DR. AARTI TREHAN

LESSON PLAN: EVEN SEMESTER 2020-21

DR. AARTI TREHAN

BSc 6th Semester LESSON PLAN: LEARNING OUTCOMES CH- 306 SESSION: 2020-2021		
S. NO.	LESSON PLAN	LEARNING OUTCOMES
WEEK : 1		**Student will be able to**
L-1	Natural and synthetic polymers & classifications	Understand & learn
L-2	Addition or chain- growth polymerization	Understand & Tell
L-3	Examles of Addition or chain- growth polymerization	Understand & explain
WEEK : 2		
L-4	Free radical vinyl polymerization, ionic vinyl polymerization,	Understand & explain
L-5	Ziegler- Natta polymerization	Learn &write

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L-6	Condensation or step growth polymerization	Knows & understands the concept
WEEK :3		
L-7	Polyesters, polyamides, phenol formaldehyde resins.	Apply the Knowledge
L- 8	Natural and synthetic rubbers.	Understand
L- 9	CLASS TEST	Assess oneself
WEEK : 4		
L- 10	Acidity of a- hydrogens, alkylation of diethyl malonate	Apply the knowledge & concepts
L-11	Acidity of a- hydrogens, alkylation of ethyl acetoacetate	Apply the knowledge & concepts
L -12	Synthesis of ethyl acetoacetate: the Claisen condensation.	Learn
WEEK : 5		
L- 13	Keto- enol tautomerism of ethyl acetoacetate	Understand

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L- 14	REVISION	Clear the doubts
L- 15	CLASS TEST	Assess oneself
WEEK : 6		
L- 16	Classification, of amino acids	Knows and learns
L- 17	Acid- base behavior, isoelectric point and electrophoresis	Learn
L- 18	Preparation of a- amino acids	Know
WEEK : 7		
L- 19	Structure and nomenclature of peptides	Write & understand
L- 20	Peptide structure determination, end group analysis, selective hydrolysis of peptides	Know & understand
L- 21	SESSIONAL	Evaluate oneself
WEEK : 8		

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L-22	Classical peptide synthesis	Knows and learn the method
L-23	solid– phase peptide synthesis.	Understand the concept and reasons
L- 24	Structures of peptides	Know & understand
WEEK : 9		
L- 25	Structure of proteins: Primary & Secondary structure.	Understand, draw & Analyze
L- 26	REVISION	Clear the doubts
L- 27	CLASS Test	Assess oneself
WEEK : 10		
L- 28	Heterocyclic Compounds:Nomenclature	Learn
L- 29	Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene	Draw & understand
L- 30	Molecular orbital picture and aromatic characteristics of pyridine	Draw & understand
WEEK : 11		

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L- 31	Methods of synthesis of pyrrole, furan, thiophene	Know & write various methods
L- 32	Chemical reactions of pyrrole, furan & thiophene with particular emphasis on the mechanism of electrophilic substitution	Write & understand
L-33	Methods of synthesis of pyridine	Understand & write the methods
WEEK : 12		
L- 34	Chemical reactions of pyridine with particular emphasis on the mechanism of electrophilic substitution	Understand the things
L- 35	. Mechanism of nucleophilic substitution reactions in pyridine derivatives	Understand the things
L- 36	Comparison of basicity of pyridine, piperidine and pyrrole.	Understand &compare
WEEK : 13		
L- 37	Introduction to condensed five and six- membered heterocycles	Write the structure

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L- 38	Preparation and reactions of indole	Know & understand
L- 39	Preparation of quinoline and isoquinoline with special reference to Fisher indole synthesis, Skraup synthesis and Bischler-Napieralski synthesis.	Know & understand
WEEK : 14		
L- 40	Reactions of quinoline .	Learn & understand
L- 41	Reactions of isoquinoline	Learn & understand
L- 42	. Mechanism of electrophilic substitution reactions of quinoline .	Understand & able to write
WEEK : 15		
L- 43	. Mechanism of electrophilic substitution reactions of isoquinoline.	Understand & able to write
L- 44	REVISION	Clear the doubts
L- 45	REVISION	Clear the doubts

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BSc 4th Semester **LESSON PLAN:** **LEARNING OUTCOMES**

CH- 206 **SESSION: 2020-2021**

S. NO.	LESSON PLAN	LEARNING OUTCOMES
WEEK : 1		Student will be able to
L-1	Principle of IR Spectroscopy	Write and understand
L-2	Molecular vibrations,	Understand & explain
L-3	Hooke's law, selection rules	Develop problem solving attitude
WEEK : 2		
L-4	Intensity and position of IR bands and factors affecting it	Understand & explain
L-5	Measurement of IR spectrum, fingerprint region,	To understand & differentiate
L-6	Characteristic absorptions of various functional groups	Knows & understands the concept
WEEK :3		

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L-7	Interpretation of IR spectra of simple organic compounds.	Understand the new concept
L- 8	Applications of IR spectroscopy in structure elucidation of simple organic compounds.	Apply the knowledge gained
L- 9	REVISION	Clear the doubts
WEEK : 4		
L- 10	CLASS TEST	Assess oneself
L-11	Structure and nomenclature of amines	Enhance the knowledge
L -12	Physical properties.	Learn
WEEK : 5		
L- 13	. Separation of a mixture of primary, secondary and tertiary amines	Differentiate
L- 14	Structural features affecting basicity of amines	Explain and apply his knowledge

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L- 15	. Preparation of alkyl and aryl amines (reduction of nitro compounds, nitriles, reductive amination of aldehyde and ketonic compounds.	Learns & understands
WEEK : 6		
L-16	Gabriel- phthalimide reaction, Hofmann bromamide reaction.	Knows and learns methods
L- 17	Electrophilic aromatic substitution in aryl amines,	Explain & understand
L- 18	Reactions of amines with nitrous acid	Explain & understand
WEEK : 7		
L- 19	SESSIONAL	Evaluate himself
L- 20	Mechanism of diazotisation	Know & understand the mechanism
L- 21	Structure of benzene diazonium chloride	Understand
WEEK : 8		

