Module Name : PhD Chemistry-E
Exam Date : 20-Sep-2020 Batch : 16:00-18:00

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negative Marks
Objective Question				
1	1	Which of the following statement is wrong? A1 : Van der Waal's radius of iodine is more than its covalent radius A2 : All isoelectronic ion belongs to same period of periodic table A3 : IE, of N is higher than that of O while IE_2 of **O** is higher than that of N A4 : Electron gain enthalpy of N is zero while that of *P* is 73 $kJmol^{-1}$	4.0	1.00
Objective Question				
2	2	Which one of the following sequences represents the increasing order of the polarizing power of the cationic species K^+, Ca^{2+}, Mg^{2+}, Be^{2+} ? A1 : $Ca^{2+} < Mg^{2+} < Be^{2+} < K^+$ A2 : $Mg^{2+} < Bc^{2+} < K^+ < Ca^{2+}$ A3 : $Be^{2+} < K^+ < Ca^{2+} < Mg^{2+}$ A4 : $K^+ < Ca^{2+} < Mg^{2+} < Be^{2+}$	4.0	1.00
Objective Question				
3	3	In which of the following ionisation process, the bond order has increased and the magnetic behaviour has changed? A1 : $N_2 \rightarrow N_2^+$ A2 : $C_2 \rightarrow C_2^+$ A3 : $NO \rightarrow NO^*$ A4 : $O_2 \rightarrow O_2^-$	4.0	1.00
Objective Question				
4	4	Amongst $NO_3^-, AsO_3^{3-}, CO_3^{2-}, ClO_3^-, SO_3^{2-}$ and BO_3^{3-} the non-planar species are- A1 CO_3^{2-}, SO_3^{2-} and BO_3^{3-}	4.0	1.00

		: A2 : AsO_3^{3-}, ClO_3^- and SO_2^{2-} A3 : NO_3^-, CO_3^{2-} and BO_3^{3-} A4 : SO_3^{2-}, NO_3^- and BO_3^{3-}		
Objective Question				
5	5	In a molecule $(CH_3)_2N\text{-}PF_2$,BH_3 and BF_3 will coordinate of which atom/s- A1 : BH_3 and BF_3 both to N atom A2 : BH_3 to P atom and BF_3 to N atom A3 : BH_3 and BF_3 both to P atom A4 : BH_3 to N atom and BF_3 to P atom	4.0	1.00
Objective Question				
6	6	The compound that will behave as an acid in H_2SO_4 is A1 : CH_3COOH A2 : HNO_3 A3 : $HClO_4$ A4 : H_2O	4.0	1.00
Objective Question				
7	7	A metal X on heating in nitrogen gives Y. Y on treatment with H_2O gives a colourless gas which when passed through $CuSO_4$ solution gives a blue colour. Y is A1 : $Mg(NO_3)_2$ A2 : Mg_3N_2 A3 : NH_3 A4 : MgO	4.0	1.00

Objective Question				
8	8	A metal readily form water soluble sulphate MSO_4,water soluble hydroxide and oxide which becomes inert on heating. The hydroxide is soluble in NaOH. The M is A1 : Sr A2 : Ba A3 : Ca A4 : Be	4.0	1.00
Objective Question				
9	9	The square planar complex $[Ir(Cl)_3(PPh_3)_3]$ undergoes oxidative addition of Cl_2 to give two products, which are A1 : *Fac- and mer- isomers* A2 : *Cis*- and *trans*- isomers A3 : Linkage isomers A4 : Enantiomers	4.0	1.00
Objective Question				
10	10	The total number of geometrical and optical isomers for the complex ion dichloro bis (ethylene diamine) rhodium (III) is A1 : 6 A2 : 4 A3 : 2 A4 : 3	4.0	1.00
Objective Question				
11	11	The lanthanide complex (acac = acctylacetone, phen =1,10-phenanthroline) that do not have square antiprismatic structure is A1 : $[Ce(NO_3)_6]^{2-}$ A2 : $[La(acac)_3(H_2O)_2]$ A3 : $[Ce(acac)_4]$	4.0	1.00

