LESS

Name of Assistant Professor : U
Subject : Chemistry 1st Sem
Lecture Time : 12:00 to 01:00PM

Weeks	Date
1st	25- 27 july
2nd	01 aug- 03 aug
3rd	08-10aug
4th	15-17aug
5th	22-24aug
6th	29-31 aug
7th	05- 06sept
8th	12- 14 sept
9th	19-21 sept
10th	26- 28 sept
11th	03- 05 oct
12th	10- 12 oct
13th	17-19oct
14th	24-26 oct
15th	28 Oct- 03 nov
16th	07-09 nov
17th	14-16 nov
18th	21-22 nov

LESSON PLAN (20

Name of Assistant Professor : M
Subject : Che

Lecture Time : 12:

Weeks	Date
1st	25July- 27 July
2nd	01 Aug- 03 Aug.
3rd	08Aug-10Aug.
4th	15Aug-17Aug.
5th	22Aug-24Aug.
6th	29Aug-31Aug.
7th	05Sept.- 06Sept.
8th	12Sept.- 14 Sept.
9th	19Sept.-21 Sept
10th	26Sept.- 28 Sept
11th	03Oct.- 05 Oct.
12th	10Oct.- 12Oct.
13th	17Oct.- 19Oct.
14th	24Oct.- 26 Oct.
15th	28Oct.- 03 Nov.
16th	07 Nov.-09 Nov.
17th	14 Nov.-16 Nov.
18th	21Nov.-22Nov.

LESSON PLAN

Name of Assistant Professor : seema

Subject : MDC chemistry 2

Sem. : 2

Weeks	Date

1st	22 Jan - 25 Jan
2nd	27 Jan - 01 Feb
3rd	03 Feb - 08 Feb
4th	10 Feb - 15 Feb
5th	17 Feb - 22 Feb
6th	24 Feb - 28 Feb
7th	03 March -08 March
8th	10 March - 15 March
9th	17 March-22 March
10th	24 March- 29 March
11th	31 March - 05 April
12th	07 April -12 April
13th	14 April- 19 April
14th	20 April- 26 April

LESSON PLAN

Name of Assistant Professor : seema

Subject : Minor chemistry 2

Sem. : 2

Weeks	Date
1st	2 Jan - 4 Jan
2nd	7 Jan - 11 Jan
3rd	13 Jan- 18 Jan

4th	20 Jan - 25 Jan
5th	27 Jan - 01 Feb
6th	03 Feb - 08 Feb
7th	10 Feb - 15 Feb
8th	17 Feb - 22 Feb
9th	24 Feb - 28 Feb
10th	03 March -08 March
11th	10 March - 15 March
12th	17 March-22 March
13th	24 March- 29 March
14th	31 March - 05 April
15th	07 April -12 April
16th	14 April- 19 April
17th	20 April- 26 April

LESS

Name of Assistant Professor : U
Subject : Chemistry
Lecture Timing : 12:00 to 01:00 PM

Weeks	Date
1st(Unit-1)	30 Jan- 1feb

2nd	6- 8feb
3rd	13 - 15feb
4th (Unit-2)	20- 22 feb
5th	27feb- 01 march
6th	06-08 march
7th	09- 16 march
8th	20-22march
9th	27-29 march
10th	03-05 april
11th	10-12 april
12th	17-19 April
13th	24-26 April

LESS

Name of Assistant Professor : U

Subject : Chemistry

Lecture Time : 12:00 to 01:00PM

Weeks	Date
1st	29-Jan
2nd	05-Feb
3rd	12-Feb
4th	19-Feb
5th	26-Feb
6th	05-Mar
7th	12-Mar
8th	19-Mar
9th	26-Mar

10th	02-Apr
11th	09-Apr
12th	16-Apr
13th	23-Apr
14th	30-Apr

Name of Teache Seema
Class
Subject

Weeks	Dates
1	07/02/24 – 10/02/24
2	12/02/24 – 17/02/24
3	19/02/24 – 24/02/24
4	26/02/24 – 02/03/24
5	04/03/24 – 09/03/24
6	11/03/24- 16/03/24
7	18/03/24- 22/03/24
8	Holi Break
9	01/04/24 – 06/04/24

10	08/04/24- 13/04/24
11	15/04/24- 20/04/24
12	22/04/24- 27/04/24
13	29/04/24-30/04/24

Month
Sept

Oct
Nov

Month
Sept
Oct

Nov

LESSON PLA
Name of Assistant
Sem. : 3rd
Subject : Chemistr
Section. : A

Weeks
1st
2nd
3rd
4th
5th

6th
7th
8th
9th
10th
11th
12th
13th
14th
15th
16th
17th
18th
19th

Name of Assistant Pı
Sem.
Subject
Section.

Weeks
1st
2nd

$_{3}$rd
$_{4}$th
$_{5}$th
$_{6}$th
$_{7}$th
$_{8}$th
$_{9}$th
$_{10}$th

11th
12th
13th
14th
15th
16th
17th
18th
19th

Name of Assistant Professor
Subject :
Sem. :

Weeks	
1st	

2nd	
3rd	
4th	
5th	
6th	
7th	
8th	
9th	
10th	
11th	
12th	

13th	
14th	
15th	

LESSON P

Name of Assistant Professor : M
Subject : S
Lecture Timing : 2

Weeks	Date
1st	01-Jan
2nd	6 JAN. - 8 JAN.
3rd	13 JAN. - 15 JAN.
4th	20 JAN. - 22 JAN.
5th	27 JAN.- 29JAN.
6th	03 FEB.-05 FEB.
7th	10 FEB.- 12 FEB.
8th	17 FEB.- 19 FEB.
9th	24 FEB.- 26 FEB.

