair

Q.14 Which of the following transition metals exhibits the higher oxidation state?

(a) Pt (b) Os (c) Cr (d) Mn

Q.15 The coordination ratio of titanium and oxygen in rutile structure is

(a) 6 : 4 (b) 6 : 2 (c) 6 : 3 (d) 6 : 6

Q.16 $[Pt(NH_3)_2(NO_2)_2]$ can exhibit the following isomerism

(a) Linkage, Geometric (b) Ionisation, Geometric

(c) Hydrate, Linkage (d) Ionisation, Linkage

Q.17 The smallest ligand field stabilisation energy for octahedral complex is

(a) High spin CO^{2+} complex (b) Low spin CO^{2+} complex

(c) High spin Cr^{2+} complex (d) Low spin Cr^{2+} complex

Q.18 Which is thermodynamically more stable complex?

(a) Ni^{2+} (b) Pt^{2+} (c) Co^{2+} (d) Both (a) and (b)

Q.19 The magnetic moment of Bohr's magneton (BM) of $[Fe(CN)_6]^{4-}$ and $[Fe(H_2O)_6]^{4-}$ respectively are

(a) $\sqrt{24}$, zero (b) $\sqrt{24}$, $\sqrt{24}$ (c) zero, $\sqrt{24}$ (d) zero, zero

Q.20 An example of an ionic organometallic compound is

(a) $Pb(C_2H_5)_4$ (b) $(CH_3)_3Al$ (c) $Mg(C_2H_5)_2$ (d) $(C_6H_5)_2$ Cr

Q.21 Which of the following is Wilkinson catalyst?

(a) $n^5(C_5H_5)_2\ Ni_2(PhC \equiv CPh)$ (b) $RhCl(PPh_3)_3$

(c) $R_4HCl(PPh_3)_3$ (d) $IrCl(PPh_3)_3$

Q.22 Which of the following has largest PK_b value?

(a) $C_2H_5NH_2$ (b) CH_2NH_2 (c) $(CH_3)_2NH$ (d) $(CH_3)_3N$

Q.23 Which of the following reaction will not proceed to the forward direction?

(a) $BF_4^- + BH_4^- \rightarrow BF_3H^- + BH_3F^-$ (b) $BeI_2 + HgF_2 \rightarrow BeF_2 + HgI_2$

(c) $R_2SBF_3 + R_2O \rightarrow BF_3OR_2 + R_2S$ (d) $CaS + H_2O \rightarrow CaO + H_2S$

Q.24 Solubility of iodine in liquid SO_2 is increased on the addition of KI. This is attributed to the formation of

(a) KI_3 (b) I_2SO_2 (c) $KI.4SO_2$ (d) SOI_2

Q.25 According to Bohr effect:

(a) affinity of Hb for O_2 increases with decreasing pH

(b) affinity of Hb for O_2 decreases with decreasing pH

(c) affinity of Hb for Mb changes with pH

(d) affinity of Hb for CO_2 does not change with pH.

Q.26 A light of yellow precipitate is formed in the second group of the qualitative analysis on passing H_2S even when no radical of second group is present. This is due to the presence of:

(a) Phosphate (b) Acetate (c) Oxalate (d) Nitrate

Q.27 Which of the following will not give positive chromyl chloride test?

(a) Copper chloride, $CuCl_2$ (b) Zinc chloride, $ZnCl_2$

(c) Mercuric chloride, $HgCl_2$ (d) Anilinium chloride, $C_6H_5NH_3Cl$

Q.28 Which of the following molecules will have unequal bond lengths?

(a) NF_3 (b) BF_3 (c) PF_5 (d) SF_6

Q.29 Two ice cubes are pressed over each other until they unite to form one block. Which one of the following forces dominates for holding them together?