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L-22	Replacement of diazo group by H, OH, F, Cl, Br, I, NO_2 and CN groups	Knows and learns methods
L-23	Reduction of diazonium salts to hydrazines, coupling reaction	Understand the reactions and reasons
L- 24	Diazonium salts and its synthetic application	Know & understand
WEEK : 9		
L- 25	CLASS TEST	Assess oneself
L- 26	Nomenclature and structure of the carbonyl group.	Know & understand
L- 27	Synthesis of aldehydes and ketones	Know & learn
WEEK : 10		
L- 28	Synthesis of aldehydes from acid chlorides, advantage of oxidation of alcohols with chromium trioxide (Sarett reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate	Know & learn
L- 29	Physical properties	Learn
L- 30	REVISION	Clear the doubts

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WEEK : 11		
L- 31	CLASS TEST	Assess oneself
L- 32	Comparison of reactivities of aldehydes and ketones.	Know & understand
L-33	Mechanism of nucleophilic additions to carbonyl group	Understand the how addition to carbonyl takes place
WEEK : 12		
L- 34	Condensation with ammonia and its derivatives.	Assess himself
L- 35	Benzoin, aldol, Perkin and Knoevenagel condensations.	Name different derivatives
L- 36	Wittig reaction. Mannich reaction	Compare different derivatives
WEEK : 13		
L- 37	REVISION	Clear the concepts
L- 38	CLASS TEST	Evaluate oneself

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L- 39	Oxidation of aldehydes, Baeyer– Villiger oxidation of ketones, Cannizzaro reaction	Understand the reactions
WEEK : 14		
L- 40	Oxidation of aldehydes, , Cannizzaro reaction	Learn the reactions
L- 41	REVISION	Clear the doubts
L- 42	MPV, Clemmensen, Wolff- Kishner with mechanism.	Learn the reactions & mechanisms
WEEK : 15		
L- 43	$LiAlH_4$ and $NaBH_4$ reduction with mechanism	Learn the reactions & mechanisms
L- 44	Revision	Clear the doubts
L- 45	REVISION	Clear the doubts

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BSc First Semester CH -106	LESSON PLAN: SESSION: 2020-2021	LEARNING OUTCOMES
S. NO.	LESSON PLAN	LEARNING OUTCOMES
WEEK : 1		Student will be able to
L-1	Nomenclature of benzene derivatives: Aromatic nucleus and side chain.	name the organic compounds
L-2	Aromaticity: the Huckel rule, aromatic ions,.	Understand & explain
L-3	Annulenes up to 10 carbon atoms, aromatic, anti-aromatic and non- aromatic compounds	Understand
WEEK : 2		
L-4	CLASS TEST	Retain the things done
L-5	Aromatic electrophilic substitution: general pattern of the mechanism,	Understand & write
L-6	Mechanism of nitration, halogenation, sulphonation, and Friedel- Crafts reaction.	Knows & understands the concept

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WEEK :3		
L-7	Energy profile diagrams.	Draw & Apply the Knowledge
L- 8	Activating , deactivating substituents and orientation.	Understand the new concept
L- 9	CLASS TEST	Assess the knowledge
WEEK : 4		
L- 10	Nomenclature of alkenes,	Name the compounds
L-11	Mechanisms of dehydration of alcohols	Understand & write the mechanism
L -12	Dehydrohalogenation of alkyl halide. The Saytzeff rule	Understand, write and define
WEEK : 5		
L- 13	Hofmann elimination	Explain and understand

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L- 14	Physical properties and relative stabilities of alkenes.	Explain and understand Justify the order of stability
L- 15	Chemical reactions of alkenes	Learn &write
WEEK : 6		
L- 16	Mechanisms of hydrogenation, electrophilic and free radical additions,	Understand & write
L- 17	Markownikoff's rule,	Define
L- 18	Hydroboration–oxidation, oxymercuration-reduction, hydration,	Learn the topic
WEEK : 7		
L- 19	Ozonolysis,hydroxylation and oxidation with $KMnO_4$.	Learn the topic
L- 20	SESSIONAL	Evaluate oneself

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L- 21	Nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of butadiene	Name the compounds and learn concepts
WEEK : 8		
L-22	Chemical reactions :1 2 and 1 , 4 additions (Electrophilic & free radical mechanism),	Understand how reaction is taking place
L-23	Diels- Alder reaction	Know & explain
L- 24	CLASS TEST	Assess his learning level
WEEK : 9		
L- 25	Nomenclature, structure and bonding in alkynes..	Learn the nomenclature
L- 26	Methods of formation.	Know & learn methods
L- 27	Chemical reactions of alkynes,	Understand
WEEK : 10		
L- 28	Acidity of alkynes. Mechanism of electrophilic reactions	Understand & write

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L- 29	Mechanism of nucleophilic addition reactions, hydroboration- oxidation of alkynes	Understand & write
L- 30	REVISION	Clear the doubts
WEEK : 11		
L- 31	Nomenclature and classes of alkyl halides	Name the compounds
L- 32	Methods of formation alkyl halides	Know the methods
L-33	Chemical reactions of alkyl halides.	Know & learn the reactions
WEEK : 12		
L- 34	Mechanisms and stereochemistry of nucleophilic substitution reactions of alkyl halides, S_N2 reactions with energy profile diagrams	Understand the mechanism
L- 35	Mechanisms and stereochemistry of nucleophilic substitution reactions of alkyl halides, S_N1 reactions with energy profile diagrams	Understand the mechanism
L- 36	CLASS TEST	Assess himself
WEEK : 13		

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L- 37	Methods of formation	Know the methods
L- 38	Reactions of aryl halides,	Learn the reactions
L- 39	The addition- elimination and the elimination- addition mechanisms of nucleophilic aromatic substitution reactions	Understand the concept
WEEK : 14		
L- 40	REVISION	Clear the doubts
L- 41	Relative reactivities of alkyl halides *vs* allyl, vinyl and aryl halides.	Understand the concept
L- 42	Factors affecting substitution	Understand and explain
WEEK : 15		
L- 43	Solvent effect on substitution	Understand & explain
L- 44	REVISION	Clear the doubts
L- 45	REVISION	Clear the doubts

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INORGANIC CHEMISTRY CLASS-B.Sc 1(2ND SEMESTER)

CH-104: DR. AARTI TREHAN : LESSON PLANNER

Week 1: L-1—L-3

Basic introduction to hydrogen bonding, s-block elements, p-block elements, chemistry of noble gases.