		A4 : [*Eu*(*acac*)(*phen*)]		
Objective Question				
12	12	Which one of the following free ions has the lowest magnetic moment - A1 : Ce^{3+} A2 : Nd^{3+} A3 : Sm^{3+} A4 : Gd^{3+}	4.0	1.00
Objective Question				
13	13	Which of the following statement is NOT correct? A1 : $V(CO)_6$ is isoelectronic and isostructural with $V(N_2)_6$ A2 : $V(CO)_6$ is para magnetic and monomeric A3 : $V(CO)_6$ is diamagnetic and dimerises to form and M-M bond A4 : In $V(CO)_6$ vanadium is in zerovalent oxidation state and the compound is not very stable	4.0	1.00
Objective Question				
14	14	The correct increasing order of bond length in Pt-Cl bond trans to X in the complex $[PtCl_3X]^{n-}$ (where $X = Pet_3, C_2H_4$ and Cl^-) A1 : $C_2H_4 < Cl^- < PEt_3$ A2 : $Cl^- < C_2H_4 < PEt_3$ A3 : $PEt_3 < C_2H_4 < Cl^-$ A4 : $Cl^- < PEt_3 < C_2H_4$	4.0	1.00
Objective Question				
15	15	In $H_2Ru_6(CO)_{18}$ cluster containing 8 -coordinated Ru centres, the hydrogen atoms are A1 : both terminal A2 : both terminal and other bridging	4.0	1.00

		A3 : both bridging between two Ru centres A4 : both bridging between three Ru centres		
Objective Question				
16	16	Which of the following statement is not correct? A1 : In the structure of $Re_2 Cl_8^{2-}$, the Re-Re distance is same as that of in Re metal A2 : In the structure of, $Re_2 Cr_8^{2}$, the Re-Re distance is short as compared to Re metal A3 : Structure of $Re_2 Cr_8^{2}$, has eclipsed configuration of Cl atoms A4 : $Re_2 Cl_8^{2-}$ has D_4 symmetry	4.0	1.00
Objective Question				
17	17	A column is packed with 0.5 g of a strongly acidic ion exchange resin in H^+ form. A 1.0M NaCl solution is passed through the column until the eluant coming out becomes neutral. The collected eluant is completely neutralized by 17ml of 0.5M NaOH. The ion exchange capacity of the resin is A1 : 1.00 meq/g A2 : 1.24 meq/g A3 : 1.50 meq/g A4 : 1.75 meq/g	4.0	1.00
Objective Question				
18	18	The molar extraction coefficient of *B* (MW = 180) is $4x10^3$ lit $mol^{-1}cm^{-1}$. One litre solution of C_1 which contains 0.1358g pharmaceutical preparation of B shows an absorbance of 0.441 in a 1 cm quartz cell. The percentage (w/w) of B in the pharmaceutical preparation is A1 : 10.20 A2 : 14.60 A3 : 20.40 A4 : 29.12	4.0	1.00
Objective Question				
19	19	Although Fe(III) is a better Lewis acid compared to Zn(II), most hydrolytic enzymes contain *Zn*(II) at the active site because	4.0	1.00

		A1 : Fe(III) is a redox active ion A2 : Fe(III) has less abundance compared to Zn(II) A3 : FE(III) generally makes octahedral complexes while Zn(II) makes tetrahedral complexes A4 : Zn(II) makes kinetically labile complexes		
Objective Question				
20	20	Carboxypeptidase contains A1 : *Zn*(II) and hydrolysis CO_2 A2 : Mg(II) and hydrolysis CO_2 A3 : Zn(II) and hydrolysis peptide bond A4 : Mg(II) and hydrolysis peptide bond	4.0	1.00
Objective Question				
21	21	The number of EPR signals observed for octahedral Ni (II) complexes is A1 : one A2 : two A3 : three A4 : zero	4.0	1.00
Objective Question				
22	22	Appropriate reasons for the deviation from the Beer's law among the following are 1. Monochromaticity of light 2. Very high concentration of analyte 3. Association of analyte 4. Dissociation of analyte A1 : 1,2 and 4 A2 : 2,3 and 4 A3 : 1,3 and 4 A4 : 1,2 and 3	4.0	1.00

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Objective Question				
23	23	The half-life of ^{32}P is 14.3 day. Calculate the specific activity of phosphorus containing specimen having 1.0 ppm of ^{32}P (atomic weight of P=31). A1 : 0.295 Ci/g A2 : 0.143 Ci/g A3 : 0.385 Ci/g A4 : 0.623 Ci/g	4.0	1.00
Objective Question				
24	24	There is a stream of neutrons with kinetic energy 0.0327 eV. If the half-life of neutron is 700 sec. what fraction of neutron will decay before they travel 100 metre? (m_n=1.675x10^{-27}kg) A1 : 1.675x10^{-5} A2 : 3.96x10^{-5} A3 : 1.675x10^{-10} A4 : 3.96x10^{-10}	4.0	1.00
Objective Question				
25	25	An operator A is defined as $A=-\frac{d}{dx}+x$ Which one of the following statements is true? A1 : A is a hermitian operator A2 : A^* is an antihermitian operator A3 : Both AA^* and A^*A are hermitian operators A4 : AA^* is hermitian but A^*A is not hermitian	4.0	1.00
Objective Question				
26	26	For a certain particle encountering a barrier, the tunnelling probability is approximately e^{-10}. If the height doubled, approximate value of the tunnelling probability will be- A1 : $e^{-\frac{10}{\sqrt{2}}}$	4.0	1.00

