

Sr. No	Dates	Topics
1.	1-2, 4-7 October	Atomic structure- electronic configuration, de-broglie equation, heseinberg uncertainty principle, hund's rule, schrodinger wave equation, wave functions, shielding effect and numericals based on screening effect.
2	8-9, 11-14 October	Mathematical concept - differentiation and integration, limits, probability,
3.	15-16, 18-21 October	Structure and bonding - hybridisation, resonance, conjugation etc. chemical bonding 1.
4	22-23, 25-28 October	Chemistry of noble gases, alkanes and cycloalkanes
5	29-30 oct,1-5 November	Gaseous state and physical propeties and mol. Structure.
6	08-13 November	Mechanism of organic reactions- types of bonds, introduction to different- different reagents
7	15-20 November	Evaluation of analytical data - mean, mode, median, Q- test, F- test, confidence limit and problems based on these.
8	22-27 November	periodic properties- trends of periodic properties along periods and groups, chemical and physical properties of elements.
9	1-4, 6-7 December	Alkenes and cycloalkenes- methods of preparation, physical and chemical properties.
10	8-11,13-14 December	Liquid state and liquid crystal- types of liquid crystals, difference b/w liquids ,solids and gases
11	15-18, 20-22 December	Dienes - types and their methods of preparation, physical and chemical properties
12	23-25,27-31 December	Alkynes - types and their methods of preparation, physical and chemical properties
13	6-8, 10-13 January	Revision & class test

Sr. No	Dates	Topics
1.	21-26 March 2022	Stereochemisrt of org. Compounds- configuration, configuration, enantiomers, diastereomers, meso compounds, recemic mixture, cis and trans, E & Z System of nomenclature
2.	28march-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, degree of dissociatio and association
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 decay, theories of Chemical kinetics
6	25-30 april 2022	Huckel's rule of aromaticity
7	2-7june 2022	Catalysis - characteristics, types, acid base catalysis, enzyme catysis, michaelis menten eq.
8	9-14 june 2022	Arene & aromaticity - Nomenclature , resonance structures, MO picture, Huckel rule, aromatic electrophilic substituion reactions.
9	16-21 june 2022	Colloidal state - definition, classification, sols: properties, emulsions: types, preparation, gels: classification, preparation etc.
10	23-28 june 2022	P- Block elements - gp-13- comparative study, compounds of gp 13
11.	30-31june 2022	P- block - 14-17- comparative study, compounds of gp 14 to 17
12.	1-6 july 2022	Revision

Paper: CHEMISTRY

Name : Dr. Suman Kumari, Kirti Sharma

Sr. No	Dates	Topics
1.	16-22 August	Chemistry of elements of 1 <sup>st</sup> transition series, characteristics and properties of D- block elements.
2.	24-30 August	Alcohols - physical and chemical properties, methods of their preparations and mechanisms.
3.	2-9 September	Thermodynamics 1 & 2- laws related to thermodynamics, carnot cycle and carnot theorem.
4	11-17 September	Aldehydes- nomenclature, physical and chemical properties , mechanisms of reactions.
5	19-25 September	Phenols - physical and chemical properties, methods of their preparations and mechanisms.
6	04-10 October	Chemical equilibrium- thermodynamic derivations , law of mass action, Le- Chatelier's principle.
7	12-18 October	Ketones - physical and chemical properties, methods of preparations, mechanisms of reactions
8	20-27 October	Thermodynamics part 2-( part b) - concept of entropy, study of functions related to entropy, clausius inequality equation.
9	30 Oct to 6 november	Chemistry of 1 <sup>st</sup> transition series - properties of elements, their complexes and their stability, coordination no. And their geometry.
10	09-15 November	Chemistry of lanthanoids and actinoids - general features, and their properties.
11	17-23 November	Thermodynamics 3 - laws of thermodynamics, Nernst equation, Gibbs function, Helmholtz function, variations of these with P, V and T.
12	25 Nov to 1 Dec	Revision
13	3-9 December	MST Exams...
14	11-17 December	Class test

Paper:chemistry

Name : Dr. Suman kumari, Kirti sharma

Sr. No	Dates	Topics
1.	21-26 march 2022	Coordination compounds- Werner's theory & exp. Verification, effective at. No. Concept, chelates and VBT of transition metal complexes.
2.	28march-2 april 2022	Carboxylic acids - introduction, methods of preparation , physical and chemical properties
3.	4-9 april 2022	Phase equilibrium - phase rule, phase components, phase diagram of one and two component system.
4	11-16april 2022	Oxidation and reduction - redox cycle and their stability, frost, latimer and pourbaix diagram , extraction of elements.
5	18-23april 2022	Carboxylic acid derivative - introduction, structure and relative stability and reactivity of carboxylic acid derivative
6	25-30april 2022	Electrochemistry I-a-- specific and equivalent conductance, Kohlrausch law, arrhenius theory, ostwal dil. Law , Debye - huckel onsagar eq.
7	2-7june 2022	ACID & BASE - various theories and Lewis concept of acid and base
8	9-14june 2022	Ether & Epoxides - introduction , nomenclature, methods of preparation , physical & chemical properties, introduction, structure and occurrence of ( fats, oils & detergents)
9	16-21june 2022	Non-aqueous solvent - physical properties of solvent, types, and genral characteristics with referece to liq. Ammonia & sulphur dioxide
10	23-28june 2022	Electrochemistry 1-b- transport no., Hittorf's method, moving boundary method, conductometric titrations and conductance measurements, soiubility of sparingly soluble salts. Electrochemistry II.
11.	30-31june 2022	Nitro compounds - introduction , nomenclature, methods of preparation , physical & chemical properties, halonitroarenes
12.	1-6 july 2022	Amines - introduction , nomenclature, methods of preparation , physical & chemical properties, stereochemistry of amines, basicity and effect of substituents on it.