Week 2: L-4—L-6

Hydrogen bonding: conditions, examples, nature and strength of hydrogen bond, characteristic properties, hydrogen bonding in water and ice.

Week 3: L-7---L-9

Types of hydrogen bonds, importance, Vanderwaal's forces, metallic

bond, semiconductors, revision, doubts, test.

Week 4: L-10—L-12

s-block elements: introduction, occurrence, electronic configuration of group 1 and 2, comparative study of characteristic of group1, uses, anomalous behaviour of Li.

Week 5: L-13—L-15

Diagonal relationship, comparison of characteristic of group 2, anomalous behavior of Be, difference between Be and other group 2 elements, diagonal relationship between Be and Al.

Week 6: L-16---L-18

Comparison of alkali and alkaline earth metal, hydrides of s-block, solvation tendencies, Complexation tendencies, biological importance.

Week 7: L-19---L-21

REVISION, SESSIONAL

WEEK 8: L-22---L-24

Chemistry of noble gases: introduction, position, occurrence, general characteristics, discovery of compounds, chemistry of compounds, compounds of Xenon, compounds of other noble gases.

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Week 9: L-25---L-27

p-block elements: Introduction, Boron family (group 13), comparative study of compounds of group 13, anomalous behavior of Boron, diagonal relationship of B and Si.

Week 10: L-28—L-30

Carbon family(group 14), : Introduction, comparative study of compounds of group14, silicates, zeolites, silicones

Week 11: L-31—L-33

Nitrogen family(group 15): Introduction, occurrence, comparative study of compounds of group 15, chemistry of some important compounds, allotropes of Phosphorous.

Week 12: L-34----L-36 Oxygen family(group 16): Introduction, occurrence, comparative study of compound of group 16, hydrogen peroxide.-

Week 13: L-37—L-39

Halogen family(group 17): Introduction, comparative study of compounds of group 17,

WEEK 14: L-40—L-42

Interhalogen compounds, Interhalogen ions and Polyhalides, Hydroacids of halogens, Oxoacids of Chlorine, relative strength of oxoacids of halogens.

Week 15: L-43—L-45

Revision , Class test.

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BOTANY PAPER -2

(Genetics)

CLASS-B.SC I(2^{ND} SEMESTER)

PLANNER

SESSION -2020-21

APRIL:Week4:Genetic Material

May:week1:Genetic Material

May:week2 :Genetic Inheritance

May :week 3:Genetic Inheritance

May:week4:Genetic Variation

June :week1:Genetic Variation

June :week2:Gene Expression

June :week3:Gene Expression

June :week4:Extra Nuclear Inheritance

BOTANY PAPER -2

(PLANT EMBRYOLOGY)

CLASS-B.SC 2(4TH SEMESTER)

PLANNER

SESSION -2020-21

APRIL:Week4:Flower Modified shoot

May:Week1: Microsporangium & Microsporogenesis

May:Week2: Pollen Pistil Interaction

May :Week 3:Pollination

May:Week4:Megasporangium

June :Week1:Female gametophytes

June :Week2:Endosperm type and Embryogenesis

June :Week3:Structure of Dicot and Monocot seeds

June :Week4:Fruit types

BOTANY PAPER -1

(ECONOMIC BOTANY)

CLASS-B.SC 3(6TH SEMESTER)

PLANNER

SESSION -2020-21

APRIL:Week4:Cereals

May:Week1:Cereals and Pulses

May:Week2 :Vegetables

May :Week 3:Fibres

May:Week4:Vegetables oils

June :Week1:Spices

June :Week2:Medicinal Plants

June :Week3:Beverages and Rubber

June :Week4:Sugarcane and Timber yielding plants

BOTANY PAPER -1

(DIVESITY OF ARCHEGONIATES)

CLASS-B.SC 1 (2^{nd} SEMESTER)

PLANNER

SESSION -2020-21

April:Week4:General characters of Bryophytes

May:week1:Marchantia

May:week2 :Anthoceros

May :week 3:Funaria

May:week4:General characters of Pteridophytes

June :week1:Selaginella

June :week2:Equisetum

June :week3:Pteris

June :week4:Rhynia and classification of Bryophytes and Pteridophytes

BOTANY PAPER -1

(BIOLOGY AND DIVERSITY OF SEED PLANTS -2)

CLASS-B.SC 2(4th SEMESTER)

PLANNER

SESSION -2020-21

APRIL:Week4:Ranunculaceae

May:week1:Brassicaceae and Malvaceae

May:week2 :Euphorbiaceae ,Rutaceae,Solanaceae

May :week 3:Leguminosae ,Apiaceae

May:week4:Asclepidaceae ,Laminaceae,Asteraceae

June :week1:Liliaceae and Poaceae

June :week2:Taxonomy and Systematics

June :week3Taxonomy and Systematic

June :week4:Flower and types of Inflorescence

BOTANY PAPER -1

(BIOCHEMISTRY AND PLANT BIOTECHNOLOGY)

CLASS-B.SC 3(6THSEMESTER)

PLANNER

SESSION -2020-21

APRIL:Week4:Enzymology

May:week1:Plant growth and development

May:week2 :Plant growth and development

May :week 3:Lipid metabolism

May:week4:Lipid metabolism

June :week1:Nitrogen metabolism

June :week2:Engineering and Biotechnology

June :week3:Engineering and Biotechnology

June :week4:Engineering and Biotechnology

Lesson plan for the session (2020-21)

Even semester B.Sc 1st

2nd sem

Paper : Electronics devices PH- 202

April 4th week : Semiconductors : Energy bands in solids, Intrinsic and extrinsic semiconductors, carrier mobility and electrical resistivity of semiconductors, Hall effect, p-n junction diode and their characteristics, Zener and Avalanche breakdown

May 1st week : Zener diode, Zener diode as a voltage regulator. Light emitting diodes (LED), Photoconduction in semiconductors, Photodiode, Solar Cell, p-n junction as a rectifier, half wave and full wave rectifiers (with derivation), filters (series inductor, shunt capacitance, L-section or choke, π and R.C. filter circuits).