(a) Dipole-dipole (b) Vander waal forces

(c) Hydrogen bond formation (d) Covalent attraction

Q.30 As per M.O theory, bond order in co-molecule is:

(a) One (b) Two (c) Three (d) Four

Q.31 Thorium element belongs to:

(a) Alkali metal (b) Transition elements (c) Lanthanides (d) Actinides

Q.32 Term symbol for ground state V^{3+} is

(a) $^3F_2$ (b) $^4S_{3/2}$ (c) $^3P_0$ (d) $^3P_2$

Q.33 Which of the following trivalent lanthanide ion is coloured?

(a) La^{3+} (b) Gd^{3+} (c) Eu^{3+} (d) Lu^{3+}

Q.34 The Boyle temperature, T_B may be defined as the temperature at which

(a) $\lim_{P\to 0}\left[\frac{\partial(Pv)}{\partial P}\right]=0$ (b) $\lim_{P\to 0}\left[\frac{\partial(Pv)}{\partial V}\right]=0$ (c) $\lim_{P\to 0}\left[\frac{\partial(V)}{\partial P}\right]=0$ (d) $\lim_{P\to 0}\left[\frac{\partial(P)}{\partial V}\right]=0$

Q.35 Critical temperature, T_C has been expressed in term of van der waal's constants 'a' and 'b'. Indicate the correct choice (R = gas constant)

(a) $T_c=\frac{a}{27b^2}$ (b) $T_c=3b$ (c) $T_c=\frac{8a}{27Rb}$ (d) $T_c=\frac{a}{27Rb}$

Q.36 The height to which water (surface tension = 72.8 dynes cm^{-1}) will rise in a glass capillary of the tube possessing radius 0.0002 cm be:

(a) 17.42 cm (b) 7.42 cm (c) 1.742 cm (d) 0.742 cm

Q.37 The fact that it is not always possible to distinguish between a liquid and a gas is due to

(a) Principle of equipartition (b) Ideal gas law

(c) Law of corresponding states (d) Principle of continuity of states

Q.38 The relation $a \neq b \neq c$ and $\alpha \neq \beta \neq \gamma = 90°$, belong to crystal system:

(a) Triclinic (b) monoclinic (c) tetragonal (d) orthorhombic

Q.39 The essential condition for a reaction to take place as per collision theory is:

(a) Volume of the molecules should decrease (b) Molecules should dissociate after collision

(c) Molecules should acquire activation energy (d) Molecules should become deactivated

Q.40 If activation energy, E_a for forward and backward reactions are 40 kJ mol^{-1} and 70 kJ mol^{-1} respectively, then reaction is

(a) Spontaneous reaction (b) Chain reaction

(c) Exothermic reaction (d) Endothermic reaction

Q.41 In which of the following, the value of pH is 12:

(a) 1 M KOH (b) 1 M NaOH (c) 1 M $Ca(OH)_2$ (d) 0.01 M NaOH

Q.42 Which of the following is a buffer solution:

(a) $NaOH + CH_3COONa$ (b) $NaOH + Na_2SO_4$

(c) $K_2SO_4 + H_2SO_4$ (d) $NH_4OH + NH_4Cl$

Q.43 The molar ionic conductance at infinite dilution of silver ions is 60.9×10^{-4} $Sm^2\ mol^{-1}$ at 25°C. The ionic mobility of silver ions at 25°Cat infinite dilution will be

(a) 6.331×10^{-8} $m^2\ v^{-1}s^{-1}$ (b) 63.31×10^{-8} $m^2\ v^{-1}s^{-1}$

(c) 633.1×10^{-8} $m^2\ v^{-1}s^{-1}$ (d) 0.6331×10^{-8} $m^2\ v^{-1}s^{-1}$

Q.44 Thermodynamic equilibrium involves:

(a) Chemical equilibrium (b) Thermal equilibrium

(c) Mechanical equilibrium (d) All of these

Q.45 For an isentropic change of state

(a) dE = 0 (b) dS = 0 (c) dH = 0 (d) dS = 1

Q.46 Joule-Thomson coefficient μ is expressed as

(a) $\mu = \frac{1}{c_P}\left(\frac{\partial H}{\partial P}\right)_V$ (b) $\mu = -\frac{1}{c_P}\left(\frac{\partial H}{\partial P}\right)_V$ (c) $\mu = -\frac{1}{c_P}\left(\frac{\partial H}{\partial P}\right)_T$ (d) $\mu = \frac{1}{c_P}\left(\frac{\partial H}{\partial P}\right)_T$

Where C_P refers to heat capacity at constant pressure.

