

**MARCH QUESTIONS ANALYSIS (2006 - 2015)**

Q. No	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
31	Heisenberg's Uncertainty principle	Why is He <sub>2</sub> not formed	Heisenberg's Uncertainty principle	hybridization	bond order	Heisenberg's Uncertainty principle	significance of negative electronic energy	Heisenberg's Uncertainty principle	significance of negative electronic energy	hybridization
32	electron affinity of F less than that of Cl	Compare the ionization energy of N & O	Define electron affinity	I.E of Ne is greater than that of F	electron affinities of Be & N are almost zero	Page.No:44	1 <sup>st</sup> I.E of Al lower than that of Mg	electron affinity of F less than that of Cl	why 1 <sup>st</sup> I.E of Be is greater than that of B	If the d(Si-C) is 1.93 Å and r(C) is 0.77 Å, Find the radius of Silicon atom.
33	Out of syllabus	P <sub>2</sub> O <sub>5</sub> is powerful dehydrating agent	potash alum prepared	P <sub>2</sub> O <sub>5</sub> is powerful dehydrating agent	Plumbo solvency	HF cannot be stored in glass bottles	P <sub>2</sub> O <sub>5</sub> is powerful dehydrating agent	Plumbo solvency	P <sub>2</sub> O <sub>5</sub> is powerful dehydrating agent	interhalogen compound? Give an one preparation
34	H <sub>3</sub> PO <sub>4</sub> is triprotic	HF cannot be stored in glass bottles	electronic structure of i.H <sub>3</sub> PO <sub>3</sub> ii.PCl <sub>5</sub>	inert pair effect	H <sub>2</sub> PO <sub>3</sub> is diprotic	action of heat on H <sub>3</sub> PO <sub>4</sub>	uses of neon	H <sub>3</sub> PO <sub>4</sub> is triprotic	uses of He	H <sub>3</sub> PO <sub>4</sub> is triprotic
35	why Mn <sup>2+</sup> is more stable than Mn <sup>3+</sup>	aqua regia	chrome – plating	d-block elements have variable oxidation states	transition elements form complexes	d-block elements have variable oxidation states	transition elements form complexes	d-block elements have variable oxidation states	transition elements form complexes	transition elements form complexes
36	magnetic moment of 3.9 BM. How many unpaired e <sup>-</sup> does it contain	d-block elements have variable oxidation states	action of heat on copper sulphate crystals	Chromyl chloride test	chrome – plating	aqua regia	Chromyl chloride test	splitting of silver and how is it prevented	aqua regia	splitting of silver and how is it prevented
37	principle behind the 'Hydrogen bomb'	Page.No:146 Ex-7	${}_{92}\text{Th}^{232} \rightarrow {}_{82}\text{Pb}^{208}$ , how many $\alpha$ and $\beta$ emitted ejected	${}_{84}\text{A}^{218} \rightarrow {}_{82}\text{Pb}^{216}$ , how many $\alpha$ and $\beta$ emitted	principle behind the 'Hydrogen bomb'	uses of Radio carbon dating.	${}_{2}\text{U}^{235} + {}_{0}\text{n}^1 \rightarrow {}_{42}\text{Mo}^{98} + {}_{54}\text{X}^{136} + \text{X}_1\text{e}^0 + \text{Y}_0\text{n}^1$ Calculate the X&Y	t <sub>1/2</sub> = 140 days. Calculate the average life.	decay constant for Ag <sup>108</sup> if its half life is 2.31 minutes	principle behind the 'Hydrogen bomb'

