Subject Code	Q Id	Questions	Answer Key
604	1051	Hybridizations of atomic orbitals of N-atom in NO_2^+, NO_3^- and NH_4^+ ions are (A) sp^2, sp and sp^3 respectively (B) sp, sp^2 and sp^3 respectively (C) sp, sp^3 and sp^2 respectively (D) sp^2, sp^3 and sp respectively	(B)
604	1052	Which of the following molecules has the highest bond order? (A) O_2^+ (B) O_2 (C) O_2^- (D) O_2^{2-}	(A)
604	1053	The structure and hybridization of $Si(CH_3)_4$ are (A) trigonal, sp^2 (B) bent, sp (C) octahedral, $sp^3 d$ (D) tetrahedral, sp^3	(D)
604	1054	Among the following ions the $p\pi$ - $d\pi$ overlap could be present in (A) CO_3^{2-} (B) NO_3^- (C) PO_4^{3-} (D) NO_2^-	(C)
604	1055	Which of the following two are iso structural? (A) XeF_2, IF_2^- (B) PCl_5, ICl_5 (C) CO_3^{2-}, SO_3^{2-} (D) NH_3, BF_3	(A)
604	1056	Hydrogen bond is strongest in (A) F-H⋯O (B) O-H⋯S (C) S-H⋯O (D) F-H⋯F	(D)
604	1057		(C)

		Among the compounds BF_3, NCl_3, H_2S, SF_4 and $BeCl_2$, identify the ones in which the central atom has the same type of hybridization.	
		(A) H_2S and $BeCl_2$	
		(B) BF_3, NCl_3 and H_2S	
		(C) NCl_3 and H_2S	
		(D) SF_4 and $BeCl_2$	
604	1058	H-O-H bond angle in H_2O is 104.5^0 and not 109^0 28' because of (A) lone pair-lone pair repulsion (B) lone pair-bond pair repulsion (C) bond pair-bond pair repulsion (D) high electronegativity of oxygen	(A)
604	1059	Which one of the following sequences represents the increasing order of the polarizing power of the cationic species, K^+, Ca^+, Mg^{2+}, Be^{2+} (A) $Mg^{2+} < Be^{2+} < K^+ < Ca^+$ (B) $Be^{2+} < K^+ < Ca^+ < Mg^{2+}$ (C) $K^+ < Ca^+ < Mg^{2+} < Be^{2+}$ (D) $Ca^+ < Mg^{2+} < Be^{2+} < K^+$	(C)
604	1060	Which one of the following pairs of species have the same bond order? (A) CN^- and NO^+ (B) CN^- and CN^+ (C) NO^+ and CN^+ (D) O_2^- and CN^-	(A)
604	1061	Which are the coloured ions? 1) Ti4+ 2) Cu+ 3) Co2+ 4) Fe2+ (A) 1, 2, 3, 4 (B) 3, 4 (C) 2, 3 (D) 1, 2	(B)
604	1062	In the manufacture of iron from haematite the limestone acts as (A) gangue (B) flux (C) slag (D) reducing agent	(B)
604	1063	Extraction for zinc from zinc blende is achieved by (A) electrolytic reduction (B) roasting followed by reduction with carbon (C) roasting followed by reduction with another metal (D) roasting followed by self-reduction	(B)

604	1064	The number of moles of $KMnO_4$ that will be needed to react with one mole of sulphite ion in acidic solution is (A) $\dfrac{3}{5}$ (B) $\dfrac{4}{5}$ (C) $\dfrac{2}{5}$ (D) 1	(C)
604	1065	Amongst $Ni(CO)_4$, $[Ni(CN)_4]^{2-}$ and $[NiCl_4]^{2-}$ (A) $Ni(CO)_4$ and $[NiCl_4]^{2-}$ are diamagnetic and $[Ni(CN)_4]^{2-}$ is paramagnetic (B) $[NiCl_4]^{2-}$ and $[Ni(CN)_4]^{2-}$ are diamagnetic and $Ni(CO)_4$ is paramagnetic (C) $(CO)_4$ and $[Ni(CN)_4]^{2-}$ are diamagnetic and $[NiCl_4]^{2-}$ is paramagnetic (D) $Ni(CO)_4$ is diamagnetic $[NiCl_4]^{2-}$ and $[Ni(CN)_4]^{2-}$ are paramagnetic	(C)
604	1066	In nitroprusside ion, iron and NO exist as Fe(II) and NO^+ rather than Fe(III) and NO. These forms can be differentiated by (A) measuring the concentration of CN^- (B) estimating the concentration of iron (C) measuring the solid state magnetic moment (D) thermally decomposing the compound	(C)
604	1067	Which one of the following complexes will have four isomers (where en=ethylenediamine)? (A) $[Co(PPh)_3(NH_3)_2Cl_2]Cl$ (B) $[Co(en)(NH_3)_2Cl_2]Cl$ (C) $[Co(en)_3]Cl_3$ (D) $[Co(en)_2Cl_2]Br$	(D)
604	1068	According to postulates of Werner theory for co-ordination compounds, (A) primary valency is ionizable (B) secondary valency is ionizable (C) primary and secondary valencies are non-ionizable (D) only primary valency is non-ionizable	(A)
604	1069	Among the following, the most stable complex is (A) $[Fe(CN)_6]^{3-}$ (B) $Fe(H_2O_6)]^{3+}$ (C) $[Fe(C_2O_4)_3)]^{3-}$ (D) $[FeCl_6]^{3-}$	(C)