		A2 : $e^{-10\sqrt{2}}$ A3 : $e^{-30\sqrt{2}}$ A4 : e^{-10}		
Objective Question				
27	27	Two trial wave functions $\phi = c_1 x(a-x)$ and $\phi_2 = c_1 x(a-x) + c_2 x^2(a-x)^2$ give ground state energies E_1 and E_2 respectively, for the microscopic particle in a $1-D$ box by using the variation method. If the exact ground state energy is E_0, the correct relationship between E_0, E_1 and E_2 is A1 : $E_0 = E_1 = E_2$ A2 : $E_0 < E_1 < E_2$ A3 : $E_0 < E_2 < E_1$ A4 : $E_0 > E_2 = E_1$	4.0	1.00
Objective Question				
28	28	The angular part of the wave function for the electron in a hydrogen atom is proportional to $\sin^2\theta\cos\theta e^{2/\varphi}$. The values of the azimuthal quantum number (l) and the magnetic quantum (m) are, respectively A1 : 2 and 2 A2 : 2 and -2 A3 : 3 and 2 A4 : 3 and -2	4.0	1.00
Objective Question				
29	29	The MO wave function for LiH molecule in the determinantal form will be A1 : $\psi = \left\|1\sigma\overline{1\sigma}\right\|$ A2 : $\psi = \left\|1\sigma\overline{1\sigma}2\sigma\overline{2\sigma}\right\|$ A3 : $\psi = \left\|1\sigma 2\sigma\right\|$	4.0	1.00

		A4 : $\psi = \left\|1\bar{\sigma}2\bar{\sigma}\right\|$		
Objective Question				
30	30	The highest occupied MO in N_2 and O^+_2 respectively are (Take x-axis as internuclear axis) A1 : $\sigma 2p_x, \pi^* 2p_y$ A2 : $\pi 2p_y, \pi 2p_z$ A3 : $\sigma^* 2p_x, \sigma 2p_x$ A4 : $\pi^* 2p_y, \pi^* 2p_z$	4.0	1.00
Objective Question				
31	31	A square pyramidal MX_4 molecule belongs to C_4 point group. The symmetry operations are $E, 2C_4, C_2, 2\sigma_4, 2\sigma\Delta$. The trace for the reducible representation when symmetry operations of C_4, applied to MX_4 is A1 : 51113 A2 : 11111 A3 : 51111 A4 : 41113	4.0	1.00
Objective Question				
32	32	The symmetry elements that are present in BF_3 are A1 : $C_3, \sigma_v, \sigma_n, 3C_2$ A2 : $C_3, 3C_2, S_2, \sigma_v$ A3 : $C_3, 3C_2, \sigma_n, S_2$ A4 : $C_3, \sigma_n, \sigma_v, i$	4.0	1.00
Objective Question				
33	33	The vibrational frequency and anharmonicity constant of an allyl halide are $300cm^{-1}$ and 0.0025 respectively. The positions (in cm^{-1}) of the fundamental mode and first overtone are respectively	4.0	1.00

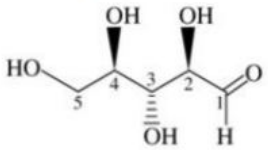
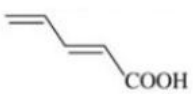
		A1 : 300, 600 A2 : 298.5, 595.5 A3 : 301.5, 604.5 A4 : 290, 580		
Objective Question				
34	34	The infrared spectrum of HCl gas shows an absorption band centred at 2885cm^{-1}. The zero-point energy of HCl molecule under harmonic oscillator approximation is A1 : 2.866x10^{-22}J A2 : 2.866x10^{-20}J A3 : 5.733x10^{-22}J A4 : 5.733x10^{-30}J	4.0	1.00
Objective Question				
35	35	1 g of perfect gas at volume V_A pressure P_A and temperature T_A changes from state A to state B when volume is V_B pressure P_B and temperature T_B. The change in entropy is A1 : $C_V \log_e \frac{V_B}{V_A} + R \log_e \frac{T_B}{T_A}$ A2 : $C_V \log_e \frac{T_B}{T_A} + R \log_e \frac{V_B}{V_A}$ A3 : $C_V \log_e \frac{V_A}{V_B} + R \log_e \frac{T_A}{T_B}$ A4 : $C_v \log \frac{T_A}{T_B} + R \log_e \frac{V_A}{V_B}$	4.0	1.00
Objective Question				
36	36	Gibbs thermodynamic potential can be represented as $G = H\text{-}TS$.Which relation hold true?(where H=Enthalpy,S=Entropy) A1 : $\left(\frac{\partial S}{\partial U}\right)_{V,N} = \frac{P}{T}$ A2 : $\left(\frac{\partial S}{\partial U}\right)_{V,N} = \frac{-P}{T}$ A3 :	4.0	1.00

