| **Academic Session- 2022-23**  **ODD Semester**  **Subject- Financial Accounting**  **Class -B.Com-1st Semester**   | **Sr. No.** | **Month** | **Contents** | | --- | --- | --- | | 1. | **August** | Accounting: Meaning, Process and Scope Basic Accounting Terms, Queries and discussion Accounting Principles  Double Entry System Recording of Accounting Transactions  Trial Balance Queries and discussion, Test & Presentation | | 2. | **September** | Capital and Revenue, Class Activity Depreciation, Provision and Reserves Queries, Discussion & Test Final Accounts with adjustment, Revision | | 3. | **October** | Final Accounts with adjustment, RevisionErrors and their RectificationAccounts of Non-Profit Organization Queries and discussion Presentation, Test & Assignment | | 4. | **November** | Consignment Accounts Consignment Accounts Queries and discussion, Test & Assignment Presentation & Revision | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
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| **Subject- Business communication**  **Class- 1st Semester** | | | |
|  | | | |
|  | Month | CONTENTS |
|  | **August** | Introduction: Basics of communication, Seven C’s of effective communication, barriers to communication, ethical context of communication. |
|  | **September** | Business Communication at workplace: Letter writing- component, layout and process, E- mailcommunication, bad news messages, persuasive written communication, memos, notice, agenda. and minutes of meeting |
|  | **October** | Report Writing: Types of business reports, structure of reports, short reports, long report. abstracts and summaries, proposals |
|  | **November** | Communication Skills: Reading skills, listening skills, note making, persuasive speaking. Body language, Gestures. |

**Sub- Business Management – l**

**Class. B.Com 1st Semester**

| Month | CONTENTS |
| --- | --- |
| **August** | Business: concept, nature and spectrum of business activities, business system, business objectives |
| **September** | Management: Introduction, concept, nature, process and significance; Development of Management Thought; Classical and Neo-Classical systems, Contingency approaches |
| **October** | Planning: concept, types and process, Decision Making: concept and process, Management by Objectives, Corporate Planning and Strategic Formulation. |
| **November** | Organizing: concept, nature, process and significance; Authority and Responsibility relationship; Centralization and Decentralization; Departmentation; Firms of Organizing structure. |

**Sub- B.R.F -1**

**Class- B.Com 3rd Semester.**

| Month | CONTENTS |
| --- | --- |
| **August** | Indian Contract Act: - Valid contract and its elements; Void and void able agreements; Void and illegal agreements; Offer and acceptance; Contractual capacity of parties; Free consent of parties; Lawful consideration and object; Agreements expressly declared as void. |
| **September** | Contingent Contracts: - Quasi contracts; Discharge of contracts: - methods of discharge of contracts;Consequences of Breach of contracts.Contract of Indemnity and guarantee: - Elements of contract of Indemnity; Rights of Indemnity Holder and indemnifier Guarantee: - features of contract of guarantee; Rights and Liabilities of surely; Discharge of surety; Difference between contract of indemnity and Guarantee. |
| **October** | Contract of Bailment and Pledge: - Meaning; types of bailment, Termination of bailment, Duties and rights of bailor and bailee. Essentials of pledge, who nay pledge, Rights and Duties of Pawnor and Pawnee. |
| **November** | .Consumer protection Act 1986: - Salient features of consumer Protection Act; Rights of consumers; consumer Protection councils; consumer disputes redressal machinery. |

**Sub.- Company Law-l**

**Class- B.Com 3rd Semester.**

| Month | CONTENTS |
| --- | --- |
| July | Company- Meaning and Characteristics; Features of company; Types of companies, advantages and disadvantages of incorporation; Lifting of corporate veil; |
| August | Promation of Company: - Promotion of company; Functions of promoter; importance of promoter; Promoter’s remuneration; legal status of Promoter; Rights of promoters; Duties of promoters; Liabilities |
| September | Memorandum of Association: - Meaning; importance; clauses of memorandum of association and their Alteration; doctrine of ultra- virus. Articles of Association: - Meaning; contents; alteration of articles of association; constructive notice and doctrine of indoor management. |
| October | Borrowing Powers; Debentures and Charges |