10th	**3MARCH- 5MARCH**
11th	**10MARCH-15MARCH**
12th	**17MARCH-19MARCH**
13th	**24MARCH-26MARCH**
14th	**31MARCH-2APRIL**
15th	**7 APRIL-9 APRIL**
16th	**14 APRIL- 16 APRIL**
17th	**21 APRIL- 23 APRIL**
18th	**28 APRIL- 30 APRIL**

LESSON PLAN

Name of Assistant Professor : seema

Subject : chemistry

Sem. : 4

Weeks	Date
1st	2 Jan - 4 Jan
2nd	7 Jan - 11 Jan
3rd	13 Jan- 18 Jan
4th	20 Jan - 25 Jan
5th	27 Jan - 01 Feb
6th	03 Feb - 08 Feb

7th	10 Feb - 15 Feb
8th	17 Feb - 22 Feb
9th	24 Feb - 28 Feb
10th	03 March -08 March
11th	10 March - 15 March
12th	17 March-22 March
13th	24 March- 29 March
14th	31 March - 05 April
15th	07 April -12 April
16th	14 April- 19 April
17th	20 April- 26 April

LESSON PLAN

Name of Assistant Professor

Subject : Chemistry

Sem. : 4

Weeks	Date
1st	2 Jan - 4 Jan
2nd	7 Jan - 11 Jan
3rd	13 Jan- 18 Jan
4th	20 Jan - 25 Jan
5th	27 Jan - 01 Feb
6th	03 Feb - 08 Feb
7th	10 Feb - 15 Feb
8th	17 Feb - 22 Feb
9th	24 Feb - 28 Feb

10th	03 March -08 March
11th	10 March - 15 March
12th	17 March-22 March
13th	24 March- 29 March
14th	31 March - 05 April
15th	07 April -12 April
16th	14 April- 19 April
17th	20 April- 26 April

LESS
Name of Assistant Professo
Sem.
Subject

Section.	
Weeks	Date
1st	22 July - 27 July
2nd	29 July- 03 Aug
3rd	05 Aug- 10 Aug
4th	12 Aug - 17 Aug
5th	19 Aug- 24 Aug
6th	26 Aug- 31 Aug
7th	02 Sep - 07 Sep
8th	09 Sep - 14 Sep
9th	16 sep- 21 sep
10th	24 sep- 28 sep
11th	30 sep- 05 oct
12th	07 oct - 12 oct
13th	14 oct -19 oct
14th	21 oct - 26 oct
15th	28 oct -02 nov
16th	04 nov- 09 nov
17th	11 nov - 16 nov
18th	18 nov- 23 nov

19th	25 nov - 30 nov

Teacher- Annu Kumari

Class- B.Sc. Non –medica

Subject: Environmental C

Paper Code: 20UCHE-50

Session- 2024-25

Week
22/07 to 27/07/2024
29/07 to 03/08/2024
05/08 to 10/08/2024
12/08 to 17/08/2024
19/08 to 24/08/2024
26/08 to31/08/2024
02/09 to 07/09/2024
09/09 to 14/09/2024
16/09 to21/09/2024
23/09 to28/09/2024
30/09 to05/10/2024
07/10 to 12/10/2024
14/10 to 19/10/2024
21/10 to 26/10/2024
27/10 to 03/11/2024
04/11 to 09/11/2024
11/11 to 16/11/2024

LESS

Name of Assistant Professo

Sem.	
Subject	
Section.	
Weeks	Date
1st	22 July - 27 July
2nd	29 July- 03 Aug
3rd	05 Aug- 10 Aug
4th	12 Aug - 17 Aug
5th	19 Aug- 24 Aug
6th	26 Aug- 31 Aug
7th	02 Sep - 07 Sep
8th	09 Sep - 14 Sep
9th	16 sep- 21 sep
10th	24 sep- 28 sep
11th	30 sep- 05 oct
12th	07 oct - 12 oct
13th	14 oct -19 oct
14th	21 oct - 26 oct
15th	28 oct -02 nov
16th	04 nov- 09 nov
17th	11 nov - 16 nov
18th	18 nov- 23 nov
19th	25 nov - 30 nov

LESSON PLAN
Name of Assistant Professo
Subject
Section

Weeks	Date
1st	2 Jan - 4 Jan
2nd	7 Jan - 11 Jan

3rd	13 Jan- 18 Jan
4th	20 Jan - 25 Jan
5th	27 Jan - 01 Feb
6th	03 Feb - 08 Feb
7th	10 Feb - 15 Feb
8th	17 Feb - 22 Feb
9th	24 Feb - 28 Feb
10th	03 March -08 March
11th	10 March - 15 March
12th	17 March-22 March
13th	24 March- 29 March
14th	31 March - 05 April
15th	07 April -12 April
16th	14 April - 20 April
17th	21 April - 27 April

Name of Assistant Professo

Subject

Sec

Weeks	Date
1st	2 Jan - 4 Jan
2nd	7 Jan - 11 Jan
3rd	13 Jan- 18 Jan
4th	20 Jan - 25 Jan
5th	27 Jan - 01 Feb
6th	03 Feb - 08 Feb
7th	10 Feb - 15 Feb
8th	17 Feb - 22 Feb

9th	24 Feb - 28 Feb
10th	03 March -08 March
11th	10 March - 15 March
12th	17 March-22 March
13th	24 March- 29 March
14th	31 March - 05 April
15th	07 April -12 April
16th	14 April - 20 April
17th	21 April - 27 April

Name of Assistant Professo
Subject
Sec A+B

Weeks	Date
1st	2 Jan - 4 Jan
2nd	7 Jan - 11 Jan
3rd	13 Jan- 18 Jan
4th	20 Jan - 25 Jan
5th	27 Jan - 01 Feb
6th	03 Feb - 08 Feb
7th	10 Feb - 15 Feb
8th	17 Feb - 22 Feb
9th	24 Feb - 28 Feb
10th	03 March -08 March

11th	10 March - 15 March
12th	17 March-22 March
13th	24 March- 29 March
14th	31 March - 05 April
15th	07 April -12 April

Name of Assistant Professor : Dee
Subject : Ch
Sec A+B

Weeks	Date
1st	2 Jan - 4 Jan
2nd	7 Jan - 11 Jan
3rd	13 Jan- 18 Jan
4th	20 Jan - 25 Jan
5th	27 Jan - 01 Feb
6th	03 Feb - 08 Feb
7th	10 Feb - 15 Feb
8th	17 Feb - 22 Feb
9th	24 Feb - 28 Feb
10th	03 March -08 March

11th	10 March - 15 March
12th	17 March-22 March
13th	24 March- 29 March
14th	31 March - 05 April
15th	07 April -12 April

Teacher- Annu Chemistry
Class- B.Sc. Non- medical
Subject: Analytical Chemi
Timing : 09:10 AM (friday
Session- 2024-25

Week
01/01/2025 to 04/01/2025
06/01/2025 to 11/01/2025
13/01/2025 to 18/01/2025
20/01/2025 to 25/01/2025
27/01/2025 to 01/02/2025
03/02/2025 to 08/02/2025
10/02/2025 to 15/02/2025
17/02/2025 to 22/02/2025
24/02/2025 to 01/03/2025
03/03/2025 to 08/03/2025

09/03/2025 to 16/03/2025
17/03/2025 to 22/03/2025
24/03 /2025 to 29/03/2025
31/03/2025 to 05/04/2025
7/04/2025 to 12/04/2025
14/04/2025 to 19/04/2025
21/04/2025 to 26/04/2025
28/04/2025 to 30/04/2025