		$\left(\frac{\partial S}{\partial V}\right)_{U,N}=\frac{P}{T}$ A4 : $\left(\frac{\partial S}{\partial V}\right)_{U,N}=\frac{-P}{T}$		
Objective Question				
37	37	Four phase points are distributed in two cells (*i* and *f*) in phase space. Then the thermodynamic probability for the macrostate n_i=3, n_j=1 is A1 : 2 A2 : 4 A3 : 6 A4 : 24	4.0	1.00
Objective Question				
38	38	Six distinguishable particles are to be distributed into 3 cells. Find the number of different combinations of particles that can produce the distribution (4,1,1) A1 : 1 A2 : 12 A3 : 24 A4 : 30	4.0	1.00
Objective Question				
39	39	For a 2 molal aqueous NaCl solution, the mean ionic activity coefficient $(Y_{\pm})$ and the Debye-Huckel limiting law constant (a) are related as A1 : $\log Y_a=\sqrt{2}A$ A2 : $\log Y_a=-\sqrt{2}A$ A3 : $Y_{\pm}=10^4$ A4 : $Y_{\pm}=10^{-4}$	4.0	1.00
Objective Question				
40	40	Given that $E^0(Fe^{3+},Fe)$=-0.4V and $E^0(Fe^{2+},Fe)$=-0.44V, the value of $E^0(Fe^{3+},Fe^{2+})$	4.0	1.00

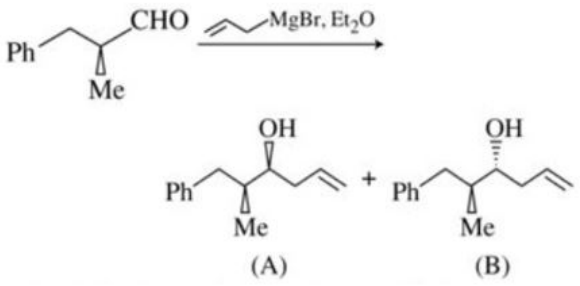
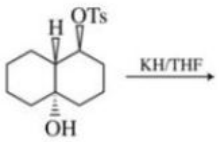
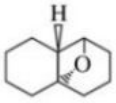
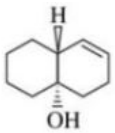
		A1 : 0.76V A2 : -.040V A3 : -0.76V A4 : 0.40V		
Objective Question				
41	41	At *T=300K, the thermal energy [k_BT] in cm^{-1} is approximately* A1 : 20000 A2 : 8000 A3 : 5000 A4 : 200	4.0	1.00
Objective Question				
42	42	For the reaction, $2X_3 \leftrightharpoons 3X_2$ the rate of formation of X_2 is A1 : $3(-d[X_3]/dt)$ A2 : $\frac{1}{2}(-d[X_3]dt)$ A3 : $\frac{1}{3}(-d\|X_3]dt)$ A4 : $\frac{3}{2}(-d\|X_3\|dt)$	4.0	1.00
Objective Question				
43	43	Arsenic (III) Sulphide forms a sol with a negative charge. Which of the following ionic substances should be most effective in coagulating the sol? A1 : KCl A2 : $MgCl_2$ A3 : $Al_2(SO_4)_3$ A4 : Na_3PO_4	4.0	1.00

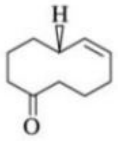
Objective Question				
44	44	Colloidal solutions of gold prepared by different methods are of different colour because of A1 : Different concentration of gold particles A2 : Variable valency of gold A3 : Different diameters of colloidal gold particles A4 : Impurities produced by different methods	4.0	1.00
Objective Question				
45	45	The spinals $CoFe_2O_4$ and $FeFe_2O_4$ respectively are A1 : inverse and inverse A2 : inverse and normal A3 : normal and normal A4 : normal and inverse	4.0	1.00
Objective Question				
46	46	The number of manganese ions in tetrahedral and octahedral sites, respectively in Mn_3O_4 A1 : One Mn^{2+} and two Mn^{3+} A2 : One Mn^{3+} and two Mn^{2+} A3 : two Mn^{3+} and one Mn^{2+} A4 : two Mn^{2+} and one Mn^{3+}	4.0	1.00
Objective Question				
47	47	There are several types of mean molar masses for polymer and they are dependent on experimental methods like: (1) osmometry (2) light scattering and (3) sedimentation. Correct relation between mean molar masses and experimental method is A1 : $\overrightarrow{M}_n \leftrightarrow 3, \overline{M}_n \leftrightarrow 2, \overline{M}_2 \leftrightarrow 1$ A2 : $\overline{M}_n \leftrightarrow 2, \overline{M}_n \leftrightarrow 3, \overline{M}_2 \leftrightarrow 1$	4.0	1.00