604	1070	The complex used as an anticancer agent is (A) Na_2CoCl_4 (B) *cis*- $[PtCl_2(NH_3)_2]$ (C) *cis*-K_2 $[PtCl_2Br_2]$ (D) *mer*-$[Co(NH_3)_3Cl_3]$	(B)
604	1071	The spin magnetic moment of cobalt in the compound $Hg[Co(SCN)_4]$ is (A) (B) (C) (D)	(C)
604	1072	Which one of the following is an inner orbital complex as well as diamagnetic in behavior? (A) $[Cr(NH_3)_6]^{3+}$ (B) $[Ni(NH_3)_6]^{2+}$ (C) $[Zn(NH_3)_6]^{2+}$ (D) $[Co(NH_3)_6]^{3+}$	(D)
604	1073	In $Fe(CO)_5$, the Fe-C bond possesses (A)) π-character only (B) Ionic character (C) Both σ and π characters (D) σ character only	(C)
604	1074	Which of the following complex ions is expected to absorb visible light? (A) $[Sc(H_2O)_3(NH_3)_3]^{3+}$ (B) $[Ti(en)_2(NH_3)_2]^{4+}$ (C) $[Cr(NH_3)_6]^{3+}$ (D) $[Zn(NH_3)_6]^{2+}$	(C)
604	1075	On heating ammonium dichromate, the gas evolved is (A) ammonia (B) oxygen (C) nitrous oxide (D) nitrogen	(D)
604	1076	$[B_5H_5]^{2-}$, B_5H_9 and B_5H_{11} are the examples of (A) closo, nido and arachno boranes respectively (B) nido, closo and arachno boranes respectively (C) arachno, nido and closo boranes respectively (D) closo, arachno and nido boranes respectively	(A)

604	1077	Diagonal relationship is not shown by (A) Be and Al (B) B and Si (C) C and P (D) Li and Mg	(C)
604	1078	Water gas is a mixture of (A) H_2O and CO (B) CO and H_2 (C) H_2 and H_2O (D) CO and N_2	(B)
604	1079	Which of the following is more polarizable? (A) Na^+ (B) Cs^+ (C) F^- (D) I^-	(D)
604	1080	The colour of gemstone, Ruby red, is due to the replacements of Al^{3+} in octahedral site by (A) Cr^{3+} (B) Fe^{2+} (C) Ti^{4+} (D) Fe^{3+}	(A)
604	1081	Fe^{3+} forms a high-spin octahedral complex; then its magnetic moment is (A) 5.92 BM (B) 0 BM (C) 1.72 BM (D) None of the above	(A)
604	1082	The magnitude of Δ_0 value will depend upon (A) charge of the central metal ion (B) nature of the ligand (C) principal quantum number of the d-electron (D) All of the above	(D)
604	1083	E p for Co^{3+} is 250 KJ mole^{-I} and Δ_0 for the complex ion $[Co(CN)_6]^{3-}$ is 345 KJ mole^{-I}. Then the complex ion is (A) paramagnetic (B) diamagnetic (C) ferromagnetic (D) None of the above	(B)

604	1084	CFSE for a high-spin system is zero. Its electronic distribution is	(D)

CFSE for a high-spin system is zero. Its electronic distribution is

(A) $(t_{2g})^4 (e_g)^0$

(B) $(t_{2g})^6 (e_g)^3$

(C) $(t_{2g})^4 (e_g)^2$

(D) $(t_{2g})^3 (e_g)^2$

604	1085		(D)

Generally step-wise stability constants gradually decrease. This general trend is due to

(A) statistical factor

(B) steric factor

(C) electrostatic factor

(D) All of the above

604	1086		(C)

Successive stability constants of 'en' complexes with a metal ion are: log K_1= 2.5, log K_2= 1.7 and log K_3 = 0.8. Therefore, the over-all stability constant is