May 2nd week : : Transistors : Junction transistors, Working of NPN and PNP transistors, Three configurations of transistor (C-B, C-E, C-C modes),Common base, common emitter and common collector characteristics of transistor,

May 3rd week : Constants of a transistor and their relation, Advantages and disadvantages of C-E configuration. D.C. load line .Transistor biasing; various methods of transistor biasing and stabilization.

May 4th week : Transistor Amplifiers : Amplifiers, Classification of amplifiers, common base and common emitter amplifiers, coupling of amplifiers, various methods of coupling,

June 1st week : Resistance- Capacitance (RC) coupled amplifier (two stage, concept of band width, no derivation), Feedback in amplifiers, advantages of negative feedback, emitter follower, distortion in amplifiers.

June 2nd week : Oscillators Oscillators, Principle of oscillation, classification of oscillators, Condition for self sustained oscillation: Barkhausen criterion for oscillationJune

June 3rd week : , Tuned collector common emitter oscillator, Hartley oscillator, C.R.O. (Principle and Working).

June 4th week : Revision Tests & Assignment checking Assesment etc.

Lesson plan for the session (2020-21)

Even semester B.Sc 2nd year

4th sem

Paper : wave & optics PH- 402

April 4th week : **Polarization**

Polarization and Double refraction, Polarisation by reflection, Polarisation by scattering, Malus Law, Phenomenon of double refraction, Huygen's wave theory of double refraction (Normal and oblique incidence)

May 1st week : Analysis of polarized Light. Nicol prism, Quarter wave plate and half wave plate, production and detection of (i) Plane polarized light (ii) Circularly polarized light and (iii) Elliptically polarized light. Optical activity, Fresnel's theory of rotation, Specific rotation, Polarimeters (half shade and Biquartz).

May 2nd week : **Fourier analysis**

Fourier series, Fourier coefficients, odd functions, even functions, Fourier theorem, analysis of complex waves and its application for the solution of triangular and rectangular waves , half and full wave rectifier outputs.

May 3rd week : **Fourier transforms** :

Fourier transforms and its properties, Application of Fourier transform to following functions:

1. F(x)=v*x2 /2
   1 x<a
2. f(x)=
   0 x>a

May 4th week : **Geometrical Optics** :

Matrix methods in paraxial optics, effects of translation and refraction, derivation of thin lens and thick lens formulae, unit plane, nodal planes, system of thin lenses.

June 1st week : **Geometrical Optics II**

Chromatic, spherical, coma, astigmatism and distortion and aberrations and their remedies.

June 2nd week : **Fiber Optics**

Optical fiber, Critical angle of propagation, Mode of Propagation, Acceptance angle, Fractional refractive index change, Numerical aperture.

June 3rd week : Types of optics fiber, Normalized frequency, Pulse dispersion, Attenuation, Applications, Fiber optic Communication, Advantages.

June 4th week : : Revision Tests & Assignment checking Assesment etc.

Lesson plan for the session (2020-21)

Even semester B.Sc 3rd

6th sem

Paper : Atomic and molecular spectroscopy PH- 602

April 4th week : Knowledge of quantum nos , Hydrogen spectra in detail Frank hertz experiment ,Bohr's correspondence principal , alkali spectra , main feature of alkali spectra

May 1st week : vector atom model , salient feature of vector atom model , spin orbital interaction energy, double term separation method ,

May 2nd week : fine structure of alkali spectra etc. , coupling in case a more than one valence electron atom .

May 3rd week : LS coupling in detail , interaction energy in LS coupling , JJ coupling interaction energy J-J coupling

May 4th week : Lermor's theorem , Pauli Exclusion Principal ,symmetric & anti- symmetric , wave function , normal Zeeman effect , anomalous Zeeman effect

June 1st week : State effect (atoms in external electric field) , Paschen – back effect, Hyperfine structure

June 2nd week: Molecular physics ,infra red rotational & vibrational spectra and their energy level .

June 3rd week: Raman effect & its application & checking of assignment

June 4th week : Revision , Assignment , Tests & Checking of test etc.

Mechanics (Physics-PH-201) Paper – I

Class – B. Sc. 1st year (2nd Semester)

Planner- Even Semester

Session 2020-21

Week 1 Moment of Inertia: Rotation of rigid body, Moment of Inertia, Torque, Angular momentum, Kinetic energy of rotation, Theorem of parallel and perpendicular axis (3L)

Week 2 Moment of Inertia of solid sphere, hollow sphere, spherical shell, solid cylinder (3L)

Week 3 MOI of hollow cylinder, solid bar of rectangular cross-section, Flywheel, MOI of an irregular body, Acceleration of body rolling down an inclined plane (3L)

Week 4 Elasticity: Elasticity, stress, strain, Hooke's law, Elastic constants and their relations, Poisson's ratio (3L)

Week 5 Torsion of cylinder and twisting couple, Determination of coefficients of modulus of rigidity for the material of wire by Maxwell's needle method (3L)

Week 6 Bending of beam, Cantilever and centrally loaded beam, Determination of Young's modulus for the material of the beam and Elastic constants for the material of the wire by Searle's method (3L)

Week 7 Kinetic theory of gases-I: Assumption of Kinetic theory of gases, Pressure of an ideal gas, Kinetic Interpretation of temperature (3L)

Week 8 Ideal gas equation, Degree of freedom, law of equipartition of energy and its applications for specific heat of gases (3L)

Week 9 Real gases, VanderWaal's equation, Brownian motion (3L)

Week 10 Kinetic theory of gases-II: Maxwell's distribution of speed and velocities, (3L)

Week 11 Experimental verification of Maxwell's law of speed distribution (3L)

Week 12 Most probable speed, average and r.m.s. speed, Mean free path (3L)

Week 13 Transport phenomenon, Diffusion of gases (3L)

Week 14 Class tests & Discussion of problems (3L)

Week 15 Revision & Discussion of problems (3L)

