

K.L. MEHTA DAYANAND COLLEGE FOR WOMEN, FARIDABAD
LESSON PLAN FOR THE SESSION 2026-27(ODD SEMESTER)

Name of the Assistant Professor: Dr. Beena Sethi Class and Section: B.Sc. (Physical Science) & B.Sc. (Life Science) Section-B ,1st Sem. Subject: Fundamental Chemistry-I	
Week 1	Chemical Bonding and Molecular Structure: Ionic Bond, Lattice Energy, Born-Haber Cycle and Its Applications, Fajan's Rules, Hydration Energy, Bond Moment, Dipole Moment and Percentage Ionic Character.
Week 2	Resonance and Resonance Energy: Study of Some Inorganic and Organic Compounds. Molecular Orbital Approach: LCAO Method, Bonding and Antibonding MOs and Their Characteristics for S-S, S-P and P-P Combination of Atomic Orbitals, Non-Bonding Combination of Orbitals.
Week 3	MO Treatment of Homonuclear Diatomic Molecules of 1st and 2nd Periods (Including Idea of S-P Mixing) and Heteronuclear Diatomic Molecules Such as O_2^- , O_2^{2-} , N_2^- , CO, NO^+ , CN^- . Comparison of VB and MO Approaches, Test.
Week 4	P-Block Elements: Oxides – Structures of Oxides of N, P. Oxyacids – Structure and Relative Acid Strengths of Oxyacids of Nitrogen and Phosphorus. Structure of White, Yellow and Red Phosphorus. Oxyacids of Sulphur – Structures and Acidic Strength.
Week 5	H ₂ O ₂ –Structure, Properties and Uses. Basic Properties of Halogen, Interhalogen Compounds-Types and Properties, Halogen-Acids and Oxyacids of Chlorine – Structure and Comparison of Acidic Strength.
Week 6	Acids and Bases: Brönsted–Lowry Concept, Conjugate Acids and Bases, Relative Strengths of Acids and Bases, Effects of Substituent and Solvent, Differentiating and Levelling Solvents, Assignment
Week 7	Lewis Acid-Base Concept: Classification of Lewis Acids and Bases, Lux-Flood Concept. Gaseous States: Maxwell's Distribution of Velocities and Energies (Derivation Excluded), Calculation of Root Mean Square Velocity, Average Velocity, Test.
Week 8	Most Probable Velocity, Collision Diameter, Collision Number, Collision Frequency and Mean Free Path, Deviation of Real Gases From Ideal Behavior
Week 9	Derivation of Van der Waals Equation of State and Its Applications in the Calculation of Boyle's Temperature (Compression Factor), Explanation of Behavior of Real Gases Using Van der Waals Equation.
Week 10	Critical Phenomenon: Critical Temperature, Critical Pressure, Critical Volume and Their Determination, PV Isotherms of Real Gases, Continuity of States
Week 11	Isotherms of Van Der Waals Equation, Relationship Between Critical Constants and Van Der Waals Constants, Compressibility Factor. Law of Corresponding States,
Week 12	Basics of Organic Chemistry and Stereochemistry: Electronic Displacements and Its Applications, Reaction Intermediates and Concept of Aromaticity. Concept of Isomerism, Mock Test

Week 13	Types of Isomerism, Optical Isomerism, Optical Activity, Elements of Symmetry, Molecular Chirality, Enantiomers, Stereogenic Centre, Properties of Enantiomers, Chiral and Achiral Molecules with Two Stereogenic Centres, Diastereomers.
Week 14	Threo and Erythro Diastereomers, Meso Compounds, Resolution of Enantiomers, Inversion, Retention and Racemization, Relative and Absolute Configuration, Sequence Rules, R & S System of Nomenclature.
Week 15	Revision

Name of the Assistant/Associate Professor: Dr Shveta Arya Class And Section: B.Sc. Life Science 5th Semester, Sec- A &B Subject: Basics of Developmental Biology	
Week 1	Gametogenesis – spermatogenesis and oogenesis.
Week 2	Structure of spermatozoa and ovum; comparison of male and female gametes.
Week 3	Hormonal regulation of gametogenesis, ovulation and formation of corpus luteum.
Week 4	Fertilization – events and types; prevention of polyspermy.
Week 5	Monozygotic and dizygotic twins; parthenogenesis.
Week 6	Types of eggs and patterns of cleavage, Class Test
Week 7	Implantation and gestation; types and functions of placenta in mammals.
Week 8	Blastulation and gastrulation in frog, Assignment
Week 9	Fate maps in frog; amphibian metamorphosis and hormonal regulation.
Week 10	Fate maps in chick, Class Test
Week 11	Concept of organizer and induction.
Week 12	Regeneration in invertebrates Mock Test
Week 13	Regeneration in vertebrates
Week 14	Extra-embryonic membranes.
Week 15	Revision

Name of Professor: Ms. Vandana Kumari Class and Section: Minor Mathematics Semester 5 Subject Name: Mathematical Computing Using Matlab Course Code: 26mat405mv01 Credits: 04 Teaching Hours: 06 Hours/Week Total Duration: 15 Weeks

Total Teaching Hours: 90 Hours		
Week	Theory / Topics to be Covered	Practical / Lab Work
1	Introduction to MATLAB Programming: MATLAB environment, Command Window, Workspace, Editor, basic commands, variables and assignments, constants, data types, input/output, arithmetic operators and relational/logical operators	Introduction to MATLAB; basic commands; variables and expressions
2	Vectors and Matrices: Defining row and column vectors, accessing elements, indexing, vector operations, linspace, colon operator, matrix creation, matrix indexing, matrix functions and basic matrix operations	Practical 1: Random 5×5 matrix with normalized values. Practical 2: Unit, magic, identity and zero matrices
3	Advanced MATLAB Basics: Complex numbers, cell arrays, creating and accessing cell arrays, matrix functions, element-wise operations, script files, comments and basic programming structure	Practice with complex numbers, cell arrays and matrix operations
4	Loops and Conditional Statements: if, if-else, elseif, nested conditional statements, for loop, while loop, applications of loops	Practical 6: If-else structure. Practical 7: FOR loop
5	Matrix Operations and Linear Algebra: Transpose, inverse, determinant, rank, trace, solving matrix equations, matrix division operators (\ and /)	Practical 3: Transpose, inverse and determinant of a matrix. Practice matrix operations
6	Linear Systems of Equations: Direct methods, matrix form $(AX=B)$, solving systems using MATLAB, applications; introduction to eigenvalues and eigenvectors	Practical 8: Solving a linear system of equations. Practical 4: Eigenvalues/eigenvectors
7	Matrix Factorization: Cholesky factorization; symmetric positive-definite matrices; LU factorization; Gaussian elimination; interpretation of (LU) decomposition	Practical 9: Cholesky factorization. Practical 10: LU factorization
8	QR Factorization and Eigenvalues: QR factorization for rectangular matrices, orthogonal matrices, applications of QR; revision of Section 2	Practical 11: QR factorization. Section 2 practical revision
9	Polynomials: Representation of polynomials in MATLAB, polynomial coefficients, evaluation, polynomial roots, characteristics, polynomial	Practical 5: Finding roots. Practical 12: Polynomial roots, evaluation and differentiation

	derivatives and integration	
10	Polynomial Operations: Addition/multiplication of polynomials, convolution and deconvolution, conv, deconv, polynomial derivative, integration, partial fraction expansion using residue	Practice polynomial operations, convolution/deconvolution and partial fractions
11	Curve Fitting: Concept of curve fitting, least-squares fitting, linear and polynomial curve fitting, polyfit, polyval, plotting fitted curves, interpretation of results	Practical 13: Polynomial curve fitting
12	Interpolation: Definition and need for interpolation, 1-D interpolation, linear interpolation, nearest-neighbour, spline, PCHIP and comparison of interpolation methods	Practical 14: 1-D interpolation
13	2-D and Multidimensional Interpolation: 2-D interpolation, interpolation using multidimensional arrays, scattered data, triangulation, tessellation, interpolation of scattered data, higher dimensions	Practical 15: 2-D interpolation; practice with multidimensional/scattered data
14	Comprehensive Theory Revision – I: Section 1 + Section 2. MATLAB basics, vectors, matrices, complex numbers, cell arrays, loops, conditional statements, linear systems, inverse/determinant, eigenvalues/eigenvectors, Cholesky, LU and QR	Revision of Practicals 1–11; problem-solving and short-answer questions
15	Comprehensive Theory Revision – II: Section 3 + Section 4. Polynomials, roots, convolution, deconvolution, derivatives, partial fractions, curve fitting, 1-D/2-D interpolation, scattered data and higher dimensions	Revision of Practicals 12–15; Mock Practical + Mock Theory Examination + Viva preparation

Name of the Assistant Professor: Ms. Vandana Kumari Class And Section: B.Sc. (Physical Science) 5th Sem Subject: Groups & Rings , Course code: 26MATM405DS01	
Week 1	Definition of a group with example and simple properties of groups, Subgroups and subgroup criteria
Week 2	Generation of groups, cyclic groups, Cosets, Left & right cosets Applications of Cosets

Week 3	Index of a subgroup Coset Decomposition Lagrange's theorem & its consequences
Week 4	Normal subgroups Quotient groups & it's Applications, Test
Week 5	Homomorphisms, isomorphisms, automorphisms and inner automorphisms of a group
Week 6	Automorphisms of cyclic groups, Permutation groups, Even & odd permutations
Week 7	Alternating groups Cayley's theorem & related Applications, Test
Week 8	Centre of a group & derived group of a group
Week 9	Introduction to rings, subrings, integral domains & fields, Assignment
Week 10	Characteristics of a ring , Ring homomorphisms, Ideals : (Principal ,prime & maximal)
Week 11	Quotient Rings Field of quotients of an integral domain
Week 12	Euclidean rings, Polynomial rings, Polynomials over the rational field, Mock test
Week 13	The Eisenstein's criterion of irreducibility Polynomial rings over commutative rings
Week 14	Unique Factorization domain R unique factorization domain implies so is $R\{X_1, X_2, \dots, X_n\}$
Week 15	Revision

Name of the Assistant Professor: Ms. Vandana Kumari Class and Section: M.Sc. Mathematics 3rd Sem Subject: MATLAB Course Code: 25MAT203SE01	
Week	Topics Covered
Week 1	Introduction to MATLAB: Overview of MATLAB environment, Command window, Workspace, Editor, Current Folder. Basics of MATLAB programming and arithmetic operations. Executing simple commands and scripts.
Week 2	Data Types and Variables: Scalars, vectors, matrices, strings, and complex numbers. Operators and expressions. Writing MATLAB scripts for arithmetic

	operations and matrix creation.
Week 3	Control Structures: If, if-else, nested if, switch-case, for and while loops. Writing MATLAB programs using conditional and looping statements.
Week 4	Functions and Scripts: Defining and calling user-defined functions, Function handles, Inline functions. Writing and executing MATLAB functions.
Week 5	Arrays and Matrix Operations: Creating one and two-dimensional arrays. Performing matrix addition, subtraction, multiplication, transpose, and inverse using MATLAB.
Week 6	String and Cell Arrays: Creating and manipulating strings and cell arrays, using string functions. Practicing MATLAB commands for string operations.
Week 7	Plotting in MATLAB (2D): Creating line plots, multiple plots on the same figure, labeling axes, legends, grid, and titles.
Week 8	Specialized 2D Plots: Bar charts, Pie charts, Error bar plots, Polar plots, and formatting plots using colors and line styles.
Week 9	3D Plots: Creating 3D plots such as mesh, surface, and contour. Using view command and overlaying multiple surfaces.
Week 10	Polynomials in MATLAB: Finding values, derivatives, integrals, and roots of polynomials. Practical on polynomial evaluation using built-in MATLAB functions.
Week 11	Curve Fitting: Fitting curves using polynomial and non-polynomial functions. Interpolation techniques and MATLAB implementation.
Week 12	Numerical Computations: Solving equations, finding minimum and maximum of functions. Writing MATLAB scripts for basic numerical problems.
Week 13	Ordinary Differential Equations: Solving first and second-order ODEs using MATLAB functions like ode45. Verification through examples.
Week 14	Numerical Integration and Differentiation: Implementing Trapezoidal and Simpson's rule. Using MATLAB functions for integration and differentiation.
Week 15	Revision and Mock Test: Discussion of important theory and practical concepts. Solving previous year problems and preparing for viva and examination.

Name of the Assistant Professor : Ms. Vandana Kumari Class : B.sc 1st yr. (Physical Sciences) Subject : Mathematical Programming in C and Numerical Method (Skill) Course Code: 24MAT401SE01	
Week 1	Programmers Model of A Computer, Algorithms, Flow Charts, Data Type, Operators And Expressions , Input /Output Functions.
Week 2	Test And Assignment, Decision Statements, Logical And Conditioner Statements, Implementation of Loops
Week 3	Switch Statement And Case Control Structures. Functions, Proprocessors And Arrays.
Week 4	Character Data Type, Standard String Handling Functions, Arithmetic Operations On Characters, Test And Assignment.

Week 5	Definition of Structures, Using Structures, Use of Structures In Array And Arrays In Structures
Week 6	Pointers Pointers Data Type, Pointers And Arrays, Pointers And Functions.
Week 7	Solution of Algebraic And Transcendental Equations, Bisection Method, Test.
Week 8	Application of Boolean Algebra To Switching Theory (Using AND,Orand Notgates) The Karnaugh Method .
Week 9	Regula- Falsi Method, Secant Method
Week 10	Newton Raphson's Method, Newton's Iterative Method For Finding Pth Root of A Number, Order of Convergence of Above Methods
Week 11	Questions On Above Methods
Week 12	Simultaneous Linear Algebraic Equations: Gauss Elimination Method, Gauss Jordan Method, Problems Based On Above Method, Mock Test
Week 13	Triangularization Method(LU Decomposition Method) , Crout's Method.
Week 14	Choleski Decomposition Method, Iterative Method, Jacobi's Method, Problems Based On Above Method
Week 15	Gauss Seidel's Method, Relaxation Method, Revision.

Name of the Assistant Professor: Dr. Mamta Singh Class And Section: B.Sc. Life Science (Major) 1st Sem, A and B Subject: Animal Diversity - I	
Week 1	Discussion About The Syllabus and Books Unit 1: Phylum- Protozoa: General Characters and Classification Up To Order Level
Week 2	Type Study of Plasmodium vivax: Asexual Cycle And Schizogony In Man Sexual Cycle of Plasmodium In Mosquito
Week 3	Parasitic Protozoans: Life History, Mode of Infection And Pathogenicity of Entamoeba, Trypanosoma
Week 4	Test Phylum- Porifera: General Characters And Classification Up To Order Level

Week 5	Canal System In Sponges-Asconoid And Syconoid Types Leuconoid Type
Week 6	Spicules In Sponges-All Types Development And Significances of Spicules Test,
Week 7	Phylum - Coelenterata: General Characters And Classification Up To Order Level Corals And Coral Reefs, Assignment
Week 8	<u>Phylum - Helminths</u> :General Characters And Classification Up To Order Level Type Study - Fasciola Hepatica-External Morphology,Body Wall,Digestive System
Week 9	Excretory,Nervous And Reproductive System Development And Life History, Phylum - Mollusca:General Characters And Classification Up To Order Level,Torsion And Detorsion In Gastropoda
Week 10	Helminths Parasites: Brief Account of Life History, Mode of Infection And Pathogenesity of Ancylostoma, Wuchereria <u>Phylum - Annelida</u> :General Characters And Classification Up To Order Level Metamerism In Annelids
Week 11	<u>Phylum – Arthropoda</u> : General Characters And Classification Up To Order Level Type Study – Periplaneta(Cockroach) -External Morphology,Body Wall,Digestive System,Respiratory System
Week 12	Circulatory,Excretory,And Nervous System Sense Organs And Reproductive Systems of Periplaneta, Mock Test
Week 13	<u>Phylum - Echinodermata</u> :General Characters And Classification Up To Order Level <u>Type Study</u> -Asteries (Sea Star)-External Morphology, Body Wall, Endoskeleton.
Week 14	Digestive System, Water Vascular System, Locomotion, Circulatory System, Reproductive System, Respiration, Excretory And Nervous System, Life History And Development of Starfish
Week 15	Revision

Name of the Assistant Professor: Dr. Mamta Class And Section: B. Sc. Life Science Ist year Subject: Apiculture (Skill)	
Week 1	Apiculture meaning, definition scope and history. Status of Apiculture Industry in India.
Week 2	Classification and Life Cycle of Honey Bee.