Q.47 Entropy is related to probability by relation

(a) S = *ln*w (b) S = k / *ln*w (c) S = R*ln*w (d) S = k *ln*w

Where R is gas constant and k is Boltzmann's constant

Q.48 Which of the following expressions represents the Clausius-Clayperon equation?

(a) $\frac{\partial \ln p}{\partial T} = \frac{-\Delta H^0_{vap}}{RT^2}$ (b) $\left[\frac{\partial (G/T)}{\partial T}\right]_P = \frac{-\Delta H^0_{vap}}{T^2}$

(c) $\left[\frac{\partial (G/T)}{\partial T}\right]_P = \frac{-\Delta H^0_{vap}}{RT^2}$ (d) $\left[\frac{\partial (G/T)}{\partial (1/T)}\right]_P = 0$

Where all the symbols have their usual meanings

Q.49 Residual entropy is

(a) The entropy arising out of defects in crystalline substance

(b) The entropy possessed by crystalline substance at absolute zero

(c) The remaining entropy of the substance

(d) The entropy which is in excess over the normal value

Q.50 If a solute is under goes dissociation in one of the solvents in which its concentration is C_2 but not in the other in which its concentration is C_1, partition coefficient, K_D can be expressed as:

(a) $K_D = \frac{c_1}{c_2}$ (b) $K_D = \frac{c_1}{\sqrt[n]{c_2}}$ (c) $K_D = \frac{c_1}{c_2(1-\alpha)}$ (d) $K_D = \frac{c_2(1-\alpha)}{c_1}$

Where α is the degree of dissociation of solute.

Q.51 When succinic acid is shaken with water and ether, it

(a) dissociates into ions in water (b) associates to form dimer in water

(c) associates to form trimer in water (d) remains the same in water

Q.52Which of the following is an Irreversible cell?

(a) $Zn / Zn^{2+} // AgCl / Ag$ (b) $Zn / Zn^{2+} // Cd^{2+} / Cd$

(c) $Cd / Cd^{2+} //KCl, Hg_2Cl_2(s) / Hg$ (d) $Zn / H_2SO_4/Ag$

Q.53 The potential of a hydrogen electrode at pH = 10 is

(a) –0.59 V (b) 0.59 V (c) 0.00 V (d) –0.06 V

Q.54 The pH of an acidic buffer according to the Henderson equation is expressed as

(a) $\mathrm{pk_a} - \log\frac{[\mathrm{salt}]}{[\mathrm{acid}]}$ (b) $\mathrm{pk_a} + \log\frac{[\mathrm{salt}]}{[\mathrm{acid}]}$ (c) $\mathrm{pk_a} + \log\frac{[\mathrm{acid}]}{[\mathrm{salt}]}$ (d) $-\mathrm{pk_a} - \log\frac{[\mathrm{salt}]}{[\mathrm{acid}]}$

Q.55 The relation between electrical energy and enthalpy of a cell reaction is:

(a) $E = -\frac{\Delta H}{nF} + (\partial E/\partial T)_P$ (b) $E = -\frac{\Delta H}{nF} - (\partial E/\partial T)_P$

(c) $E = -\frac{\Delta H}{nF} + T(\partial E/\partial T)_P$ (d) $E = -\frac{\Delta H}{nF} - T(\partial E/\partial T)_P$

Q.56 If $\hat{A}$ and $\hat{B}$ are two operators such that $[\hat{A}, \hat{B}] = 1$, the value of $[\hat{A}, \hat{B}^2]$ will then be equal to