(A) 5

(B) 104.2

(C) 10^5

(D) None of the above

604	1087		(C)

An antidote used in mercury poisoning is

(A) *Cis*-platin

(B) Calomel

(C) EDTA

(D) None of the above

604	1088		(D)

Among the following, the most stable complex is

(A) $[Co(en)(H_2O)_4]^{3+}$

(B) $[Co(en)_2(H_2O)_2]^{3+}$

(C) $[Co(NH_3)_6]^{3+}$

(D) $[Co(en)_3]^{3+}$

604	1089		(A)

The metal present in vitamin B_{12} is

(A) cobalt

(B) manganese

(C) iron

(D) magnesium

604	1090		(A)

$[Pt(NH_3)_4]^{2+}$ on treatment with Cl^- gives a product of composition, $[PtCl_2(NH_3)_2]$. It is a

(A) *trans*-isomer

(B) *cis*-isomer

(C) mixture of *cis- trans*-isomer

(D) None of the above

604	1091	The metal carbonyl that does not obey the EAN rule is (A) $Ni(CO)_4$ (B) $V(CO)_6$ (C) $Cr(CO)_6$ (D) All of the above	(B)
604	1092	Mond's process makes use of the formation of (A) $Ni(CO)_4$ (B) $Ni(CO)_5$ (C) $Cr(CO)_6$ (D) None of the above	(A)
604	1093	Vaska's complex is (A) $[Pt(Cl)(CO)(PPh_3)_2]$ (B) $[Ir(Cl)(CO)(PPh_3)_2]$ (C) $[Ir(Cl)(CO)(PEt_3)_2]$ (D) $[Pt(CO)(Cl)(PEt_3)_2$	(B)
604	1094	Wilkinson's catalyst is (A)) $[RhCl(PPh_3)_3]$ (B) $[Rh(PPh_3)_3]Cl$ (C) $[RhCl(PEt_3)_3]$ (D) None of the above	(A)
604	1095	The increasing order of splitting of d orbitals in distorted octahedral field is (A) t_2, e (B) t_{2g}, e_g (C) d_{xz}, d_{yz}, d_{xy}, d_z^2, $d_{x^2-y^2}$ (D) d_{xz}, d_{yz}, d_z^2, d_{xy}, $d_{x^2-y^2}$	(C)
604	1096	In Irving-Williams series the stability of complexes with a given ligand is in the order (A) $Mn^{2+} < Fe^{2+} < Co^{2+} < Ni^{2+} < Cu^{2+}$ (B) $Mn^{2+} > Fe^{2+} > Co^{2+} > Ni^{2+} > Cu^{2+}$ (C) $Cu^{2+} > Ni^{2+} > Fe^{2+} > Mn^{2+} > Co^{2+}$ (D) $Cu^{2+} < Ni^{2+} < Fe^{2+} < Mn^{2+} < Co^{2+}$	(A)
604	1097	Match the following Column I Column II a) Al p) Calamine b) Cu q) Cryolite c) Mg r) Malachite d) Zn s) Carnallite	(A)

		(A) a-q, b-r, c-s, d-p	
		(B) a-q, b-s, c-p, d-q	
		(C) a-r, b-p, c-s, d-q	
		(D) a-p, b-q, c-s, d-r	
604	1098	The shape of IF_5 molecule is (A) pentagonal bipyramidal (B) square pyramidal (C) octahedral (D) trigonal planar	(B)
604	1099	Which of the following molecules has trigonal planar geometry? (A) IF_3 (B) PCl_3 (C) NH_3 (D) BF_3	(D)
604	1100	Number of lone pairs of electrons on Xe atoms in XeF_2, XeF_4 and XeF_6 molecules are respectively (A) 3, 2 and 1 (B) 4, 3 and 2 (C) 2, 3 and 1 (D) 3, 2 and 0	(A)
604	1101	Dimethyl terephthalate and ethylene glycol react to form (A) nylon-66 (B) nylon-6 (C) neoprene (D) Dacron	(D)
604	1102	The standard employed in Proton NMR spectroscopy is (A) $CDCl_3$ (B) DMSO-Cl_6 (C) Tetra ethyl lead (D) TMS	(D)
604	1103	C_6H_{14} has how many structural isomers (A) 4 (B) 5 (C) 6 (D) 7	(B)
604	1104	The enolic form of acetone contains (A) 9 sigma bonds, 1 pi bond and 2 lone pairs	(A)

		(B) 8 sigma bonds, 2 pi bond and 2 lone pairs	
		(C) 10 sigma bonds, 1 pi bond and 1 lone pair	
		(D) 9 sigma bonds, 2 pi bond and 1 lone pair	