		A3 : $\overline{M}_n \leftrightarrow 1, \overline{M}_n \leftrightarrow 2, \overline{M}_2 \leftrightarrow 3$ A4 : $\overline{M}_n \leftrightarrow 1, \overline{M}_n \leftrightarrow 3, \overline{M}_2 \leftrightarrow 2$		
Objective Question				
48	48	The number average molar mass $(\overline{M}_n)$ and weight-average molar mass $\overline{M}_w$ of a polymer are obtained respectively by A1 : Osmometry and light scattering measurements A2 : Osmometry and viscosity measurements A3 : Light scattering and sedimentation measurements A4 : Viscosity and light scattering measurements	4.0	1.00
Objective Question				
49	49	Probable error can be used only when A1 : Data is drawn from a normal population A2 : Conditions of random sampling are prevailing during selection of samples A3 : Neither for data nor for random sampling A4 : Both for data and for random sampling	4.0	1.00
Objective Question				
50	50	Concurrent deviation method is associated with A1 : Quantitative measurement A2 : Qualitative measurement A3 : Variables of qualitative characters A4 : Correlation coefficient of variables of two qualitative characters	4.0	1.00
Objective Question				
51	51		4.0	1.00

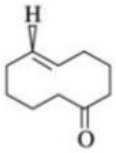
		Write the IUPAC name of  A1 : 2(S),3(S),4(S),5-tetra hydroxypentanal A2 : 2(5),3(5),4(R),5-tetra hydroxypentanal A3 : 2(R),3(R),4(S),5- tetra hydroxy pentanal A4 : 2(R),3(R),4(R),5-tetra hydroxypentanal		
Objective Question				
52	52	IUPAC name of following compound -  A1 : (4Z,2E)-Hexa-2, 4-dienoic acid A2 : (22,4E)-Hexa-2, 4-dienoic acid A3 : (4E,27)-Hexa-2, 4-dienoic acid A4 : (2E,4Z)-Hexa-2, 4-dienoic acid	4.0	1.00
Objective Question				
53	53	In the compound with structure $ClCH_2BrCH_2.C{=}C.CD_2.CH_3$ the Z configuration will have A1 : $-CH_2Br$ and $-CD_3$ on opposite sides of the double bond A2 : $-CH_2Br$ and $-CD_3$ on the same side of the double bond A3 : $-CH_2Cl$ and $-CH_3$ on opposite sides of the double bond A4 : $-CH_2Cl$ and $-CD_3$ on the same side of the double bond	4.0	1.00
Objective Question				
54	54	The dihedral angle between the C-H bonds (as viewed along the C-C bond axis) in the skew conformation of ethane can be any angle other than A1 : 0^o, 60^o, 120^o	4.0	1.00

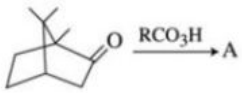
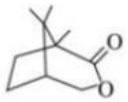
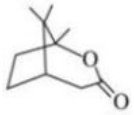
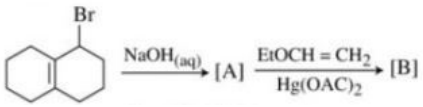
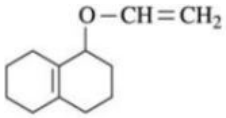
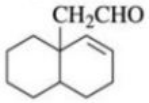
		A2 : 45^o, 90^o, 135^o A3 : 45^o, 90^o, 180^o A4 : 90^o, 135^o, 180^o		
Objective Question				
55	55	Consider the following statement, which does not satisfy the rule of aromaticity? A1 : The total number of π electrons in the molecule or ion should be $(4n+2)$ where $n = 0, 1, 2, 3$ etc. A2 : The unhybridized *p*-orbitals must overlap to give a continuous ring of parallel orbitals A3 : The molecule should be in a ring like structure and should possess planarity A4 : The atom in the ring should possess sp^3 hybridization	4.0	1.00
Objective Question				
56	56	Which of the following compound is nonaromatic? A1 : 2,4,6 -cycloheptatriene- 1 -carboxylic acid A2 : Azulene A3 : Sydnone A4 : Tropylium cation	4.0	1.00
Objective Question				
57	57	The number of unshared electrons on the carbene carbon is - A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
58	58	In the singlet and triplet states of methylene radical, the unshared electrons are respectively	4.0	1.00

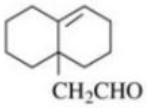
		A1 : unpaired, unpaired A2 : paired, paired A3 : unpaired, paired A4 : paired, unpaired		
Objective Question				
59	59	Which one of the following statements is true for the following transformation?  A1 : A is the major product and it is a cram product A2 : A is the major product and it is a anticram product A3 : B is the major product and it is a cram product A4 : B is the major product and it is a anticram product	4.0	1.00
Objective Question				
60	60	The major product formed in the following reaction is  A1 :  A2 :  A3 :	4.0	1.00