(a) $\hat{A}$ (b) $2\hat{A}$ (c) $\hat{B}$ (d) $2\hat{B}$

Q.57 Operators $\hat{A}$ and $\hat{B}$ are said to be commutative, if:

(a) $\hat{A}\hat{B} = \hat{B}\hat{A}$ (b) $\hat{A}\hat{B} \neq \hat{B}\hat{A}$ (c) $\frac{\hat{A}\hat{B}}{\hat{B}\hat{A}} = 0$ (d) $\hat{A}\hat{B} = 0$

Q.58 The vibrational frequency of HD is less than that of H_2 because

(a) H_2 has higher force constant

(b) H_2 has lower force constant

(c) HD has a higher mass and higher force constant

(d) HD has a higher mass

Q.59 In Raman spectroscopy, using mercury vapours lamp:

(a) The anti-stokes and stokes lines are equally intense

(b) The stokes lines are more intense than the anti-stokes lines

(c) The anti-stokes lines are more intense than the stokes lines

(d) None of these

Q.60 The rotational spectrum of a rigid diatomic rotor consists of equally spaced lines with spacing equal to:

(a) 0.5B (b) B (c) 1.5B (d) 2B

Where B is a rotational constant

Q.61 Hyperchromic shift refers to

(a) A shift of λ_{max} to longer wavelength

(b) A shift of λ_{max} to shorter wavelength

(c) An increase in the intensity of an absorption band with reference to its molar extinction coefficient

(d) A decrease in the intensity of an absorption band with reference to its molar extinction coefficient

Q.62 Which of the following statements is correct?

(a) A triple point is invariant (b) A triple point is monovalent

(c) A triple point is also called as incongruent melting point (d) None of these

Q.63 A racemic mixture has:

(a) Positive optical rotation (b) Negative optical rotation

(c) Infinite optical rotation (d) Zero optical rotation

Q.64 Duhem-Margules equation is

(a) $\frac{l_n p_1}{l_n p_2} = \frac{l_n x_1}{l_n x_2}$ (b) $\frac{l_n p_1}{l_n x_1} = \frac{l_n p_2}{l_n x_2}$ (c) $\frac{dl_n p_1}{dl_n p_2} = \frac{dl_n x_1}{dl_n x_2}$ (d) $\frac{dl_n p_1}{dl_n x_1} = \frac{dl_n p_2}{dl_n x_2}$

Where all the terms have their usual meanings.

Q.65 Solutions which have the same osmotic pressure at same temperature are called:

(a) Isotonic solutions (b) Regular solutions

(c) Ideal solutions (d) Non-ideal solutions

Q.66 The complex compound $K_4[Fe(CN)_6]$ is 45% dissociated in 0.1 M aqueous solution of the complex. The osmotic pressure of the solution will be:

(a) 0.68atm (b) 6.894atm (c) 68.94atm (d) None of these

Q.67 Which of the following molecule shows hyper-conjugation?

(a) Benzophenone (b) 1,3-butadiene (c) Toluene (d) 1,3-butadiyne

Q.68 Which conformation of cyclohexane is least stable?

(a) Chair (b) Half-chair (c) Boat (d) Twist-boat

Q.69 Which of the following are used for separation of pair of enantiomers?

(a) Conversion to diastereoisomers and mechanical separation

(b) Differential absorption and deracemization

(c) Chiral recognition and biochemical process

(d) All of the above

Q.70 Choose the correct statement

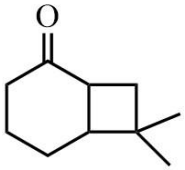
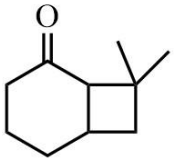
(a) Cyclopropyl methyl cation is more stable than the benzylic cation

(b) Methyl anion in gas phase is having tetrahedral structure

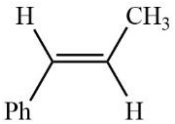
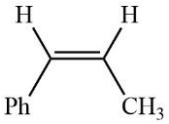
(c) It is steric hinderance to dimerization and not the resonance that is the cause of stability in triphenyl methyl radical

(d) Singlet methylene is bent with an angle of 103°

Q.71 What is(are) the products of the following reaction under photochemical condition?