604	1105	Anti-Markownikov's addition of HBr is not observed in (A) Propene (B) But-1-ene (C) But-2-ene (D) Pent-2-ene	(C)
604	1106	Power alcohol is a mixture of petrol and alcohol in the ratio of (A) 4:1 (B) 1:4 (C) 2:1 (D) 1:2	(A)
604	1107	When ethyl iodide is treated with dry silver oxide it forms (A) ethyl alcohol (B) diethyl ether (C) silver chloride (D) ethyl methyl ether	(B)
604	1108	Hoffmann's bromamide reaction converts (A) amide to alcohol (B) cyanide to amide (C) amide to lower amine (D) aldehyde to ketone	(C)
604	1109	Isopropyl chloride undergoes hydrolysis by (A) S_N1 mechanism (B) S_N2 mechanism (C) S_N1 and S_N2 mechanism (D) neither S_N1 and S_N2 mechanism	(C)
604	1110	Which one of the following methods is used to convert ketone into hydrocarbons? (A) aldol condensation (B) Reimer Tiemann Reaction (C) Cannizzaro Reaction (D) Wolf-Kishner reduction	(D)
604	1111	Grignard reagent on reaction with elemental sulphur followed by acidification gives (A) Sulphuric acid (B) Isothiocyanate (C) thioether	(D)

		(D) Mercaptan	
604	1112	The major Organic compound formed by the reaction of 1,1,1-Trichloroethane with silver powder is (A) 2-Butene (B) Acetylene (C) Ethene (D) 2-Butyne	(D)
604	1113	(A) Acetyl Chloride (B) Acetaldehyde (C) Acetylene (D) Ethylene.	(D)
604	1114	An aromatic compound 'A'(C_7H_9N) on reacting with $NaNO_2$/HCl at 0�C forms benzyl alcohol and nitrogen gas. The number of isomers possible for the compound 'A' is (A) 3 (B) 6 (C) 5 (D) 7	(C)
604	1115	Which of the following will have a meso-isomer also? (A) 2-Chlorobutane (B) 2,3-Dichlorobutane (C) 2,3-Dichloropentane (D) 2-hydroxypropanoic acid	(B)
604	1116	Arrange p-toluidine(I) N,N-dimethyl-p-toluidine(II) p-nitroaniline(III) and aniline(IV) in order of decreasing basicity (A) I > IV > III > II (B) I > II > III > IV (C) II > I > IV > III (D) III > I > II > IV	(C)
604	1117	(A) 1,2 (B) 1,3 (C) 1,2,3 (D) 2,3	(D)
604	1118	A Compound X(C_5H_8) reacts with ammonical $AgNO_3$ to give a white precipitate and an oxidation with hot alkaline $KMnO_4$ gives the acid, $(CH_3)_2CHCOOH$. Therefore X is (A) CH_2=CHCH=CHCH$_3$ (B) $CH_3(CH_2)_2C\equiv CH$ (C) $(CH_3)_2CH-C\equiv CH$	(C)

		(D) $(CH_3)_2C=C=CH_2$	
604	1119	Among the following statements on the nitration of aromatic compounds, the false one is (A) The rate of nitration of benzene is almost the same as that of hexadeuterobenzene (B) The rate of nitration of toluene is greater than that of benzene (C) The rate of nitration of benzene is greater than that of hexadeuterobenzene (D) Nitration is an electrophilic substitution reaction	(A)
604	1120	Reaction of trans-2-phenyl-1-bromocyclopentane on reaction with alcoholic KOH produces (A) 4-Phenylcyclopentene (B) 2-Phenylcyclopentene (C) 1-Phenylcyclopentene (D) 3-Phenylcyclopentene	(D)
604	1121	Hydroboration followed by Oxidation of 2-Methylpropene gives (A) 2-Methyl-2-propanol (B) 1,2,3-Propanetriol (C) 2-Methyl-1-propanol (D) 1,2-Popanediol	(C)
604	1122	The IUPAC name of Cl_3CCH_2CHO is (A) Chloral (B) 1,1,1-Trichloropropanal (C) 2,2,2-Trichloropropanal (D) 3,3,3-Trichloropropanal	(D)
604	1123	Total number of isomeric alcohols with formula $C_4H_{10}O$ are (A) 1 (B) 2 (C) 3 (D) 4	(D)
604	1124	Which of the following pairs show isomerism? (A) CH_4 and C_2H_6 (B) $CHCl_3$ and CCl_4 (C) CH_3CH_2OH and CH_3OCH_3 (D) NaCl and NaOH	(C)
604	1125	Which of the following compounds can exhibit tautomerism? (A) Benzaldehyde (B) Acetophenone (C) Nitrobenzene (D) 2-Aminopropane	(B)