Statistical Physics (Physics-PH-401) Paper – I

Class – B. Sc. 2nd year (4th Semester)

Planner- Even Semester

Session 2020-21

Week 1 Statistical Physics-1: Microscopic and Macroscopic systems, events-mutually exclusive, Probability, Statistical probability, A-priori probability, Probability theorems, some probability considerations (3L),

Week 2 Combinations possessing maximum probability and minimum probability, Tossing of coins, Permutations & Combinations, Distribution of N (=2,3,4) distinguishable and indistinguishable particles in two boxes of equal size (3L)

Week 3 Micro and Macro states, Thermodynamical probability, Constraints and Accessible states, Statistical Fluctuations (3L)

Week 4 General distribution of distinguishable particles in compartments of different sizes, Condition of equilibrium between two systems in thermal contact- β parameter, Entropy and Probability-Boltzman's relation (3L)

Week 5 Statistical Physics-2: Postulates of Statistical Physics, Phase space, Division of phase space into cells, three kinds of statistics, (3L)

Week 6 M. B. Statistics applied to an ideal gas in equilibrium – energy distribution law (including evaluation of α and β), speed distribution law & velocity distribution law (3L)

Week 7 Expression for average speed, r.m.s. speed, average velocity, r.m.s. velocity, most probable energy & mean energy for Maxwellian distribution (3L)

Week 8 Quantum Statistics: Need for Quantum Statistics: Bose-Einstein energy distribution law, Applications of B.E. Statistics to Plank's radiation law (3L)

Week 9 B.E. gas, Degeneracy and B.E. Condensation (3L)

Week 10 Fermi-Dirac energy distribution law, F.D. gas and degeneracy, Fermi energy and Fermi temperature (3L)

Week 11 Fermi Dirac energy distribution law for electron gas in metals, Zero point energy, zero point pressure and average speed (at 0K) of electron gas (3L)

Week 12 Specific heat anomaly of metals and its solution, M.B. distribution as a limiting case of B.E. and F.D. distributions, Comparison of three statistics (3L)

Week 13 Theory of Specific Heat of Solid: Derivation of Dulong and Petit Law from classical Physics, Specific heat at low temperature, Einstein theory of specific heat (3L)

Week 14 Criticism of Einstein theory, Debye model of specific heat of solids, success and shortcomings of Debye theory, Comparison of Einstein and Debye theories (3L)

Week 15 Revision and problem solving (3L)

Solid State (Physics-PH-601) Paper – I

Class – B. Sc. 3rd year (6th Semester)

Planner- Even Semester

Session 2020-21

Week 1 Crystal Structure-I: Crystalline and Glassy forms, liquid crystals, Crystal structure, periodicity, lattice and basis, Crystal translational vectors and axes (3L)

Week 2 Unit cell and primitive cell, Wigner Seitz primitive Cell, symmetry operations for a 2 dimensional crystal, Bravais lattices in 2 and 3 dimensions (3L)

Week 3 Crystal planes and Millar indices, Interplanar spacing, crystal structures of Zinc sulphide, sodium chloride, Diamond (3L)

Week 4 Crystal Structure-II: X-ray diffraction, Bragg's law and experimental X-ray diffraction methods (3L)

Week 5 K-space and reciprocal lattice and its physical significance, reciprocal lattice vectors (3L)

Week 6 Reciprocal lattice to a simple cubic lattice, b.c.c and f.c.c. (3L)

Week 7 Superconductivity: Historical Introduction, Survey of superconductivity, superconducting systems, High temperature superconductors (3L)

Week 8 Isotopic Effect, Critical magnetic field, Meissner Effect, London theory and Pippard's equation, Classification of superconductors (type I and typeII) (3L)

Week 9 BCS theory of superconductivity, Flux quantization, Josephson Effect (AC and DC), (3L)

Week 10 Practical application of superconductivity and their limitations, power applications of superconductors, **Introduction to Nano Physics:** Definition, Length scale (3L)

Week 11 Importance of Nano-scale and technology, History of Nanotechnology, Benefits and challenges in molecular manufacturing (3L)

Week 12 Molecular assembler concept, Understanding advanced capabilities, Vision and objective of nanotechnology (3L)

Week 13 Nanotechnology in different fields, automobile, electronics, nano-biotechnology, materials, medicine, Revision (3L)

Week 14 Class tests (3L)

Week 15 Revision and problem solving (3L)

ZOOLOGY PAPER -1

(life & diversity of annelida to arthropoda)

CLASS-B.SC I(2ND SEMESTER)

PLANNER

SESSION -2020-21

APRIL:Week4: introduction of annelida + sex linked inheritance

May:week1: Earthworm

May:week2 : Earthworm continued

May :week 3: metamerism + trochopore larva

May:week4: linkage & recombination + extra chromosomal inheritance

June :week1: introduction of arthropoda + grasshopper

June :week2: Grasshopper continued

June :week3:. Elements of heredity & varieties

June :week4:sex determination

ZOOLOGY PAPER -1

(life & diversity from amphibia to mammals)

CLASS-B.SC 2(4TH SEMESTER)

PLANNER

SESSION -2020-21

APRIL:Week4: introduction of amphibia + frog

May:Week1: frog + parental care in amphibia

May:Week2: introduction of reptilia + lizard

May :Week 3:lizard continued

May:Week4: introduction of aves + pigeon

June :Week1: pigeon continued

June :Week2: migration in birds + reptiles in general

June :Week3: introduction of mammals + rat

June :Week4:rat continued

ZOOLOGY PAPER -1

(Aquaculture & pest management I)

CLASS-B.SC 3(6TH SEMESTER)

PLANNER

SESSION -2020-21

APRIL:Week4: introduction to world & indian fisheries

May:Week1: freshwater fishes in india

May:Week2 : fishing crafts & gears + brackish water culture

May :Week 3 : introduction to parasitology

May:Week4: sugarcane pests

June :Week1: cotton pests

June :Week2: wheat pests

June :Week3: paddy pests

June :Week4: vegetables pests

Inorganic Chemistry 2020-21

Class-B.Sc III(6th Semester)(CH-304)

Planner DR.(MRS.)SUNITA PAHWA

Week 1:Bridge course: introduction of organometallic chemistry, acids bases, bioinorganic chemistry.