Week 3	Identification of Indigenous and exotic Honey bee species
Week 4	Cultivable species of Honey Bee with reference to India, Test
Week 5	Cultivable species of Honey Bee with reference to India Social organization of honey bees: the castes- queen, drone and workers.
Week 6	Nesting behavior of Honey bees, Bee foraging, Seasonal management, swarming in Honey bees, waggle dance, defense in honey bees. Disease and enemies of bees, control and preventive measures.
Week 7	Role of Bees in cross pollination in horticulture and agriculture.
Week 8	Methods of Artificial Bee keeping. Equipments used in Bee keeping.
Week 9	Equipments used in Bee keeping Industry .Methods of extraction of Honey and other products.
Week 10	Products of Apiculture Industry and their Uses (Honey, Bee Wax, Royal Jelly, Bee Venom, Propolis and Pollen) .
Week 11	Bee Keeping Industry: Present and future, Assignment
Week 12	Prospects of apiculture as self employment venture, Mock Test
Week 13	Economics of Apiculture: Expenditure, Net Income, and Additional benefits
Week 14	Test
Week 15	Revision

Name of the Assistant Professor: Ms. Renu Pandey Class And Section: B.Sc. Biotechnology 1st year Subject: Cell Biology (DSC A1)	
Week 1	Unit I: Basics of Cell Biology, Discovery of Cell & Cell Theory, Structure & Function of Protoplasm.
Week 2	Cell Wall, Plasma Membrane, Modification of Plasma Membrane, Intracellular Junctions.
Week 3	Cytoskeleton, Mitochondria, Chloroplast, ER, Golgi Complex, Structure And Function of Lysosomes,

Week 4	Endosomes And Microbodies, Ribosomes, Centriole, Nucleus, Chromosomes. Unit II: Chemical Components of A Cell, Test
Week 5	Catalysis And Use of Energy By Cells, Biogenesis of Cellular Organelles, Mitochondria, Chloroplasts, Test
Week 6	ER, Golgi Complex, Biosynthetic Processes In ER, And Golgi Apparatus, Protein Synthesis And Folding In The Cytoplasm, Degradation of Cellular Components.
Week 7	Unit III: Structure And Function of Prokaryotic Cell And Its Components- The Slime And The Cell Wall of The Bacteria Containing Peptidoglycan.
Week 8	And Related Molecules, The Outer Membrane of Gram-Negative Bacteria, And The Cytoplasmic Membrane, Water And Ion Transport.
Week 9	Mesosomes, Flagella, Pilus, Fimbriae, Ribosomes, Carboxysomes, Sulphur Granules, Glycogen, Polyphosphate Bodies, Fat Bodies, Assignment
Week 10	Gas Vesicles, Endospores, Exospores, Cysts. Mycelia of Fungi And Actinomycetes, Cytoskeleton Filament, Proteins And Carbohydrates, Solute Transport By Simple Diffusion, Facilitated Diffusion And Active Transport
Week 11	Heterocysts And Akinetes of Cyanobacteria, Gliding, And Motility. Unit Iv: Membrane Structure And Transport- Models of Membrane Structure, Membrane Lipids.
Week 12	Mock Test
Week 13	Cell Cycle Overview of Cell Cycle, Components of Cell Cycle Control System,
Week 14	Intracellular And Extracellular Control of Cell Division, Programmed Cell Death (Apoptosis).
Week 15	Revision

Name of the Assistant Professor: Ms. Renu Pandey Class And Section: B.Sc. Biotech 3rd sem. Subject: Fundamentals of Immunology (24CBT402DS02)	
Week 1	Introduction to Immunology Immune Responses, types of Immune Response and cells of Immune system
Week 2	Humoral & Cellular immune responses structure of Immunoglobulins or Antibodies,
Week 3	T-lymphocytes & immune response (cytotoxic Tc and Th cell, suppressor T-cells), T-cell receptors
Week 4	Germline rearrangement B-lymphocyte maturation, Class test1

Week 5	Lymphoid organs Primary and secondary lymphoid organs MALT
Week 6	Antibody Antigenic Interaction Precipitation and maturation Assignment discussion
Week 7	Antigenic determinants structure and classification of Antigens
Week 8	Antibody Germline structure Hyper and variable region of antibody class test2
Week 9	Major Histocompatibility complexes MHC I & II antigens, antigen APC
Week 10	Immunity to infection – immunity to different organisms, pathogen defense strategies
Week 11	avoidance of recognition. Auto- immune diseases, Immunodeficiency- AIDS.
Week 12	MOCK TEST
Week 13	Hypersensitivity reactions and its categories Type I, II, III and IV
Week 14	Vaccines, immunoassay, ELISA ,RIA,Immunoblotting Hybridoma Technology
Week 15	REVISION

Name of the Assistant/Associate Professor: Ms. Sudha Diwakar Class And Section: B.Sc. Physical Science 5th Sem. Subject: Fundamental Chemistry-V	
Week 1	Organometallic Chemistry: Definition, nature of metal carbon bond, classification of organometallic compounds by bond types viz. i) covalent ii) ionic iii) electron deficient iv) cluster compounds v) π bond compounds including sandwich derivatives
Week 2	Structure and bonding in metal-ethylenic, metal-acetylenic complexes, metal carbonyls and cyclopentadienyl derivative
Week 3	Properties and bonding of alkyls of Li, Al, Hg and Sn, concept of hapticity of organic ligand, Zeise salt and ferrocene. EAN rule applied to carbonyls
Week 4	Preparation, structure, bonding and properties of mononuclear and polynuclear carbonyls of 3d metals. π – acceptor behavior of carbon monoxide. Synergic effects (VB approach)
Week 5	MO diagram of CO can be referred for synergic effect to IR frequencies). Applications of organometallic compounds

Week 6	Quantum Mechanics- Black-body radiation, Plank's radiation law, photoelectric effect, heat capacity of solids, Compton effect, wave function and its significance, postulates of quantum mechanics, quantum mechanical operator, commutation relations
Week 7	Hamiltonian operator, Hermitian operator, average value of square of Hermitian as a positive quantity, role of operators in quantum mechanics, Heisenberg uncertainty principle
Week 8	Carbonyl Compounds and Carboxylic acid derivative: Mechanisms of Aldol and Benzoin condensation, Knoevenagel condensation, Claisen-Schmidt, Perkin, Cannizzaro and Wittig reaction
Week 9	Beckmann and Benzil-Benzilic acid rearrangements, haloform reaction and Baeyer-Villiger oxidation, α -substitution reactions, oxidations and reductions (Clemmensen, Wolff-Kishner, LiAlH_4 , NaBH_4 , MPV, PDC). Preparation and reactions of acid chlorides
Week 10	anhydrides, esters and amides, comparative study of nucleophilic substitution at acyl group – Mechanism of acidic and alkaline hydrolysis of esters, Claisen condensation, Dieckmann and Reformatsky reactions, Hoffmann-bromamide degradation and Curtius rearrangement
Week 11	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
Week 12	Conversion of glucose into mannose. 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, Mock Test
Week 13	An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination
Week 14	Synthetic Dyes, Colour and constitution (electronic concept). Classification of dyes, chemistry and synthesis of methyl orange,
Week 15	congo red, malachite green, crystal violet, phenolphthalein, fluorescein, alizarin and indigo, Revision

Name of the Assistant/Associate Professor: Ms. Sudha Diwakar Class And Section: B.Sc. Biotech, B.Sc. Home Science , BCA Subject: (Minor) Transition Metals, Batteries, Alcohols & Phenols (26CHE405MI01)	
Week 1	d-Block Elements General introduction, electronic configuration, occurrence and characteristics of transition metals, general trends in properties of the transition metals – metallic character, ionization enthalpy
Week 2	oxidation states, ionic radii, color, catalytic property, magnetic properties, interstitial compounds, alloy formation, preparation and chemical properties of $\text{K}_2\text{Cr}_2\text{O}_7$ and KMnO_4

Week 3	Characteristics of an ideal battery, principle, working, applications and comparison of the following batteries: Pb-acid battery, Test
Week 4	Li-metal batteries, Li-ion batteries, Li-polymer batteries, solid state electrolyte batteries, fuel cells
Week 5	Alcohols: Structure and classification of alcohols as 1°, 2° & 3°, methods of preparation of 1°, 2° & 3° by using Grignard reagent, Assignment
Week 6	ester hydrolysis and reduction of aldehydes, ketones, carboxylic acids and esters.
Week 7	Chemical Reactions: Acidic character of alcohols and reaction with sodium, with HX (Lucas Test)
Week 8	esterification, oxidation (with PCC, alkaline KMnO ₄ , acidic K ₂ Cr ₂ O ₇ and conc. HNO ₃), Oppenauer oxidation, Test
Week 9	Phenols : Acidity of phenols and factors affecting their acidity, methods of preparation from cumene
Week 10	diazonium salts and benzene sulphonic acid. Chemical Reactions: Directive influence of OH group
Week 11	electrophilic substitution reactions, viz. nitration, halogenation, sulphonation, Assignment
Week 12	Mock Test
Week 13	Reimer-Tiemann reaction, Gattermann-Koch reaction
Week 14	Houben-Hoesch condensation, Schotten-Baumann reaction.
Week 15	Revision

Name of the Assistant Professor: Dr. Annu Kalra Class and Section: M.Sc. (F)Chemistry, 3rd Semester Subject: Inorganic Chemistry Special-I Course Code: 25CHE203DS01)	
Week 1	Basics of Nuclear Chemistry, Justifications and applications, nuclear stability rules and decay of unstable nuclei.
Week 2	Decay of unstable nuclei, Nuclear forces
Week 3	Liquid drop model, Shell Model and collective model

Week 4	REVISION UNIT-I TEST
Week 5	Energetics of nuclear reactions; various types of nuclear reactions including photonuclear, thermonuclear and spallation reactions
Week 6	Mechanism of nuclear reaction by compound nucleus model, Nuclear fission – Fission probability
Week 7	Energy release, theories of fission, brief idea about breeder reactors
Week 8	REVISION UNIT-II TEST
Week 9	Detection of Nuclear Radiation, Various methods of detecting nuclear radiations
Week 10	Gas-filled counters – Ionization chamber, Proportional counter and G.M. counters
Week 11	Scintillation detectors, Solid state detectors
Week 12	MOCK TEST
Week 13	NAA- Principle, Application and Limitations, IDA : Principle, Application and Limitations
Week 14	Radiometric titrations, radioisotopes, radiopharmacology
Week 15	Nuclear medicines- RAI-131, technetium- 99m, gallium and indium scan REVISION

Name of the Assistant Professor: Dr. Annu Kalra Class And Section: B.Sc 1st semester (life science and physical science) Subject: Skill Enhancement Course	
Week 1	Composition of soil, concept of pH and pH measurement of soil
Week 2	Composition of soil, concept of pH and pH measurement of soil
Week 3	Complexometric titrations, Chelation and chelating agents
Week 4	Use of indicators, estimation of calcium and magnesium ions in soil
Week 5	Definition of pure water and sources responsible for contamination of water
Week 6	Water sampling methods, water purification methods, Test
Week 7	Determination of dissolved oxygen in a water sample, Chemistry in cosmetics: preparation and uses of hair dye
Week 8	preparation and uses of soaps and shampoo, Test
Week 9	preparation and uses of suntan lotions and face powder and lipsticks
Week 10	Preparation and uses of talcum powder and nail enamels, Assignment
Week 11	General introduction of pesticides (natural and synthetic), benefits and adverse effects, changing concepts of pesticides
Week 12	Brief introduction of SAR, synthesis and technical manufacture, uses of organochlorines and organophosphates, basic principles of pH metry, Mock Test
Week 13	Potentiometric and conductometric titrations, applications: determination of degree of dissociation
Week 14	Determination of K_a of acids and bases, buffer action, Henderson Hazel equation

Week 15	Revision of full syllabus
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Name of the Assistant Professor: Ms. Rajni Class And Section: M.Sc. Chemistry I Sem Subject: Organic Chemistry-I	
Week 1	Nature of Bonding in Organic molecules: Delocalized chemical bonding, conjugation, cross-conjugation, resonance, hyperconjugation and tautomerism.
Week 2	Aromaticity in benzenoid and non-benzenoid compounds, Huckel's rule, energy level of π -molecular orbitals, annulenes, antiaromaticity, homoaromaticity, PMO approach, alternant and non-alternant hydrocarbons.
Week 3	Bonds weaker than covalent, addition compounds, crown ether complexes and cryptands, inclusion compounds
Week 4	Bonds weaker than covalent, addition compounds, cyclodextrins, catenanes and rotaxanes. Assignment
Week 5	Stereochemistry: Chirality, elements of symmetry, molecules with more than one chiral center, diastereomerism, methods of resolution, optical purity. Test
Week 6	Prochirality, enantiotopic and diastereotopic atoms, groups and faces, asymmetric synthesis, Cram's rule and its modifications, Prelog's rule, conformational analysis of decalins.
Week 7	Optical activity in the absence of chiral carbon (Biphenyls, Allenes and Spiranes), chirality due to helical shape. Geometrical isomerism in alkenes and oximes, methods of determining the configuration. Unit
Week 8	Reaction Mechanism: Structure and Reactivity: types of mechanisms, thermodynamic and kinetic requirements, kinetic and thermodynamic control
Week 9	Hammond's postulate, Curtin-Hammett principle, potential energy diagrams, transition states and intermediates, methods of determining mechanisms, isotope effects. Generation, structure, stability and reactivity of carbocations
Week 10	Generation, structure, stability and reactivity of carbanions, free radicals, carbenes and nitrenes.
Week 11	Effect of structure on reactivity, Hammett equation and linear free energy relationship, substituent and reaction constants, Taft equation, Test
Week 12	Elimination Reactions: The E1, E2 and E1cB mechanisms, orientation of the double bond. Effect of substrate structures, attacking base, leaving group and medium on reactivity. Mechanism and orientation in pyrolytic elimination, Mock Test

Week 13	Addition to Carbon-Carbon Multiple Bonds: Mechanistic and stereochemical aspects of addition reactions involving electrophiles, nucleophiles and free radicals, orientation and reactivity, addition to cyclopropane ring.
Week 14	Hydrogenation of double and triple bonds, hydrogenation of aromatic rings, hydroboration reaction, Michael reaction, Sharpless asymmetric epoxidation. Revision and Doubts
Week 15	Revision of Complete Syllabus

Name of the Assistant Professor: Ms. Rajni Class And Section: B.Sc. Biotech, B.Sc. Home Sc., BCA IIIrd Semester Subject: Minor Chemistry (Molecular Structure, Thermodynamics, Equilibrium & Alkyl Halides (25CHE404MV01))	
Week 1	Chemical Bonding and Molecular Structure: Valence electrons, ionic bond, covalent bond, bond parameters, Lewis' structure, polar character of covalent bond.
Week 2	Valence bond theory and its limitations, resonance, geometry of covalent molecules, VSEPR theory, concept of hybridization, involving s, p and d orbitals and shapes of some simple molecules
Week 3	Molecular orbital theory of homo nuclear diatomic molecules (qualitative idea only), hydrogen bond and its types with examples, Van der Waal forces
Week 4	Thermodynamics: Concept of system, types of system, surroundings, extensive and intensive properties, state functions and variables. Test and assignment
Week 5	Laws of thermodynamics – internal energy and enthalpy, heat capacity and specific heat, entropy, Gibbs free energy & Helmholtz function, measurement of ΔU and ΔH
Week 6	Hess's law of constant heat summation, enthalpy of bond dissociation, combustion, formation, atomization, sublimation, phase transition, ionization.
Week 7	Alkyl halides Structure of haloalkanes and their classification as 1°, 2° & 3°, general methods of preparation
Week 8	Chemical reactions: nucleophilic substitution reactions with mechanism and their types (S _N 1, S _N 2 and S _N i,)
Week 9	Chemical reactions: E1, E2 & E1cB
Week 10	Nucleophilic substitution reactions with specific examples from: hydrolysis, nitrite & nitro formation, nitrile & isonitrile formation and Williamson's ether synthesis. Test and Assignment
Week 11	Chemical and ionic equilibrium: Dynamic nature of equilibrium, law of mass action, equilibrium constant, factors affecting equilibrium - Le Chatelier's principle & its applications
Week 12	MOCK TEST

Week 13	Theories of acid and base, ionization of acids and bases, strong and weak electrolytes, degree of ionization, acidic and basic strength
Week 14	Concept of pH, hydrolysis of salts (elementary idea), buffer solution, solubility product, common ion effect.
Week 15	REVISION

Name of the Assistant Professor: Ms. Manisha Class And Section: M.Sc. Chemistry I Sem Subject: Physical Chemistry-I	
Week 1	Introduction to laws of thermodynamics, Law of mass action and its thermodynamics derivation, Test
Week 2	Classius Clapeyron equation and its applications, Phase diagram for two completely missible component system, Eutectic systems, calculation of eutectic point, Assignment
Week 3	Systems forming solid compounds A_xB_y with congruent melting point, phase diagram and thermodynamic treatment of solid solutions
Week 4	Rate law for consecutive & parallel reactions (first orders), ionic reactions, single and double sphere models, influence of solvent and ionic strength, chain reactions
Week 5	Hydrogen-bromine reactions & hydrogen – chlorine reactions, ortho-para hydrogen conversion. Chain length, apparent activation energy of chain reactions, Photochemical reactions Test,
Week 6	Hydrogen-chlorine reactions), Rice herzfeld mechanism of organic molecules decomposition (ethane, acetaldehyde), enzyme kinetics, Michaelis-Menton treatment, Lineweaver-Burk plot and Eadie–Hofstee methods. Competitive and noncompetitive inhibition.
Week 7	Electrochemistry: Debye-Huckel theory of ion-ion interaction and activity coefficient, applicability and limitations of Debye-Huckel limiting law, its modification for finitesized ions, effect of ion-solvent interaction on activity coefficient. Physical significance of activity coefficients
Week 8	Equivalent conductivity (λ_{eq}) vs. concentration $c^{1/2}$ as a function of solvent, effect of ion association upon conductivity (Debye-Huckel-Bjerrum equation). Ion Transport in solutions: Ionic movement under the influence of an electric field
Week 9	mobility of ions, ionic drift velocity and its relation with current density, Einstein relation between absolute mobility and diffusion coefficient, Stokes-Einstein relation, Nernst-Einstein equation, Walden's rule. References
Week 10	Quantum Mechanics: Elementary idea of quantum mechanics, Schrodinger wave equation for a particle in one dimensional box and its pictorial representation
Week 11	Schrodinger wave equation for a particle in a three dimensional box, concept of degeneracy, Schrodinger wave equation for a linear harmonic oscillator & its solution by polynomial method

Week 12	Quantum Mechanics: Elementary idea of quantum mechanics, Schrodinger wave equation for a particle in one dimensional box and its pictorial representation, Mock Test.
Week 13	Mean activity coefficient of an electrolyte. Debye-Huckel-Onsager treatment for aqueous solution and its limitations. Debye-Huckel Onsager theory for non-aqueous solutions, solvent effect on the mobility at infinite dilution
Week 14	Assignment of Debye-Huckel Onsager theory for non-aqueous solutions, solvent effect on the mobility at infinite dilution
Week 15	Revision of Complete Syllabus

Name of the Assistant/Associate Professor: Ms. Manisha Class And Section: B.Sc. Life Science 5th Sem, Section-B Subject: Fundamental Chemistry-V	
Week 1	Organometallic Chemistry: Definition, nature of metal carbon bond, classification of organometallic compounds by bond types viz. i) covalent ii) ionic iii) electron deficient iv) cluster compounds v) π bond compounds including sandwich derivatives
Week 2	Structure and bonding in metal-ethylenic, metal-acetylenic complexes, metal carbonyls and cyclopentadienyl derivative
Week 3	Properties and bonding of alkyls of Li, Al, Hg and Sn, concept of hapticity of organic ligand, Zeise salt and ferrocene. EAN rule applied to carbonyls
Week 4	Preparation, structure, bonding and properties of mononuclear and polynuclear carbonyls of 3d metals. π – acceptor behavior of carbon monoxide. Synergic effects (VB approach)
Week 5	MO diagram of CO can be referred for synergic effect to IR frequencies). Applications of organometallic compounds
Week 6	Quantum Mechanics- Black-body radiation, Plank's radiation law, photoelectric effect, heat capacity of solids, Compton effect, wave function and its significance, postulates of quantum mechanics, quantum mechanical operator, commutation relations
Week 7	Hamiltonian operator, Hermitian operator, average value of square of Hermitian as a positive quantity, role of operators in quantum mechanics, Heisenberg uncertainty principle
Week 8	Carbonyl Compounds and Carboxylic acid derivative: Mechanisms of Aldol and Benzoin condensation, Knoevenagel condensation, Claisen-Schmidt, Perkin, Cannizzaro and Wittig reaction
Week 9	Beckmann and Benzil-Benzilic acid rearrangements, haloform reaction and Baeyer-Villiger oxidation, α -substitution reactions, oxidations and reductions (Clemmensen, Wolff-Kishner, LiAlH_4 , NaBH_4 , MPV, PDC). Preparation and reactions of acid chlorides