ON PLAN (2024-25)

sha

Topics
Dual behaviour of matter and radiation, de Broglie relation, Heisenberg uncertainity principle
concept of atomic orbitals, significance of quantum numbers
radial and angular wave function, normal and orthogonal wave function, shape of s,p,d,f orbitals, effective nuclear charge and Slaters rule
Classification of periodic table, atomic and ionic radii, IE,EA, Electronegativity, trends in periodic table
Unit 2 : Kinetic theory of gases, maxwells distribution of velocities and energies, calculation of orrt mean square, average and most probable velocity
collision number, collision diameter, collision frequency, mean free path, deviation of real gases from ideal behaviour, derivation of van der waal equation of state, Boyles temperature
Concept of critical T,P,V, relationship between critical constants and van der waals constants
Unit :3- Localized and delocalized chemical bond, van der waal interactions, resonance and its applications
hyperconjugation, inductive effect, electromeric effect, curved arrow notation, homolytic and heterolytic bond fission
Class Test, Assignment submission, Types of reagents
Types of organic reactions
reaction intermediates
Structure and properties of liquids
Classification of solids ,law of rational indices and miller indices
Diwali Holidays
elementary ideas of symmetry and symmetry elements, seven crystal system, fourteen Bravais lattices
x- ray diffraction, Braggs law, laue method
rotating crystal method and powder pattern method and revision

24-25)

Monika Manchanda

mistry

00 to 01:00 P.M.

Topics
Dual behaviour of matter and radiation, de Broglie relation, Heisenberg uncertainity principle
Concept of atomic orbitals, significance of quantum numbers
Radial and angular wave function, normal and orthogonal wave function, shape of s,p,d,f orbitals, effective nuclear charge and Slaters rule
Classification of periodic table, atomic and ionic radii, IE,EA, Electronegativity, trends in periodic table
Kinetic theory of gases, maxwells distribution of velocities and energies, calculation of orrt mean square, average and most probable velocity
Collision number, collision diameter, collision frequency, mean free path, deviation of real gases from ideal behaviour, derivation of van der waal equation of state, Boyles temperature
Concept of critical T,P,V, relationship between critical constants and van der waals constants
Localized and delocalized chemical bond, van der waal interactions, resonance and its applications
Hyperconjugation, inductive effect, electromeric effect, curved arrow notation, homolytic and heterolytic bond fission,Types of reagents
Mid Term Exam Assignment Submission Types of Organic REACTIONS
Reaction intermediates
Structure and properties of liquids, Bragg's law
Classification of solids ,law of rational indices and miller indices

Elementary ideas of symmetry and symmetry elements, seven crystal system, fourteen Bravais lattices

Diwali Holidays
X- Ray diffraction ,Laue Method,Rotating crystal method and powder pattern method
Doubt Classes
Revision

Topics

Renowned Indian Scientists Brief Biography of Renowned Indian Scientists (Hargobind Khurana
Dr. P.C. Ray, Sir C.V. Raman, Dr. A.P.J. Abdul Kalam, C. N. R. Rao, Dr. Vikram Sara Bhai,
Dr. Homi Jahangir Bhabha, Dr. J.C. Bose, Dr. S. N. Bose)
Metal and Non-Metals Periodic table, classification of elements, physical and chemical aspects of metals and nonmetals,
Ore and Minerals of Iron, Copper, Aluminium, alloys
Physical Properties of Matter Classification of matter, properties, uses,
deal gas equation, real gas equation, some important compounds (baking soda, washing soda, plaster of Paris, gypsum, glass)
revision of unit 1&2
Holi Break
Submission of Assignment by students Unit Test for Assessment
Soil and fertilizers Green revolution, soil: types of soil and their components for fertility
grow condition, pH, irrigation, biofertilizers
chemical fertilizers and their uses, acid rain.
revision
doubts classes

Topics
Periodic table and atomic properties Atomic properties: atomic and ionic radii, ionisation energy, electron affinity and electronegativity definition, methods of determination or evaluation
trend in periodic table, effective nuclear charge, Slater's rules. Directional characteristics of covalent bond, various type of hybridisation
shapes of simple inorganic molecules and ions (BeF2, BF3, CH4, PF5, SF6, IF7, SO4-2,, ClO4-1, NO3-1

Ionic Solids: Stoichiometric and Non-stoichiometric defects in crystals, Lattice energy and Born- Haber cycle, Solvation energy and its relationship with solubility of Ionic solids
Polarizing power and Polarisability of ions, Fajan's rule. Metallic bond – Qualitative idea of valence bond
Band theories of metallic bond (conductors, semiconductors, insulators
revision of 1st unit
revision of 2nd unit
Metallic Bond and semiconductors Semiconductors – Introduction, types, and applications
Structure and Bonding in Organic Compounds Localized and delocalized chemic al bond, Van der Waal's interactions, resonance:
resonance: conditions, resonance effect and its applications, hyperconjugation, inductive effect, Electromeric effect & their comparison
Holi Break
Submission of Assignment by students Unit Test for Assessment
Stereochemistry of Organic Compounds Concept of isomerism. Types of isomerism. Optical isomerism, element s of symmetry, enantiomers, stereo genic centre, optical activity, properties of enantiomers,
chiral and achiral molecules (upto two stereo genic centres), diastereomers, threo and erythro diastereomers, meso compound
meso compounds Relative and absolute configuration, sequence rules, R & S systems of nomenclature
Geometrical isomerism. Determination of configuration of geometric isomers.
Revision

ON PLAN(2024-25)

sha

Topics
Valence bond theory approach, shape of simple inorganic molecules, VSEPR theory and hybridisation with examples

MOT for N2, O2, CN, CO diatomic molecules, dipole moment and percentage ionic character in covalent bond
Ionic structures, radius ratio rule, lattice energy, born haber cycle , solvation energy, polarization of ions, polarizing power and fajan rule.
Reaction rates and rate equation concept, order and molecularity, integrated rate expression for zero, first order reaction.
Half life period of a reaction and Arrhenius equation, Nernst distribution.
Determination of degree of hydrolysis, hydrolysis constant of aniline hydrochloride.
Class test and assignment submission for internal assessment and revision
Nomenclature, structure, Classification and isomerism in alkanesmethod of preparation of alkanes, physical properties
Free redical Halogenation of alkanes: Reactivity and selectivity. Nomenclature of cycloalkanes. Bayer strain theory and its limitations
Holi Break
Nomenclature and structure of alkenes and method of preparation of alkenes
Saytzeff rule. chemical reactions of alkenes , Markownikoffs rule of addition , hydrogen bonding
van der waal forces and semiconductors with applications, metallic bonds: qualitative ideas of VBTs

