

## Teaching Plan (2021-22): Class: B.Sc. PART-I (Ist Semester)

## Paper: CHEMISTRY

Name: Kirti Sharma

Sr.No	Dates	Topics
1.	1-5 September	Atomic structure-electronic configuration, de-broglie equation, heseinberg uncertainty principle, hund's rule, schrodinger wave equation, wave functions, shielding effect and number
A	7-12 September	Mathematical concept-differentiation and integration, limits, probability,
3.	14-19 September	Structure and bonding -hybridisation, resonance, conjugation etc. chemical bonding 1.
4	21-26 September	Chemistry of noble gases, alkanes and cycloalkanes
5	28-03 October	Gaseous state and physical properties and mol. Structure.
6	05-10 October	Mechanism of organic reactions-types of bonds, introduction to different-different reagents
7	12-17 October	Evaluation of analytical data -mean, mode, median, Q-test, F-test, confidence limit and problems based on these.
8	19-24 October	periodic properties-trends of periodic properties along periods and groups, chemical and physical properties of elements.
9	26-31 October	Alkenes and cycloalkenes-methods of preparation, physical and chemical properties.
10	02-07 November	Liquid state and liquid crystal-types of liquid crystals, difference b/w liquids, solids and gases
11	09-14 November	Dienes-types and their methods of preparation, physical and chemical properties
12	16-	Alkynes-types and their methods of preparation, physical and chemical properties
13	23-	MST Exams...

Govt. Shivalik College Naya Nangal

Teaching Plan (2021-22): Class: B.sc PART-II (3<sup>rd</sup> Semester)

Paper: CHEMISTRY

Name: Dr. Suman Kumari, Kirti Sharma

Sr.No	Dates	Topics
1.	1-5 September	Chemistry of elements of 1 <sup>st</sup> transition series, characteristics and properties of D-block elements.
2.	7-12 September	Alcohols - physical and chemical properties, methods of their preparations and mechanisms.
3.	14-19 September	Thermodynamics 1 & 2 - laws related to thermodynamics, Carnot cycle and Carnot theorem.
4.	21-26 September	Aldehydes - nomenclature, physical and chemical properties, mechanisms of reactions.
5.	28-03 October	Phenols - physical and chemical properties, methods of their preparations and mechanisms.
6.	05-10 October	Chemical equilibrium - thermodynamic derivations, law of mass action, Le-Chatelier's principle.
7.	12-17 October	Ketones - physical and chemical properties, methods of preparations, mechanisms of reactions.
8.	19-24 October	Thermodynamics part 2 - (part b) - concept of entropy, study of functions related to entropy, Clausius inequality equation.
9.	26-31 October	Chemistry of 1 <sup>st</sup> transition series - properties of elements, their complexes and their stability, coordination no. and their geometry.
10.	02-07 November	Chemistry of lanthanoids and actinoids - general features, and their properties.
11.	09-14 November	Thermodynamics 3 - laws of thermodynamics, Nernst equation, Gibbs function, Helmholtz function, variations of these with P, V and T.
12.	16-	Revision
13.	23-	MST Exams...

Teaching Plan (2021-22) : Class: B.sc. PART-III (5<sup>TH</sup> Semester)

## Paper: CHEMISTRY

Name: DR. Suman Kumari

Sr.No	Dates	Topics
1.	1-5 September	Metal-ligand bonding in transition metal complexes-various theory & their limitations and CFT theory.
2.	7-12 September	Spectroscopy-NMR-basic principle, structure analysis and their applications
3.	14-19 September	Elementary quantum mechanics-Plank's radiation law, photoelectric effect, Schrodinger wave equation, particle in one dimensional box, Q.no. And their importance.
4	21-26 September	Magnetic properties of transition metal complexes-types of mag. Behaviour, L-S coupling, magnetic moment and its applications
5	28-03 October	Organometallic compounds (Mg, Zn, Li) - methods of formation and chemical reactions
6	05-10 October	Spectroscopy-Rotational & vibrational-basic principle, structure analysis and their applications
7	12-17 October	Thermodynamic and kinetic aspects of metal complexes-brief outline of thermodynamic stability of metal complexes & their reactions.
8	19-24 October	Organosulphur compounds-nomenclature, structural features, methods of formation and chemical reactions
9	26-31 October	Electronic spectra of transition metal complexes-types of electronic transition, selection rule and Orgel-energy level diagram.
10	02-07 November	UV Spectroscopy-basic principle, structure analysis and their applications
11	09-14 November	IR Spectroscopy-basic principle, structure analysis and their applications
12	16-21 November	Revision
13	23-03 December	MST Exams...