38	Superconductors . give an application	Determine the n.of CsCl unit per unit cell	molecular crystals	Sketch the Sc,Bcc,Fcc	superconductors	molecular crystals	vitreous state	superconductors	vitreous state	How are glasses formed
39	entropy? What is its unit	Kelvin – Planck statement	Page.No:170 Ex-1	Page.No:172 Ex-2	Page.No:172 Ex-3	Page.No:180 Ex-18	Page.No:170 Ex-1	Page.No:172 Ex-4	Page.No:180 Ex-20	entropy? What is its unit
40	Page.No:195 Ex-18	Le Chatlier's principle	Relationship b/w formation equilibrium & dissociation constant	Dissociation of $\text{PCl}_5$ decreases in presence of increase $\text{Cl}_2$	Le Chatlier's principle	reaction quotient	Le Chatlier's principle	Le Chatlier's principle	reaction quotient	Le Chatlier's principle
41	Example for opposing reactions	Arrhenius equation and explain the terms	pseudo first order reaction	order of reaction	activation energy	pseudo first order reaction	$t_{1/2}$ period of a first order reaction is independent of the initial concentration of the reactant	opposing reactions	consecutive reaction	simple and complex reaction
42	$t_{1/2}$ period of a first order rxn is 20 min. Calculate the rate constant	parallel reaction	activation energy	Arrhenius equation and explain the terms	parallel reaction	Arrhenius equation and explain the terms	consecutive reaction	Arrhenius equation and explain the terms	activation energy	rate constant for a first order reaction is $1.54 \times 10^{-3} \text{ sec}^{-1}$ . Calculate $t_{1/2}$
43	electrophoresis	colloidal system of gas in gas does not exist	heterogeneous catalysis? Give an example	Perptisation? Give an example	promoters? Give an example	general characteristics of catalytic reaction	Brownian movement	electrophoresis	Tyndall effect	Catalysis poison? Give an example
44	State Faraday's first and second laws	The mass of the substance deposited by the passage of 10A 2 hours 40 mins 50sec is 9.65g ECEqu	common ion effect? Give example	Oswald's dilution law	common ion effect? Give example	common ion effect? Give example	Buffer solution? Give example.	State Faraday's second laws	common ion effect? Give example	Oswald's dilution law
45	Mesotartaric acid is optically inactive compound with chiral carbon atom. Justify	Distinguish racemic mixture from mesoform.	racemic mixture	conditions of exhibit optical Isomerism	Mesotartaric acid is an optically inactive compound with chiral carbon atom.	Distinguish racemic mixture from mesoform.	Differentiate diastereomer & enantiomer.	Mesotartaric acid is an optically inactive compound with chiral carbon atom. Justify	racemic mixture	structure of E & Z forms of cinnamic acid

46	consumption of alcohol by a person be detected	Phenol is insoluble in NaHCO <sub>3</sub> solution but acetic acid is soluble	Alcohol cannot be used as a solvent for Grignard reagents.	Terylene be prepared	Dow's process	Terylene be prepared	coupling reaction	glycerol be prepared	Victor Meyer's test for 3 <sup>o</sup> OH	Chemical tests to distinguish propan-2-ol & 2-methylpropan-2-ol
47	Phenol to phenolphthalein	glycerol react with KHSO <sub>4</sub>	ethylene glycol to 1,4-dioxin	phenol identified	glycerol react with KHSO <sub>4</sub>	tertiary butyl alcohol to isobutylene	How is acrolein formed	Phenol to phenolphthalein	Picric acid prepared from phenol	benzyl alcohol obtained from phenyl magnesium bromide
48	IUPAC Name a. Crotonaldehyde b. Methyl-n-propylketone	acetophenone be prepared by Friedel-Crafts reaction	urotropine prepared? Mention its use.	acetophenone be prepared by Friedel-Crafts reaction	urotropine prepared? Mention its use.	acetophenone be prepared by Friedel-Crafts reaction	tests to identify aldehydes	IUPAC Name a. Crotonaldehyde b. Methyl-n-propylketone	urotropine prepared? Mention its use.	Perkin's reaction
49	Trans esterification reaction	uses of Oxalic acid	action of lactic acid with dil. H <sub>2</sub> SO <sub>4</sub>	uses of Oxalic acid	tests for Salicylic acid	aspirin prepared from salicylic acid	lactic acid into lactyl chloride.	tests for carboxylic acid	Trans esterification reaction	structure of lactyl chloride & lactic acid
50	Acetamide to methylamine	Gabriel's Phthalimide synthesis	C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub> C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> NH <sub>2</sub>	C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub> , C <sub>6</sub> H <sub>5</sub> N <sub>2</sub> Cl, C <sub>6</sub> H <sub>6</sub>	C <sub>6</sub> H <sub>5</sub> NO <sub>2</sub> , C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub> ,	CH <sub>3</sub> CONH <sub>2</sub> , CH <sub>3</sub> NH <sub>2</sub> ,	CH <sub>3</sub> NH <sub>2</sub> , CH <sub>3</sub> CN, CH <sub>3</sub> NHCH <sub>3</sub>	CH <sub>3</sub> NH <sub>2</sub> , CH <sub>3</sub> CONH <sub>2</sub> , CH <sub>3</sub> NHCH <sub>3</sub>	C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub> , C <sub>6</sub> H <sub>5</sub> N <sub>2</sub> Cl, C <sub>6</sub> H <sub>5</sub> OH	C <sub>6</sub> H <sub>5</sub> NH <sub>2</sub> , C <sub>6</sub> H <sub>5</sub> N <sub>2</sub> Cl, C <sub>6</sub> H <sub>5</sub> NO <sub>2</sub>
51	Dacron prepared. give an uses	chromophores? Give two examples	Why are Iodoform and phenolic solutions called antiseptic	Nylon-66 prepared? Give its use	chromophores? Give two examples	characteristics of dyes	antioxidants? Give two examples	antipyretics? Give two examples	Antacids are important? Give an examples	Food preservatives
52	O <sub>2</sub> molecule	Davison and Germer's Experiment	Mo theory	Page.No:12 Ex-5	O <sub>2</sub> molecule	De-Broglie's equation	Page.No:8 Ex-4	O <sub>2</sub> molecule	N <sub>2</sub> molecule	Mo theory
53	Zinc extracted from Zinc blende	potassium dichromate prepared from chromite ore	gold extracted from its ore	Cr <sub>2</sub> O <sub>3</sub> reduced to chromium by aluminothermic process	potassium dichromate prepared from chromite ore	Zinc extracted from Zinc blende	Silver extracted from its ore	silver extracted from its ore	Zinc extracted from Zinc blende	gold extracted from its ore