ON PLAN(2024-25)

sha

Topics
ALKANE : Nomenclature, Classification of carbon atoms in alkanes
Structure, isomerism and sources, methods of preparation
Public Holiday
physical properties, mechanism of free redical halogenation : reactivity and selectivity
Holiday
ALKENES : Nomenclature and structure
Holiday
Methods of preparation
Chemical reactions

ClassTest
Markownikoffs rule of addition
the saytzeff rule and relative stabilities of alkenes
Revision
Holiday

B.Sc. 1st Physics Honours, 2nd Semester
: Chemistry

Topics
Revisit toThermodynamics & Kinetic theory: Basic concepts ,laws of thermodynamics, concepts of heat & energy,temperature,internal energy,work,state function, reversible & irreversible process
isothermal & adiabatic processes , Carnot cycle, gas laws, vander Waals equation, Kinetic theory of gases, Maxwell Boltzmann velocity distribution.
Thermochemistry : Enthalpy ,heat of fusion & vaporisation ,enthalpy of a chemical reaction (heat of
enthalpy of formation , standard reaction enthalpy ,Hess's law, Kirchhoff's law, bond energy ,dissociation energy
Entropy :Formulation of Second law (different statements),entropy change in a phase transition & other processes,entropy and Gibbs energy of mixing
Trouton's Rule, calculation of absolute (Third law) entropy,entropy change in a chemical reaction. Free energy functions: Criteria for spontaneity and equilibrium of closed systems,
variation of Gibbs free energy with pressure and temperature,Gibbs Helmholtz equation,the concept of chemical potential,partial molar quantity ,Gibbs Duhem equation. Phase equilibrium : Simple systems: Solid– liquid ,liquid– vapour ,vapour– solid transitions ,phase diagrams: water,carbon dioxide, sulphur ,phase equilibrium condition,
Gibb's phase rule, Clapeyron & Clausius–Clapeyron equation. Ideal Solutions: Chemical potentialofa solute in a binary ideal solution, Raoult's Law, colligative properties :vapour pressure lowering,. Test

reezing point depression, boiling point elevation ,osmotic pressure ,van't Hoff equation. Chemical equilibrium: Gibbs free energy change of a reaction, standard reaction Gibbs free energy ,condition for chemical equilibrium ,equilibrium constant,
reactions involving gases and pure substances, effect of temperature,pressure on the equilibrium ,Le Chatelier principle and applications. Electrochemical systems : Chemical potential of a charged species ,electrochemical cell (galvanic and electrolytic) . half-cell potential (electrode potential),relation with free energy, Nernst equation.
Molecular thermodynamics :Concept of ensembles,partition function,evaluation of partition function for vibrational, rotational ,electronic energies, evaluation of free energy, entropy and equilibrium constants from partition functions
Revision &doubt classes

Name of Assistant Professor: Dr. Anuj
Class : B.Sc. 3rd Semester

Week
Week 1
Week 2
Week 3
Week 4
Week 1

Week 2
Week 3
Week 4
Week 1
Week 2
Week 3
Week 4

Name of Assistant Professor: Dr. Anu
Class : B.Sc. 3rd Semester

Week
Week 1
Week 2
Week 3
Week 4
Week 1
Week 2
Week 3
Week 4

Week 1
Week 2
Week 3
Week 4

N

: Professor : Sarita

y

Date
22 July - 27 July
29 July- 03 Aug
05 Aug- 10 Aug
12 Aug - 17 Aug
19 Aug- 24 Aug

26 Aug- 31 Aug
02 Sep - 07 Sep
09 Sep - 14 Sep
16 sep- 21 sep
24 sep- 28 sep
30 sep- 05 oct
07 oct - 12 oct
14 oct -19 oct
21 oct - 26 oct
28 oct -02 nov
04 nov- 09 nov
11 nov - 16 nov
18 nov- 23 nov
25 nov - 30 nov

LESSON PLAN

rofessor : Sandeep Kumar

: 3rd

: Chemistry

: A

Date
22 July - 27 July
29 July- 03 Aug

05 Aug- 10 Aug
12 Aug - 17 Aug
19 Aug- 24 Aug
26 Aug- 31 Aug
02 Sep - 07 Sep
09 Sep - 14 Sep
16 sep- 21 sep
24 sep- 28 sep

30 sep- 05 oct
07 oct - 12 oct
14 oct -19 oct
21 oct - 26 oct
28 oct -02 nov
04 nov- 09 nov
11 nov - 16 nov
18 nov- 23 nov
25 nov - 30 nov

: Vikas Yadav

Chemistry (wed. and thursday)

4(January - April)

Topics
Solutions: Dilute Solutions and Colligative Properties, Ideal and non-ideal solutions, activity and activity coefficient, Raoult's law, relative lowering of vapour pressure,

Elevation in boiling point and depression of freezing point, molecular weight determination, Osmosis law,
Thermodynamic derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods for determining various colligative properties. Abnormal molar mass, degree of dissociation and association of solutes.
Carbohydrates: Classification and nomenclature. Monosaccharides, mechanism of osazone formation, interconversion of glucose and fructose, chain lengthening and chain shortening of aldoses. Configuration of monosaccharides. Erythro and threo diastereomers. Formation of glycosides, ethers and esters.
Determination of ring size of glucose and fructose. Open chain and cyclic structure of D(+)-glucose & D(-) fructose. Mechanism of mutarotation. Structures of ribose and deoxyribose. A brief introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination.
Amines: Structure and nomenclature of amines, physical properties. Separation of a mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines.
Preparation of alkyl and aryl amines (reduction of nitro compounds, nitriles, reductive amination of aldehydic and ketonic compounds. Gabrielphthalimide reaction, Hofmann bromamide reaction. electrophilic aromatic substitution in
aryl amines, reactions of amines with nitrous acid.
Diazonium Salts: Mechanism of diazotisation, structure of benzene diazonium chloride, Replacement of diazo group by H, OH, F, Cl, Br, I, NO_2 and CN groups, reduction of diazonium salts to hyrazines, coupling reaction and its synthetic application.
Nitro Compounds: Preparation of nitro alkanes and nitro arenes and their chemical reactions. Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium.
Electrochemistry-I Electrolytic conduction, factors affecting electrolytic conduction, specific conductance, molar conductance, equivalent conductance and relation among them, their variation with concentration. Arrhenius theory of ionization, Ostwald's Dilution Law. Debye Huckel- Onsager's equation for strong electrolytes (elementary treatment only)
Holi Break
Submission of Assignment by students **Unit Test for Assessment**