Week 2: organometallic chemistry: organometallic compounds , classification.

Week 3:classification of ligands, EAN, nomenclature..

Week 4:bonding, preparations and applications, olefin complexes..

Week 5:metal carbonyls, bonding and structure.

Week 6: acids and bases HSAB concept: Arrhenius concept, bronsted theory, lewis concept.

Week 7: lux flood concept, usanovich concept, relative strength of acids and bases.

Week 8: hard and soft acids and bases, symbiosis, electronegativity.

Week 9: bioinorganic chemistry: essential and non-essential elements, bulk elememts.

Week 10:essential trace elements, metalloporhyrins, haemoglobin and myoglobin..

Week 11: biological role of alkali and alkaline earth metals, nitrogen fixation.

Week 12:silicones and phosphazones

Principal (Offg.)
Arya Kanya Mahavidyalya
Shahabad Markanda

(Akwinder kaur)

(Even Sem)

TEXTILE CHEMISTRY-1(106)

Class- B.Sc FD (2nd Sem)

Planner

Session-2020-2021

April: Week3 Introduction to textile fibers

April: Week4 classification of fibers based on sources and origin , basic textile terminology.

May: Week1 Primary and secondary properties of various fibers.

May: Week2 Sequence of operations & purposes of short / long staple yarn

May: Week3 manufacturing process, introduction & objectives of opening & cleaning carding, combing, drawing, roving and spinning.

May: Week4 Different methods and types of spinning, Introduction, Manufacturing & Properties of different natural and man-made fibers

June: Week 1 Classification of Yarns: Carded and Combed yarns, woolen & worsted yarns, filament and spun yarns.

June: Week2 Yarn Properties – linear density, size, twist in yarn, crimp twist direction, strength and uniformity

June: Week3 Textured yarns – types and application, Fancy Yarns – types and uses.

June: Week4 Physical properties of Fabric

July: Week1 Methods of determining the physical properties and interpretation of test results

July: Week2 Revision of Unit 1&2

Principal (Offg.)
Arya Kanya Mahavidyalya
Shahabad Markanda

(Akwinder kaur)

CONCEPT OF FASHION (107)

Class- B.Sc FD (2th Sem)

Planner

Session-2020-2021

April: Week3 Origin of clothing – theory of protection

April: Week4 modesty, adornment, Fashion-definition, importance

May: Week1 Principles, factors affecting fashion and differences between fashion and non-fashion

May: Week2 Fashion--origin, evolution, cycles, length of cycles

May: Week3 fashion of different eras till French revolution

May: Week4 Fashion Theories – trickle- down, trickle- across and bottom-up-theory

June: Week1 Fashion Psychology – first impression, role of social and psychological aspects of clothing

June: Week2 Fashion Terminology – fashion, style, change, fashion cycles, fad, classic, boutique, croquis, fashion trends

June: Week3 haute couture, designer, pret-a-porter, silhouette.

June: Week4 Sociological choice of clothing as affected by nationality

July: Week1 tradition, class consciousness, occupation etc.

July: Week2 National and International Designers of 20th & 21st Century.

Principal (Offg.)
Arya Kanya Mahavidyalya
Shahabad Markanda

TEXTILE CHEMISTRY-II (206)

Class- B.Sc FD (4th Sem)

Planner

Session-2020-2021

April: Week3 Classification of dyes, Theories of dyeing

April: Week4 Stages of dyeing, Color fastness

May: Week1 Fabric finishing, Preparatory processes (Singeing, desizing, scouring, bleaching, heat-setting).

May: Week2 Routine finishes – beetling, calendaring, carbonization, permanent setting, mercerization, sizing, softening, anti-shrink, weighting, milling

May: Week3 Special purpose finishes-flame retardant, water-repellent

May: Week4 durable-press, moth-proofing, soil-repellent, anti-static

June: Week1 Dyeing defects

June: Week2 Auxiliaries, Techniques of decorative dyeing

June: Week3 Styles and methods of printing

June: Week4 Basic Bleaching processes and classification of bleaches

July: Week1 revision of unit 1&2

July: Week2 test of unit 1 & 2

Principal (Offg.)
Arya Kanya Mahavidy
Shahabad Markanda

(Akwinder kaur)

MARKETING AND MERCHANDISING (306)

Class- B.Sc FD (6th Sem)

Planner

Session-2020-2021

April: Week 3 Marketing terminology & Fashion market

April: Week 4 Introduction to marketing environment (macro & micro)

May: Week1 Sales promotion techniques, Retailing-introduction

May: Week2 different retail operations, factors affecting retailing

May: Week3 Fashion forecasting – Process, sources of fashion forecasting information

May: Week4 Merchandising – introduction, Role of merchandiser

June: Week1 Types of merchandising.

June: Week2 Export documentation , Export marketing, global scenario

June: Week 3 Export policies & Import policies.

June: Week 4 Prospects of Indian apparel in overseas market.

July: Week1 Importance of textile industry in Indian economy

July: Week 2 Revision of unit 1&2

(Harjeet kaur)

(Even Sem.)

GARMENT CONSTRUCTION (109)

Class- B.Sc FD (2th Sem)

Planner

Session-2020-2021

April: Week3 Introduction to sewing – history of sewing machines

April: Week4 Different types of sewing machines, their maintenance, common problems and their remedies

May: Week1 Principles of clothing – Socio-psychological aspects of clothing.

May: Week2 Fabric Preparation, Handling special fabrics.

May: Week3 Suitability of different fabrics for different garments.

May: Week4 Principles of fitting, factors to be considered while fitting, common fitting problems

June: Week1 remedying fitting defects.

June: Week2 A brief study of garment details

June: Week3 Lining, interlining, facing & interfacing,Clothing for different age groups

June: Week4 Clothing for different occasions.

July: Week1 Different styles of garments – skirt, trouser

July: Week2 blouses, one piece dresses & coat.