(a)  (b)  (c) Both (a) and (b) (d) Neither (a) nor (b)

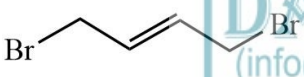
Q.72 What is(are) the products of the following reaction?

(a)  (b)  (c) Both (a) and (b) (d) Neither (a) nor (b)

Q.73 Cyclopentadienyl cation is

(a) Aromatic (b) Non-aromatic (c) Antiaromatic (d) Both (b) and (c)

Q.74 1,3-Butadiene on reaction with bromine at low temperature produces:

(a)  (b) 

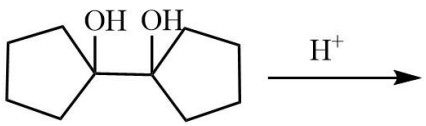
(c)  (d) Both (a) and (b)

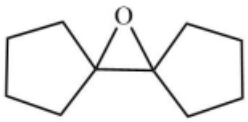
Q.75 Treatment of $PhCH = CHCH_2Cl$ with lithium aluminium hydride is

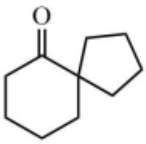
(a) S_N2 reaction (b) S_N1 reaction

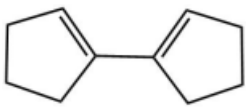
(c) Mixed S_N2 and S_N1 reaction (d) S_Ni reaction

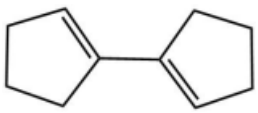
Q.76 The product of following reaction is:



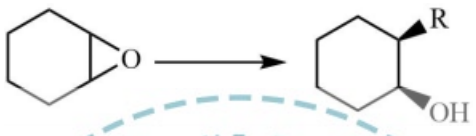
(a) 

(b) 

(c) 

(d) 

Q.77 How the following conversion is achieved?



(a) (1) RLi, (2) H^+ (b) (1) RMgBr, (2) H^+ (c) Both (a) and (b) (d) $MgBr_2$

Q.78 Phenol reacts with one equivalent of bromine at 5C in CS_2 to produce

(a) 2-Bromophenol

(b) 4-Bromophenol

(c) 2-bromophenol (major amount) and 4-bromophenol (minor amount)

(d) 2-bromophenol (minor amount) and 4-bromophenol (major amount)

Q.79 The strongest acid among the following is

(a) Propionic acid (b) 2-Chlorobutanoic acid

(c) 2-Nitroacetic acid (d) 2-Cyanoacetic acid

Q.80 choose the incorrect statement

(a) Trimethylamine shows less angle compression because the bulky methyl groups open the angle slightly

(b) Boiling point of trimethylamine is more than the diisopropylamine

(c) Dimethylamine is stronger base than trimethylamine

(d) Secondary amines react with nitrous acid to form N-nitrosoamines

Q.81 Sandmeyer reaction involves treatment of diazonium salts with

(a) $CuCl_2$ $CuBr_2$ (b) CuCN (c) CuI_2 or $CuCl_2$ (d) Both (1) and (2)

Q.82 Anisole on nitration yields more amount of

(a) 2-nitroanisole (b) 3-nitroanisole (c) 4-nitroanisole (d) Both (1) and (3)

Q.83 Choose the correct statement

(a) Formaldehyde is gas at room temperature (b) Paraformaldehyde is a linear polymer

(c) Paraldehyde is used in medicine as sedative (d) All of these

Q.84 Acid chloride (RCOCl) on reaction with lithium aluminium tri(t-butoxy) hydride gives

(a) RCHO (b) RCH_2OH (c) RCH_3 (d) Both (a) and (b)

Q.85 Treatment of ketones with peeroxyacids in presence of acid catalyst gives carboxylic ester and carboxylic acid. The reaction is called