Kohlarausch's Law and its application in calculation of conductance of weak electrolytes at infinite dilution. Applications of conductivity measurements: determination of degree of dissociation, determination of Ka of acids, determination of solubility product of sparingly soluble salts, conductometric titrations. Definition of pH and pKa, Buffer solution, Henderson – Hazel equation, Buffer mechanism of buffer action.
Electrochemistry-II Electrolytic and Galvanic cells – reversible & Irreversible cells, conventional representation of electrochemical cells. EMF of cell and its measurement, activity and activitycoefficients. Calculation of thermodynamic quantities of cell reaction (G, H & S). Types of reversible electrodes – metal-metal ion gas electrode, metal–insoluble salt- anion and redox electrodes.
Amino Acids, Peptides & Proteins: Classification of amino acids, Acid-base behaviour, isoelectric point and electrophoresis. Preparation of D-amino acids. Structure and nomenclature of peptides and proteins. Classification of proteins. Peptide structure determination, end group analysis, selective hydrolysis of peptides. Classical peptide synthesis, solid– phase peptide synthesis. Structures of peptides and proteins: Primary & Secondary structure.

LAN

ONIKA MANCHANDA

EC(Green Chemistry)

:00 to 3:00 PM

Topics
Introduction to Green Chemistry
What is Green Chemistry?Need for Green Chemistry.
Emergance of Green Chemistry. Goals of green chemistry.
Limitation in the persuit of Green Chemistry & Pollution prevention act of 1990.
Green synthesis/reactions of adipic acid & catechol.
Principles of Green Chemistry And their explanation with examples.
Green Reagents-Non phosgene isocyanate synthesis, Selective methylation using DMC.
Microwave assisted solvent free synthesis of copper pthalocynamine.
Microwave assisted Reactions in Water-Hoffmann Elimination, Methyl Benzoate to Benzoic Acid.

Ultrasonic Assisted Reactions (Simmons smith Reactions) Assignment Submission
HOLI BREAK
Unit test Future trends in Green Chemistry Carbon Sequestration
Ozone deplation /Oxidation reagents & Catalysts
Biomimetic, Multifunctional reagents
Mechanochemical & Solvent free synthesis of inorganic complexes
Cocrystal controlled solid state synthesis, Green chemistry for sustainable development
Doubt Classes
Revision

Topics
Unit1:Amines: Structure and nomenclature of amines, physical properties. Separation of a mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines. Preparation of alkyl and aryl amines (reduction of nitro compounds,
nitriles, reductive amination of aldehydic and ketonic compounds. Gabrielphthalimide reaction, Hofmann bromamide reaction.
electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid.
UNIT-II Diazonium Salts: Mechanism of diazotisation, structure of benzene diazonium chloride, Replacement of diazo group by H, OH, F, Cl, Br, I, NO_2 and CN groups
reduction of diazonium salts to hyrazines, coupling reaction and its synthetic application.
Nitro Compounds: Preparation of nitro alkanes and nitro arenes and their chemical reaction

Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium.
revision of unit 1&2
UNIT-III Electrochemistry-I Electrolytic conduction, factors affecting electrolytic conduction, specific conductance, molar conductance,
equivalent conductance and relation among them, their variation with concentration. Arrhenius theory of ionization, Ostwald's Dilution Law. Debye HuckelOnsager's equation for strong electrolytes (elementary treatment only)
Holi Break
Submission of Assignment by students Unit Test for Assessment
Kohlarausch's Law and its application in calculation of conductance of weak electrolytes at infinite dilution. Applications of conductivity measurements: determination of degree of dissociation, determination of Ka of acids, determination of solubility product of sparingly soluble salts, conductometric titrations. Definition of pH and pKa, Buffer solution, Henderson – Hazel equation, Buffer mechanism of buffer action.
UNIT-IV Electrochemistry-II Electrolytic and Galvanic cells – reversible & Irreversible cells, conventional representation of electrochemical cells. EMF of cell and its measurement, activity and activity
coefficients. Calculation of thermodynamic quantities of cell reaction (G, H & S). Types of reversible electrodes – metal-metal ion gas electrode, metal–insoluble salt- anion and redox electrodes. Nernst equation, derivation of cell EMF and single electrode potential. Standard Hydrogen electrode, reference electrodes, standard electrodes potential
sign conventions, electrochemical series and its applications. Application of EMF measurement i.e., valency of ions, solubility product, activity coefficient; potentiometric titration (acid-base and redox). Determination of pH using Hydrogen electrode, Quinhydrone electrode and glass electrode
Revision

· : Sarita

Topics
Solutions: Dilute Solutions and Colligative Properties, Ideal and non-ideal solutions, activity and activity coefficient, Raoult's law, relative lowering of vapour pressure,
Elevation in boiling point and depression of freezing point, molecular weight determination, Osmosis law,
Thermodynamic derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods for determining various colligative properties. Abnormal molar mass, degree of dissociation and association of solutes.
Carbohydrates: Classification and nomenclature. Monosaccharides, mechanism of osazone formation, interconversion of glucose and fructose, chain lengthening and chain shortening of aldoses. Configuration of monosaccharides. Erythro and threo diastereomers. Formation of glycosides, ethers and esters.
Determination of ring size of glucose and fructose. Open chain and cyclic structure of D(+)-glucose & D(-) fructose. Mechanism of mutarotation. Structures of ribose and deoxyribose. A brief introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination.
Amines: Structure and nomenclature of amines, physical properties. Separation of a mixture of primary, secondary and tertiary amines. Structural features affecting basicity of amines.
Preparation of alkyl and aryl amines (reduction of nitro compounds, nitriles, reductive amination of aldehydic and ketonic compounds. Gabrielphthalimide reaction, Hofmann bromamide reaction. electrophilic aromatic substitution in
aryl amines, reactions of amines with nitrous acid.
Diazonium Salts: Mechanism of diazotisation, structure of benzene diazonium chloride, Replacement of diazo group by H, OH, F, Cl, Br, I, NO2 and CN groups, reduction of diazonium salts to hyrazines, coupling reaction and its synthetic application.
Nitro Compounds: Preparation of nitro alkanes and nitro arenes and their chemical reactions. Mechanism of electrophilic substitution reactions in nitro arenes and their reductions in acidic, neutral and alkaline medium.