604	1126	Which has smallest heat of hydrogenation/mol? (A) But-1-ene (B) Cis-2-butene (C) Trans-2-butene (D) 1,3-Butadiene	(A)
604	1127	An enantiomerically pure acid is treated with racemic mixture of an alcohol having one chiral carbon. The ester formed will be (A) Optically active mixture (B) Pure enantiomer (C) Meso Compound (D) Racemic Mixture	(A)
604	1128	Which of the following does not undergo S_N^2 reaction? (A) Vinyl halide (B) Allyl halide (C) Chlorobenzene (D) All of the above	(D)
604	1129	Acetaldehyde is the rearrangement product of (A) Methyl Alcohol (B) Allyl Alcohol (C) Vinyl Alcohol (D) All of the above	(C)
604	1130	The state of hybridization of carbon in triplet carbon is (A) sp^3 (B) sp^2 (C) sp (D) None of the above	(C)
604	1131	Among the following the aromatic compound is (A) Cylopropenyl cation (B) Cyclopentadienyl cation (C) Cyclobutadiene (D) Cyclopropenyl anion	(A)
604	1132	During $AgNO_3$ test for detection of halogens, sodium extract is boiled with few drops of conc.HNO_3 to decompose (A) NaCN (B) Na_2S (C) Both (A) and (B) (D) None of the above	(C)
604	1133	Sprayer used in the detection of amino acid is	(D)

		(A) iodine
		(B) Benedicts solution
		(C) Fehling's solution
		(D) Ninhydrin solution

604	1134	The reaction between 2-Methyl-1,3-butadiene and ethylene is called as (A) Michael addition (B) Diels-Alder reaction (C) Wolf-Kishner reaction (D) None of the above	(B)
604	1135	The most strained cycloalkane is (A) Cyclopropane (B) Cyclobutane (C) Cyclopentane (D) Cyclohexane	(A)
604	1136	Toluene can be converted into Benzaldehyde by oxidation with (A) $KMnO_4$/alkali (B) CrO_2Cl_2 (C) $K_2Cr_2O_7/K_2SO_4$ (D) O_2/V_2O_5	(B)
604	1137	Which of the following will react with sodium metal? (A) Ethene (B) Propyne (C) But-2-yne (D) Ethane	(B)
604	1138	The reagents required to obtain 1-iodobutane from but-1-ene is/are (A) I_2/red P (B) KI (C) HI/H_2O_2 (D) HBr/H_2O_2 and KI/acetone	(D)
604	1139	In the S_N^2 reaction of cis-3-methylcyclopentyl bromide with alkali, the product formed is (A) A cis-alcohol (B) A trans-alcohol (C) An equi molecular mixture of cis and trans alcohol (D) There is no reaction	(B)
604	1140	The action of Chloral on Chlorobenzene gives (A) BHC (B) DDT	(B)

		(C) Gammaxene	
		(D) Lindane	
604	1141	(A) C_2H_5Cl (B) C_2H_5ONa (C) CH_2N_2 (D) CH_3ONa	(B)
604	1142	Aryl halides are less reactive towards nucleophile than alkylhalides due to (A) Resonance (B) Stability of Carbonium ion (C) High Boiling point (D) None of the above	(D)
604	1143	By Wurtz reaction, a mixture of methyl iodide and ethyl iodide gives (A) Butane (B) Ethane (C) Propane (D) A mixture of the above three	(D)
604	1144	Complete hydrolysis of cellulose gives (A) D-Fructose (B) D-ribose (C) D-glucose (D) L-glucose	(C)
604	1145	The prosthetic group of haemoglobin is (A) Prophin (B) Globulin (C) Haem (D) Gelatin	(C)
604	1146	Which base is present in RNA but not in DNA? (A) Uracil (B) Cytosine (C) Guanine (D) Thymine	(A)
604	1147	Night blindness may be caused by the deficiency of vitamin (A) A (B) B (C) D (D) C	(A)

604	1148	The chemical name of vitamin C is (A) Nicotinic acid (B) Folic acid (C) Tartaric acid (D) Ascorbic acid	(D)
604	1149	Which of the following contains cobalt? (A) Vitamin A (B) Vitamin C (C) Vitamin B_{12} (D) Vitamin K	(C)
604	1150	Excess of sodium ions in our body system causes (A) High BP (B) Low BP (C) Diabetes (D) Anemia	(A)
604	1151	Which of the following polymer is used for making films and frames? (A) Polyethalene (B) Polyvinylchloride (C) Polystyrene (D) Polymethyl Methacrylate	(C)
604	1152	The number average molecular weight is given by (A) $\dfrac{\sum n_i M_i}{\sum n_i}$ (B) $\dfrac{\sum n_i M_i}{\sum M_i}$ (C) $\dfrac{\sum M_i}{\sum n_i}$ (D) $\dfrac{\sum n_i}{\sum M_i}$	(A)
604	1153	Which one of the following is always true for spontaneous change at all the temperatures? (A) $\Delta H>0;\ \Delta S<0$ (B) $\Delta H <0;\ \Delta S<0$ (C) $\Delta H<0;\ \Delta S>0$ (D) $\Delta H>0;\ \Delta S>0$	(C)
604	1154	The degree of dissociation of 0.01 M acetic acid solution is found to be 0.05 at 25°C and the molar conductance	(B)