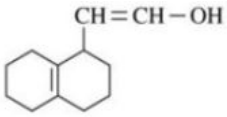
A4 :



Objective Question				
61	61	The major product of the following conversion will be  A1 :  A2 :  A3 :  A4 : 	4.0	1.00
Objective Question				
62	62	The major product \[[B]\] of following reaction sequence will be-  A1 :  A2 :  A3 :	4.0	1.00



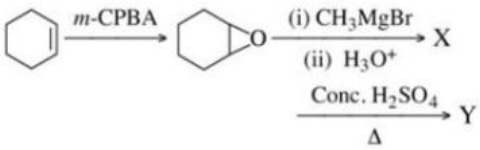
A4 :



Objective Question

63	63	Consider the following statements - I. A solution of iodine and silver acetate in moist acetic acid is known as Woodward-reagent II.OsO_4 is known as Lemieux-Johnson reagent III. DDQ is a powerful dehydrogenating agent. Select the correct statement. A1 : I,II A2 : II,III A3 : I,III A4 : I	4.0	1.00

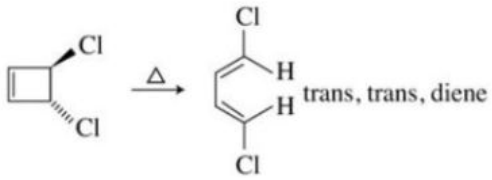
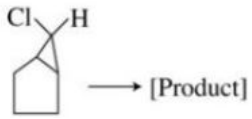
Objective Question

64	64	The correct statement with respect to the following reaction is/are  I. The major product Y is 1-methyleyclohexene II. X is a racemic mixture III. X is a single pure enantiomer IV. Y is a 2-methylcyclohexene A1 : I,III A2 : I,II A3 : II,IV A4 : I,III,IV	4.0	1.00

Objective Question

65	65	Absolute asymmetric synthesis can be carried out by A1 : Using optically active solvent	4.0	1.00

		A2 : Reacting an optically active reactant with a non-optically active one A3 : Using irradiation with circularly polarised light A4 : Using quartz vessels as the reaction container		
Objective Question				
66	66	Which of the following statement(s) is valid for protection-deprotection of functional group? A1 : In a reaction only once we can perform the protection-deprotection of functional group A2 : Protection-deprotection should be avoided if possible because it adds two extra steps in a reaction A3 : The goal of protection and deprotection is to keep the number of steps to a minimum A4 : If two like functional groups in a molecule, are present, protection can be done if one functional group reacts at a different rate in the protecting group reaction	4.0	1.00
Objective Question				
67	67	Which of the following regarding the structure of (E)- 4 -methyl- 3 -heptene are not correct? I. The n-propyl and **H** are on the same side of the double bond. II. The n-propyl and ethyl are on the same side of the C=C bond. III. The methyl and **H** are on the same side of the double bond. IV. The ethyl and methyl are on the same side of the double bond. A1 : I and II A2 : II and IV A3 : III and IV A4 : II and III	4.0	1.00
Objective Question				
68	68	Consider the following statements: I. A reaction catalysed by an enzyme always gives an optically active product. II. A racemate can be distinguished from a meso or an achiral compound by an attempted resolution. III. Conversion of an erythro to a threo stereoisomer always occur by inversion at one chiral "C". IV.A D-enantiomer rotates the plane of polarized light to the right and L-enantiomer to the left. V. All stereospecific reactions are necessarily stereo-selective, but the converse is not true. Select the correct statement A1 : II, III, V A2 : I, II, IV A3 : III, IV, V	4.0	1.00

		A4 : III, IV		
Objective Question				
69	69	In the reaction shown below, the ring opening takes place through  A1 : Conrotation A2 : Disrotation A3 : Conrotation followed by disrotation A4 : Insertion	4.0	1.00
Objective Question				
70	70	In the reaction given below, which one of the statements is correct?  A1 : The product formed is the result of sigmatropic shift A2 : The ring opening does not take place in the transition state and it is not a electrocyclic reaction and there is no product formation A3 : The product can only form when the leaving group is ex in position A4 : The product formed due to electrocyclic ring opening in a disrotatory mode and the disrotatory mode which moves the bridgehead hydrogens outward.	4.0	1.00
Objective Question				
71	71	Pyridine undergoes nucleophilic substitution with $NaNH_2$ at 100^oC to form A1 : 2-Aminopyridine A2 : 3-Aminopyridine A3 : 4-Aminopyridine A4 : 2,3-diaminopyridine	4.0	1.00