54	Similarities & difference b/w Lanthanides and Actinides	consequences of lanthanides	the position of lanthanides in the periodic table	consequences of lanthanides	Lanthanides from monazite sand	consequences of lanthanides	consequences of lanthanides	consequences of lanthanides	Lanthanides from monazite sand	uses of lanthanides
55	Werner's theory	$K_4[Fe(CN)_6]$ Name, Central metal ion, Ligand, Co-number, Geometry	chlorophyll important in environmental chemistry	$[FeF_6]^{4-}$ differ from $[Fe(CN)_6]^{4-}$	function of hemoglobin in natural process	$K_4[Fe(CN)_6]$ Name, Central metal ion, Ligand, Co-number, Geometry	coordination and ionization isomerism	$[Ni(CN)_4]^{2-}$ is diamagnetic whereas $[Ni(NH_3)_4]^{2+}$ is paramagnetic	$Cr(en)_3Cl_3]$ Name, Central metal ion, Ligand, Co-number, Geometry	coordination and ionization isomerism
56	second law of thermodynamics	characteristics of free energy	second law of thermodynamics	characteristics of entropy	second law of thermodynamics	characteristics of entropy	characteristics of entropy	second law of thermodynamics	characteristics of free energy	characteristics of free energy
57	relation between $K_P$ and $K_C$	decomposition of $PCl_5$ .	Haber's process.	contact process	relation between $K_P$ and $K_C$	decomposition of $PCl_5$ .	relation between $K_P$ and $K_C$	decomposition of $PCl_5$ .	relation between $K_P$ and $K_C$	decomposition of $PCl_5$ .
58	characteristics of order of reaction	determination of rate constant of acid hydrolysis of methyl acetate	types of complex reaction	Page.No:8 Ex	characteristics of order of reaction	characteristics of order of reaction	Page.No:9 Ex	characteristics of order of reaction	rate constant of a first order reaction	characteristics of a first order reaction
59	Page.No:102 Ex-10	Page.No:101 Ex-5	Page.No:92 Ex	Nernst equation	Page.No:102 Ex-10	Page.No:95 Ex-2	Nernst equation	Page.No:92 Ex	Page.No:94 Ex-1	Page No:95 Voll-2
60	ethers react with HI? Give the significance of the reaction	diethyl ether react with i. $O_2$ /long contact,ii dil. $H_2SO_4$ ,iii $PCl_5$	preparing diethyl ether	preparation of anisole	preparing diethyl ether	aliphatic ether & aromatic ether	preparing diethyl ether	preparing diethyl ether	isomerism exhibited by ethers	diethyl ether react with i. $O_2$ /long contact,ii dil. $H_2SO_4$ ,iii $PCl_5$
61	Cannizaro reaction	Aldol Condensation reaction	difference between acetaldehyde and acetone	Popott's rule with an example	Cannizaro reaction	acetone to (i) mesityl oxide (ii) mesitylene.	Aldol Condensation reaction	difference between acetaldehyde and benzaldehyde	Aldol Condensation reaction	Aldol Condensation reaction in acetone