Electrochemistry-I Electrolytic conduction, factors affecting electrolytic conduction, specific conductance, molar conductance, equivalent conductance and relation among them, their variation with concentration. Arrhenius theory of ionization, Ostwald's Dilution Law. Debye Huckel- Onsager's equation for strong electrolytes (elementary treatment only)
Holi Break
Submission of Assignment by students Unit Test for Assessment
Kohlarausch's Law and its application in calculation of conductance of weak electrolytes at infinite dilution. Applications of conductivity measurements: determination of degree of dissociation, determination of Ka of acids, determination of solubility product of sparingly soluble salts, conductometric titrations. Definition of pH and pKa, Buffer solution, Henderson – Hazel equation, Buffer mechanism of buffer action.
Electrochemistry-II Electrolytic and Galvanic cells – reversible & Irreversible cells, conventional representation of electrochemical cells. EMF of cell and its measurement, activity and activitycoefficients. Calculation of thermodynamic quantities of cell reaction (ΔG, ΔH & ΔS). Types of reversible electrodes – metal-metal ion gas electrode, metal–insoluble salt- anion and redox electrodes.
Amino Acids, Peptides & Proteins: Classification of amino acids, Acid-base behaviour, isoelectric point and electrophoresis. Preparation of D-amino acids. Structure and nomenclature of peptides and proteins. Classification of proteins. Peptide structure determination, end group analysis, selective hydrolysis of peptides. Classical peptide synthesis, solid– phase peptide synthesis. Structures of peptides and proteins: Primary & Secondary structure.
Phase Equilibrium: phase component and degree of freedom, thermodynamic derivation of Gibbs phase rule, phase equilibria of one component system – water, Carbon dioxide and Sulphur systems. Phase equilibria of two component systems, solid-liquid equilibria, simple eutectic Example Pb-Ag system.
Revision

ON PLAN (2024-25)

r : Anil kumar

: 5th

: Chemistry

: A
Topics
Unit-II: Five membered heterocyclic compounds: Introduction: M.O. picture and aromatic characteristics of pyrrole , furan and thiophene. Methods of synthesis and chemical reactions.
Mechanism of electrophilic substitution reaction in five membered heterocyclic compounds.
Six membered heterocyclic compounds: Introduction: M.O. Picture and aromatic characteristics of pyridine, Methods of synthesis.
Chemical reactions of pyridine and mechansism of electrophilic substitution reactions. Mechanism of Nucleophilic substitution reactions in pyridine.
Comparison of basicity of pyridine, piperidine and pyrrole. Revision and Doubt-sessions
Fused heterocyclic compounds: Introduction of condensed five- and six-membered heterocycles. Preparation and reactions of quinoline and isoquinoline Fischer-Indole synthesis,
Skraups synthesis and Bischler-Napieralski synthesis, Mechanism of electrophilic substitution reactions of quinoline and isoquinoline.
Revision and Doubt sessions. Unit Test For Assessment,Submission of Assignments by Students
Nomenclature of Heterocyclic compounds: Trivial, Hantzch-Widman and Replacement system.Three membered heterocycles: Synthesis and reactions of aziridines
Nomenclature of mono and polycyclic compounds, polarity, tautomerism, aromaticity, electrophilic substitution.
Three membered heterocycles: Synthesis and reactions of oxiranes, thiiranes, azetidines
Synthesis and reactions of oxetanes,Synthesis and reactions of thietanes
NMR:-principal, number of signal ,peak area , equalent and non equalent proton,
shielding and deshielding of protons, proton counting , spilliting of signal, and coupling constant.,
Diwali Break
NMR II:- PMR spectra of ethyl bromide, propyl bromide, isopropyl bromide, ethanol, acteldehyded, ethyl acetate, toulene, bezaldehydd and acetophenone
simple problem on NMR spectroscop[y, for structure determenation of organic compound.
UV spectroscopy:- beer lambert law, moplar absorvity , presenation and analyis of uv spectra, electronic transition , effect of conjucation , concept of choromophore, and auxochrome, bathochromic

IR spectra:- absorption spectroscopy, characterstic abs of various functional groups,hooks laws, selection rule, position no,fingerprint region

l 5th Semester
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Topic
Air Pollution: Major regions of atmosphere. Chemical and photochemical reactions in atmosphere.
Air pollutants: types, sources, particle size and chemical nature; Photochemical smog: its constituents and photochemistry.
Environmental effects of ozone, Major sources of air pollution
Pollution by SO2, CO2, CO, NO, Fi S and other foul-smelling gases. Methods of estimation of CO, NO, SO, and control procedures
Effects of air pollution on living organisms and vegetation. Greenhouse effect and Global warming, Ozone depletion by oxides of nitrogen,
Revision of unit-1
Water Pollution: Hydrologicel cycle, water resources, aquatic ecosystems, Sources and nature of water pollutants,
Techniques for measuring water pollution, Impacts of water pollution on hydrological and ecosystems. Water purification methods.
Effluent treatment plants (primary, secondary and tertiary treatment).
Industrial effluents from the following industries and their treatment: electroplating, textile, tannery, dairy, petroleum and petrochemicals, agro, fertilizer, etc
Industrial waste management, incineration of waste. Revision of unit-2
Water treatment and purification (reverse osmosis, electro dialysis, ion exchange). Water quality parameters for waste water, industrial water and domestic water
Energy & Environment: Sources of energy- Coal, petrol and natural gas, nuclear fusion/fission, solar energy, hydrogen, geothermal, tidal and hydel, etc
Nuclear Pollution-Disposal of nuclear waste, nuclear disaster and its management
Diwali Break
Biocatalysis: Introduction to biocatalysis.
Importance in "Green Chemistry" and Chemica Industry, revision of syllabus

ON PLAN (2024-25)

r : Deepak

: 5th
: Chemistry
: A & B
Topics
NMR:-principal, number of signal ,peak area , equalent and non equalent proton
position of signal and chemical shift
shielding and deshielding of protons, proton counting , spilliting of signal, and coupling constant.
NMR II:- PMR spectra of ethyl bromide, propyl bromide, isopropyl bromide, ethanol, acteldehyded, ethyl acetate, toulene, bezaldehydd and acetophenone
simple problem on NMR spectroscop[y, for structure determenation of organic compound.
UV spectroscopy:- beer lambert law, moplar absorvity , presenation and analyis of uv spectra, electronic transition ,
effect of conjucation , concept of choromophore, and auxochrome, bathochromic
Revision and Doubt sessions. Unit Test For Assessment
hyperchromic and hypochromic shift
IR spectra:- absorption spectroscopy,
IR bands, measuremts of IR spectrum ,
fingerprint region
characterstic abs of various functional groups
, uv spectra of conjugated enes and enones.
Diwali Break
hooks laws, selection rule, position no
enes and enones.
interparation of spectra of simpple organic compounds.
Revision

r : Dr. Satish Kumar

: Inorganic Materials of Industrial Importance The

: C

Topics
Glassy state and its properties, Classification (Sil;icates and Non Silicates glasses) .
Manufacture and processing of Glass.