(a) Wittig reaction (b) Cannizzaro reaction

(c) Baeyer-Villiger rearrngement (d) Favorskii rearrangement

Q.86 (+)-Sucrose is made up of

(a) (D)-(+)-Glucose and (D)-(+)-Glucose (b) (D)-(+)-Glucose and (D)-(–)-Fructose

(c) (D)-(+)-Galactose and (D)-(+)-Glucose (d) (D)-(+)-Galactose and (D)-(+)-Fructose

Q.87 Match the following:

(A)	Killiani-Fischer synthesis	(p)	Opening and closing of hemiacetal of (D)-(+)-glucose
(B)	Mutarotation	(q)	Diastereomeric aldoses pair that differ only in configuration about C-2

(C)	Anomeric effect	(r)	Lengthening of carbon chain of aldoses
(D)	Epimer	(s)	Repulsion between the dipoles associated with the oxygen of the ring

(a) (A)- (r), (B)-(p) , (C) -(s), (D)-(q)
(b) (A)-(p), (B)-(r), (C) -(q), (D)-(s)
(c) (A)-(r), (B)-(s), (C) -(p), (D)-(q)
(d) (A)-(p), (B)-(r), (C) -(s), (D)-(q)

Q.88 The potential side reaction(s) of hindered ketone with bulky Grignard reagent is(are)

(a) Enolization (b) Reduction (c) Both (a) and (b) (d) Neither (a) nor (b)

Q.89 Choose the incorrect statement

(a) Pyrrole reacts with electrophiles at all positions but prefer the 2- and 5- positions, while indole much prefer the 3-position
(b) Thiophene is very similar to benzene in reactivity
(c) The lone pair of pyridine's nitrogen is delocalised
(d) Amination of pyridine with lithium amide is called Chichibabin reaction

Q.90 Reaction of phenylhydrazine in acidic solution with an aldehyde or ketone is called

(a) Fischer indole synthesis (b) Skraup synthesis
(c) Bischler Napieralski synthesis (d) None of these

Q.91 The salts of alkyl hydrogen sulphates normally have a large non-polar hydrocarbon end of:

(a) C_5 and C_{11} carbons (b) C_{12} and C_{18} carbons
(c) C_{19} and C_{25} carbons (d) None of these

Q.92 Ethylacetoacetate on reaction with sodium ethoxide followed by methyl iodide produces

(a) $CH_3\ CH_2\ COCH_2\ COOCH_2\ CH_3$ (b) $CH_3\ COCH\ (CH_3)\ COOCH_2\ CH_3$

(c) Both (a) and (b) (d) Neither (a) nor (b)

Q.93 Which of the following stereochemical arrangement if polypropylene is highly crystalline?

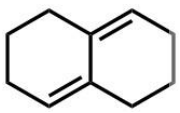
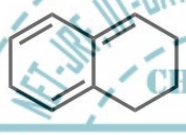
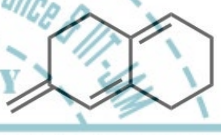
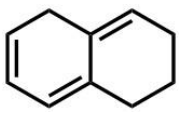
(a) Atactic (b) Isotactic (c) Syndiotactic (d) Both (2) and (3)

Q.94 Choose the pair of amino acids having aromatic character.

(a) Histidine and Tryosine (b) Cysteine and Alanine

(c) Tryptophane and Proline (d) Valine and Tryosine

Q.95 Which of the following will show higher λ_{max} in UV spectroscopy?

(a)  (b)  (c)  (d) 

Q.96 The highest λ_{max} observed in the UV spectrum of acetone is due to:

(a) n-π^* transition (b) π-π^* transition

(c) n-σ^* transition (d) σ-σ^* transition

Q.97 Which of the following bond in a molecule will have relatively more stretching frequency in IR spectrum?