Week 10	anhydrides, esters and amides, comparative study of nucleophilic substitution at acyl group – Mechanism of acidic and alkaline hydrolysis of esters, Claisen condensation, Dieckmann and Reformatsky reactions, Hoffmann-bromamide degradation and Curtius rearrangement
Week 11	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
Week 12	Conversion of glucose into mannose. 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, Mock Test
Week 13	An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination
Week 14	Synthetic Dyes, Colour and constitution (electronic concept). Classification of dyes, chemistry and synthesis of methyl orange,
Week 15	congo red, malachite green, crystal violet, phenolphthalein, fluorescein, alizarin and indigo, Revision

Name of the Assistant Professor: Ms. Pooja Khatana Class And Section: M.Sc. Chemistry 3rd Sem. Subject: Inorganic Special-II (Instrumental Techniques)	
Week 1	Symmetry and shapes of AB ₂ , AB ₃ , AB ₄
Week 2	Symmetry and shapes of AB ₅ , AB ₆
Week 3	Modes of bonding of Ambidentate Ligands, ethylenediamine and diketone complexes
Week 4	Application of Resonance Raman Spectroscopy particularly for the study of active sites of metalloproteins as myoglobin and hemoglobin, REVISION & TEST
Week 5	Principle of ESR, Presentation of the spectrum, hyperfine coupling, hyperfine splitting in various structures
Week 6	Intensity ratio of lines in spectrum, factors affecting magnitude of 'g', zero field splitting and Kramer's degeneracy
Week 7	Applications to Transition metal complexes having one and more than one unpaired electrons, Drago's rule for metal complexes, application to inorganic free radicals, study of electron exchange reactions, REVISION & TEST
Week 8	Basic principles of Mossbauer spectroscopy, Spectral display, Doppler shift and recoil energy, Doppler's effect

Week 9	Isomer shift and its interpretation, factors affecting the magnitude of isomer shift, quadrupole and magnetic hyperfine interaction, application of techniques in study of bonding and structure of Fe^{2+} , Fe^{3+} , Sn^{2+} and Sn^{4+} compounds
Week 10	Detection of oxidation states, nature of metal- ligand bond, number of lines in Fe, Sn and Ni- octahedral complexes, principle of Mass spectrometry, experimental arrangements and presentation of spectra, interaction of the molecules with high energy electrons, interpretation of mass spectra
Week 11	Effect of isotopes on the appearance of mass spectrum, applications- finger printing, molecular weight determination, evaluation of heat of sublimation of high melting solids, principle of NMR spectroscopy
Week 12	MOCK TEST
Week 13	^{19}F and ^{31}P NMR Spectra, chemical shift, coupling constant, ^{19}F spectra of fluoroacetone, 1- bromo-1-fluoroethane, dimethyl phosphorus trifluoride and bromine penta fluoride, ^{31}P spectra of HPF_2 , $\text{HPO}(\text{OH})_2$, $\text{H}_2\text{PO}(\text{OH})$ AND cis- $\text{Pt}(\text{Pet}_3)_2\text{Cl}_2$, applications of ^{31}P NMR for structural determination of complexes
Week 14	Contact shift, its origin and applications, pseudo contact shift, diamagnetic complexes, spectra of free radicals, lanthanide shift reagents, magnetic susceptibility measurement, solid state NMR, Wide Line NMR, magnetic angle spinning and applications of magnetic resonance imaging
Week 15	REVISION

Name of the Assistant/Associate Professor: Ms. Pooja Khatana Class And Section: B.Sc. Life Science 5th Sem., Section-A Subject: Fundamental Chemistry-V	
Week 1	Organometallic Chemistry: Definition, nature of metal carbon bond, classification of organometallic compounds by bond types viz. i) covalent ii) ionic iii) electron deficient iv) cluster compounds v) π bond compounds including sandwich derivatives
Week 2	Structure and bonding in metal-ethylenic, metal-acetylenic complexes, metal carbonyls and cyclopentadienyl derivative
Week 3	Properties and bonding of alkyls of Li, Al, Hg and Sn, concept of hapticity of organic ligand, Zeise salt and ferrocene. EAN rule applied to carbonyls
Week 4	Preparation, structure, bonding and properties of mononuclear and polynuclear carbonyls of 3d metals. π – acceptor behavior of carbon monoxide. Synergic effects (VB approach)
Week 5	MO diagram of CO can be referred for synergic effect to IR frequencies). Applications of organometallic compounds
Week 6	Quantum Mechanics- Black-body radiation, Plank's radiation law, photoelectric effect, heat capacity of solids, Compton effect, wave function and its significance, postulates of quantum mechanics, quantum mechanical operator, commutation relations

Week 7	Hamiltonian operator, Hermitian operator, average value of square of Hermitian as a positive quantity, role of operators in quantum mechanics, Heisenberg uncertainty principle
Week 8	Carbonyl Compounds and Carboxylic acid derivative: Mechanisms of Aldol and Benzoin condensation, Knoevenagel condensation, Claisen-Schmidt, Perkin, Cannizzaro and Wittig reaction
Week 9	Beckmann and Benzil-Benzilic acid rearrangements, haloform reaction and Baeyer-Villiger oxidation, α -substitution reactions, oxidations and reductions (Clemmensen, Wolff-Kishner, LiAlH_4 , NaBH_4 , MPV, PDC). Preparation and reactions of acid chlorides
Week 10	anhydrides, esters and amides, comparative study of nucleophilic substitution at acyl group – Mechanism of acidic and alkaline hydrolysis of esters, Claisen condensation, Dieckmann and Reformatsky reactions, Hoffmann-bromamide degradation and Curtius rearrangement
Week 11	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
Week 12	Conversion of glucose into mannose. 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, Mock Test
Week 13	An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination
Week 14	Synthetic Dyes, Colour and constitution (electronic concept). Classification of dyes, chemistry and synthesis of methyl orange,
Week 15	congo red, malachite green, crystal violet, phenolphthalein, fluorescein, alizarin and indigo, Revision

Name of the Assistant/Associate Professor: Ms. Pooja Khatana Class And Section: B.Sc. Physical Science 3rd Sem. Subject: Web Designing (25CSCX03MD01), MDC Computer	
Week 1	Concept of Web Design; Web Servers; Hypertext Transfer Protocol, URLs; Searching and Web-Casting Techniques
Week 2	Search Engines and Search Tools, Domain Name System, Home Page, Web page and Website
Week 3	Web Publishing: Hosting your Site; Internet Service Provider, Test
Week 4	Phases of Planning and designing your Website, Assignment

Week 5	Steps for developing your Site; Choosing the contents
Week 6	Web Development: Introduction to HTML; Hypertext and HTML; HTML Document Features
Week 7	HTML command Tags; Headers; Text styles; Text Structuring; Text colors and Background; Formatting text
Week 8	Definition and types of Lists - Ordered and Unordered, Table Creation and Layouts. Images; Inserting Graphics
Week 9	Frame Creation and Layouts; Creating Links; Working with Forms and Menus
Week 10	Working with Radio Buttons and Check Boxes; Text Boxes; Page layouts, Assignment
Week 11	Cascading Style Sheets (CSS): Basic Concepts, Properties, Creation of Style Sheets. Common Tasks with CSS
Week 12	Mock Test
Week 13	Text, Fonts, Margins, Links, Tables, Colors. Marquee. Mouse Overs. Filters and Transitions. Adding Links
Week 14	Adding Tables. Adding Forms. Adding Image and Sound. Use of CSS in HTML Documents, Linking and Embedding of CSS in HTML
Week 15	Revision

Name of the Assistant Professor: Dr. Purnima Verma Class and Section: M.Sc. Chemistry 1st sem Subject: Inorganic Chemistry-I	
Week 1	Metal-Ligand Bonding- Crystal Field Theory, Spectrochemical Series, Calculation of CFSE For Low And High Spin Complexes of 3d- Series Element
Week 2	Application of CFSE, Limitations of Crystal Field Theory, Jahn-Teller Effect And Its Applications, Ligand Field Theory,
Week 3	Molecular Orbital Theory, M.O Diagram of Diagram of Octahedral And Square Planer Complexes Including Both Sigma & Pi Bonding, Factor Affecting Delta E
Week 4	Reaction Mechanism of Octahedral Transition Metal Complexes-1-Inert And Labile Complexes, Mechanism For Ligand Replacement Reactions

Week 5	Formation of Complexes From Aqua Ions, Ligand Displacement Reactions In Octahedral Complexes-Acid Hydrolysis, Test
Week 6	Base Hydrolysis, Anation Reaction, Water Ligand Exchange Reactions, Factor Affecting Ligand Substitution In Octahedral Complexes(Leaving – Group Effects, Effects of Spectator Ligands, Steric Effects),
Week 7	Optic Rotation , Cotton Effect, Racemization of Tris-Chelate Complexes, Electrophilic Attack of Ligands Thermodynamics Aspects- Factors Affecting Stability of Metal Complexes, Irving-Williams Series
Week 8	Reaction Mechanism of Square-Planer Transition Metal Complexes – II - Mechanism of Ligand Displacement Reaction In Square-Planer Complexes And Related Numerical, Assignment
Week 9	Oxidative Addition & Reductive Elimination Reaction, Trans Effect And Theories of Trans Effect, Application of Trans Effect..
Week 10	Electron Transfer Processes- Types And Mechanism- Outer Sphere Electron Transfer And Inner Sphere Electron Transfer Reaction, Electron Exchange Reactions,
Week 11	Factors Effecting Rate of Electron Transfer Reactions And Role of Non-Bridging Ligand On Rate of Electron Transfer
Week 12	Isopoly And Heteropoly Acids And Salts of Mo & W- Isopoly Acids And Isopoly Ions, Preparation And Structure of Paramolybdate And Octamolybdate, Heteropoly Acids (Only Classification Into Six Groups), Mock Test
Week 13	Keggin's Structure of 1:11 & 1:12 Heteropoly Acids And Structure of 1:6 Heteropoly Acids And Heteropoly Blue. Crystal Structure- Structure of Some Binary And Ternary Crystalline Solids Such As Fluorite, Anti-Fluorite, Rutile
Week 14	Anti-Rutile, Cristobalite, Layered Lattice- CdI_2 , BiI_3 , ReO_3 , Mn_2O_3 , Nias, Corundum, Perovskite, Ilmenite, Calcite, Normal Spinel & Inverse Spinel Mineral , Well Equation And Tolerance Factor, Test
Week 15	Important Question Discussion And Quick Revision.

Name of the Assistant Professor: Dr. Purnima Verma Class and Section: B.Sc. Physical Science 1st sem Subject: Value Added (EVS) .	
Week 1	Introduction To Environmental Studies: Multidisciplinary Nature of Environmental Studies. Scope And Importance; Concept of Sustainability And Sustainable Development.
Week 2	Ecosystem- Introduction, Types, Characteristic Features, Structure & Function of The Following Ecosystem- A) Forest Ecosystem, B) Grassland Ecosystem,

Week 3	C) Desert Ecosystem, D) Aquatic Ecosystems, (Ponds, Streams, Lakes, Rivers, Oceans, Estuaries)
Week 4	Revision, Test
Week 5	Renewable And Non-Renewable Resources- Natural Resources And Associated Problem, A) Forest Resources: Use And Over-Exploitation, Deforestation, Timber Extraction, Mining, Dams And Their Effects On Forest And Tribal People. B) Water Resources: Use And Over Utilization of Surface And Ground Water, Floods, Drought, Conflicts Over Water, Dams-Benefits And Problems.
Week 6	C) Mineral Resources: Use And Exploitation, Environmental Effects of Extracting And Using Minerals Resources. D) Food Resources: World Food Problems, Changes Caused By Agriculture And Overgrazing, Effects of Modern Agriculture, Fertilizers- Pesticides Problems, Water Logging, Salinity, Case Study
Week 7	Energy Resources: Growing Energy Needs, Renewable And Non- Renewable Energy Sources, Use of Alternate Energy Resources, Test
Week 8	F) Land Resources: Land As A Resources, Land Degradation, Man Induced Landslides, Soil Erosion, And Desertification. Role of An Individual In Conservation of Natural Resources. Equitable Use of Resources For Sustainable Lifestyles.
Week 9	Biodiversity And Its Conservation: Introduction-Definition: Genetic, Species And Ecosystem Diversity. Bio Geographical Classification of India.
Week 10	Value of Biodiversity: Consumptive Use, Productive Use, Social Ethical, Aesthetic And Option Values Biodiversity At Global, National And Local Levels. Biodiversity Threats To Biodiversity: Habitat Loss, Poaching of Wildlife ,
Week 11	Man-Wildlife Conflicts. Endangered And Endemic Species of India. Conservation of Biodiversity: In-Situ And Ex-Situ Conservation of Biodiversity
Week 12	Assignment Mock Test
Week 13	Environmental Pollution:- Definition, Cause, Effects And Control Measures of- A) Air Pollution, B) Water Pollution, C) Soil Pollution, D) Marine Pollution, E) Noise Pollution, F) Thermal Pollution, G) Nuclear Hazards H) Solid Waste.
Week 14	Role of An Individual In Prevention of Pollution. Disaster Management: Floods, Earthquake, Cyclone And Landslides. Water Conservation And Its Strategies. Climate Change- Greenhouse Gases, Acid Rain And Global Warming.
Week 15	Important Question Discussion And Quick Revision.

Name of the Assistant Professor: Dr. Purnima Verma & Ms. Sudha Diwakar
Class and Section: B.Sc Home Science 1st sem
Subject: MDC (Chemistry)

Week 1	UNIT-1 Basic Concept of Chemistry: Introduction, Dalton Atomic theory, concept of atom, element and molecule, matter and its classification
Week 2	Chemical reaction, empirical and molecular formula, molecular mass, mole concept
Week 3	Solution and their preparation (strength, molarity, normality and mole fraction)
Week 4	Revision, Test
Week 5	UNIT-2 Atomic structure- Electron , proton and neutron, atomic number, atomic mass, isotopes, isobars and isotones, thomson's model, rutherford's model, bohr's model
Week 6	Dual nature of matter and light, Dr broglie's relationship, Heisenberg uncertainty principle , orbit and orbital , quantum numbers, Shape of s, p and d orbitals
Week 7	rules for filling electron in the orbitals (aufbau principle, paul's exclusion rule and hund's rule) electronic configuration of atom, stability of half-filled and completely filled orbitals
Week 8	UNIT-3 States of matter- Introduction to three states of matter and intermolecular interaction, Gas laws- Boyle's law, Charle's law, Gay Lussac's law and Avagadro's law with practical implication
Week 9	Elementary idea of kinetic energy , molecular speeds, ideal gas equation and deviation from ideal behaviour. Liquid state – Melting & Boiling point, Vapour pressure, viscosity and surface tension
Week 10	Solid state- General characteristics of solid state, crystalline and amorphous solids, classification of crystalline solids
Week 11	Test Unit-2 and Unit 3
Week 12	Assignment Mock Test
Week 13	UNIT- 4 Chemistry in every day life- Drugs and their classification with suitable examples, food adulteration and preservation , Artificial sweetening agents
Week 14	Antioxidants, soaps and detergents and their types with cleansing action
Week 15	Important Question Discussion And Quick Revision.

Name of the Assistant Professor: Ms. Sonia Bisht
Class And Section: M.Sc. Chemistry 3rd Semester
Subject: Inorganic Special-III , Bio-Inorganic Chemistry (25CHE203DS07)

Week 1	Biological elements: General survey of essential and trace elements (bulk biological essential elements, less abundant essential elements, and trace non-metals)
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Week 2	disturbing factors in metabolic process, pharmacological classification of drugs. Proteins: Amino acids, peptides, proteins (primary, secondary, tertiary and quaternary structures)
Week 3	globular proteins, prosthetic groups, metalloproteins, apo proteins. Interaction of metal ions with nucleotides: Composition of nucleic acids, nucleoside, nucleotide
Week 4	structure of DNA and RNA, replication, transcription, gene, metal ions in nucleotide systems, effect of metal ions on nucleic acids. Test
Week 5	Oxygen carriers and storage systems: Porphyrins, metalloporphyrins, comparison of spectral properties of porphyrins and metalloporphyrins, heme-proteins, structure and functions of haemoglobin (Hb) and myoglobin (Mb)
Week 6	synthetic oxygen carrier model systems, Perutz mechanism for cooperativity in hemoglobin, role of protein chain in Hb, factors affecting binding powers of O ₂ with Hb and Mb (Effect of partial pressure of O ₂ and effect of pH/Bohr's effect)
Week 7	role of 2,3-bisphosphoglycerate in the functioning of Hb. Metal transport and storage: Iron-storage: Ferritin, iron-transport: transferrin & siderophores, copper transfer: ceruloplasmin, Doubt Class, Test
Week 8	Alkali and alkaline earth metals in biological systems: Ionophores, active transport of cations across membranes, sodium pump, calcium pump, calcium carriers, role of carriers in muscle contraction
Week 9	blood clotting hormones, Metalloenzymes- Structure and functions; zinc enzymes : Carboxypeptidase and carbonic anhydrase. Iron Enzymes: Catalase, peroxidase and cytochrome P-450
Week 10	Copper Enzymes: Superoxide dismutase, non-blue copper proteins: cytochrome c oxidase and galactose oxidase.
Week 11	Coenzymes: Vitamin B12, functions of coenzyme B12. Molybdenum Enzymes: Xanthine oxidase and aldehyde oxidase.
Week 12	Biological Redox Process: Electron transport systems: Iron-sulphur proteins (rubredoxin, ferredoxins and rieske protein), cytochromes, Blue copper proteins (plastocyanin and azurin), Mock Test
Week 13	Nitrogen Fixation: Biological nitrogen fixation, in-vivo and in-vitro nitrogen fixation, symbiotic and asymbiotic nitrogen fixation.
Week 14	Photosynthesis: Chlorophyll, reaction cycle of photosynthesis involving light and dark reactions (Calvin cycle).
Week 15	Revision

Name of the Assistant Professor: Ms. Sonia Bisht

Class And Section: B.Sc. (Physical Science) 1st Sem.