Composition and Properties of Soda lime, Lead Glass, Armoured glass, safety glass
Composition and Properties of Borosilicate glass, fluorosilicate, coloured and photosensitive glass
Important Clays and feldspar, ceramics their types and manufacture
High technology ceramics and their application
Superconducting and semiconducting oxides
Fullerens carbon nanotubes and carbon fibres
Different types of fertilizers, Manufacture of Urea and ammoniun nitrate
Manufacture of Calcium ammonium nitrate, Ammonium phosphate, Polyphosphates, Superphosphates
Holi Break
Submission of Assignment by students **Unit Test for Assessment**
Compound and mixed fertilizers, potassium chloride and potassium sulphate
Classification of alloys, ferrous and non ferrous alloys, specific properties of elements in alloys
Manufacturing of steel (Removal of silicaon decarbonization, demagnetisation, desulphurization and dephosphorization)
Surface treatment (argon treatment, heat treatment, nitriding, carburizing)
General principal and properties of catalysts. Phase transfer catalyst and application of zeolites as catalysts

r : Dr. Satish Kumar

: Chemistry

: E

Topics
application of IR in structure elucidation of organic compounds, carbonyl and effect of substituents on it, C-H, N-H, O-H vibrartion and H-bonding .
Basic principal of NMR, Chemical shift and its measurments .
factor infunecing the chemical shift . Spin spin coupling mechanism of nuclear spin spin interaction .
different spin systems, coupling constants
coupling constant and factor effecting coupling constant
Anisotropic effects in alekene ,alkyne
Anisotropic effects in aromatic
simplication of complex spectra with examples

NMR spectroscopy II :- interpretation of PMR spectra of simple organic compounds, Distinction between geotromical isomers.
C^{13} NMR spectroscopy:- basic principal ,chemical shift and its calculations . Application of IR , UV and NMR for indentification of simple organic molecules.
Holi Break
Submission of Assignment by students **Unit Test for Assessment**
unsaturated mono and disubstituted aromatic compunds , metal ligands vibration .group frequenciecs off complex ligands -CO strecting and effects of coordination on it.
nitro and nitrite and CO ligands and effects of their coordination and metal ion. Application of far and near IR .
Mass specrometery :- introduction ion production ,EI,CI,FD and FAB ,
factors affecting fragmenation ,Mclafferty rearrangents , nitrogen rule
mass spectral fragementaion of organic compounds .

r : Anil kumar

: Chemistry

Topics
Basic principal of NMR, Chemical shift and its measurments .
factor infunecing the chemical shift . Spin spin coupling mechanism of nuclear spin spin interaction .
different spin systems, coupling constants
coupling constant and factor effecting coupling constant
Anisotropic effects in alekene ,alkyne
Anisotropic effects in aromatic
simplication of complex spectra with examples
NMR spectroscopy II :- interpretation of PMR spectra of simple organic compounds, Distinction between geotromical isomers.
C^{13} NMR spectroscopy:- basic principal ,chemical shift and its calculations . Application of IR , UV and NMR for indentification of simple organic molecules.
application of IR in structure elucidation of organic compounds, carbonyle and effect of substituents on it, C-H, N-H, O-H vibrartion and H-bonding .

Holi Break
Submission of Assignment by students **Unit Test for Assessment**
unsaturated mono and disubstituted aromatic compunds , metal ligands vibration .group frequenciecs off complex ligands -Cn strecting and effects of coordination on it.
nitro and nitrite and co ligands and effects of their coordination and metal ion. Application of far and near IR .
Mass specrometery :- introduction ion productio ,EI,CI,FD and FAB factors affecting fragmenation ,Mclaffe4rty rearrangents , nitrogen rule , mass spectral fragementaion of organic compounds .

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Topics
Quantum Mechanics-I: Black- body radiation, Plank's radiation law, photoelectric effect
Compton effect, wave function and its significance of postulates o f quantum mechanics, quantum mechanical, operator
commutation relations, Hamiltonian operator, Hermitian operator, Schrodinger equation and its application to free particle and particl e in a box problem
quantization of energy level, zero point energy, degeneracy, extension to three dimensional boxes. Heisenberg uncertainty principle.
Quantum Mechanics- II: Rigid rotator model of rotation of diatomic molecule, Schrödin ger equation
, transformation to spherical polar coordinates, and separation of v ariables,
shperpherical harmonics, and qualitative discussion of solution.
Molecular spectroscopy I: Interaction of electromagnetic radiation with molecules and various types of spectra, Born Oppenheimer a pproximation.
Rotutional Spectroscopy: Selection rules, intensities of spectral lin e, determination of bond lengths of diatomic and triatomic molecu les, isotopic substitution
Spectroscopy: Classical concept of vibration, computation of force constant, anharmonicity, Morse potential curve, dissociation energ ies, vibrating diatomic rotator, fundamental frequencies, overtones , hot bands, vibration-rotation spectroscopy: P, Q, R branches.

Holi Break
Submission of Assignment by students **Unit Test for Assessment**
Molecular Spectroscopy Il: Raman Spectroscopy: Qualitative treat ment of Rotational Raman effect, Effect of nuclear spin, Vibration al Raman spectra, stokes and anti- stokes lines, their intensity and rule of mutual exclusion.
Electronic Spectroscopy: Franck- Condon principle, electronic transitions, sing'et and triplet states, f luorescence and phosphorescence
dissociation and predissociation, calculation of electronic transitio rns of polyenes using free electron model.

6th Semester
istry
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Topic
Error analysis: Methods of sampling and associated errors, Classification of errors, Propagation of errors, treatment of errors,
Normal distribution, Tests of Significance and Confidence Limits.
UV-Visible Spectroscopy: Basic principles of instrumentation (choice of source, monochromator and detector) for single and double beam instrument; Infrared Spectroscopy
Basic principles of instrumentation (choice of source, monochromator& detector) for single and double beam instrument; sampling techniques.
Structural illustration through interpretation of data, Effect and importance of isotope substitution.
Flame atomic absorption and emission spectroscopy: Basic principles of instrumentation choice of source, monochromator, detector
choice of flame and Burner designs, Techniques of atomization and sample
introduction; Method of background correction, sources of chemical interferences and their method of removal
Techniques for the quantitative estimation of trace level of metal ions from water samples.
Revision and test of unit-1

Holi Break
Diffraction methods: Bragg condition, Miller indices, Bragg method, Debye-Scherrer method (sodium chloride crystal), indexing reflections for a cubic system using powder method
identification of unit cells from systematic absences in diffraction pattern. Structure factor and its relation to intensity and electron density, introduction to phase problem
Introduction, Classification, Mechanism of Chromatography separation: adsorption, partition & ion exchange,
Development of chromatograms; frontal, elution and displacement methods.
Qualitative and quantitative aspects of chromatographic methods of analysis,
Paper and thin layer chromatography, liquid chromatography and ion-exchange chromatography.
Revision and assignment work

Topic
Unit **1 :- Chemical Equilibrium** Equilibrium constant and free energy, concept of chemical potential, Thermodynamic derivation of law of chemical equilibrium
Temperature dependence of equilibrium constant; Van't Hoff reaction isochore, Van't
Clapeyron equation and Clausius – Clapeyron equation & its applications.
Unit-II Distribution Law General Introduction about distribution law; Nernst distribution law – its thermodynamic derivation
Modification of distribution law when solute undergoes dissociation, association and chemical combination.