(a) C – O (b) C – N (c) C – C (d) C – H

Q.98 In primary amide, the amide-I and amide-II bonds are due to:

(a) C = O str. And N-H str. (b) N-H asym. Str. And N-H sym. Str.

(c) C = O str. And N-H bending (d) N–H str. And N-H bending

Q.99 How many signals will be observed in the ^{1}H NMR spectrum of 1,2,2-tribromoethane and pure ethanol, respectively?

(a) 2 and 2 (b) 3 and 3 (c) 3 and 2 (d) 2 and 3

Q.100 What is the multiplicity of signals in acetaldehyde?

(a) Both singlets (b) Singlet and triplet

(c) Both doublets (d) Doublet and quartet

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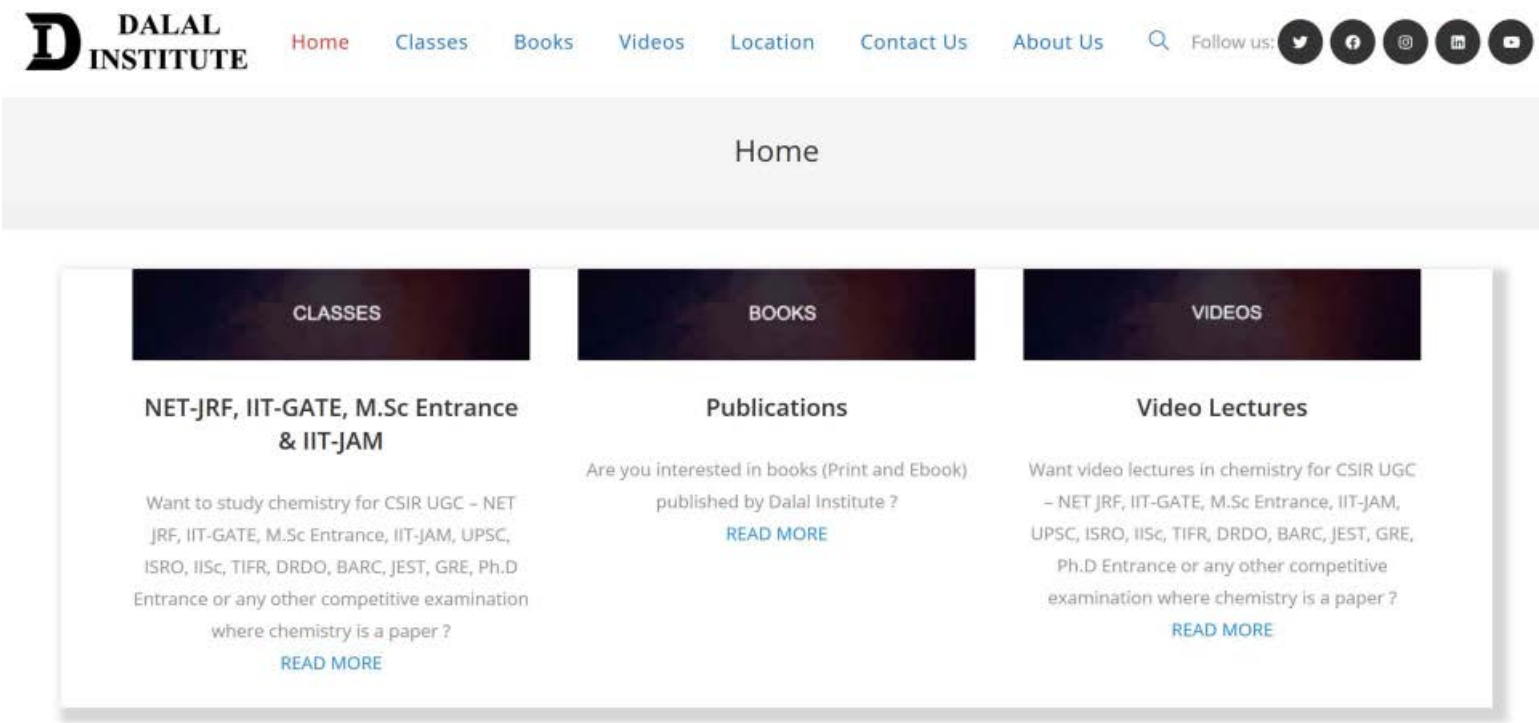