Subject: MDC, Fundamentals of Computing (24CSCX01MD01)

Week 1	Historical evolution of computing, Computers and their classification; Working of a computer; Block Diagram and its components; Characteristics
Week 2	Benefits and Limitations of Computers. Human being Vs. Computer. Computer Codes and their types
Week 3	Introduction to I/O concepts, Hardcopy and Softcopy Devices; Keyboards, mouse, joysticks, trackballs, digitizer, voice-recognition
Week 4	optical-recognition, scanners, terminals, point-of-sale terminals, machine-vision systems, Printer & its types
Week 5	Memory & Mass Storage Devices: Characteristics of memory systems, types of memory, RAM, ROM
Week 6	Assignment, Test, magnetic disks-floppy disk, hard-disk; optical disks; Magnetic tapes; Concepts of Virtual and Cache memory
Week 7	Introduction, Software and its types, Language translators, Operating System and its Functions, Measuring System Performance
Week 8	Assemblers, Compilers and Interpreters. Batch Processing, Multiprogramming, Multi-tasking, Multiprocessing, Time Sharing, DOS, Windows, Unix/Linux
Week 9	Concept of problem solving, Problem definition, Programming Languages and their classification
Week 10	Problem solving with computer, Concept of a programming and design techniques, computer program lifecycle and program development process, Test,
Week 11	Introduction, forms of data transmission, modem and its types, communication channels, data transmission modes
Week 12	Computer Networks: Introduction to Computer Network, types of Computer Network, Network Topologies, Network Protocols, Applications of Computer Networks
Week 13	Introduction to Internet, WWW, Web Browsers, Evolution of Internet, Applications of Internet, Connecting to Internet, Internet tools. Electronic Mail: Introduction to E-mail, Setting Up an E-mail Account, Mock Test
Week 14	Troubleshooting Common E-mail Issues.Computer Applications: Computer applications in Artificial Intelligence, Banking, Education, Marketing

Week 15	Desktop publishing, CAD/CAM, Project Management, Military, Sports, Research & Development. Revision of Complete Syllabus
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Name of the Assistant Professor: Ms. Priyanka Bhatia Class And Section: B.Sc. Life Science – 3rd Sem , Section A & B Subject: Fundamental Chemistry – III (Major Chemistry)	
Week 1	Unit-1 Chemistry of Transition series elements : General characteristics of transition metals, brief discussion of differences between the first, second and third transition series, stability of various oxidation states, magnetic and spectral properties.
Week 2	Binary compounds and complexes illustrating relative stability of their oxidation states. Chemistry of Ti, V, Cr, Mn, Fe, Co, Mo and W in various oxidation states,
Week 3	Some important compounds as laboratory reagents: potassium dichromate, potassium permanganate, potassium ferrocyanide, potassium ferricyanide, sodium nitroprusside and sodium cobaltinitrite.
Week 4	Assignment Unit – 2: Thermodynamics-II Third law of thermodynamics: Nernst heat theorem, concept of residual entropy, evaluation of absolute entropy from heat capacity data. Gibbs and Helmholtz functions,.
Week 5	Gibbs function (G) and Helmholtz function (A) as thermodynamic quantities, A & G as criteria for spontaneity, thermodynamic equilibrium and their advantage over entropy change. Variation of G and A with P, V and T. Partial molar quantities
Week 6	Class test Unit –3 : Electrochemistry Arrhenius theory of ionization, Ostwald's Dilution Law. Debye-Huckel–Onsager's equation for strong electrolytes (elementary treatment only,)
Week 7	Transport number, definition and determination by Hittorf's methods. Electrolytic conduction, factors affecting electrolytic conduction. Applications of conductivity measurements: determination of dissociation constant (K _a) and degree of dissociation
Week 8	determination of solubility product of sparingly soluble salts, conductometric titrations. Definition of pH and pK _a , buffer solution, buffer action, Henderson – Hasselbalch equation, buffer mechanism of buffer action.
Week 9	Class Test Reversible electrodes – Metal- metal ion gas electrode, metal – metal insoluble salt anion electrode and redox electrode.
Week 10	Assignment Unit – IV : Alkyl and aryl halides Alkyl halide: Nomenclature and classes of alkyl halides, general methods of preparation
Week 11	Physical properties and chemical reactions, mechanisms (S _N 1, S _N 2, E1, E2 and E1c _b) and stereochemistry of nucleophilic substitution reactions of alkyl halides with energy profile diagrams,

Week 12	MOCK TEST
Week 13	Elimination vs substitution reactions. Aryl halides: Methods of preparation, Reactions: Aromatic nucleophilic substitution and effect of substituents on reactivity
Week 14	. Benzyne Mechanism: KNH_2/NH_3 (or $\text{NaNH}_2/\text{NH}_3$), reactivity and relative strength of C-halogen bond in alkyl, allyl, benzyl, vinyl and aryl halides.
Week 15	REVISION

Name of the Assistant Professor: Ms. Priyanka Bhatia Class and Section: B.Sc. Life Science 1st sem , Section-B Subject: Value Added (EVS) .	
Week 1	Introduction To Environmental Studies: Multidisciplinary Nature of Environmental Studies. Scope And Importance; Concept of Sustainability And Sustainable Development.
Week 2	Ecosystem- Introduction, Types, Characteristic Features, Structure & Function of The Following Ecosystem- A) Forest Ecosystem, B) Grassland Ecosystem,
Week 3	C) Desert Ecosystem, D) Aquatic Ecosystems, (Ponds, Streams, Lakes, Rivers, Oceans, Estuaries)
Week 4	Revision, Test
Week 5	Renewable And Non-Renewable Resources- Natural Resources And Associated Problem, A) Forest Resources: Use And Over-Exploitation, Deforestation, Timber Extraction, Mining, Dams And Their Effects On Forest And Tribal People. B) Water Resources: Use And Over Utilization of Surface And Ground Water, Floods, Drought, Conflicts Over Water, Dams-Benefits And Problems.
Week 6	C) Mineral Resources: Use And Exploitation, Environmental Effects of Extracting And Using Minerals Resources. D) Food Resources: World Food Problems, Changes Caused By Agriculture And Overgrazing, Effects of Modern Agriculture, Fertilizers- Pesticides Problems, Water Logging, Salinity, Case Study
Week 7	Energy Resources: Growing Energy Needs, Renewable And Non- Renewable Energy Sources, Use of Alternate Energy Resources, Test
Week 8	F) Land Resources: Land As A Resources, Land Degradation, Man Induced Landslides, Soil Erosion, And Desertification. Role of An Individual In Conservation of Natural Resources. Equitable Use of Resources For Sustainable Lifestyles.
Week 9	Biodiversity And Its Conservation: Introduction-Definition: Genetic, Species And Ecosystem Diversity. Bio Geographical Classification of India.
Week 10	Value of Biodiversity: Consumptive Use, Productive Use, Social Ethical, Aesthetic And Option Values Biodiversity At Global, National And Local Levels.

	BiodiversityThreats To Biodiversity: Habitat Loss, Poaching of Wildlife ,
Week 11	Man-Wildlife Conflicts. Endangered And Endemic Species of India. Conservation of Biodiversity: In-Situ And Ex-Situ Conservation of Biodiversity
Week 12	Assignment Mock Test
Week 13	Environmental Pollution:- Definition, Cause, Effects And Control Measures of- A) Air Pollution, B) Water Pollution, C) Soil Pollution, D) Marine Pollution, E) Noise Pollution, F) Thermal Pollution, G) Nuclear Hazards H) Solid Waste.
Week 14	Role of An Individual In Prevention of Pollution. Disaster Management: Floods, Earthquake, Cyclone And Landslides. Water Conservation And Its Strategies. Climate Change- Greenhouse Gases, Acid Rain And Global Warming.
Week 15	Imporatant Question Discussion And Quick Revision.

Name of the Assistant Professor: Ms. Anita Class and Section: B.Sc. (Life Science) 1st Sem., Section-A Subject: Fundamental Chemistry-I	
Week 1	Chemical Bonding and Molecular Structure: Ionic Bond, Lattice Energy, Born-Haber Cycle and Its Applications, Fajan's Rules, Hydration Energy, Bond Moment, Dipole Moment and Percentage Ionic Character.
Week 2	Resonance and Resonance Energy: Study of Some Inorganic and Organic Compounds. Molecular Orbital Approach: LCAO Method, Bonding and Antibonding MOs and Their Characteristics for S-S, S-P and P-P Combination of Atomic Orbitals, Non-Bonding Combination of Orbitals.
Week 3	MO Treatment of Homonuclear Diatomic Molecules of 1st and 2nd Periods (Including Idea of S-P Mixing) and Heteronuclear Diatomic Molecules Such as O_2^- , O_2^{2-} , N_2^- , CO, NO^+ , CN^- . Comparison of VB and MO Approaches, Test.
Week 4	P-Block Elements: Oxides – Structures of Oxides of N, P. Oxyacids – Structure and Relative Acid Strengths of Oxyacids of Nitrogen and Phosphorus. Structure of White, Yellow and Red Phosphorus. Oxyacids of Sulphur – Structures and Acidic Strength.
Week 5	H ₂ O ₂ –Structure, Properties and Uses. Basic Properties of Halogen, Interhalogen Compounds-Types and Properties, Halogen-Acids and Oxyacids of Chlorine – Structure and Comparison of Acidic Strength.
Week 6	Acids and Bases: Brönsted–Lowry Concept, Conjugate Acids and Bases, Relative Strengths of Acids and Bases, Effects of Substituent and Solvent, Differentiating and Levelling Solvents, Assignment
Week 7	Lewis Acid-Base Concept: Classification of Lewis Acids and Bases, Lux-Flood Concept. Gaseous States: Maxwell's Distribution of Velocities and Energies (Derivation Excluded), Calculation of Root Mean Square Velocity, Average Velocity, Test.

Week 8	Most Probable Velocity, Collision Diameter, Collision Number, Collision Frequency and Mean Free Path, Deviation of Real Gases From Ideal Behavior
Week 9	Derivation of Van der Waals Equation of State and Its Applications in the Calculation of Boyle's Temperature (Compression Factor), Explanation of Behavior of Real Gases Using Van der Waals Equation.
Week 10	Critical Phenomenon: Critical Temperature, Critical Pressure, Critical Volume and Their Determination, PV Isotherms of Real Gases, Continuity of States
Week 11	Isotherms of Van Der Waals Equation, Relationship Between Critical Constants and Van Der Waals Constants, Compressibility Factor. Law of Corresponding States,
Week 12	Basics of Organic Chemistry and Stereochemistry: Electronic Displacements and Its Applications, Reaction Intermediates and Concept of Aromaticity. Concept of Isomerism, Mock Test
Week 13	Types of Isomerism, Optical Isomerism, Optical Activity, Elements of Symmetry, Molecular Chirality, Enantiomers, Stereogenic Centre, Properties of Enantiomers, Chiral and Achiral Molecules with Two Stereogenic Centres, Diastereomers.
Week 14	Threo and Erythro Diastereomers, Meso Compounds, Resolution of Enantiomers, Inversion, Retention and Racemization, Relative and Absolute Configuration, Sequence Rules, R & S System of Nomenclature.
Week 15	Revision

Name of the Assistant Professor: Ms. Anita Class And Section: B.Sc. Biotech 1st Semester Subject: Minor Course- Basic Concepts of Chemistry	
Week 1	Fundamentals of Organic Chemistry- Electronic displacements: Inductive effect, electromeric effect, resonance
Week 2	Hyperconjugation, Cleavage of bonds: homolysis and heterolysis. Introduction of Reaction intermediates
Week 3	Reaction intermediates: carbocations, carbanions, free radicals
Week 4	Reaction intermediates: carbenes, Electrophiles and nucleophiles. Aromaticity: benzenoids and Huckel's rule.
Week 5	Atomic Structure- Atomic models, Rutherford's model and its limitations, Bohr's model and its applications , Test
Week 6	Dual nature of matter and light, de Broglie's relationship, Heisenberg uncertainty principle, concept of orbitals, quantum numbers

Week 7	shapes of s, p and d orbitals, rules for filling electrons in orbitals - Aufbau principle, Pauli's exclusion principle and Hund's rule & Test
Week 8	Electronic configuration of atoms, stability of half-filled and completely filled orbitals. Assignment
Week 9	Periodic Table and Atomic Properties -Brief history of the development of periodic table, modern periodic law and the present form of periodic table
Week 10	Periodic trends in properties of elements -atomic radii, ionic radii, inert gas radii, ionization enthalpy, electron gain enthalpy
Week 11	Electronegativity, valency. Nomenclature of elements with atomic number greater than 100. , Test
Week 12	Mole Concept- Atomic mass, mole concept and molar mass, Avogadro's number and its significance, percentage composition, Mock Test
Week 13	Empirical and molecular formula, chemical reactions, ways of expressing concentration of solutions (molarity, normality, molality, mole percentage, strength),
Week 14	Stoichiometric calculations involving reactants and products. & Doubt Class
Week 15	Revision

Name of the Assistant Professor: Ms. Anita Class And Section: B.Sc. Physical Science & B.Sc. Life Science – 3rd Sem Subject: SEC Paper – III– Batteries	
Week 1	Unit–I-Basic Concepts Components of cells and batteries, classification of cells and batteries, operation of a cell, theoretical cell voltage, capacity, energy, specific energy and energy density of practical batteries.
Week 2	Unit – II - Battery Design and Factors Affecting Battery Performance General introduction, designing to eliminate potential safety problems,
Week 3	battery safeguards when using discrete batteries, battery construction, design of rechargeable batteries, factors affecting battery performance.
Week 4	Class Test – 1 Unit – III - Primary Batteries General characteristics and applications of primary batteries, types and characteristics of primary batteries,
Week 5	comparison of the performance characteristics of primary battery systems, recharging primary batteries. A) Zinc-Carbon Batteries (Leclanche' and Zinc Chloride Cell Systems): General characteristics, cell chemistry, types of cells and batteries, construction, cell components

Week 6	. B) Magnesium and Aluminum Batteries: General characteristics, cell chemistry, construction of Mg/MnO ₂ batteries, performance characteristics of Mg/MnO ₂ batteries, sizes and types of Mg/MnO ₂ batteries, other types of magnesium primary batteries.
Week 7	Class Test – 2 Assignment
Week 8	Unit – IV - Secondary Batteries General characteristics and applications of secondary batteries, types and characteristics of secondary batteries, comparison of performance characteristics for secondary battery systems
Week 9	and introduction, chemistry, construction, performance characteristics, charging characteristics of following batteries: Lead batteries,
Week 10	Lithium ionbatteries, Iron electrode batteries,
Week 11	Nickel-Cadmium, Nickel-Metal hydride, Nickel-Zinc batteries
Week 12	MOCK TEST
Week 13	Project Work + Presentation
Week 14	Doubt Class
Week 15	REVISION

Name of the Assistant Professor: Ms. Ranjana Class And Section: B.Sc. Physical Science 3rd Sem Subject: Fundamental Chemistry – III (Major Chemistry)	
Week 1	Unit-1 Chemistry of Transition series elements : General characteristics of transition metals, brief discussion of differences between the first, second and third transition series, stability of various oxidation states, magnetic and spectral properties.
Week 2	Binary compounds and complexes illustrating relative stability of their oxidation states. Chemistry of Ti, V, Cr, Mn, Fe, Co, Mo and W in various oxidation states,
Week 3	Some important compounds as laboratory reagents: potassium dichromate, potassium permanganate, potassium ferrocyanide, potassium ferricyanide, sodium nitroprusside and sodium cobaltinitrite.
Week 4	Assignment Unit – 2: Thermodynamics-II Third law of thermodynamics: Nernst heat theorem, concept of residual entropy, evaluation of absolute entropy from heat capacity data. Gibbs and Helmholtz functions,.
Week 5	Gibbs function (G) and Helmholtz function (A) as thermodynamic quantities, A & G as criteria for spontaneity, thermodynamic equilibrium and their advantage over entropy change. Variation of G and A with P, V and T. Partial molar quantities

Week 6	Class test Unit –3 : Electrochemistry Arrhenius theory of ionization, Ostwald's Dilution Law. Debye-Huckel–Onsager's equation for strong electrolytes (elementary treatment only,)
Week 7	Transport number, definition and determination by Hittorf's methods. Electrolytic conduction, factors affecting electrolytic conduction. Applications of conductivity measurements: determination of dissociation constant (K _a) and degree of dissociation
Week 8	determination of solubility product of sparingly soluble salts, conductometric titrations. Definition of pH and pK _a , buffer solution, buffer action, Henderson – Hasselbalch equation, buffer mechanism of buffer action.
Week 9	Class Test Reversible electrodes – Metal- metal ion gas electrode, metal – metal insoluble salt anion electrode and redox electrode.
Week 10	Assignment Unit – IV : Alkyl and aryl halides Alkyl halide: Nomenclature and classes of alkyl halides, general methods of preparation
Week 11	Physical properties and chemical reactions, mechanisms (S _N 1, S _N 2, E1, E2 and E1cb) and stereochemistry of nucleophilic substitution reactions of alkyl halides with energy profile diagrams,
Week 12	MOCK TEST
Week 13	Elimination vs substitution reactions. Aryl halides: Methods of preparation, Reactions: Aromatic nucleophilic substitution and effect of substituents on reactivity
Week 14	. Benzyne Mechanism: K ⁺ NH ₂ /NH ₃ (or NaNH ₂ /NH ₃), reactivity and relative strength of C-halogen bond in alkyl, allyl, benzyl, vinyl and aryl halides.
Week 15	REVISION

Name of the Assistant Professor: Ms. Ranjana Class and Section: B.Sc. Life Science 1st Sem, Section-A Subject: Value Added (EVS) .	
Week 1	Introduction To Environmental Studies: Multidisciplinary Nature of Environmental Studies. Scope And Importance; Concept of Sustainability And Sustainable Development.
Week 2	Ecosystem- Introduction, Types, Characteristic Features, Structure & Function of The Following Ecosystem- A) Forest Ecosystem, B) Grassland Ecosystem,
Week 3	C) Desert Ecosystem, D) Aquatic Ecosystems, (Ponds, Streams, Lakes, Rivers, Oceans, Estuaries)
Week 4	Revision, Test

Week 5	Renewable And Non-Renewable Resources- Natural Resources And Associated Problem, A) Forest Resources: Use And Over-Exploitation, Deforestation, Timber Extraction, Mining, Dams And Their Effects On Forest And Tribal People. B) Water Resources: Use And Over Utilization of Surface And Ground Water, Floods, Drought, Conflicts Over Water, Dams-Benefits And Problems.
Week 6	C) Mineral Resources: Use And Exploitation, Environmental Effects of Extracting And Using Minerals Resources. D) Food Resources: World Food Problems, Changes Caused By Agriculture And Overgrazing, Effects of Modern Agriculture, Fertilizers- Pesticides Problems, Water Logging, Salinity, Case Study
Week 7	Energy Resources: Growing Energy Needs, Renewable And Non- Renewable Energy Sources, Use of Alternate Energy Resources, Test
Week 8	F) Land Resources: Land As A Resources, Land Degradation, Man Induced Landslides, Soil Erosion, And Desertification. Role of An Individual In Conservation of Natural Resources. Equitable Use of Resources For Sustainable Lifestyles.
Week 9	Biodiversity And Its Conservation: Introduction-Definition: Genetic, Species And Ecosystem Diversity. Bio Geographical Classification of India.
Week 10	Value of Biodiversity: Consumptive Use, Productive Use, Social Ethical, Aesthetic And Option Values Biodiversity At Global, National And Local Levels. Biodiversity Threats To Biodiversity: Habitat Loss, Poaching of Wildlife ,
Week 11	Man-Wildlife Conflicts. Endangered And Endemic Species of India. Conservation of Biodiversity: In-Situ And Ex-Situ Conservation of Biodiversity
Week 12	Assignment Mock Test
Week 13	Environmental Pollution:- Definition, Cause, Effects And Control Measures of- A) Air Pollution, B) Water Pollution, C) Soil Pollution, D) Marine Pollution, E) Noise Pollution, F) Thermal Pollution, G) Nuclear Hazards H) Solid Waste.
Week 14	Role of An Individual In Prevention of Pollution. Disaster Management: Floods, Earthquake, Cyclone And Landslides. Water Conservation And Its Strategies. Climate Change- Greenhouse Gases, Acid Rain And Global Warming.
Week 15	Important Question Discussion And Quick Revision.