62	lactic acid manufacture d in large scale	Distinguish between formic acid and acetic acid	mechanism involved in esterification	Kolb's electrolytic reaction	reducing nature of formic acid	mechanism involved in esterification	i) HVZ rxn ii) Trans esterification iii. Kolbe's electrolytic reaction	mechanism involved in the esterification	Oxalic acid manufactured from sodium formate	benzoic acid obtained from a.Ethyl benzene b.Benzyl alcohol,c. benzene
63	characteristics of rocket propellants	Buna rubbers	Buna-S and Nylon – 66 prepared	characteristics of rocket propellants	notes on anesthetics	characteristics of rocket propellants	Buna-S and Nylon – 66 prepared	Buna-S and Nylon – 66 prepared	characteristics of rocket propellants	notes on i. antibiotics,ii. antispasmodics
64a	Pauling's method to determine ionic radii	factors affect electron affinity	Pauling's scale	factors affect electron affinity	Pauling's method to determine ionic radii	electronegativity values help to find out the nature of bonding between atoms	Pauling's method to determine ionic radii	Pauling's scale	Pauling's method to determine ionic radii	Pauling's scale
64b	Dennis method	uses of silicones	Fluorine differ from other halogens	Anomalous nature of fluorine	Ramsay Rayleigh's method	Dewar's process	uses of silicones	Fluorine differ from other halogens	uses of silicones	Dennis method
65a	Apply V.B. theory for [Fe <sup>II</sup> F <sub>6</sub> ] <sup>4-</sup> ii) [Fe <sup>II</sup> (CN) <sub>6</sub> ] <sup>4-</sup>	[Ni(CN) <sub>4</sub> ] <sup>2-</sup> is diamagnetic whereas [Ni(NH <sub>3</sub> ) <sub>4</sub> ] <sup>2+</sup> is paramagnetic	coordination and ionization isomerism	postulates of valence bond theory	hydrate and linkage isomerism	Apply V.B. theory for [Fe <sup>II</sup> F <sub>6</sub> ] <sup>4-</sup> ii) [Fe <sup>II</sup> (CN) <sub>6</sub> ] <sup>4-</sup>	postulates of valence bond theory	coordination and ionization isomerism	postulates of valence bond theory	[Co(NH <sub>3</sub> ) <sub>4</sub> Cl <sub>2</sub> ] NO <sub>2</sub> , mention the following a) IUPAC Name b) Central metal ion c) Ligand d) Co-ordination no e) Charge on the complex ion
65b	medical uses of radioactive isotopes	'Hydrogen bomb'	Radiocarbon dating	difference between chemical and nuclear reactions	Radiocarbon dating	difference between chemical and nuclear reactions	difference between chemical and nuclear reactions	Radiocarbon dating	difference between chemical and nuclear reactions	Radiocarbon dating