of acetic acid at infinite dilution is 390 ◆ 10–4 S m2 mol–1 at 25oC. The specific conductance is

(A) 1.95×10^{-4} S m^2 mol^{-1}

(B) 19.5×10^{-4} S m^2 mol^{-1}

(C) 0.78×10^{-4} S m^2 mol^{-1}

(D) 0.78 S m^2 mol^{-1}

604	1155	Rate expression for the $2A \longrightarrow$ Product reaction. (A) $k_2 = \frac{1}{t}\left[\frac{1}{(a-b)} \ln \frac{a(b-x)}{b(a-x)}\right]$ (B) $k_2 = \frac{1}{t}\left[\frac{1}{(a-b)} \ln \frac{b(a-x)}{a(b-x)}\right]$ (C) $k_2 = \frac{1}{t}\left[\frac{x}{a(a-x)}\right]$ (D) $k_2 = \frac{1}{t}\left[\frac{a(a-x)}{x}\right]$	(C)
604	1156	Polymers which having regular alternation of d- and l- configurations in a molecular Chains (A) Syndiotactic polymers (B) Atactic polymers (C) Isotacic polymers (D) Stereoregular polymers	(A)
604	1157	In a $2A \longrightarrow$ Product reaction, the concentration of A decreases from 0.5 mol L^{-1} to 0.4 mol L^{-1} in 10 minutes. The average rate during this interval? (A) 0.5×10^{-3} mol L^{-1} min^{-1} (B) 5×10^{-3} mol L^{-1} min^{-1} (C) 10×10^{-3} mol L^{-1} min^{-1} (D) 0.1×10^{-3} mol L^{-1} min^{-1}	(B)
604	1158	Which of the following is used as a fuel in fuel cells? (A) Hydrogen (B) Nitrogen (C) Methane (D) Both A and C	(D)
604	1159	What is effect of adding nitrogen to the following equilibrium $N_2 + 3H_2 \rightleftharpoons 2NH_3$ (A) Equilibrium shifts towards left (B) Equilibrium shifts towards right (C) Equilibrium does not alter (D) None of the above	(B)

604	1160	The Gibb's energy for the reaction at 27° C whose equilibrium constant K=10 (A) –5.73kJ (B) –57.3 kJ (C) –0.573kJ (D) –573 kJ	(A)
604	1161	Consider the reaction at equilibrium $2SO_2+O_2 \rightleftharpoons 2SO_3$,$\Delta H=$ –ve, the procedure which yields formation of more SO_2 (A) Addition of O_2 (B) Addition of SO_3 (C) Increase of pressure at constant temperature. (D) Decrease in temperature at constant pressure	(A)
604	1162	A process in which no heat enters or leaves the system is called (A) Isothermal (B) Isobaric (C) Adiabatic (D) Isochoric	(C)
604	1163	Which one of the following is always true for adiabatic expansion of ideal gas? (A) Temperature rises (B) $\Delta H=0$ (C) q=0 (D) W=0	(C)
604	1164	An endothermic reaction A $\rightleftharpoons$ B proceeds spontaneously. Which of the following is correct for the reaction? (A) ΔS is positive and $T\Delta S > \Delta H$ (B) ΔH is positive and $\Delta H > T\Delta S$ (C) ΔS is negative and $T\Delta S > \Delta H$ (D) ΔG and ΔH both are negative	(A)
604	1165	In a reaction, $A + B \rightarrow$ Product, rate is doubled when the concentration of B is doubled, and rate increases by a factor of 8 when the concentrations of both the reactants (A and B) are doubled, rate law for the reaction can be written as (A) Rate = $k[A]^2[B]^2$ (B) Rate = $k[A][B]^2$ (C) Rate = $k[A] [B]$ (D) Rate = $k[A]^2[B]$	(D)
604	1166	Equal volumes of 1M HCl and 1M H_2SO_4 neutralised by NaOH solution and liberates heat of 'X' kcal and 'Y' kcal respectively. Which of the following is true? (A) X=Y (B) X=0.5Y (C) X=2Y (D) None of the above	(B)