Name of the Assistant Professor: Ms. Indu Rani

Class And Section: B.Sc. Life Science 1st Sem.

Subject: Diversity of Microbes (24BOTM401DS01)

Week 1	Discovery, Physiochemical And Biological Characteristics of Viruses
Week 2	Classification, General Structure ,Replication, DNA Virus ,Lytic And Lysogenic Cycle

Week 3	RNA Virus , Discovery , General Characters ,Types of Bacteria, Cell Structure ,Nutritional Types
Week 4	Reproduction And Economic Importance of Bacteria. Test
Week 5	Cyanobacteria, General Characters, Thallus Organization, Cell Structure, Assignment
Week 6	Nostoc, Economic Importance of Cyanobacteria Algae, General Characters, Algae In Diversified Habitat
Week 7	Thallus Organization, Cell Structure, Reproduction, Criteria of Classification of Algae
Week 8	Classification of Algae, Algal Blooms, Red Tides And Algae Biofertilizers Test
Week 9	Morphology And Life Cycle of Volvox Morphology And Life Cycle of Oedogonium
Week 10	Morphology And Life Cycle of Vaucheria Morphology And Life Cycle of Ectocarpus
Week 11	Morphology And Life Cycle of Polysiphonia, Economic Importance of Algae. General Characters ,Organization of Thallus, Nutrition And Reproduction In Fungi, Classification of Fungi Morphology And Life Cycle of Phytophthora
Week 12	Mock Test
Week 13	Morphology And Life Cycle of Mucor ,Penicillium, Puccinia And Agaricus
Week 14	Morphology And Life Cycle of Colletotrichum,Economic Importance of Fungi. Lichens And Mycorrhiza
Week 15	Revision

Name of the Assistant Professor: Ms. Indu

Class And Section: B.Sc life Science 1st Sem, Skill Enhancement Course (Botany)

Subject: Biofertilizers and Biopesticides

Week 1	Bio fertilizers: Definition, scope, status and importance: Advantage & limitation of bio fertilizers compared to chemical fertilizers.
Week 2	Type of bio fertilizers, Structure and characteristics, features of bacterial bio fertilizer Azospirillum, azotobacter, rhizobium
Week 3	Structure and characteristics features of actinomycetes (Frankia), cyanobacterial (anabaena, Nostoc)
Week 4	Structure and characteristics features of hapalosiphon and fungal VAM and ectomycorrhiza bio fertilizers, Test
Week 5	Production of bio fertilizers: strain selection, sterilization and microbial growth, Fermentation, mass production of carrier based and liquid bio fertilizers, Assignment
Week 6	Factors affecting the production of bio fertilizers, quality control of bio fertilizers, Test
Week 7	Application methods and dosage of bio fertilizers, effect of bio fertilizers on soil fertility, plant growth and yield,
Week 8	Bio fertilizers storage, shelf life, quality control and marketing, regulatory framework and certification for bio fertilizers
Week 9	Application technology for seeds, seed links, tubers, sets, etc.
Week 10	Factors influencing the efficacy of bio fertilizers, economic feasibility and cost benefit analysis of using bio fertilizers
Week 11	Future prospect and potential of bio fertilizer in sustainable agriculture and environmental protection, Bio Pesticides: Definition, classification; advantages & limitation of bio pesticides compared to chemical pesticides. Modes of action
Week 12	Mechanism of bio pesticides, Bio Pesticides: Definition, classification; advantages & limitation of bio pesticides compared to chemical pesticides. Modes of action, Mock Test
Week 13	Characteristics and application of microbial pesticides, characteristics and application of botanical pesticides
Week 14	Characteristics and application of bio chemical, bio control agents and their efficacy on seed-borne and soil-borne plant pathogens
Week 15	Revision

Name of the Assistant Professor: Dr. Priti Class And Section: B.Sc. Biotech 3rd sem. Subject: Fundamentals of Molecular biology (25CBTS403DS01)	
Week 1	DNA as genetic material, Structure of DNA, Types of DNA, Replication of DNA in prokaryotes and eukaryotes: Semiconservative nature of DNA replication, Bidirectional replication, DNA polymerases
Week 2	The replication complex: prepriming proteins, primosome, replisome, Rolling circle replication
Week 3	Unique aspects of eukaryotic chromosome replication, Fidelity of replication, Class Test I
Week 4	DNA damage and repair: causes and types of DNA damage, mechanism of DNA repair: Photoreactivation
Week 5	Base excision repair, nucleotide excision repair, mismatch repair, translesion synthesis, recombinational repair, non homologous end joining.
Week 6	Homologous recombination: models and mechanism, Class Test II
Week 7	RNA structure and types of RNA, Transcription in prokaryotes: Prokaryotic RNA polymerase, role of sigma factor, promoter, Initiation, elongation and termination of RNA chains
Week 8	Transcription in eukaryotes: Eukaryotic RNA polymerases, transcription factors, promoters, enhancers, mechanism of transcription initiation, promoter clearance and elongation
Week 9	RNA splicing and processing: processing of pre-mRNA: 5' cap formation, polyadenylation, splicing, rRNA and tRNA splicing
Week 10	Regulation of gene expression in prokaryotes: Operon concept (inducible and repressible system)
Week 11	Genetic code and its characteristics Prokaryotic and eukaryotic translation: ribosome structure and assembly
Week 12	MOCK TEST
Week 13	Charging of tRNA, aminoacyl tRNA synthetases, Mechanism of initiation, elongation and termination of polypeptides, Fidelity of translation
Week 14	Inhibitors of translation. Posttranslational modifications of protein
Week 15	REVISION

Name of the Assistant Professor: Dr. Priti Class And Section: B.Sc. Biotechnology 5th semester Subject: Plant and Animal Biotechnology (26CBTS405DS02)	
Week 1	Introduction to in vitro plant culture methods, Use of growth regulators,
Week 2	Embryo culture, embryo rescue, wide hybridization and its applications
Week 3	Introduction to Embryogenesis and Organogenesis: Principles and Practical Applications
Week 4	Haploids production methods and their applications
Week 5	Agrobacterium-Mediated Gene Delivery, Direct Gene Transfer Methods: PEG-Mediated, Electroporation, and Particle Bombardment,
Week 6	Cointegrate and Binary Vectors: Structure and Applications,
Week 7	Screenable and selectable markers, Chloroplast Transformation, Transgenic plants and their applications.
Week 8	History of animal cell culture, culture media and equipments, primary and secondary culture
Week 9	continuous cell line, suspension culture, somatic cell cloning and hybridization,
Week 10	transfection and transformation of cell, commercial scale production of animal cell, application of animal cell culture.
Week 11	Structure of sperm and ovum, cryopreservation of sperm and ova of livestock, artificial insemination
Week 12	Mock Test
Week 13	superovulation, in-vitro fertilization, cryopreservation, Embryo transfer technology
Week 14	Transgenic animals and their applications
Week 15	Revision

Name of the Assistant Professor: Dr. Priti & Ms. Jyoti Sharma Class And Section: B.Sc. Biotechnology 1st Sem. Subject: Basics of Biomolecules (24CBTS401DS01)	
Week 1	Lipids: Classification, nomenclature and properties of fatty acids. Essential fatty acids
Week 2	Structure and properties of phospholipids, sphingolipids
Week 3	Glycolipids, gangliosides, prostaglandins, Test

Week 4	Terpenoids and isoprenoids - definition and representative structures, steroids
Week 5	Concept of acid value, saponification value and iodine value
Week 6	Nucleic acids introduction and basics, Test
Week 7	Chemical structure and base composition of nucleic acids
Week 8	Chargaff's rules, Watson Crick Model (B-DNA)
Week 9	Other forms of DNA (A and Z-DNA).
Week 10	Nucleosides & Nucleotides, Assignment
Week 11	Biologically important nucleotides.
Week 12	Structural polymorphism of RNA, Mock test
Week 13	Denaturation of DNA.
Week 14	Renaturation of DNA
Week 15	Revision

Name of the Assistant Professor: Dr. Priti Class And Section: B.Sc. biotech (MINOR) 5th semester Subject: IPR, Biosafety and Bioethics (26CBT405MV01)	
Week 1	Intellectual Property Rights, Patents and Copyrights: Patentability of life forms with special reference to Microorganisms
Week 2	Pharmaceutical industries, Biodiversity, Naturally occurring substances.
Week 3	GMO, Human genome and IPR, Substantive Patent Law Treaty (SPLT), World patent.
Week 4	Social and ethical issues in Biotechnology- cloning, human cloning, gene therapy,
Week 5	GMOs, clinical trials, AI in Biotechnology
Week 6	Ethical committee functions- animal and human ethics committee.
Week 7	Bio-safety and Biosecurity: Definition, Requirements, Biosafety laboratories-BSL1, BSL-2, BSL-3, BSL-4,
Week 8	Biohazards, Biosafety concerns of genetically modified organisms (GMOs), GLP

Week 9	Biosafety concerns of GMP and FDA, IBSC (Institutional Biosafety Committee)
Week 10	Data management and safety; Lab notebooks, Experimental data record keeping
Week 11	Raw data management, Publication ethics
Week 12	Mock Test
Week 13	Plagiarism, Clinical data collection and management
Week 14	Informed consent
Week 15	Revision

Name of the Assistant Professor: Dr Reeti Panchal Class And Section: B.Sc. Life Science 3rd Semester Section A & B Subject: Cell Biology & Genetics	
Week 1	Introduction of Syllabus and books, Ultrastructure of different cell organelles of animal cell, Plasma Membrane: Fluid mosaic model, various modes of transport across the membrane, Class Test
Week 2	Mechanism of active and passive transport, endocytosis and exocytosis, Endoplasmic reticulum (ER): types, role of ER in protein synthesis and transportation in animal cell.
Week 3	Centriole and basal body, Cilia and Flagella, Mitochondria: Mitochondrial DNA; as semiautonomous body, Biogenesis Mitochondrial enzymes (only names), role of mitochondria
Week 4	Ultrastructure and functions of Nucleus: Nuclear• membrane, nuclear lamina, Cytoskeleton: Microtubules, Microfilaments, Ribosomes: Types, biogenesis and role in protein synthesis
Week 5	Fine structure of chromosomes, nucleosome concept and role of histones, Lysosomes: Structure, enzyme and their role Polymorphism, Golgi complex: Structure & function
Week 6	Euchromatin and heterochromatin, Lampbrush chromosomes and polytene chromosomes, Meiosis I, Meiosis II, Mitosis, An elementary idea of cellular basis of Immunity,
Week 7	Mendelian inheritance, Linkage & recombination, Sex determination & its mechanism
Week 8	Sex linked inheritance: Haemophilia and colour blindness in man, Assignment
Week 9	Multiple allelism: A,B,O blood group in man, Inborn errors of metabolism and sickle cell anaemia
Week 10	Nature and function of genetic material, Structure & types of nucleic acids, Gene mutation: spontaneous and induced
Week 11	Chemical basis of mutations, transition, transversion, chemical and radiations mutations, Class Test

Week 12	MOCK TEST
Week 13	Chromosomal abnormalities involving autosomes and sex chromosomes
Week 14	Structural chromosomal aberrations (Deletion, duplication, inversion and transportation)
Week 15	REVISION

Name of the Assistant Professor: Dr Reeti Panchal Class And Section: B.Sc. Life Science 3rd Semester Section- A&B Subject: Cell Biology & Genetics (MDC)	
Week 1	Introduction of Syllabus and books, Ultrastructure of different cell organelles of animal cell, Plasma Membrane: Fluid mosaic model, various modes of transport across the membrane, Class Test
Week 2	Mechanism of active and passive transport, endocytosis and exocytosis, Endoplasmic reticulum (ER): types, role of ER in protein synthesis and transportation in animal cell.
Week 3	Centriole and basal body, Cilia and Flagella, Mitochondria: Mitochondrial DNA; as semiautonomous body, Biogenesis Mitochondrial enzymes (only names), role of mitochondria
Week 4	Ultrastructure and functions of Nucleus: Nuclear• membrane, nuclear lamina, Cytoskeleton: Microtubules, Microfilaments, Ribosomes: Types, biogenesis and role in protein synthesis
Week 5	Fine structure of chromosomes, nucleosome concept and role of histones, Lysosomes: Structure, enzyme and their role Polymorphism, Golgi complex: Structure & function
Week 6	Euchromatin and heterochromatin, Lampbrush chromosomes and polytene chromosomes, Meiosis I, Meiosis II, Mitosis, An elementary idea of cellular basis of Immunity,
Week 7	Mendelian inheritance, Linkage & recombination, Sex determination & its mechanism
Week 8	Sex linked inheritance: Haemophilia and colour blindness in man, Assignment
Week 9	Multiple allelism: A,B,O blood group in man, Inborn errors of metabolism and sickle cell anaemia
Week 10	Nature and function of genetic material, Structure & types of nucleic acids, Gene mutation: spontaneous and induced
Week 11	Chemical basis of mutations, transition, transversion, chemical and radiations mutations, Class Test
Week 12	MOCK TEST
Week 13	Chromosomal abnormalities involving autosomes and sex chromosomes

Week 14	Structural chromosomal aberrations (Deletion, duplication, inversion and transportation)
Week 15	REVISION
Name of the Assistant/Associate Professor: Dr. Vandana Arora Class And Section: B.sc (Physical Science) 1st Sem. Subject: Introduction to Statistics (Minor)	
Week 1	Statistics: Definition, Scope, Concepts of Statistical Population and Sample.
Week 2	Data: Quantitative and Qualitative, Attributes & their Applications
Week 3	Scales of Measurement: Nominal, Ordinal, Interval and Ratio. Presentation: Tabular and Graphical, including Histogram and Ogives.
Week 4	Measures of Central Tendency: Mathematical and Positional including Mean, Median & Mode with their applications
Week 5	Measures of Dispersion: Range, Quartile Deviation, Mean Deviation & their applications, Test
Week 6	Standard Deviation, Coefficient of Variation, Moments, Skewness and Kurtosis, Box Plot.
Week 7	Bi-variate Data: Definition, Scatter Diagram, Simple Correlation, Test
Week 8	Partial and Multiple Correlation (Three Variables Only), Rank Correlation.
Week 9	Simple Linear Regression, Principle of Least Squares & their applications, Assignment
Week 10	Fitting of Polynomials and Exponential Curves with all related applications.
Week 11	Attributes: Notations and Terminology, Contingency Table, Class Frequencies, Ultimate Class Frequencies, Consistency.
Week 12	Mock Test
Week 13	Association of Attributes, Independence, Measure of Association for 2 x 2 Table.
Week 14	Chi-Square, Karl Pearson's and Tschuprow's Coefficient of Association. Contingency & all applications.