66a	Schottky and Frenkel defect	nature of glass	Bragg's spectrometer method	Schottky and Frenkel defect	Bragg's spectrometer method	properties of ionic crystals	Schottky and Frenkel defect	Schottky and Frenkel defect	Bragg's spectrometer method	properties of ionic crystals
66b	adsorption theory of catalysis	intermediate formation compound theory	(i)mechanical dispersion method,(ii)electro dispersion method	adsorption theory of catalysis	preparation of colloids by chemical methods	colloidal solution be purified by dialysis	preparation of colloids by chemical methods	adsorption theory of catalysis	preparation of colloids by chemical methods	electro – osmosis OR electrophoresis
67a	Oswald's dilution law	Oswald's dilution law	Henderson equation	Quinonoid theory of indicators	Arrhenius theory of electrolytic dissociation	Henderson equation	Arrhenius theory of electrolytic dissociation	Quinonoid theory of indicators	Arrhenius theory of electrolytic dissociation	Oswald's dilution law
67b	IUPAC convention for writing cell diagram	IUPAC convention for writing cell diagram	e. m. f of a half cell determined	IUPAC convention for writing cell diagram	IUPAC convention for writing cell diagram	IUPAC convention for writing cell diagram	cell terminology	IUPAC convention for writing cell diagram	cell terminology	relation between EMF and free energy
68a	Distinguish between enantiomers and diastereomers	conformations of cyclohexanol	Distinguish between enantiomers and diastereomers	optical activity in Tartaric acid	conformations of cyclohexanol	geometrical (cis,trans) isomerism	optical activity in Tartaric acid	geometrical (cis,trans) isomerism	Distinguish between enantiomers and diastereomers	Distinguish between enantiomers and diastereomers
68b	mechanism involved in the esterification	lactic acid is (i) treated with dil. H <sub>2</sub> SO <sub>4</sub> (ii) heated alone (iii) Oxidised with alkaline KMnO <sub>4</sub>	(i) Salicylic acid to Methyl salicylate (ii) Lactic acid to Pyruvic acid (iii) Methyl cyanide to Acetamide.	(i) Salicylic acid to Aspirin (ii) Methyl acetate to Ethyl acetate (iii) Lactic acid to Pyruvic acid	i) Kolbe's electrolytic reaction and (ii) trans – esterification reaction.	(i) Lactic acid to Lactide (ii) Salicylic acid to Methyl salicylate	Bromination reaction in Salicylic acid	reducing nature of Formic acid	benzoic acid obtained from i.Toluene ii.Phenyl cyanide iii. Carbon dioxide?	i.HVZ reaction ii.Trans-esterification iii. Methyl salicylate formation
69a	Distinguish between 1 <sup>o</sup> 2 <sup>o</sup> 3 <sup>o</sup> amines	reduction nitrobenzene	i. C <sub>6</sub> H <sub>5</sub> OH, ii. C <sub>6</sub> H <sub>5</sub> Cl, iii.Biphenyl prepared by using C <sub>6</sub> H <sub>5</sub> N <sub>2</sub> Cl?	(i) Mustard oil reaction (ii) Gabriel's Phthalimide synthesis.	Distinguish between 1 <sup>o</sup> 2 <sup>o</sup> 3 <sup>o</sup> amines	(i) Carbylamine reaction (ii) Gabriel's Phthalimide synthesis	i) Mustard oil reaction (ii) Formation of Schiff's base	Distinguish between 1 <sup>o</sup> 2 <sup>o</sup> 3 <sup>o</sup> amines	reduction nitrobenzene	Distinguish between primary, secondary and tertiary amines

69b	structure of fructose	structure of fructose	carbohydrates classified	structure of glucose	carbohydrate sclassified	carbohydrates classified	structure of fructose	structure of fructose	structure of glucose	structure of fructose.
70a	2° OH	2° OH	Glycerol	2° OH	Phenol	Glycol	C <sub>6</sub> H <sub>5</sub> CH <sub>2</sub> OH	Phenol	Glycol	Glycol
70b	Cu	Cu	Ag	Ag	Cu	K <sub>2</sub> Cr <sub>2</sub> O <sub>7</sub>	Zn	Cu	Ag	Zn
70c	C <sub>6</sub> H <sub>5</sub> CHO	C <sub>6</sub> H <sub>5</sub> OH	C <sub>6</sub> H <sub>5</sub> CHO	C <sub>6</sub> H <sub>5</sub> CHO	CH <sub>3</sub> CHO	C <sub>6</sub> H <sub>5</sub> CHO	CH <sub>3</sub> CO CH <sub>3</sub>	CH <sub>3</sub> CHO	C <sub>6</sub> H <sub>5</sub> CHO	C <sub>6</sub> H <sub>5</sub> CHO
70d	Page.No:72 Ex-1	P <sup>OH</sup> Sum	Page.No:56 Ex-4	Page.No:55 Ex-2	Page.No:62 Ex-4	Page.No:68 Ex-5	Page.No:55 Ex-3	Page.No:73 Ex-2	Page.No:60 Ex-3	Page .No : 60 Vol - 2

**COMPILED BY**

**S.PRABAKAR M.Sc, B.Ed, M.Phil, PGDCA,  
PG Asst in Chemistry,  
Champion Tuition Centre,  
Achalvadi, Harur - 636903.**