604	1167	The internal energy of one mole of gas is (A) 3RT/2 (B) KT/2 (C) RT/2 (D) 3KT/2	(A)
604	1168	Which one of the following statement is not correct about the binary mixture which forms an ideal solution? (A) Has only very weak interaction between solute and solvent molecules (B) Can be separated into its two components by repeated distillation (C) Has a vapour pressure intermediate between the vapour pressure of pure components (D) Has a boiling point intermediate between the vapour pressure of pure components	(A)
604	1169	Vapour pressure of CCl_4 at 25^oC is 143mm of Hg 0.5g of a nonvolatile solute (Mol. wt 65) is dissolved in 100mL CCl_4 . The vapour pressure of solution is found to be (A) 141.97mm of Hg (B) 94.39 mm of Hg (C) 199.34mm of Hg (D) 143.99mm of Hg	(A)
604	1170	The molecular weights of four substances are given below. The 1% aqueous solution of which will have the lowest freezing point? (A) 82 (B) 180 (C) 60 (D) 342	(C)
604	1171	Which one of the following is not a colligative property? (A) Donnan Membrane equilibrium (B) Lowering of vapour pressure (C) Osmotic pressure (D) Elevation of boiling point	(A)
604	1172	The average translational kinetic energy of an ideal gas per mole (E) at 25^oC (A) $3.716 \times 10^3 J\ mol^{-1}$ (B) $1.651 \times 10^3 J\ mol^{-1}$ (C) $0.371 \times 10^3 J\ mol^{-1}$ (D) $0.311 \times 10^3 J\ mol^{-1}$	(A)
604	1173	Which of the following is classified as polyester polymer? (A) Nylon-66 (B) Bakelite (C) Terylene (D) Melamine	(C)

604	1174	The vibrational degree of freedom of the following molecules CO_2, H_2O and C_2H_2 are (A) 3, 3 and 7 (B) 4, 3 and 7 (C) 4, 3 and 6 (D) 3, 3 and 6	(B)
604	1175	The boiling point of n-heptane is 36°C. the molar heat of vaporization of n-heptane is (assume that it obeys Trouton's rule) (A) 27.192 k J mol^{-1} (B) 3.168 k J mol^{-1} (C) 2.719 k J mol (D) 31.680 k J mol^{-1}	(A)
604	1176	The viscosity of a gas with the increase of temperature (A) Same as previous (B) Decreases (C) None of above (D) Increases	(D)
604	1177	The kinetic energy of ejected electron due to photoelectric effect is (A) independent on the intensity of incident radiation (B) varies linearly with frequency of incident radiation (C) dependent on the intensity of incident radiation (D) Both (A) and (B)	(D)
604	1178	The ground state energy of the electron in He^+ species (given, R_H = 13.60 eV) (A) –13.60 eV (B) 54.40 eV (C) –54.40 eV (D) 13.60 eV	(C)
604	1179	What will be the wavelength of the ball of mass 0.1 kg moving with a velocity of 10 m s^{-1} (A) 66.26 x10–34 m (B) 6.626 x10^{-32} m (C) 0.66 x10^{-34} m (D) 6.626 x10^{-34} m	(D)
604	1180	Heisenberg uncertainty principle is expressed mathematically as (A) $\Delta x \cdot \Delta(mv_x) > h/4\pi$ (B) $\Delta x \cdot \Delta(mv_x) \geq h/4\pi$ (C)) $\Delta x \cdot \Delta(mv_x) < h/4\pi$ (D) $\Delta x \cdot \Delta(mv_x) \leq h/4\pi$	(B)

604	1181	Spectral series of hydrogen atom, which comes under visible region of electromagnetic radiation (A) Balmer series (B) Lyman series (C) Paschen series (D) Both (A) and (B)	(A)
604	1182	For an ideal gas relation between the enthalpy change and change in internal energy at constant temperature is given by (A) H=E+PV (B) $\Delta H= \Delta E+ \Delta nRT$ (C) $\Delta H= \Delta E+P\, \Delta V$ (D) $\Delta H= \Delta G+T\Delta S$	(C)
604	1183	The radii of third orbit of hydrogen atom (Given, $a_0 = 0.53\diamond$) (A) 2.12 $\diamond$ (B) 0.477 $\diamond$ (C) 4.77 $\diamond$ (D) 0.212 $\diamond$	(C)
604	1184	The Wien's displacement law is expressed mathematically as (A) $\dfrac{\lambda_m}{.b} = T$ (B) $\dfrac{\lambda_m}{T} = b$ (C) $\lambda_m b = T$ (D) $\lambda_m T = b$	(D)
604	1185	When we apply external voltage of 1.1 V to the deniell cell, then which of the following is correct? (A) No current flows through the cell (B) Current flows from Cu to Zn rod (C) Current flows from Zn to Cu rod (D) Zn dissolves at anode and copper deposits at Cathode	(A)
604	1186	Calculate the value of equilibrium constant for the reaction A+B $\diamond$ C+D, if at equilibrium there are 1mol of A,2 mol of B, 6 mol of C and 20 mol of D, in a 1L vessel (A) 60 (B) 40 (C) 120 (D) 20	(A)
604	1187	The standard Gibbs energy of Daniell cell (E^o = 1.10 V) is (A) –106.13 k J mol^{-1} (B) –21.22 k J mol^{-1}	(D)