Week 15	Revision
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Name of the Assistant/Associate Professor: Dr. Vandana Arora Class And Section: B.Sc. 3rd sem. Physical Science Subject: Elementary Probability Theory	
Week 1	Mathematical expectation and generating function, Expectation of single random variable and its properties.
Week 2	Probability generating function, Moment generating function and Characteristics function.
Week 3	Discrete probability distribution-Bernoulli and Binomial along with their properties and limiting cases.
Week 4	Discrete probability distribution-Poisson and Geometric along with their properties and limiting cases
Week 5	Continuous probability distribution – Uniform and Exponential along with their properties and limiting cases.
Week 6	Continuous probability distribution – Normal along with their properties and limiting cases.
Week 7	Introduction of probability ,Random experiment ,Sample space .
Week 8	Events and algebra of events, Classical ,Statistical and axiomatic definition of probability.
Week 9	Conditional probability , Laws of addition and multiplication, Independent events .
Week 10	Bayes' theorem and its application , Discrete and Continuous random variables.
Week 11	Probability mass and density function.
Week 12	Mock Test
Week 13	Cumulative distribution function with its illustration and properties.
Week 14	Two dimensional random variables – Joint, Marginal and Conditional distribution.
Week 15	Revision

Name of the Assistant/Associate Professor: Dr. Vandana Arora Class And Section: M.Sc. 3rd Sem Subject: Ordinary differential equations	
Week 1	Preliminaries, ε -approximate solution, Cauchy-Euler construction of an ε -approximate solution of an initial value problem
Week 2	Equicontinuous family of functions, Ascoli-Arzelà Lemma, Cauchy-Peano existence theorem.
Week 3	Lipschitz condition, Picards-Lindelof existence and uniqueness theorem for $dy/dt = f(t,y)$
Week 4	initial-value problems by Picards method, Dependence of solutions on initial conditions. Test, Assignment
Week 5	Nonlinear differential systems, Phase plane, Path, Critical points, Autonomous systems, Isolated critical points
Week 6	Path approaching a critical point, Path entering a critical point, Types of critical points- Center, Saddle points, Spiral points, Node points, Stability of critical points
Week 7	Nonlinear conservative dynamical system, Dependence on a parameter, Liapunov direct method, Limit cycles
Week 8	Periodic solutions, Bendixson nonexistence criterion
Week 9	Poincare-Bendixson theorem, Index of a critical point.
Week 10	Strum-Liouville problems
Week 11	Orthogonality of characteristic functions
Week 12	Mock Test
Week 13	Revision
Week 14	Revision
Week 15	Revision

Name of the Assistant/Associate Professor: Dr. Vandana Arora Class And Section: M.sc 1st Semester Subject: Mathematical statistics	
Week 1	Probability: Definition and various approaches of probability, Addition theorem, Boole inequality, Conditional probability and multiplication theorem
Week 2	Independent events, Mutual and pairwise independence of events, Bayes theorem and its applications.
Week 3	Random variable and probability functions: Definition and properties of random variables, Discrete and continuous random variables. Test n Assignment
Week 4	Probability mass and density functions, Distribution function. Concepts of bivariate random variable: joint, marginal and conditional distributions.
Week 5	Mathematical expectation: Definition and its properties. Variance, Covariance, Moment generating function Definitions and their properties.
Week 6	Discrete distributions: Uniform, Bernoulli, Binomial, Poisson and Geometric distributions with their properties.
Week 7	Continuous distributions: Uniform, Exponential and Normal distributions with their properties.
Week 8	Testing of hypothesis: Parameter and statistic, Sampling distribution and standard error of estimate, Null and
Week 9	Alternative hypotheses, Simple and composite hypotheses, Critical region, Level of significance, One tailed
Week 10	Two tailed tests, Two types of errors. Tests of significance: Large sample tests for single mean
Week 11	Doubts n Assignment
Week 12	Mock Test
Week 13	Revision
Week 14	Revision
Week 15	Revision

Name of the Assistant/Associate Professor: Dr. Nupur Srivastava Class And Section: M.Sc. Mathematics, 1st Semester Subject: Discrete Mathematics (24MAT201SE01)	
Week 1	Statement Symbolic Representation And Tautologies, Quantifiers, Predicates And Validity, Propositional Logic
Week 2	Problems, Revision, Test And Assignment, Lattices As Partially Ordered Sets
Week 3	Properties of Order Set, Lattices As Algebraic System, Sub Lattices.
Week 4	Direct Products And Homomorphism, Some Special Lattices, E.G. Complete, Complemented And Distributive Lattices .
Week 5	Test, Boolean Algebra As Lattices, Various Boolean Identities, The Switching Algebra, Examples, Subalgebras.
Week 6	Direct Products And Homomorphism, Joint Irreducible Elements , Items And Minterms, Boolean Forms And Their Equivalence, Minterms Boolean Forms .
Week 7	Sum of Products, Canonical Forms, Minimisation of Boolean Functions.
Week 8	Application of Boolean Algebra To Switching Theory (Using AND, OR and NOT gates) The Karnaugh Method .
Week 9	Finite State Machine And Their Transition Table Diagrams, Equivalence of Finite State Machines, Reduced Machines.
Week 10	Homomorphism, Finite Automata, Acceptors, Non -Deterministic, Finite Automata And Equivalence of Its Power To That of Deterministic Finite Automata Moore And Mealy Machines
Week 11	Grammars And Language, Phrase Structure Grammars, Requiring Rules, Derivation, Sentential Forms, Language Generated By A Grammar, Regular.
Week 12	Context – Free And Context Sensitive Grammars And Languages, Regular Sets, Regular Expression And The Pumping Lemma, Mock Test
Week 13	Recurrence, Relations And Generating Function , Some Numbers Sequences, Linear Homogeneous Recurrence Relations, Non – Homogeneous Recurrence Relations, Generating Functions.
Week 14	Recurrence And Generating Functions, Exponential Generating Functions
Week 15	Revision

Name of the Assistant Professor: Dr. Nupur Srivastava Class And Section: M. Sc 3rd semester Subject: Graph Theory, 25MAT203DS05	
Week 1	Introduction of subject and syllabus, Definition of different types of graph
Week 2	Walk, Path and Circuits
Week 3	Problems, Doubt class, Test
Week 4	Application of graph, operation on graph
Week 5	Test presentation, doubt class
Week 6	Graph representation, Isomorphism of graph, Eulerian path
Week 7	Hamilton path, revision, test
Week 8	Traveeling sales man problem, planner graph, planarity
Week 9	Krakowaski theorem, graph coloring, directed graph
Week 10	Tree, rooted labelled tree, prefix code, test, revision
Week 11	Minimum spaaning tree, sorting method
Week 12	MOCK TEST
Week 13	Prime algorithms
Week 14	Revision, test
Week 15	REVISION

Name of the Assistant/Associate Professor: Dr. Nupur Srivastava Class And Section: M.Sc.Mathematics 3rd Semester Subject: Fluid Dynamics (25MAT203DS03)	
Week 1	Kinematics, Lagrange and Eulerian methods, Stream lines, path lines and streak lines, Velocity potential, Irrotational and rotational motion, Vorticity, and circulation, Equation of continuity.
Week 2	Boundary surfaces, Acceleration at a point of fluid. Test

Week 3	Components of acceleration in cylindrical and spherical polar coordinates
Week 4	Pressure at a point of a moving fluid, Euler equation of motion. Equation of motion in cylindrical and spherical polar coordinates
Week 5	Bernoulli's equation, impulsive motion, Kelvin circulation theorem. Vorticity equation, Energy equation, for incompressible flow
Week 6	Kelvin minimum energy theorem. Kinetic energy of infinite fluid, test
Week 7	Uniqueness theorem, Axially symmetric flows, Liquid streaming past a fixed sphere, Motion of sphere through a liquid at rest at infinity. Equation of motion of sphere, Kinetic energy generated by impulsive motion.
Week 8	Motion of two concentric spheres. Three dimensional sources, sink and doublets, Assignment
Week 9	Image of sources sink and doublets in rigid impermeable infinite plane and in impermeable spherical surface
Week 10	Two-dimensional motion, Use of cylindrical polar coordinates, Test
Week 11	stream function, axisymmetric flow, Test, and doubt session
Week 12	Stokes stream function, Stokes stream function of basic flows revision of topics and doubt session, Mock Test
Week 13	Irrotational motion in two dimensions, Complex velocity potential, Milne-Thomson circle, doubts classes
Week 14	Two dimensional sources sinks and doublets and their images, Blasius theorem
Week 15	Revision

Name of the Assistant/Associate Professor: Dr. Nupur Srivastava Class And Section: MDC Mathematics 3rd Semester Subject: Applicable Mathematics 25MATX03MD01	
Week 1	Unit I: Theory of Sets: Meaning, elements, types, presentation and equality of Sets.
Week 2	Union, Intersection, Complement and Difference of sets, Venn Diagram.

Week 3	Cartesian Product of two Sets, Applications of Set Theory.
Week 4	Unit II: Matrices and Determinants: Definition of a Matrix ; Types of Matrices, Algebra of Matrices. Test-I
Week 5	Properties of determinant, Calculation of values of Determinant up to third order.
Week 6	Adjoint of a Matrix, elementary row and column operations. Assignment- I
Week 7	Finding inverse matrix through adjoint.
Week 8	Solutions Solution of a system of Linear equations having unique solution and involving not more than three variables.
Week 9	Unit III- Compound Interest: Certain different types of interest rate.
Week 10	Concept of present value and amount of a sum.
Week 11	Unit IV-Annuities: Types of annuities; Present value .
Week 12	Mock Test
Week 13	Unit IV contd.: Amount of an annuity.
Week 14	Including the case of continuous compounding.
Week 15	Revision

Name of the Assistant/Associate Professor: Dr. Nupur Srivastava Class And Section: Minor Mathematics ,3rd semester Subject: Operations Research (25MAT403MI01)	
Week 1	Unit I: Definition, scope, methodology and applications of OR. Types of OR models. Concept of optimization, Linear Programming.
Week 2	Introduction, Formulation of a Linear Programming Problem (LPP), Requirements for an LPP, Advantages of LP.

Week 3	Limitations of LP. Graphical solution: Multiple, unbounded and infeasible solutions.
Week 4	Unit II: Principle of simplex method: standard form, basic solution, basic feasible solution. Computational Aspect of Simplex Method. Test – I
Week 5	Cases of unique feasible solution, no feasible solution, multiple solution and unbounded solution
Week 6	Degeneracy. Two Phase and Big- M methods. Assignment- I
Week 7	Unit III: Duality in LPP, primal-dual relationship. Transportation Problem: Methods for finding basic feasible solution of a transportation problem.
Week 8	Modified distribution method for finding the optimum solution, Unbalanced Transportation problem Test- II
Week 9	Degenerate transportation problems, 52ransshipment problem, maximization in a transportation problem.
Week 10	Unit IV: Assignment Problem: Solution by Hungarian method, Unbalanced assignment problem, maximization in an assignment problem.
Week 11	Crew assignment and Travelling salesman problem. Game Theory: Two person zero sum game.
Week 12	MOCK TEST
Week 13	Unit IV contd.: Game with saddle points, the rule of dominance; Algebraic, graphical programming method.
Week 14	Linear programming methods for solving mixed strategy games.
Week 15	REVISION

Name of the Assistant Professor: Dr. Sonam Ahuja Class And Section: MDC Statistics 3rd semester Subject: Statistical Computing Using SPSS	
Week 1	Presentation of the data through different graphs.
Week 2	Compute the measures of central tendency and dispersion for a data set .

Week 3	Determine the correlation coefficient .
Week 4	Determine the Spearman's rank correlation.
Week 5	Viva Practice and Test-1
Week 6	Check the independence and association of attributes.
Week 7	Check the consistency of categorical data.
Week 8	Perform small sample tests.
Week 9	Perform large sample tests.
Week 10	Find Confidence interval to estimate the parameters. Test -2
Week 11	Perform one way and two way ANOVA.
Week 12	MOCK TEST
Week 13	Find the best fitted line using the method of curve fitting.
Week 14	Fit the simple linear regression and assess the significance of obtained model.
Week 15	REVISION

Name of the Assistant/Associate Professor: Dr. Sonam Ahuja Class And Section: M.Sc. (Mathematics) 1st Sem Subject: Abstract Algebra	
Week 1	Sylow First Theorem, Sylow Second Theorem, Sylow Third Theorem, Related Theorems
Week 2	Sylow Subgroups, p-groups, Applications of Sylow Theorems
Week 3	Description of group of order p^2 and pq , Survey of groups upto order 15
Week 4	Normal & Subnormal Series, Solvable Series, Derived Series , Solvable groups, Solvability of S_n -the symmetric group of degree $n \geq 2$
Week 5	Central Series, Nilpotent groups and their Properties, Equivalent conditions for a finite group to be nilpotent
Week 6	Composition Series, Zassenhaus lemma, Jordan- Holder Theorem

Week 7	Modules, Cyclic Modules, Simple and Semi-Simple modules, Schur lemma, Free modules
Week 8	Modules over Principal ideal domain and its applications to finitely generated abelian groups.
Week 9	Noetherian and Artinian modules, Modules of finite length, Noetherian and Artinian rings, Hilbert basis theorem
Week 10	$\text{Hom}(R,R)$, Opposite rings, Wedderburn - Artin Theorem, Maschke theorem
Week 11	Applications of Noetherian & Artinian Rings
Week 12	Mock Test
Week 13	Equivalent statement for left Artinian rings having non-zero nilpotent ideals
Week 14	Numericals Practise & Assignment
Week 15	Revision

Name of the Assistant Professor: Dr Sonam Ahuja Class And Section: M.Sc (Maths) 1st Sem Subject: Analytical Number Theory	
Week 1	Distribution of Primes, Fermat and Mersenne Numbers, Farey Series
Week 2	Results concerning Farey Series, Approximation of irrational numbers by rationals
Week 3	Hurwitz Theorem, Irrationality of e and π . Applications
Week 4	The arithmetic in $\mathbb{Z}_n$, The group U_n , Primitive roots and their existence Test of unit 1
Week 5	The group U_p^n (p -odd) & U_2^n , The group of quadratic residues Q_n
Week 6	Quadratic residues for prime power moduli and arbitrary moduli
Week 7	Applications and algebraic structure of U_n & Q_n

Week 8	Riemann Zeta Function and it's convergence, Applications to prime numbers Test of unit 2
Week 9	Zeta Function as Euler product and Evaluation of zeta function for $s = 2, 2K$
Week 10	Diophantine equations $ax + by = c$, $x^2 + y^2 = z^2$ and $x^4 + y^4 = z^4$
Week 11	The representation of number by two or four squares, Waring problem, Four square Theorem, The numbers $g(k)$ & $G(k)$ Assignment
Week 12	Mock test
Week 13	Arithmetic functions such as Euler, divisor and sum, $U(n)$, $N(n)$, $I(n)$ functions Definitions and examples and simple properties, Perfect numbers Test of unit 3
Week 14	Mobius inversion Formula, The Mobius function , The order and average order of the euler, divisor and sum functions .
Week 15	Revision

Name of the Assistant Professor: Dr. Sonam Ahuja Class And Section: M.Sc (Maths) Final year Subject: Elementary Topology	
Week 1	Introduction of Topology, Comparison of Topologies On Set, Intersection & Union of Topology On A Set,
Week 2	Neighborhoods, Interior Point, Closed Set, Adherent Point, Limit Point, Closure of A Set, Derived Set,
Week 3	Boundary of Set, Dense Subsets, Alternative Methods of Defining A Topology In Terms of Neighborhood System & Kuratowski Closure Operator
Week 4	Relative Topology, Base & Sub Base, Continuous Function, Test of unit 1
Week 5	Open & Closed Function, Homeomorphism, Connectedness, Connected Subsets
Week 6	Continuity & Connectedness, Components, Locally Connected Spaces, Assignment

Week 7	Compact Spaces & Subsets, Compactness In Terms of Finite Intersection Property, Continuity & Compact Sets,
Week 8	Basic Properties of Compactness, Closeness of Compact Subset & A Continuous Map From A Compact Space Into Hausdorff Test of unit 2
Week 9	Sequentially & Countably Compact Sets, Locally Compactness & One Point Compactification
Week 10	First Countable, Second Countable & Separation Spaces, Hereditary & Topological Properties
Week 11	Countability of A Collection of Disjoint Open Sets In Separation Test
Week 12	Mock Test
Week 13	Their Characterization & Basic Properties
Week 14	Second Countable Spaces, Lindelof Theorem, T ₀ , T ₁ , T ₂ Separation Axioms
Week 15	Revision

Name of the Assistant Professor: Dr. Sonam Ahuja Class And Section: Minor Statistics B.Sc (Physical Science) 3rd Sem Subject: Elementary Probability Theory	
Week 1	Mathematical expectation and generating function, Expectation of single random variable and its properties.
Week 2	Probability generating function, Moment generating function and Characteristics function.
Week 3	Discrete probability distribution-Bernoulli and Binomial along with their properties and limiting cases.
Week 4	Discrete probability distribution-Poisson and Geometric along with their properties and limiting cases.
Week 5	Continuous probability distribution – Uniform and Exponential along with their properties and limiting cases.
Week 6	Continuous probability distribution – Normal along with their properties and limiting cases.
Week 7	Introduction of probability ,Random experiment ,Sample space .
Week 8	Events and algebra of events, Classical ,Statistical and axiomatic definition of probability.

Week 9	Conditional probability , Laws of addition and multiplication, Independent events .
Week 10	Bayes' theorem and its application , Discrete and Continuous random variables.
Week 11	Probability mass and density function.
Week 12	Mock Test
Week 13	Cumulative distribution function with its illustration and properties.
Week 14	Two dimensional random variables – Joint, Marginal and Conditional distribution.
Week 15	Revision

Name of the Assistant Professor: Dr. Sonam Ahuja & Ms. Jyoti Class And Section: Skill (3rd sem) Subject: Operation Research	
Week 1	Unit I: Linear programming problems (LPP): Introduction to linear programming problems (LPP), Mathematical formulation of the linear programming problems with illustration.
Week 2	Graphical method used for solving linear programming problem , Feasible region of LPP.
Week 3	Unbounded solution to the LPP in graphical method, Canonical and standard form of LPP.
Week 4	Unit II: Simplex Method: Basic and non basic variables, Theory of Simplex method, optimality and unboundlessness. Test - I
Week 5	Simplex algorithm, Simplex method in tableau format. Introduction to artificial variables.
Week 6	Two –phase simplex method, Big-M method, Degeneracy problem in simplex method Assignment- I
Week 7	Unit III: Transportation Problem: Introduction to transportation problem, Initial basic feasible solution to transportation problem using North-West Corner.
Week 8	Least Cost Method and Vogel's approximation Method. Optimal solution to transportation problem using MODI method. Test- II
Week 9	Unbalanced transportation problem.
Week 10	Degeneracy in transportation problem.