Principal (Offg.)
Arya Kanya Mahavidyalya
Shahebad Markanda

(Harjeet kaur)

GARMENT CONSTRUCTION –II (Practical)

Class- B.Sc FD (4th Sem)

Planner

Session-2020-2021

April: Week3 Drafting and construction

April: Week4 Kalidar kurta

May: Week1 Kalidar kurta

May: Week2 Kalidar kurta

May: Week3 Salwar kameez

May: Week4 Salwar kameez

June: Week1 Petticoat

June: Week2 Petticoat

June: Week3 Blouse

June: Week4 Blouse

July: Week1 Pyzami

July: Week2 Pyzami

Principal (Offg.)
Arya Kanya Mahavidyalya
Shahabad Markanda

(Harjeet Kaur)

GARMENT CONSTRUCTION – III (309)

Class- B.Sc FD(6th Sem)

Planner

Session-2020-2021

April: Week 3 Introduce concept of advance garment construction

April: Week 4 Bushirt & Pyjama with Inseam Pocket

May: Week1 Night Suit, Nighty & Gown

May: Week2 Churidaar

May: Week3 Circular Skirt

May: Week4 Top with dart manipulation

June: Week1 Cont. with last Topic

June: Week2 Cholicut Blouse

June: Week3 Trousers

June: Week4 Men's Shirt

July: Week1 Jacket with hood

July: Week2 Evening gowns

Principal (Offg.)
Arya Kanya Mahavidyalya
Shahabad Markanda

(Even Sem.)

(Himani Agarwal)

FABRIC CONSTRUCTION (108)

Class- B.Sc FD (2th Sem)

Planner

Session-2020-2021

April: Week3 Different methods of fabric formation – weaving, knitting, felting, bonding, lace-making, knotting.

April: Week4 Classification of fabrics and use, material, weaves construction, thickness, surface characteristics etc.

May: Week1 Fabric construction methods, basic motion of weaving, looms- types and parts, shuttle and shuttle-less looms and basic weaving concepts

May: Week2 Woven structure representation, plain weave, warp section, weft section and graphical representation

May: Week3 Translation of wave into fabric design, draft, denting and lifting and inter-relationships.

May: Week4 Elementary Weaves – Plain, twill and satin, influence of these weaves on fabric construction

June: Week1 Plain Weave – Warp weft, rib and their influence on fabric characteristics. Examples of their applications in fabrics

June: Week2 Modification of twill weaves – pointed, herring bone and diamond twill

June: Week3 Regular and irregular satin weaves and their application in fabrics

June: Week4 Fancy decorative weaves – dobby, jacquard

July: Week1 pile, leno, surface, figure-lappet and double weave

July: Week2 Revision of unit 1&2

Principal (Offg.)
Arya Kanya Mahavidyalya
Shahebad Markanda

(Himani Agarwal)

PATTERN MAKING-II (Practical) 209

Class- B.Sc FD (4th Sem)

Planner

Session-2020-2021

April: Week3 Drafting of basic skirt block and trouser.

April: Week4 Preparation of pattern (drafting method) of different types of skirts: A-line, Godet, gored, May: Week1 basic skirts

May: Week2 Draping of basic bodice block-Front and Back

May: Week3 Draping of basic skirt block – Front and Back

May: Week4 Draping of top with princess line and cowl neck

June: Week1 Draping of skirt with flare and skirt with cowl

June: Week2 Grading of : Basic bodice and sleeve block

June: Week3 Basic skirt

June: Week4 Trousers

July: Week1 Preparation of commercial paper pattern of trouser

July: Week2 Full circular, Pegged.

Principal (Offg.)
Arya Kanya Mahavidyalya
Shahebad Markanda

(Himani Agarwal)

HISTORY OF INDIAN COSTUMES (208)

Class- B.Sc FD (4th Sem)

Planner

Session-2020-2021

April: Week3 Introduction of Indian Costumes

April: Week4 Indus Valley Period

May: Week1 Vedic Period

May: Week2 Mauryan & Sunga Period

May: Week3 Satvahana Period

May: Week4 Kushan Period

June: Week1 Gupta Period

June: Week2 cont. with last topic

June: Week3 Mughal Period

June: Week4 cont. with last topic

July: Week1 British Period

July: Week2 Presentation of different periods

Principal (Offg.)
Arya Kanya Mahavidyalya
Shahabad Markanda

(Himani Agarwal)

LINE DEVELOPMENT (308)

Class- B.Sc FD(6th Sem)

Planner

Session-2020-2021

April: Week 3 To make students understand the importance of portfolios

April: Week 4 To impart skills of portfolio presentation.

May: Week1 Study of Fashion Forecast

May: Week 2 Conceptualization of theme

May: Week 3 mood board

May: Week4 cont. with this topic

June: Week1 designing, fabric sourcing

June: Week2 cont. with this topic

June: Week3 pattern development

June: Week 4 cont. with last topic

July: Week1 construction

July: Week 2 cont. with last topic

Principal (Offg.)
Arya Kanya Mahavidyalya
Shahabad Markanda

ZOOLOGY PAPER -2

(life & diversity from mollusca to hemichordata & Genetics Ii)

CLASS-B.SC I(2^{ND} SEMESTER)

PLANNER

SESSION -2020-21

APRIL:Week4: introduction of mollusca + human genetics

May:week1: Pila

May:week2 : Pila continued + torsion & detorsion

May :week 3: introduction of echinodermata + inborn errors of metabolism

May:week4: starfish

June :week1: starfish continued + Aristotle lantern

June :week2: mutations + applied genetics

June :week3: Balanoglossus

June :week4: Balanoglossus + multiple allelism

ZOOLOGY PAPER -2

(Mammalian Physiology II)

CLASS-B.SC 2(4TH SEMESTER)

PLANNER

SESSION -2020-21

APRIL:Week4: circulation

May:Week1: circulation

May:Week2: respiration

May :Week 3: respiration

May:Week4: excretion

June :Week1:neural integration

June :Week2:neural integration + endocrinology

June :Week3: endocrinology

June :Week4: reproduction

ZOOLOGY PAPER -2

(aquaculture & pest management II)

CLASS-B.SC 3(6TH SEMESTER)

PLANNER

SESSION -2020-21

APRIL:Week4: fish seed & feed

May:Week1: techniques of fish culture + management & marketing

May:Week2 : latest advancements in Aquaculture

May :Week 3: stored grain pests

May:Week4: biological control of insects

June :Week1: chemical control of pests

June :Week2: integrated pest management

June :Week3: bird pests

June :Week4:rodent pest

B sc 3rd year (CH-305) 6th semester

Planner MS.POONAM(PHYSICAL CHEMISTRY)

Even semester

1st week bridge course introduction electronic spectrum and concept of potential energy curves for binding and anti bonding molecular orbitals.