		(C) –10.61 k J mol^{-1} (D) –212.27 k J mol^{-1}	
604	1188	The potential of hydrogen electrode in contact with a solution whose pH is 10 (A) –0.0591 V (B) –0.5910 V (C) –5.910 V (D) –0.00591 V	(B)
604	1189	The conductivity of electrolytic solutions depends on i) Size of the ions produced and their solvation ii) The nature of the electrolyte added iii) Temperature (A) i and ii (B) only ii (C) All of the above (D) ii and iii	(C)
604	1190	Consider the reaction: $Cr_2O_7^{2-} + 14H^+ + 6e^- \rightarrow 2Cr^{3+} + 7H_2O$ the amount of electricity is needed to reduce 1 mole of $Cr_2O_7^{2-}$? (F = 96490 C) (A) 5789.22 C (B) 578.922 C (C) 578922 C (D) 57892.2 C	(C)
604	1191	The anodic reaction when Lead storage battery is in use (A) $Pb(s) + SO_4^{2-}(aq) \longleftarrow PbSO_4(s) + 2e^-$ (B) $PbO_2(s) + SO_4^{2-}(aq) + 4H^+(aq) + 2e^- \longrightarrow PbSO_4(s) + 2H_2O(l)$ (C) $PbO_2(s) + SO_4^{2-}(aq) + 4H^+(aq) + 2e^- \longleftarrow PbSO_4(s) + 2H_2O(l)$ (D) $Pb(s) + SO_4^{2-}(aq) \longrightarrow PbSO_4(s) + 2e^-$	(D)
604	1192	The monomer of Buna-S are (A) Styrene and butadiene (B) Isoprene and butadiene (C) Butadiene and vinyl chloride (D) Butadiene	(A)
604	1193	How much of electricity is required to produce 20g of Ca from molten $CaCl_2$? (A) 1 F	(A)

		(B) 2 F	
		(C) 4 F	
		(D) 3 F	
604	1194	At atmospheric pressure, azeotropic solutions (A) Cannot be separated into pure components by fractional distillation (B) Can be separated into pure components by fractional distillation (C) Can be separated into its components by single distillation (D) Can be separated into its components by steam distillation	(A)
604	1195	As compared to iron, aluminum has (A) Higher tendency to oxidize (B) Less tendency to oxidize (C) Equal tendency to oxidize (D) None of the above	(A)
604	1196	Rate expression for half order reaction from the followings is (A) $Rate = k\,[A]^{3/2}\,[B]^{-1}$ (B) $Rate = k\,[A]^{1/2}\,[B]^{3/2}$ (C) $Rate = k\,[A]^{3/2}\,[B]^{-1/2}$ (D) $Rate = k\,[A]^{1/2}\,[B]^{-1/2}$	(A)
604	1197	Which statement is valid for second order reaction kinetics? (i) $t_{1/2}$ of second order reaction is inversely proportional to its initial concentration of reactants. (ii) $t_{1/2}$ of second order reaction is directly proportional to its initial concentration of reactants. (iii) $t_{1/2}$ of second order reaction is does not remain constant as the reaction proceeds. (iv) $t_{1/2}$ of second order reaction is inversely proportional to square of its initial concentration of reactants . (A) i and iii (B) Only i (C) Only iv (D) iii and iv	(A)
604	1198	The correct form of Arrhenius equation is (A) $\ln k = {E_a}/{(RT)} - \ln A$ (B) $\ln k = {E_a}/{(RT)} + \ln A$ (C)	(D)

		$Rate = k\,[A]^{3/2}\,[B]^{-1/2}$ (D) $\ln k = -\,E_a/(RT) + \ln A$	
604	1199	Which one of the following is not a condensation polymer? (A) Dacron (B) Neoprene (C) Melamine (D) Glyptal	(B)
604	1200	A reaction involving two different reactants can never be (A) Unimolecular reaction (B) First order reaction (C) Second order reaction (D) Bimolecular reaction	(A)