Week 11	Unit IV: Assignment Problem : Introduction to assignment problem.
Week 12	Mock Test
Week 13	Unit IV contd.: Mathematical formulation of assignment problem.
Week 14	Solution to assignment problem using Hungarian method.
Week 15	Revision

Name of the Assistant/Associate Professor: Ms. Sonia Class And Section: B.A.(1st sem.) Subject: Introductory Mathematics (MDC)	
Week 1	Introduction of number system, HCF & LCM of numbers, fractions & Decimals, simplification
Week 2	Square roots & cube roots, surds & indices, problems on numbers
Week 3	Revision of unit-1
Week 4	Introduction of average, percentage
Week 5	Profit & loss, Ratio & proportion,
Week 6	Problems on ages & partnership
Week 7	Revision of unit-2
Week 8	Time & work, time & Distance
Week 9	Problems on trains, Allegation(Mixture problems),
Week 10	Calender & clock
Week 11	Revision of unit-3

Week 12	Mock Test
Week 13	Revision & test of unit-1
Week 14	Revision & test of unit -2
Week 15	Revision

Name of the Assistant/Associate Professor: Ms. Sonia Class And Section: B.A(3rd sem.) Subject: Elements of Applicable Mathematics	
Week 1	Theory of sets:Meaning, elements, types, presentation & equality of sets.
Week 2	Union , intersection, complement & Difference of sets, venn diagram.
Week 3	Cartesian product of two sets, Application of set theory.
Week 4	Revision of unit - 1 Matrices & determinants: definition of matrix, types of matrices,
Week 5	Algebra of Matrix, elementary row & column operations, finding inverse of matrix through adjoint.
Week 6	Solution of a system of linear equations having unique solution & involving not more than three variables.
Week 7	Revision of unit-2 & test
Week 8	Compound interest: certain types of interest rates, concept of present value & amount of a sum,
Week 9	Types of Annuities, present value & amount of an annuity.
Week 10	Cases of continuous compounding.
Week 11	Revision of unit-3 & test
Week 12	Mock Test

Week 13	Revision of unit 1
Week 14	Revision of unit-2
Week 15	Revision

Name of the Assistant/Associate Professor: Ms. Sonia Class And Section: B.Sc.(Physical Science) 3rd sem. Subject: Ordinary differential equations & Scientific techniques.	
Week 1	Geometrical meaning of a differential equation, Exact differential equations, integrating factors.
Week 2	First order higher degree equations solvable for x, y, p. Lagrange's equations, Clairaut's equations. Equations reducible to Clairaut's form. Singular solutions.
Week 3	Orthogonal trajectories: Cartesian coordinates & polar coordinates. Self orthogonal family of curves.
Week 4	Linear ordinary differential equations with constant coefficient. Test of ch-1
Week 5	Homogenous linear ordinary differential equations. Equations reducible to homogenous. Test of ch-2
Week 6	Linear differential equations of second order. Reducible to normal form. Transformation of the equation by changing the dependent variable/independent variable.
Week 7	Solution by operators of non- homogenous linear differential equations. Reduction of order of a differential equation.
Week 8	Method of variations of parameters. Method of undetermined coefficients. Test of ch-4 & ch-5
Week 9	Ordinary simultaneous differential equations. Solution of simultaneous differential equations involving operators x & t etc. Test of ch-6
Week 10	Simultaneous equation of the form $dx/P=dy/Q=dz/R$. Total differential equations.
Week 11	Condition for $Pdx+Qdy+Rdz=0$ to be exact. General method of solving $Pdx+Qdy+Rdz=0$ by taking one variable constant. Method of auxiliary equations. Revision of ch-7
Week 12	Mock Test

Week 13	Revision of unit-1 & 2
Week 14	Revision of unit 3 & 4
Week 15	Revision

Name of the Assistant/Associate Professor: Ms. Sonia Class And Section: M.Sc. Maths (Previous) Subject: Complex Analysis	
Week 1	Function of complex variable: limit, continuity, Differentiability, Analytic function, C-R equation in Cartesian & polar form.
Week 2	Power series, Radius of convergence, Differentiability of sum of a power series function, Branches of many valued functions.
Week 3	Path in a region, contour, complex integration, cauchy theorem, cauchy integral formula, extension of cauchy integral formula.
Week 4	Poisson integral formula, Higher order derivative, complex function as a function of its upper limits, Morera theorem.
Week 5	Cauchy inequality, Liouville theorem, Taylor's theorem.
Week 6	Zeros of analytic function, Laurent series, isolated Singularities.
Week 7	Casorati -Weierstrass theorem, limit point of zeros & poles, Maximum modulus principle, Minimum modulus principle.
Week 8	Schwartz lemma, meromorphic function, argument principle, Rouches theorem.
Week 9	Fundamental theorem of algebra, Inverse function theorem.
Week 10	Calculus of residue, Cauchy residue theorem, Evaluation of integrals.
Week 11	Conformal mapping, space of an analytic function & their completeness.
Week 12	Mock Test
Week 13	Hurwitz theorem, Montel theorem.

Week 14	Riemann mapping theorem.
Week 15	Revision

Name of the Assistant Professor: Ms. Jyoti kushwah Class And Section: B. Sc. (Phy science) 1st sem Subject:Mathematical Foundations: Functions, Algebra and Computational Methods	
Week 1	Unit I: Relations, Functions along with domain and range, Composition of functions, Invertibility
Week 2	inverse of functions, one-to- one correspondence
Week 3	Unit II : Relations between the roots and coefficients of general polynomial equation in one variable. Solutions of polynomial equations having conditions on. Root
Week 4	. Common roots and multiple roots. Transformation of equations. Nature of the roots of an equation Descarte's rule of signs. Test-I
Week 5	Solutions of cubic equations (Cardon's method) Biquadratic equations and their solutions
Week 6	Unit III : Matrix and its types. Symmetric, Skew-symmetric, Hermitian and Skew Hermitian matrices. Unitary and Orthogonal matrix Assignment- I
Week 7	Involuntary, Nilpotent Matrices. Rank of a Matrix & its applications. Rank of a matrices, Row rank and column rank of a matrix, Elementary Operations on matrices, Inverse of a matrix, Normal form
Week 8	PAQ Form, Linear dependence and independence of rows and columns of matrices, Applications of matrixes to a system. of linear(both homogenous and non homogenous)
Week 9	Theorems on consistency of a system of linear equations. Unit IV : (Eigenvalues, Eigenvectors and Diagonalization of matrix) Cayley hamilton theorem. Eigenvalues, eigenvectors
Week 10	The characteristics equation of matrix, Minimal polynomial of a matrix
Week 11	Its use in finding the inverse of a matrix .
Week 12	MOCK TEST
Week 13	Unit IV contd.: Diagonalization of matrix

Week 14	Based exercise solved
Week 15	REVISION

Name of the Assistant/Associate Professor: Ms. Jyoti kushwah Class And Section: Minor (Mathematics) 1st Sem. Subject: Basic mathematics	
Week 1	Matrices: definition of matrix.
Week 2	Types of matrix
Week 3	Algebra of matrix
Week 4	Determinants: properties of determinants, calculations of values of determinants up to third order.
Week 5	Adjoint of matrix through elementary rows and columns operations Test
Week 6	Solutions of system of linear equations having unique solutions and involving not more than three variables.
Week 7	Differentiation partial derivative up to second order Test
Week 8	Homogeneity of functions and Euler's theorem, Assignment
Week 9	Total differential, differentiations equation of implicit function with the help of total differential
Week 10	Maxima and minima, cases of one variable involving second or higher order derivatives.
Week 11	Cases of two variable involving not more than one constraint, Integration as an anti derivative process.
Week 12	Method of integration by substitution substitution, by parts and by use of partial fractions Mock Test
Week 13	Definite integration, Finding areas in simple cases.
Week 14	Leontiff input output model.

Week 15	Revision
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Name of the Assistant Professor : Ms. Jyoti Kushwah Class : MDC(maths) 1st sem Subject : Introductory Mathematics	
Week 1	Numbers, problems based on numbers
Week 2	HCF and LCM of a numbers, test and assignment
Week 3	Problems based on HCf and LCM of a numbers
Week 4	Decimal and fractions, test and assignment
Week 5	Problems based on decimal and fractions, simplification
Week 6	Problems based on simplification
Week 7	Square root and cube root, test
Week 8	Problems based on square root and cube root, assignment
Week 9	Surds and indices , problems on numbers
Week 10	Average and percentage, problems based on average and percentage
Week 11	Profit and loss, ratio and proportion, problems on ages and partnership
Week 12	Time and work, time and distance, problems based on above topic
Week 13	Problems on trains mixture problems, test
Week 14	Problems based on calendar and clock, assignment

Week 15	Revision
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Name of the Assistant Professor: Ms. Jyoti kushwah Class And Section: MDC(3rd sem) Subject: Applicable Mathematics	
Week 1	Unit I: Theory of Sets: Meaning, elements, types, presentation and equality of Sets.
Week 2	Union, Intersection, Complement and Difference of sets, Venn Diagram.
Week 3	Cartesian Product of two Sets, Applications of Set Theory.
Week 4	Unit II: Matrices and Determinants: Definition of a Matrix ; Types of Matrices, Algebra of Matrices. Test-I
Week 5	Properties of determinant, Calculation of values of Determinant up to third order.
Week 6	Adjoint of a Matrix, elementary row and column operations. Assignment- I
Week 7	Finding inverse matrix through adjoint.
Week 8	Solution of a system of Linear equations having unique solution and involving not more than three variables.
Week 9	Unit III- Compound Interest: Certain different types of interest rate.
Week 10	Concept of present value and amount of a sum.
Week 11	Unit IV-Annuities: Types of annuities; Present value .
Week 12	MOCK TEST
Week 13	Unit IV contd.: Amount of an annuity.
Week 14	Including the case of continuous compounding.
Week 15	REVISION

Name of the Assistant Professor: Ms. Varsha Class And Section: M. Sc. (3rd sem) Subject: Functional Analysis	
Week 1	Unit I: Normed linear spaces, Metric on normed linear spaces, Completion of a normed space, Banach spaces, subspace of a Banach space.

Week 2	Holder and Minkowski inequality, Completeness of quotient spaces of normed linear space.
Week 3	Completeness of l_p , L^p , R^n , C^n and $C[a,b]$. Incomplete normed space.
Week 4	Unit II: Finite dimensional normed linear spaces and Subspaces, Bounded linear transformation, Equivalent formulation of continuity. Test – I
Week 5	Spaces of bounded linear transformations, Continuous linear functional.
Week 6	Conjugate spaces. Hahn- Banach extension theorem(Real and Complex form). Assignment-I
Week 7	Unit III: Riesz Representation theorem for bounded linear functionals on L_p and $C[a, b]$. Second conjugate spaces.
Week 8	Reflexive space, Uniform boundedness principle and its consequences. Test- II
Week 9	Open mapping theorem and its application, Projections, Closed Graph theorem.
Week 10	Unit IV: Equivalent norms, Weak and Strong convergence, Their equivalence in finite dimensional spaces. Weak Sequential compactness.
Week 11	Solvability of linear equations in Banach spaces. Compact operator and its relation with continuous operator.
Week 12	MOCK TEST
Week 13	Unit IV contd.: Compactness of linear transformation on a finite dimensional space.
Week 14	Properties of compact operators, Compactness of the limit of the sequence of compact operators.
Week 15	REVISION

Name of the Assistant/Associate Professor: Ms. Varsha Class And Section: Minor stats 5th sem Subject: Bio statistics	
Week 1	Unit 1: Introduction to biostatistics; scope, significance, and applications. Types of data: qualitative and quantitative; discrete and continuous variables
Week 2	Scales of measurement: nominal, ordinal, interval, and ratio. Scaling techniques: Z-scores, standard scores, and T-scores.
Week 3	Reliability of test scores: methods including test retest, parallel forms, split-half, and Cronbach's alpha. Test 1

Week 4	Unit 2: Measurement of disease occurrence through key morbidity indicators: prevalence, incidence rate, and cumulative incidence.
Week 5	Understanding the relationship between prevalence and incidence, along with their applications in epidemiology and public health. Discussion of limitations and potential biases in measuring morbidity. Assignment
Week 6	Assessment of clinical agreement using statistical tools such as the Kappa statistic, intra-class correlation coefficient (ICC), and the Mantel-Haenszel test, with emphasis on their interpretation and relevance in evaluating diagnostic consistency and research reliability.
Week 7	Unit 3: Assessment of diagnostic and screening tests with a focus on validity and reliability. Key measures of Validity-sensitivity,specificity,
Week 8	positive predictive value (PPV), and negative predictive value (NPV). Reliability through consistency and repeatability of test. The relationship between validity and reliability
Week 9	Introduction to the Receiver Operating Characteristic (ROC) curve, including its construction, interpretation, and applications in comparing diagnostic test performance. Test 2
Week 10	Unit 4: Core concepts in epidemiology with a focus on association and causation. Association, Causation. Examination of potential errors in epidemiological studies, including bias,
Week 11	confounding, and effect modification, along with strategies for their identification and control. Methods for estimating risk and association, including relative risk, odds ratios, and attributable risk
Week 12	Mock Test
Week 13	Comparison of relative and attributable risks for evaluating disease burden and prevention potential. Use of odds ratios in retrospective studies and their approximation to prospective risk ratios. Exact inference techniques for odds ratio analysis in matched case-control studies.
Week 14	Revision
Week 15	Revision

Name of the Assistant/Associate Professor: Ms.Varsha Class And Section: M.Sc 1st sem Subject: Mathematical analysis	
Week 1	Section-I Riemann-Stieltjes integral, Existence and properties,
Week 2	Integration and differentiation, The fundamental theorem of calculus,
Week 3	Integration of vector-valued functions, Rectifiable curves. Test 1
Week 4	Section-II Sequence and series of functions, Point wise and uniform convergence,
Week 5	Cauchy criterion for uniform convergence, Weirstrass Mtest, Abel and Dirichlet tests for uniform convergence,
Week 6	Uniform convergence and continuity, Uniform convergence and differentiation, Weierstrass approximation theorem. Assignment
Week 7	Section-III Power series, uniform convergence and uniqueness theorem, Abel theorem, Tauber theorem.
Week 8	Functions of several variables, Linear Transformations, Euclidean space R^n , Derivatives in an open subset of R^n ,
Week 9	Chain Rule, Partial derivatives, Continuously Differentiable Mapping, Young and Schwarz theorems. Test 2
Week 10	Section-IV Taylor theorem, Higher order differentials, Explicit and implicit functions,
Week 11	Implicit function theorem, Inverse function theorem, Change of variables, Extreme values of explicit functions,
Week 12	Mock Test

Week 13	Stationary values of implicit functions, Lagrange multipliers method, Jacobian and its properties.
Week 14	Revision
Week 15	Revision

Name of the Assistant/Associate Professor: Ms. Varsha Class And Section: MDC stats 1st sem Subject: Basic Statistics	
Week 1	Unit 1: Statistics: Definition, Scope & Limitations, Concepts of Statistical Population and Sample.
Week 2	Data: Quantitative and Qualitative, Methods of Collection, Scales of Measurement:
Week 3	Nominal, Ordinal, Interval and Ratio. Test 1
Week 4	Unit 2: Tabular and Graphical Representation of Data: Classification, Tabulation
Week 5	Diagrammatic Representation using Bar Graph, Line Graph, Dot Plot, Pie Chart, Pareto Chart, Histogram, Frequency Polygon
Week 6	Ogives, Stem and Leaf Plot, Box and Whisker Plot, and Scatter Plot. Assignment
Week 7	Unit 3: Measures of Central Tendency: Mathematical and Positional, Measures of Dispersion
Week 8	Range, Quartile Deviation, Mean Deviation, Standard Deviation
Week 9	Coefficient of Variation, Moments, Skewness and Kurtosis. Test 2

Week 10	Unit 4: Analysis and Consistency of Categorical Data, Independence and Association of Attributes,
Week 11	Bivariate Data: Definition, Scatter Diagram, Simple, Partial and Multiple Correlation (
Week 12	Mock Test
Week 13	(3 Variables Only), Rank Correlation; Simple Linear Regression
Week 14	Revision
Week 15	Revision

Name of the Assistant Professor: Ms. Komal Class And Section: B.Sc. Biotech 3rd Sem. Subject: Introduction to Fisheries (Minor)	
Week 1	Introduction of Fisheries biology
Week 2	Sampling strategies
Week 3	Streams- Physical sampling, Electrofishing fisheries
Week 4	Safety in fisheries work.
Week 5	Invasive species – Global threat to global fisheries
Week 6	Climate changes and Impact of fisheries
Week 7	Fish measurement
Week 8	Lake & Reservoirs -1 , physical characteristics & process
Week 9	Role of hatcheries in fisheries management
Week 10	Lake & reservoirs -2
Week 11	Sampling fishes& plankton
Week 12	MOCK TEST
Week 13	Stream and lake reclamation, fishes handling & transport

Week 14	Revision & Test
Week 15	REVISION

Name of the Assistant Professor: Ms. Komal Class And Section: B.Sc. 1st Sem. Subject: Basics of Zoology-I (MDC)	
Week 1	Zoology: Definition and scope, introduction to Animal Kingdom, animal characters Non-Chordates and Invertebrates
Week 2	Non-Chordates and Invertebrates with examples, Invertebrate Phyla, Introduction to basic characters of animal with special reference to the non chordates
Week 3	Biodiversity: Introduction and Scope; General characters of Protozoa and Porifera, Test
Week 4	Study of Amoeba and sponges with special reference to its structure and economic importance
Week 5	General characters of Coelentrata and Annelida
Week 6	Ecological importance of corals; Economic importance of Leech
Week 7	Morphology of earthworm and its ecological role
Week 8	General characters of Arthropoda and Mollusca, Assignment
Week 9	Study of basic characters of insects and snails; Insects as pest: Grasshopper
Week 10	Economic importance of Honey Bee; Snails as pest in Paddy fields
Week 11	General characters of Echinodermata
Week 12	Study of basic characters of Star fish, Mock Test
Week 13	Study of basic characters of Star fish with reference to its role in ecosystem; Economic importance of Star Fish
Week 14	Test
Week 15	Revision

Name of the Assistant Professor: Ms. Anjali Class And Section: B.Sc. Life Science 1st Sem (Minor) Subject: Human Evolution	
Week 1	Discussion about the syllabus and books Origins of Evolutionary Thought: Linnaeus
Week 2	Wallace/Darwin: Theory of evolution by Natural Selection.
Week 3	The forces of evolution and the formation of species.
Week 4	Natural selection, Test
Week 5	Genetic drift, Gene flow, Founder effect.
Week 6	Human variation and race.
Week 7	Human adaptation, Assignment
Week 8	Life History, Primate sociality
Week 9	Social Behavior and Culture: as an insight of the origin of sociality in humans.
Week 10	The hominin record.
Week 11	Early hominins and Australopithecus.
Week 12	Evolution of Human behaviour Neanderthals and contemporaries, Mock Test
Week 13	As an insight of the origin of sociality in humans.
Week 14	Revision
Week 15	Test

Name of the Assistant Professor: Ms. Anjali Class And Section: B.Sc. Life science 3rd Semester, A&B Subject: Microtomy	
Week 1	Microtomy: Introduction, definition, history and application in biological sciences
Week 2	Types of microtomes: Rotary microtome, sledge and cryomicrotome