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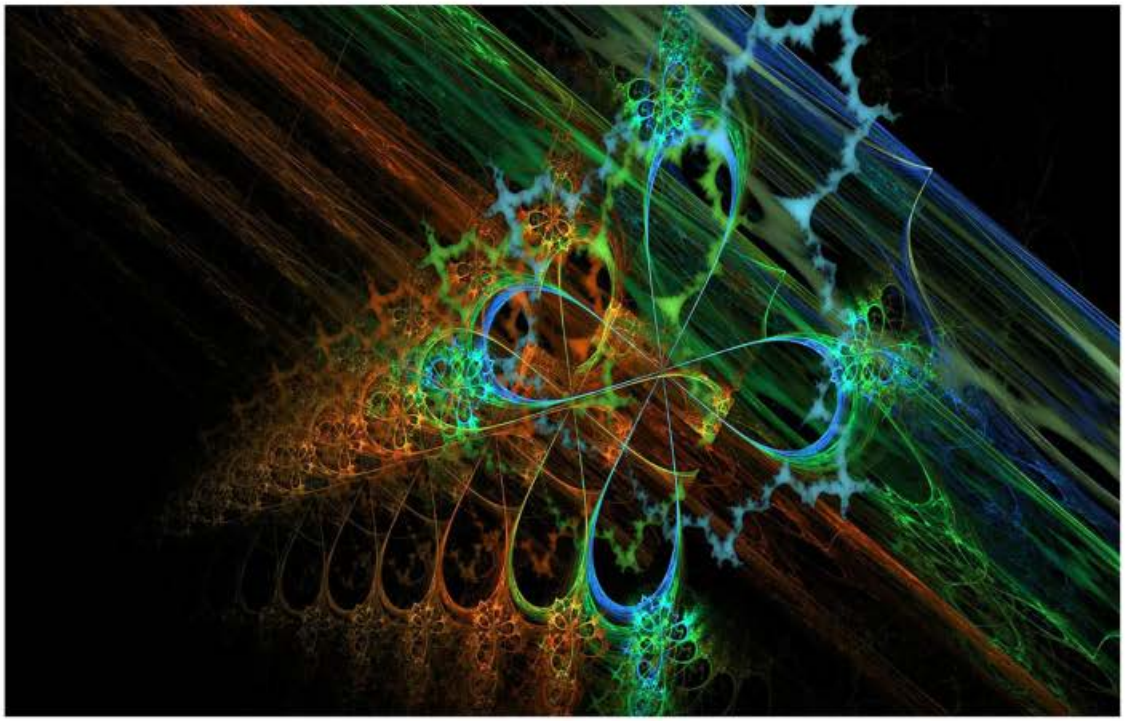

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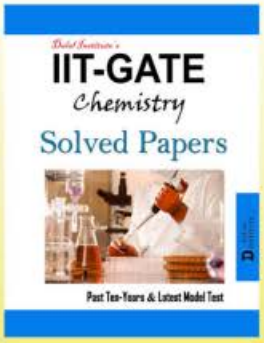

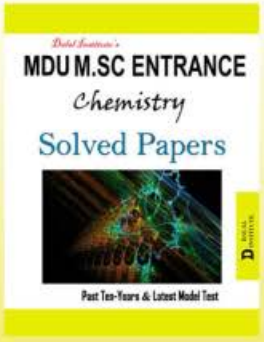

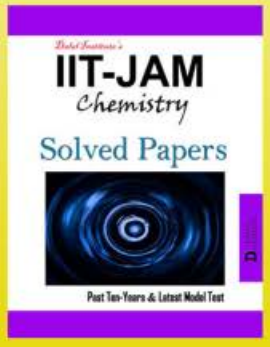

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