Applications of distribution law: (i) Determination of degree of hydrolysis and hydrolysis constant of aniline hydrochloride. (ii) Determination of equilibrium constant of potassium tri-iodide complex and process of extraction
Unit-III Carboxylic Acids Nomenclature of Carboxylic acids, structure and bonding, physical properties, acidity of carboxylic acids
Diwali Vacation
Preparation of carboxylic acids. Reactions of carboxylic acids. Hell-Volhard-Zelinsky
Unit- IV Derivatives of Carboxylic acid Structure, nomenclature and preparation of acid chlorides, esters, amides and acid anhydrides. Relative stability of acyl derivatives.
Physical properties, interconversion of acid derivatives by nucleophilic acyl substitution. Mechanisms of esterification and hydrolysis
Revision and Test

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Topic
Unit **III :- Chemical Dynamics** Brief description of integrated rate laws of zero and first order
Brief description of integrated rate laws of second order and graphical representation
Lindemann Hinshewood treatment for unimolecular gas; rate law for opposing reaction
Rate law for opposing reactions; parallel reaction
Rate law for consecutive reactions
Chain reactions
Chain reactions, chain length, apparent activation energy
Diwali Vacation

UNIT-IV Ion - Ion Interactions: The Debye-Huckel theory of ion- ion interactions, ionic cloud, Poisson's equation, excess charge density, Linearization of Boltzmann equation Linearized Poison Boltzmann equation and its solution, excess charge density and potential as a function of distance from central ion, Debye Huckel reciprocal length ionic cloud and its contribution to the total potential
Debye-Huckel limiting law of activity coefficients, its physical significance and its limitations, ion-size effect on potential, ion-size
Debye - Huckel -Onsager treatment for aqueous and non aqueous solutions and its limitations.

Topics	
Introduction of coordination compounds , Werner's theory of coordination compounds, nomenclature of coordination compounds, Isomerism in coordination compounds,	
Valence Bond Theory of Transition Metal Complexes and its Limitations, Crystal Field Theory	
crystal field splitting in octahedral, tetrahedral and square planer complexes, factors affecting the crystal field parameters.	
Types of magnetic behaviour, methods of determining magnetic susceptibility, spin-only formula	
L-S coupling, orbital contribution to magnetic moments, applications of magnetic moment data for 3d-metal complexes,	

Types of electronic transitions, selection rules for d-d transitions, spectroscopic ground state	
spectrochemical series, Orgel-energy level diagram for d1and d9 states	
Orgal energy level diagrams Unit Test For Assessment	
discussion of the electronic spectrum of [Ti(H2O)6]3+	
Doubt classes	
Introduction of chemical kinetics, Factors affecting rate of reaction Integrated rate equation for zero order,1st order, 2nd order and 3rd order reactions	
Methods for determining rate of reaction	
Parallel reactions, series reactions Consecutive Reactions	
Arrhenius Equation: Effect of Temperature Collision Theory, Transition State Theory	
Diwali Break	
Doubt Classes	
Enzymatic Reaction: Michaelis-Menton Treatment , Acid -Base Catalysed Reactions	
Submission of Assignments by Students	
Revision	

Topics
Definition of transition elements, position in the periodic table, General characteristics &properties of d-block elements
Comparison of properties of 3d elements with 4d & 5delements with reference only to ionic radii, oxidation state, magnetic and spectralproperties.

Werner's coordination theory, effective atomic number concept, chelates, nomenclatureof coordination compound
isomerism in coordination compounds, valence bond theoryof transition metal complexes.
Limitations of valence bond theory, an elementary idea of crystal-field theory, crystalfield splitting in octahedral and tetrahedral complexes, factors affecting the crystal-fieldparameters.
Definition of thermodynamic terms: system,surrounding etc. Types ofsystems, intensive and extensive prope rties. State and path functionsand their differentials. Thermodynamic process. Concept of heat andwork.
Zeroth Law of thermodynamics, First law of thermodynamics:statement, definition of internal energy and enthalpy. Heat capacity,heat capacities a t constant volume and pressure and their relationship.Calculation of w.q. dU & dH for the expansion of ideal gases underisothermal and adiabatic conditions for reversible process, Kirchoffsequation.
Second law of thermodynamics, need for the law, diffe rent statementsof the law, Carnot's cycles and its efficiency, Carnot's theorm,Thermodynamics scale of temperature. Concept of entropy – entropy asa state function, entropy as a function of P, V & T.
Monohydric alcohols □ nomenclature, methods of formation by reduction of aldehydes,ketones, carboxylic acids and esters. Hydrogen bonding. Acidic nature.
Dihydric alcohols — nomenclature, methods of formation, chemicalreactions of vicinal glycols,

Nomenclature, structure and bonding. Preparation of phenols,Comparative acidic strengths of alcohols and phenols, resonancestabilization of phenoxide ion. Mechanisms of Fries rearrangement,Claisen rearrangement, and Schotten and Baumann reactions.
Synthesis of epoxides. Acid and base - catalyzed ring opening ofepoxides,Ultraviolet (UV) absorption spectroscopyAbsorption laws (Beer-Lambert law), molar absorptivity, presentationand analysis of UV spectra
types of electronic transitions, effect ofconjugation. Concept of chromophore and auxochrome. Bathochromic,hypsochromic, hyperchromic and hypochromic shifts.
Nomenclature of Carboxylic acids, structure and bonding, , acidity ofcarboxylic acids, effects of substituents on acid strength. Hell-Volhard- Zelinsky reaction. Mechanism of decarboxylation.
Diwali Break
Relative stability of acyl derivatives. interconversion of acidderivatives by nucleophilic acyl substitution.
Relative stability of acyl derivatives. interconversion of acidderivatives by nucleophilic acyl substitution.Mechanisms of esterification and hydrolysis (acidic and basic).
Submission of Assignments by Students
Revision

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