Week 3	Collection and transportation of sample for histological examinations, Basic concept of fixation
Week 4	Various types of fixatives used in microtomy, process of fixation, Embedding- Block formation
Week 5	Section cutting: Paraffin section cutting, stretching
Week 6	Spreading the sections and attachment to the glass slides
Week 7	General staining procedure for paraffin embedded tissue
Week 8	Nuclear stains and cytoplasmic stains
Week 9	Haematoxylin and eosin staining, Class Test
Week 10	Mercury bromophenol blue staining, Assignment
Week 11	Toulidine blue stain, Class Test
Week 12	MOCK TEST
Week 13	Staining- Principle and procedure, preparation of stains and solvents
Week 14	Commonly used mountants used in microtomy
Week 15	REVISION

Name of the Assistant Professor: Ms. Kavita
Class And Section: B.Sc. Life Science 1st sem
Subject: (Minor Biotech -Basics of Biotechnology)

Week 1	Introduction to biotechnology – an interdisciplinary pursuit, Main areas of application of biotechnology;
Week 2	Biotechnology research in India and biotechnology in context of developing world; Public perception of biotechnological products
Week 3	Immune system (immune cells, types of immunity and general structure of immunoglobulins).
Week 4	Immune system continue Hybridoma technology and monoclonal antibodies.
Week 5	In vitro fertilization and embryo transfer technology in brief.
Week 6	Revision Class Test

Week 7	Introduction of Gene and genomes. Introduction of proteins and proteome.
Week 8	History and overview of genetic manipulations, DNA fingerprinting and forensic analysis
Week 9	Assignment Revision
Week 10	Class test Environment Biotechnology: An overview, scope and market of biological control of environment.
Week 11	Bioremediation
Week 12	Mock Test
Week 13	waste treatment biotechnology.
Week 14	Revision
Week 15	Revision

Name of the Assistant Professor: Ms. Kavita
Class And Section: Physical Science 2nd year (MDC)
Subject: Principles of Biotechnology II (24CBTX01MD01)

Week 1	Cloning vectors and expression vectors, Codon optimization;
Week 2	Construction of recombinant DNA, Transformation of recombinant vector in bacteria,
Week 3	Optimization of expression of recombinant proteins in E. coli.
Week 4	General problems with the production of recombinant proteins in E. coli, Processing and purification of recombinant proteins.
Week 5	Presentation
Week 6	Class Test 1
Week 7	Study of Genomes: Definition of Genome, Gene identification and Genome annotation
Week 8	Quiz .
Week 9	Bioinformatics tools in genome analysis Bioinformatics
Week 10	Basics of transcriptomics, proteomics and metabolomics- studying, analysing and comparing, and their applications in Biotechnology

Week 11	Class test 2 Revision
Week 12	MOCK TEST
Week 13	Applications of recombinant proteins.
Week 14	Revision
Week 15	REVISION

Name of the Assistant/Associate Professor: Ms. Kavita

Class And Section: B.Sc Biotech 3rd year

Subject: Bioprocess Engineering (26CBTS405DS04)

Week 1	Introduction to bioprocess technology. Range of bioprocess technology and its chronological development. Types of microbial culture.
Week 2	Batch, Fedbatch and Continuous culture. Basic principle components of fermentation technology.
Week 3	Design of bioprocess vessels. Significance of Impeller, Baffles, Sparger.
Week 4	Types of culture/production vessels- Airlift; Cyclone Column; Packed Tower. Application in production processes.
Week 5	Principles of upstream processing – Media preparation, Inocula development and sterilization.
Week 6	Revision. Class test
Week 7	Introduction to oxygen requirement in bioprocess. Mass transfer of oxygen and nutrient, Mass transfer coefficient, factors affecting KLa.
Week 8	Foam formation and foam control Bioprocess measurement and control system with special reference to computer aided process control.
Week 9	Revision Class test Practical File
Week 10	Introduction to downstream processing, product recovery and purification

Week 11	Microbial production of ethanol, amylase, lactic acid and Single Cell Proteins. Assignment
Week 12	MOCK TEST
Week 13	Effluent treatment aerobic and anaerobic Revision
Week 14	Revision Practical file
Week 15	REVISION

Name of the Assistant Professor: Ms. Kavita
Class And Section: B.Sc. Biotechnology 1st year
Subject: Digital and Technological Solutions (23CSAX01VA01)

Week 1	Role & Significance of Digital Technology Information and Communication Technology (ICT) & Tools Computer System & its Working Software and its Types
Week 2	Operating Systems -Types and Functions of Operating System Problem Solving, Algorithms and Flowcharts Class Test
Week 3	Communication Systems: Principles, Model & Transmission Media Computer Networks & Internet: Concepts & Applications World Wide Web (WWW) Web Browsers, Search Engines, Messaging, Email, Social Networking
Week 4	Computer-Based Information System (CBIS): Significance & Types E-Commerce & Digital Marketing: Basic Concepts, Benefits & Challenges
Week 5	Overview of Artificial Intelligence (AI) Machine Learning (ML) Deep Learning Big Data
Week 6	Data Science Big Data Analytics Internet of Things (IoT) Industrial Internet of Things (IIoT)
Week 7	Case Study
Week 8	Robotics

	3D Printing
Week 9	Blockchain Technology Quantum Computing
Week 10	Cloud Computing and its Service Models
Week 11	Quiz
Week 12	MOCK TEST
Week 13	Class Test
Week 14	Revision
Week 15	REVISION

Name of the Assistant Professor: Ms. Jyoti Sharma
Class And Section: B.Sc. Biotechnology 5th semester
Subject: Recombinant DNA Technology (26CBTS405DS01)

Week 1	Genetic Engineering Introduction, scope and applications, Isolation of genomic and plasmid DNA,
Week 2	Quantitative estimation of DNA and RNA, Primer Designing, Polymerase Chain reaction
Week 3	RT-(Reverse transcription)PCR, Real time PCR, Nucleic acid blotting (Southern, Northern blotting)
Week 4	Nucleic acid Modifying Enzymes: DNA polymerase, Polynucleotide kinase, Alkaline phosphatase, Nucleases, Methylases
Week 5	Terminal deoxynucleotidyl transferase, Reverse transcriptase, Restriction endonucleases (R.E.)- Nomenclature, types, Recognition sequence, blunt and sticky ends, applications,
Week 6	Ligases, Linker, Adaptor, Homopolymer tailing Cloning Vectors; Types- Plasmid, bacterio phage, phagemid, cosmid.
Week 7	Plasmid Biology: Structural and Functional Organization of Plasmids, Stringent and Relaxed Plasmids, Incompatibility of Plasmid Maintenance
Week 8	Artificial chromosomes (YAC, BAC, PAC), Genomic library, cDNA library.
Week 9	Construction of recombinant DNA, Preparation of competent cell,
Week 10	Transformation, Selection and Screening of Recombinant clones by different screening strategies (Probes, Colony and plaque hybridization)
Week 11	Production of Recombinant proteins in bacteria: Central role of E. coli in genetic engineering,
Week 12	Mock Test

Week 13	hybridization techniques- In-situ hybridization, FISH.
Week 14	expression of the recombinant proteins in <i>E. coli</i> .
Week 15	Revision

Name of the Assistant Professor: Ms. Jyoti Sharma
Class And Section: B.Sc. Life Science 3rd Sem
Subject: Principles of Gene Manipulation (24CBT402MI01)

Week 1	Introduction and scope of genetic engineering, Milestones in genetic engineering,
Week 2	Purification of total cell DNA, plasmid DNA, phage DNA
Week 3	Yield analysis, Central role of <i>E. coli</i> in genetic engineering.
Week 4	DNA polymerase, Polynucleotide kinase, Alkaline phosphatase, Class Test-1
Week 5	Nucleases, Methylase, Reverse transcriptase, Restriction endonucleases, Ligases
Week 6	Construction of recombinant DNA, Class Test-2
Week 7	Preparation of competent cells, Episomes
Week 8	Gene transfer using plasmids and other cloning vectors
Week 9	Genetic engineering in animals, Genetic engineering in plants
Week 10	Therapeutic products produced by Genetic engineering, human hormones
Week 11	immune modulators and vaccines
Week 12	MOCK TEST
Week 13	DNA fingerprinting, Gene therapy

Week 14	Restriction mapping, Genome mapping.
Week 15	REVISION

Name of the Assistant Professor: Ms. Neha
Class And Section: B.Sc Life Science 5th semester (Sec-A & B)
Subject: Botany (Major) Plant Physiology (26BOTM405DS01)

Week 1	Plant water relation- Importance of water to plant life, physical properties of water, imbibition, diffusion, osmosis
Week 2	Absorption and transport of water, transpiration, physiology of stomata
Week 3	Essential macro and micro elements and their role, deficiency symptoms
Week 4	Mineral uptake, Revision, Test
Week 5	Transport of organic substances, mechanism of phloem transport, source sink relationship, factor affecting translocation
Week 6	Photosynthesis significance, historical aspect, photosynthetic pigment, action spectra and enhancement effect
Week 7	Concept of two photosystem, Z-Spectra, photophosphorylation, Calvin cycle
Week 8	C4 pathway, CAM plants, photorespiration, Test
Week 9	Definition and phases of growth and development, seed dormancy, plant movement
Week 10	Concept of photoperiodism, physiology of flowering, florigen concept
Week 11	Physiology of senescence, Photoperiodism and biological clock, Test
Week 12	History of their discovery, mechanism of action and application of auxin, gibberellins
Week 13	Cytokinin, Ethylene, Abscissic acid, photomorphogenesis

Week 14	Phytochromes , Cryptochromes and their discovery, mechanism of action and application
Week 15	Revision

Name of the Assistant Professor: Ms. Shweta Chaudhary

Class And Section: B. Sc. Life Science 3rd semester

Subject: Plant Taxonomy

Week 1	Taxonomy and Systematics, Fundamental components of taxonomy, Role of chemotaxonomy,
Week 2	Cytotaxonomy and taximetrics in relation to taxonomy, Botanical nomenclature, Principles and rules, principle of priority and Test
Week 3	Type concept, taxonomic ranks, Keys to identification of plant, Taxonomic ranks, Floral Terms and Types of Inflorescence
Week 4	Salient features of the systems of classification by Bentham & Hooker and Engler& Prantl
Week 5	Salient features of the systems of classification by Engler& Prantl BSI, NBPGR, NBRI and Indian contribution in plant taxonomy.
Week 6	Diagnostic features and economic importance of the following families: Ranunculaceae and Brassicaceae, Test
Week 7	Diagnostic features and economic importance of the following families: Malvaceae and Euphorbiaceae
Week 8	Diagnostic features and economic importance of the following families: Rutaceae and Fabaceae, Assignment
Week 9	Diagnostic features and economic importance of the following families: Cucurbitaceae and Rosaceae
Week 10	Diagnostic features and economic importance of the following families: Apocyanaceae and Apiaceae
Week 11	Diagnostic features and economic importance of the following families: Asclepiadaceae and Lamiaceae
Week 12	MOCK TEST
Week 13	Diagnostic features and economic importance of the following families: Asteraceae and Solanaceae
Week 14	Diagnostic features and economic importance of the following families: Liliaceae and Poaceae
Week 15	REVISION

Name of the Assistant Professor: Ms. Sapna Singh

Class And Section: B.Sc. Life Sci. Multi-Disciplinary Course (Botany)1st Year

Subject: Organic Farming

Week 1	Concept And Components of Organic Farming, Aims And Objectives, Need of Organic Farming, Historical Development of Organic Farming In India
Week 2	Status of Organic Farming In India, Advantages And Disadvantages of Organic Farming, Assignment
Week 3	Organic Farming Processes- Concept of Farming System, Developing Organic Farms, Important Steps And Methods, Pure Organic Farming And Integrated Farming System, Test
Week 4	Plant Nutrients Essential, Their Role In Plant Growth And Development, Nutrient Uptake And Utilization By Plant.
Week 5	Nutrient Management In Organic Farming : Balance Nutrient Supply For Organic Farming System Using Nutrients From Organic Sources.
Week 6	Preparation, Nutrient Content And Methods of Use/For Following Rural Composite, Mulching, City Composite, Oil Cakes, Animal Waste,.
Week 7	Vermi Composites, Vermi Wash, Beejamrit, Green Manures, Bio Fertilizers.
Week 8	Nitrogenous, Phosphatic Potassic, Availability of Nutrients From Above Sources, Recycling of Organic Matter In Organic Agriculture Transformation of Organic Substances In Soil.
Week 9	Disease And Pest Management In Organic Farming – Integrated Pest And Disease Managements, Organic. Pesticide, Bio Pesticides, In Organic Pesticides, Disadvantages of Their Use .
Week 10	Seed, Seedling And Soil Treatment Measures, Feasibility of Complete Dependence On Organic Sources. Wheat Management In Organic Farming. Test
Week 11	Use of Neem And Other Plant Products In Organic Farming, Organic Agri-Horti Culture In Urban And Semi Urban Areas.
Week 12	Certification, Standardization, Marketing- Quality Control And Certification Procedures of Organic Products, Mock Test
Week 13	Organic Standards In India. Government Schemes Related To Organic Farming In India.
Week 14	Potential Demand And Marketing of Organic Products. Organic Farming And Food Security In India.
Week 15	Revision

Name of the Assistant/Associate Professor: Ms. Sapna Singh Class And Section: B.Sc. Biotechnology 3rd year Minor Subject: Agroforestry	
Week 1	Introduction of Agroforestry,Importance of Woody Elements in Agroforestry and their role in Biomass production,Suitability of species in Agroforestry system for different purposes
Week 2	Choices of Species for various Agroclimatic Zones for the production of Timber,fuelwood,fruits,Medicinal Plants and Aromatic Plants,Modifications in Tending and Pruning operations
Week 3	Modifications in Tending and Pruning operations in Canopy Management, Test
Week 4	Mixture of Trees and herbaceous crops ,fruit crop and Timber treesand their need and relevance in Agroforestry,Tree density manipulation and the mixture of trees and herbaceous crops
Week 5	Trees suitable for var.ious Assemblages and their planting plan in different Agroclimatic zones and Agroforestry system,Revision
Week 6	Intercropping in fruit Orchards like- Plum,peach,mango,sapota,pomegranate,orange,citrus and guava
Week 7	Intercropping between commercial plantationlike teak,shisham,pterocarpus,poplar,Santalum and casuarina,principles of resource capture and utilization of light,water,nutrition and space
Week 8	Technology and use of complex liquids and suspension fertilizers ,Biological nitrogen fixation, Revision of unit 2
Week 9	Biofertilizers ,Mycorrhizal associations and their significance,farmyard manure and other organic fertilizers
Week 10	Methods of weed control-cultural,biological,mechanical and chemical,Importance of renewable waste and its recycling,Test
Week 11	Tree crop interphase- biological factors affecting form and function in woody and non woody plants mixture,Nitrogen fixing tree interactions in Agroforestry,REVISION
Week 12	Mock Test
Week 13	Tree soil crop interactions-positive and negative,above ground and belowground interactions,Root distribution of trees and crops competition and/or complementarity in resource sharing
Week 14	Management option to neutralize negative interactions,Tree husbandary practices for alleviating competition ,Allelopathy,
Week 15	Revision

Name of the Assistant Professor: Ms. Vidhi
Class And Section: 1st year Minor Botany
Subject: Fundamentals of Plant Ecology

Week 1	Definition, Scope And Importance of Ecology
Week 2	Levels of Organization In Ecology, Introduction of Environment And Environmental Factors, Climatic Factors Water And Humidity
Week 3	Climatic Factors Wind ,Light And Temperature, Edaphic Factors(Soil Profile)
Week 4	Physiochemical Properties of Soil, Topographic Factors And Biotic Factors
Week 5	Test ,Adaptation of Plants To Water Stress And Salinity, Morphological And Anatomical Features of Hydrophytes
Week 6	Morphological And Anatomical Features of Xerophytes , Morphological And Anatomical Features of Halophytes
Week 7	Basic Concept And Characteristics of Population, Biotic Potential, Assignment
Week 8	Growth Curves , Ecotypes And Ecads Test
Week 9	Community Ecology ; Concept And Characteristics (Qualitative And Quantitative), Methods of Analysis
Week 10	Ecological Succession, Ecosystem Structure And Functions
Week 11	Biogeochemical Cycles ; Carbon, Nitrogen, Phosphorus And Hydrological
Week 12	Phytogeographical Regions of India, Vegetation Type of India, Environmental Pollution (Air Pollution), Mock Test
Week 13	Water Pollution, Green House Effect And Green House Gases, Impact of Global Warming, Carbon Dating
Week 14	Ozone Layer Depletion ,Biomagnification

Week 15	Revision
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Name of the Assistant/Associate Professor: Ms. Vidhi Class And Section: B.Sc. 3rd sem Subject: Plant propagation and nursery techniques	
Week 1	Introduction to nursery management: meaning, objectives, scope and importance of plant nursery; types of nurseries and basic requirements.
Week 2	Nursery infrastructure: site selection, layout, nursery beds, pathways, irrigation and drainage; greenhouse, shade house, mist chamber and polyhouse.
Week 3	Nursery tools and implements: types, uses, maintenance and safe handling; seasonal nursery activities.
Week 4	Seed propagation: seed structure, types of seeds, seed quality, seed germination and factors affecting germination.
Week 5	Seed dormancy: dormancy and quiescence; causes and types of dormancy; scarification, stratification and other methods of breaking dormancy.
Week 6	Seed storage: seed banks, factors affecting seed viability; methods of seed storage and maintenance of seed viability
Week 7	Preparation of soil: land preparation, nursery bed preparation, manuring, fertilizers, watering and irrigation practices.
Week 8	Sowing and raising of seeds and seedlings; seedling care; epigeal and hypogeal germination; transplantation of seedlings.
Week 9	Potting media: soil, sand, peat, sphagnum moss, vermiculite and perlite; characteristics and preparation of suitable media.
Week 10	Vermicompost production: preparation and use of vermicompost in nursery; common nursery diseases—anthracnose, blights, die-back and leaf spots.
Week 11	Powdery mildew; insect/pest and disease control in nursery. Vegetative propagation: need and potentialities; cutting and layering
Week 12	Mock Test
Week 13	Factors influencing rooting of cuttings and layering; use of growth regulators. Grafting and budding; graft incompatibility.
Week 14	Propagation through specialized organs—rhizomes, corms, runners and suckers. Maintenance of mother trees; collection of scion wood and stocks; stock–scion relationship and their influence

Week 15	Revision
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