Objective Question				
72	72	Which of the following reagents will react with pyrrole to form 2 -formyl pyrrole? A1 : HCOOH A2 : $CHCl_3$/KOH A3 : H_2O_2 A4 : $(CH_3CO)_2O/SnCl_4$	4.0	1.00
Objective Question				
73	73	α-terpincol on dehydration with oxalic acid to give A1 : terpinolene A2 : dipentene A3 : Both terpinolene and dipentene A4 : None of these	4.0	1.00
Objective Question				
74	74	Exposing an organism to a certain chemical can change nucleotide bases in a gene, causing mutation. In one such mutated organism if a protein had only 70% of the primary amino acid sequence, which of the following is likely occur ? A1 : Mutation broke the protein A2 : The organism could not make amino acids A3 : Mutation created a terminator codon A4 : The gene was not transcribed	4.0	1.00
Objective Question				
75	75	The correct order for the basic features of a mass spectrometer is A1 : acceleration, deflection, detection, ionisation A2 : ionisation, acceleration, deflection, detection A3 : acceleration, ionisation, deflection, detection	4.0	1.00

		A4 : acceleration, deflection, ionisation, detection		
Objective Question				
76	76	To check that a secondary alcohol has been completely oxidised to a ketone you can A1 : check that the IR spectrum has absorptions at 3500cm^{-1} and 1650cm^{-1} A2 : check that the IR spectrum has no absorption around 3500cm^{-1} A3 : check that the IR spectrum has no absorption around 1650cm^{-1} A4 : check that the IR spectrum has no absorption at 3500cm^{-1} and 1650cm^{-1}	4.0	1.00
Objective Question				
77	77	Maximum Nanotechnology focus is on A1 : Semiconductors A2 : Hybrid materials A3 : Healthcare A4 : Information technology	4.0	1.00
Objective Question				
78	78	Which one is example of passive nanostructures that is 1st generation product? A1 : Targeted drugs A2 : 3D transistors A3 : Nanostructured metals A4 : Robotics	4.0	1.00
Objective Question				
79	79	*E* factor is A1 : Mass ratio of waste to desired product A2 : Ratio of molecular weight of desired product and molecular weights of all substances produced in stoichiometric equation A3 Percentage of product of all the materials used in its preparation	4.0	1.00

		: A4 : Total mass used in a process divided by the mass of product		
Objective Question				
80	80	Green Chemistry eliminates waste- A1 : At the end of the process A2 : At source A3 : Somewhere in middle of the process A4 : Nothing to do with waste remediation	4.0	1.00
Objective Question				
81	81	The disease not caused by a bacterium is A1 : Pneumonia A2 : Meningitis A3 : Syphillis A4 : Poliomylitis	4.0	1.00
Objective Question				
82	82	Which of the following statement is wrong? A1 : Penicillin and cephalosporin are commonly referred to as β-lactum antibiotics A2 : Chloroquine is a 4-aminoquinoline derivative A3 : Most of the analgesics are obtained from opium A4 : Interferon is a drug for tuberculosis	4.0	1.00
Objective Question				
83	83	Turbidity in water may be checked by coagulant such as A1 : Ferric chloride A2 : Ferric sulphate	4.0	1.00

		A3 : Ferric alum A4 : All of these		
Objective Question				
84	84	Which among the following are more resistant to undergo decomposition in soil? A1 : Carbohydrates A2 : Proteins A3 : Tannins and lignin A4 : Lipids	4.0	1.00
Objective Question				
85	85	If $\tan A, \tan B$ are the roots of $x^2 - Px + Q = 0$ (where $P, Q \in R$), then the value of $\sin^2(A+B) =$ A1 : $\frac{P^2}{P^2+(1-Q)^2}$ A2 : $\frac{P^2}{P^2+Q^2}$ A3 : $\frac{Q^2}{P^2+(1-Q)^2}$ A4 : $\frac{P^2}{(P+Q)^2}$	4.0	1.00
Objective Question				
86	86	If $a_k = \frac{1}{k(k+1)}$, for $k = 1, 2, 3, \ldots\ldots, n$, then $\left(\sum_{k=1}^{n} a_k\right)^2 =$ A1 : $\frac{n}{n+1}$ A2 : $\frac{n^2}{(n+1)^2}$ A3 : $\frac{n^4}{(n+1)^4}$ A4 : $\frac{n^6}{(n+1)^6}$	4.0	1.00