**Teaching Plan (2021-22)**  
**Govt. Shivaji College Nayanangal**  
**Class: B.Sc. I (SEM -II)**

**Paper: Chemistry N**

**Name: Kirti Sharma**

Sr.No	Dates	Topics
1.	21-26 March 2022	Stereochemistry of org. Compounds- configuration, configuration, enantiomers, diastereomers, meso compounds, racemic mixture, cis and trans, E & Z System of nomenclature
2.	28 March- 2 April 2022	s-block elements-comparative study, features of hydrides, complexation tendencies, functions in biosystems
3.	4-9 April 2022	Solutions- types, colligative properties, determination of mol. Wt. Using colligative properties
4	11-16 April 2022	Alkyl & aryl halides- physical and chemical properties, relative reactivities of allyl, vinyl and aryl halides
5	18-23 April 2022	Chemical kinetics-rate of reaction, factors influencing it, order of different reactions, half-life period, radioactive
6	25-30 April 2022	Huckel's rule of aromaticity
7	2- 7 June 20 22	Catalysis- characteristics, types, acid base catalysis, enzyme catalysis, Michaelis-Menten eq.
8	9-14 June 2022	Arene & aromaticity- Nomenclature, resonance structures, MO picture, Huckel rule, aromatic electrophilic substitution reactions.
9	16-21 June 2022	Colloidal state- definition, classification, sols: properties, emulsions: types, preparation, gels: classification, p
10	23-28 June 2022	p-Block elements-gp-13-comparative study, compounds of gp 13
11.	30- 31 June 2022	p-block-14-17-comparative study, compounds of gp 14 to 17
12.	1-6 July 2022	Revision

**Govt. Shivalik College Naya Nangal**  
Teaching Plan (2021-22)

Class: B.Sc. Part II Semester  
(IV)

Paper: chemistry

Name: Dr. Sumankumari, Kirtisharma

Sr.No	Dates	Topics
1.	21-26march 2022	Coordination compounds-Werner's theory & exp. Verification, effective at. No. Concept, chelates and VBT of transition metal complexes.
2.	28march- 2april2022	Carboxylic acids-introduction, methods of preparation, physical and chemical properties
3.	4-9april 2022	Phase equilibrium-phase rule, phase components, phase diagram of one and two components system.
4	11- 16april202	Oxidation and reduction -redox cycle and their stability, Frost, Latimer and Pourbaix diagram, extraction of elements.
5	18- 23april202	Carboxylic acid derivative-introduction, structure and relative stability and reactivity of carboxylic acid derivative
6	25- 30april202	Electrochemistry I-a-- specific and equivalent conductance, Kohlrausch law, Arrhenius theory, Ostwald dil. La
7	2- 7june20 22	ACID & BASE -various theories and Lewis concept of acid and base
8	9- 14june20 22	Ether & Epoxides-introduction, nomenclature, methods of preparation, physical & chemical properties, introduction, structure and occurrence of (fats, oils & detergents)
9	16- 21june202	Non-aqueous solvent- physical properties of solvent, types, and general characteristics with reference to liq.
10	23- 28june202 2	Electrochemistry I-b- transport no., Hittorf's method, moving boundary method, conductometric titrations and conductance measurements, solubility of sparingly soluble salts. Electrochemistry II.
11.	30- 31june202	Nitro compounds- introduction, nomenclature, methods of preparation, physical & chemical properties, halo nitro arenes
12.	1-6july 2022	Amines- introduction, nomenclature, methods of preparation, physical & chemical properties, stereochemistry of amines, basicity and effect of substituents on it.

Paper:chemistry

Govt.ShivalikCollegeNayaNangal

Teaching Plan(2021-22)  
Teaching Plan(2021-22)

Class:B.Sc.PartIII Semester 6<sup>th</sup>

Name:Dr.SumanKumari

Sr.No	Dates	Topics
1.	21-26march 2022	Hardsoftacidbase- Pearson'sHSABconcept,hardnessandsoftnesstheirtheoreticalbasis,symbiosis.
2.	28march- 2april 2022	Carbohydrates- introduction,classificationandnomenclature,structureofglucose,fructose,riboseetc. Ringstructureof glucose,fructose,starchandcellulose
3.	4-9april 2022	Ramanspectrum- conceptofpolarizability,rotationalandvib.Ramanspectraofdiatomicmolecules,selectionrule
4	11-16april 2022	Bioinorganicchemistry- Essential&traceelements,haemoglobinandmyoglobin,biologicalroleofalkaliandalkaline earthmetals.Nitrogenfixation.
5	18-23april 2022	Solidstate-Lawsofcrystallography,X-raydiffractionbycrystals,bragg'seq.StructureofNaCl,KCl.
6	25-30april 2022	Polymer- preparationbyvariousmethods,addition&condensationpolymerisation,natural&syntheticrubber
7	2-7june 2022	Silicones&phosphazenes- preparation,propertiesandclassificationofinorganicpolymersandnatureofbondinginthem
8	9-14june 2022	Electronicspectrum-conceptofbondingandantibondingmolecularorbitals,Franck-condonprinciple,selectionruleofelectronicspectrum.
9	16-21june 2022	Aminoacids,peptides,proteinsandnucleicacids- theirintroductionandnomenclature,physical&chemicalproperties,
10	23- 28june202 2	Organometallicchemistry- classification,preparationofLi,Al,Hg,Sn,andTi,mononuclearcarbonylandtheirnatureofbonding
11.	30- 31june202	Enolates-introduction,preparation,applicationsofenolatesinorg.Synthesis.
12.	1-6july 2022	Photochemistry- Lawsofphotochemistry,qualitativdescriptionoffluorescenceandnonradiativeprocess