Paper: CHEMISTRY

Name : DR. Suman kumari

Sr. No	Dates	Topics
1.	16-22 August	Metal-ligand bonding in transition metal complexes- various theory & their limitations and CFT theory.
2.	24-30 August	Spectroscopy - NMR- basic principle , structure analysis and their applications
3.	2-9 September	Elementary quantum mechanics- Plank' radiations law, photo electric effect, schrodinger wave equation, particle in one dimensional box, Q. no. And their importance.
4	11-17 September	Magnetic properties of transition metal complexes- types of mag. Behaviour, L-S coupling, magnetic moment and its applications
5	19-25 September	Organometallic compounds( Mg, Zn, Li) - methods of formation and chemical reactions
6	04-10 October	Spectroscopy - Rotational & vibrational - basic principle , structure analysis and their applications
7	12-18 October	Thermodynamic and kinetic aspects of metal complexes - brief outline of thermodynamic stability of metal complexes & their reactions.
8	20-27 October	Organosulphur compounds - nomenclature, structural features, methods of formation and chemical reactions
9	30 Oct to 6 november	Electronic spectra of transition metal complexes- types of electronic transition, selections rule and Orgel- energy level diagram.
10	09-15 November	UV Spectroscopy - basic principle , structure analysis and their applications
11	17-23 November	IR Spectroscopy - basic principle , structure analysis and their applications
12	25 Nov to 1 Dec	MST exam....
13	3-9 December	Class test
14	11-17 December	Revision & class test

Paper: chemistry

Name : Dr. Suman Kumari

Sr. No	Dates	Topics
1.	21-26 march 2022	Hard soft acid base - Pearson's HSAB concept, hardness and softness their theoretical basis, symbiosis.
2.	28march-2 april 2022	Carbohydrates - introduction, classification and nomenclature, structures of glucose, fructose, ribose etc. Ring structure of glucose, fructose, starch and cellulose
3.	4-9 april 2022	Raman spectrum- concept of polarizability, rotational and vib. Raman spectra of diatomic molecules, selection rule
4	11-16 april 2022	Bioinorganic chemistry- Essential & trace elements, hemoglobin and myoglobin, biological role of alkali and alkaline earth metals, Nitrogen fixation.
5	18-23 april 2022	Solid state - Laws of crystallography, X-ray diffraction by crystals, bragg's eq. Structure of NaCl, KCl.
6	25-30 april 2022	Polymer - preparation by various methods, addition & condensation polymerisation, natural & synthetic rubber,
7	2-7 june 2022	Silicones & phosphazenes - preparation, properties and classification of inorganic polymers and nature of bonding in them.
8	9-14 june 2022	Electronic spectrum- concept of bonding and antibonding molecular orbitals, Franck- condon principle, selections rule of electronic spectrum.
9	16-21 june 2022	Amino acids, peptides, proteins and nucleic acids - their introduction and nomenclature, physical & chemical properties,
10	23-28june 2022	Organometallic chemistry - classification, preparation of Li, Al, Hg, Sn, and Ti, mononuclear carbonyl and their nature of bonding
11.	30-31june 2022	Enolates - introduction , preparation, applications of enolates in org. Synthesis.
12.	1-6 july 2022	Photochemistry - Laws of photochemistry, qualitative description of fluorescence and non radiative process

**Department of Chemistry (2021-2022)**

Period	1	2	3	4	5	6	7	8	9
Time/Class	9.00-9.45AM	9.45-10.30AM	10.30-11.15AM	11.15-12.00PM	12.00-12.45PM	12.45-1.30PM	1.30-2.15PM	2.15-3.00PM	3.00-3.45PM
B.sc I Sem II	-	-	Chemistry(1-6) Kirti sharma	-	-	-	Chemistry Practical Tuesday-Saturday	Monday-Friday- Dr.Suman kumari	
B.sc II Sem IV	-	-	-	-	-	Chemistry(1-3) SK (4-6) KS	Chemistry Practical Tuesday (KS) Wednesday-Thursday( SK)	Monday- Friday-	
B.sc III Sem VI	Chemistry(1-6) Suman kumari	-	-	-	-	-	Chemistry Practical Thursday-Saturday	Wednesday-Friday- Kirti sharma	

Govt. Shivalik college , Naya Nangal

Work Load (session 2021-2022)

(Prof. Kirti Sharma, Chemistry Deptt.)

**Theory :**

Class	Period No.	Time	Days	No.of Periods
BSc. 1	4	11:15 am - 12:00 noon	1-6	6
BSc. 2	6	12:45-1:30pm	4-6	3

**Practical :**

Class	Period No.	Time	Days	No. of Periods
Bsc 2	7,8,9	1:30-3:45pm	1-2	06
Bsc 3	6,7,8	12:45-3:00pm	3-6	12

**Total =**

**Theory + practical**

$$= 9 + 18$$

**Total = 27**

Govt. Shivalik college , Naya Nangal

Work Load (session 2021-2022)

(Prof. Suman Kumari, Chemistry Deptt.)

**Theory :**

Class	Period No.	Time	Days	No.of Periods
BSc. 2	6	12:45-1:30pm	1-3	3
BSc. 3	2	9:45-10:30am	1-6	6

**Practical :**

Class	Period No.	Time	Days	No. of Periods
Bsc 2	7,8,9	1:30-3:45pm	3-4	06
Bsc 1	6,7,8	12:45-3:00pm	1-2,5-6	12

**Total =**

**Theory + practical**

$$= 9 + 18$$

**Total = 27**