Objective Question				
87	87	$\sum_{k=1}^{\infty}\frac{1}{k!}\left(\sum_{n=1}^{k}2^{n-1}\right)=$ A1 : e A2 : e^2+e A3 : e^2 A4 : e^2-e	4.0	1.00
Objective Question				
88	88	The sum of the series $\frac{x}{1-x^2}+\frac{x^2}{1-x^4}+\frac{x^4}{1-x^8}+\ldots\ldots$ to infinite terms, if $\lvert x\rvert<1$ is A1 : $\frac{x}{1-x}$ A2 : $\frac{1}{1-x}$ A3 : $\frac{1+x}{1-x}$ A4 : 1	4.0	1.00
Objective Question				
89	89	If $a=\cos\frac{4\pi}{3}+i\sin\frac{4\pi}{3}$, then $\begin{vmatrix}1 & 1 & 1\\ 1 & a & a^2\\ 1 & a^2 & a\end{vmatrix}$ is A1 : purely real A2 : purely imaginary A3 : $a\left(\cos\frac{2\pi}{3}+i\sin\frac{2\pi}{3}\right)$ A4 : a	4.0	1.00
Objective Question				
90	90	If A and B are square matrices of the same order and A is non-singular, then for a positive integer n, $(A^{-1}BA)^n$ is equal to	4.0	1.00

		A1 : $A^{-n}B^nA^n$ A2 : $A^nB^nA^{-n}$ A3 : $A^{-1}B^nA$ A4 : $n(A^{-1}BA)$		
Objective Question				
91	91	If A and B are any two different square matrices of order n with $A-B$ is non-singular and $A^3=B^3$ and $A(AB)=B(BA)$, then A1 : $A^2+B^2=O$ A2 : $A^2+B^2=I$ A3 : $A^2+B^3=I$ A4 : $A^3+B^3=O$	4.0	1.00
Objective Question				
92	92	A committee of 6 is chosen from 10 men and 7 women to contain atleast 3 men and 2 women. The number of ways this can be done, if two women refuse to serve on the same committee, is A1 : 8000 A2 : 7800 A3 : 7600 A4 : 7200	4.0	1.00
Objective Question				
93	93	Let $f(x)$ be a function such that $f'(x)=f(x), f(0)=1$ and $g(x)$ be a function such that $f(x)+g(x)=x^2$ Then $\int_0^1 f(x)g(x)dx=$ A1 : $e-\frac{e^2}{2}-\frac{5}{2}$ A2 : $e+\frac{e^2}{2}-\frac{3}{2}$ A3 : $e-\frac{e^2}{2}-\frac{3}{2}$	4.0	1.00

		A4 : $e+\frac{e^2}{2}+\frac{5}{2}$		
Objective Question				
94	94	If the system of equations $x+ky+3z=0, 3x+ky, -2z=0, 2x+3y-4z=0$ has non trivial solution then $\frac{xy}{z^2}=$ A1 : 5/6 A2 : -5/6 A3 : 6/5 A4 : -6/5	4.0	1.00
Objective Question				
95	95	Express in standard form: $(1+2i)^6 (4i+3)^3$ A1 : 15625 A2 : -15625 A3 : 14625 A4 : -14625	4.0	1.00
Objective Question				
96	96	If $A=\begin{bmatrix}2&0&0\\-1&2&3\\3&3&5\end{bmatrix}$, then find $A(\text{adj}.A)$ A1 : $4I$ A2 : $2I$ A3 : $5I$ A4 : $7I$	4.0	1.00
Objective Question				
97	97		4.0	1.00

		For what value of x, is the matrix $A=\begin{bmatrix}0 & 1 & -2\\ -1 & 0 & 3\\ x & -3 & 0\end{bmatrix}$ skew-symmetric matrix? A1 : 2 A2 : -1 A3 : 4 A4 : -3		
Objective Question				
98	98	If $f(x)=\int_0^x\left(t^2+2t+2\right)dt, 2\le x\le 4,$ then A1 : the maximum value of $f(x)$ is $\frac{136}{3}$ A2 : the minimum value of $f(x)$ is 10 A3 : the maximum value of $f(x)$ is 26 A4 : the maximum value of $f(x)$ is zero	4.0	1.00
Objective Question				
99	99	$\int_{-3\pi/2}^{-\pi/2}\left[(x+\pi)^3+\cos^2(x+3\pi)\right]dx$ is equal to A1 : $\frac{\pi^4}{32}$ A2 : $\frac{\pi^4}{32}+\frac{\pi}{2}$ A3 : $\frac{\pi}{2}$ A4 : $\frac{\pi}{2}-1$	4.0	1.00
Objective Question				
100	100	Let a,b and c be distinct non-negative numbers. If the vectors $a\hat{i}+a\hat{j}+c\hat{k},\hat{i}+\hat{k}$ and $c\hat{i}+c\hat{j}+b\hat{k}$ lie in a plane, then c is A1 : the arithmetic mean of a and b	4.0	1.00

		A2: the geometric mean of a and b A3: the harmonic mean of a and b A4: equal to zero.		