2nd week qualitative description ig selection rules and Franck Condon principle , quantitative description of sigma and pie and n molecular orbital their energy level

3rd week introduction of photochemistry interaction of radiation with matter difference between thermal and photochemical processes , law of photochemistry

4th week :- Grotthus – drapper law, stark Einstein law ,Jablonski diagram,quantitative description of fluorescence, phosphorescence, non radiative process .

5th week :- quantum yield, photosensitized reactions energy transfer processes

6th week:- introduction of solution and colligative properties, ideal and non ideal solutions, activity and activity coefficient, dilute solution

7th week :- collective properties, raoluts law, relative lowering of vapor pressure, molecular weight determination, osmosis its measurements.

gth week :- elevation in boiling point and depression of freezing point, thermodynamic derivation of relatio between molecular weight and elevation in boiling point and depression in freezing point.

gth week :- collegative properties, abnormal molar Mass, degree of dissociation and association of salutes.

10th week : introduction about phases, phase component, degree of freedom ,thermodynamic derivation of Gibbs phase rule , phase quilibria of one component system

11th week - phase equlibria of two component systems solid - liquid equilibria simple

Principal (Offg.)
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Shahabad Markanda

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12th week - assignments + tests

13th week : revision + test.

B sc 1st year (CH- 105) 2nd semester

PLANNER

Even semester

1st week bridge course introduction about colloidal state of matter etc.

2nd week - types of colloidal solution , classification of colloidal and colloidal sols, multimolecular macromolecular and associated colloids.

3rd week preparation of colloidal solutions purification of colloidal solutions ,emulsions application of colloids. Gel.

4th week :- introduction about chemical kinetics, rate of reaction, measurement of the rate of reaction factors affecting the rates of reactions .

5th week : order of a reaction and specific reaction rate , reactions of zero ,first , second order, reaction of third order its characteristics examples.

6th week :- half life period molecularity of the reaction mechanism of the reaction methods of determination of the order of the reaction.

7th week :- introduction of electrochemistry electrolytic and metallic conduction, conductance , specific ,equivalent and molar conductance .

gth week - variation conductance and variation of molar conductance with concentration kohlrauch s law

gth week :- arrhenius theory of ionization or electrolytic dissociation ,evidence for arrhenius theory . , ostwald dilution law. limitations of arrhenius theory

10th week :- transport number, Debye huckle theory, applications of kohlrausch law,

11th week dissociation constant, buffer solution and buffer action , calculation of ph of buffer solution

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Shahabad Markanda

12th week :- assignments +test + revision

13th revision +test.

Bsc 2nd year (CH 205) 4th semester

Planner

Even semester

1st week bridge course introduction of second and third law of thermodynamics

2nd week :- carnot cycle and its efficiency, carnot theorem ,thermodynamic scale of temperature, concepts of entropy.

3rd week : physical significance of entropy, entropy change in reversible process and in irreversible process. Entropy change for ideal gad with change in temperature, pressure, volume.

4th week :- entropy change on mixing of ideal gasses , standard entropy and standard entropy change in a chemical reaction.

5th week : Gibbs free energy, variation of work function , variation of free energy with temperature and pressure , Gibbs helmholtz equation, nernst heat theorem

6th week :- third law of thermodynamics, and it's applications, boltzmann entropy equation, concept of residual entropy introduction about electrochemistry

7th week : electrochemical cell and galvanic cell , electrolytic cell , electrode potential, measurement of standard electrode potential

gth week - emf of a cell reversible and irreversible cells , reversible electrode thermodynamics of cell reaction calculations of change in G,H,S of cell reactions.

gth week: reference electrode , electrochemical series , activity and activity coefficient, derivation of equilibrium constant from nernst equation, electrolytic polarization .

10th week :- decomposition voltage ,or deposition potential, overvoltage, hydrogen overvoltage, oxygen overvoltage .

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11th week - application of overvoltage concentration cells ,emf of concentration cells

12th week :- liquid junction potential, application of emf measurements.

13th week :- revision +assignment + test.

Principal (Offg.)
Arya Kanya Mahavidyalaya
Shahabad Markanda

INORGANIC CHEMISTRY(EVEN SEMESTER)

CLASS-B.SC II(4^{TH} SEMESTER)(CH-204)

PLANNER MS.POONAM

Week 1: Bridge course- basic introduction to lanthanoids and actinoids.

Week 2: Introduction to Lanthanoids, occurrence, electronic configuration and position in periodic table, general characteristics .

Week 3: Isolation of lanthanoids, method of separation, production of lanthanoid metal.

Week 4: Compounds of lanthanoids, uses of lanthanoids, test, revision, doubts.

Week 5: Introduction to actinoids, radioactive nature, sources and occurrence of actinoids, electronic configuration and position of actinoids.

Week 6: General characteristics, compounds of actinoids, chemistry of separation.

Week 7: Comparison of lanthanoid and actinoid series, comparison of d-block with f-block, uses of actinoid as nuclear fuel.

Week 8: Transuranic elements , synthesis, heavier actinoid elements, elements beyond atomic no. 103.

Week 9: Qualitative and Quantitative inorganic analysis: introduction, solubility product, types, analysis of mixture, dry or preliminary test.

Week 10: Confirmatory test for acid radicals, identification of acid radicals, wet test for basic radical.

Week 11: Analysis of group 1,2,3(fe3+, al3+, cr3+), interference of acid radicals in basic radicals scheme and their removal.

Week 12: Analysis of group (4,5,6), gravimetric analysis, precipitataion.

Week 13:Revision via test.

Principal (Offg.)
Arya Kanya Mahavidyalya
Shahabad Markanda