| **Weeks /Months** | **Contents** |
| --- | --- |
| August | An Introduction to Human Resource Management  Definition, Importance objectives and scope of HRM.  Function of HRM - Managerial and Operative Functions Qualification and Qualities of HRM evolution and Growth of HRM in India. |
| September | Recruitment: - Meaning, Steps in recruitment policy, sources and modes of recruitment, Factors affecting recruitment. Selection: - Meaning, Essentials of Selection Procedure, Stages in Selection Procedure.  Training: - Concept, Need and importance of Training, methods of Training. |
| October | Wages: - Meaning, Objective, Theories of wages, Methods and  Concept of wages  Wage Incentives: - Concept, Need and Importance of Incentives. |
| November | Industrial Relations: - Concept, Importance and Objectives of industrial relation  Industrial Unrest: - Meaning, Forms and Causes of industrial disputes, Impact of Industrial unrest on the Economy, preventive and curative methods and Agencies for  Reconciliation of Industrial unrest. |

**Subject –Human Resource Management**

**Class- B.Com 3rd Semester.**

**Sub- Corporate accounting – 1**

**Class-B.Com 3rd Semester.**

| Month | CONTENTS |
| --- | --- |
| July | Capital: Meaning, types, Accounting Treatment of issue, forfeiture and reissue of Share; Buy- back of equity shares & Sweat shares; Redemption of preference share; Issue of Bonus Share. |
| August | Debenture: Meaning, Types. Issue and Redemption of Debentures. |
| September | Valuation of Goodwill: Meaning, objectives, determinates and main methods. Valuation of Shares: Meaning, objectives, determinates and main methods |
| October | Profit or loss before and after incorporation. Final accounts of companies. |

**Subject – Business Statistics I**

**Class- B.Com 3rd semester**

| **Weeks /Months** | **Contents** |
| --- | --- |
| August | Introduction of Statistics: Origin, Development, Definition, Scope, Uses and Limitations.  Statistical Data and presentation of Data |
| September | Central Tendency and Partition values; Concept and Measures of Central tendency  Dispersion: Concept and Its absolute as well as relative measures. |
| October | Moments, Skewness and Kurtosis: Moments about any point and about mean and the relationship between them. Sheppard’s Corrections for Moments. Concept of symmetrical distribution and skewness, measures  and Co- efficient of skewness, Concept of Kurtosis and its measures. |
| November | Correlation-concept, scatter diagram, Karl Pearson’s co-efficient of Correlation and its properties  Spearman’s rank Correlation, Concurrent deviation method  Regression: Meaning and Definition, Properties of  Regression Co-efficient and Regression lines, standard error of estimate, Co-efficient of determination. |

Subject- **Fundamentals of Insurance**

Class -**B. Com-3rd Semester**

| **Sr. No.** | **Month** | **Contents** |
| --- | --- | --- |
| 1. | **August** | Introduction to Insurance Principles of Insurance  Importance of Insurance  Unit Test 1 |
| 2. | **September** | Types of Insurance, Insurance as a social security tool  Introduction to Life Insurance Organizational Structure of Life Insurance Corporation  Unit Test 2 |
| 3. | **October** | Revival of Policy, Introduction to Fire Insurance  Types of Fire Insurance Policy and Marine Insurance  Assignment of Marine Insurance Policy Accident and Motor Insurance  Unit Test 3 |
| 4. | **November** | Other Policy conditions of Motor Insurance, Meaning of Insurance Agents, Introduction - Aviation Insurance  National Crop Insurance, Unit Test 4  Tests, Assignments & Presentations  Revision |

**Lesson Plan of Subject – International Trade**

**Class- B.Com 5th semester**

| **Weeks /Months** | **Contents** |
| --- | --- |
| August | International Business:- An overview; Domestic business; International Business; Major risks and challenges of International Business; International Business Environment – Components and determinants; stages of internationalization of business; international business approaches, concept of  globalization. |
| September | Modes of entering into international business; nature of multinational enterprise and international direct investment; foreign exchange; determination of exchange rate; Balance of payments. |
| October | Theories of International Trade : Absolute advantage theory; comparative advantage theory; factor proportions theory; product life cycle theory of trade; government influence on trade; rationale for government intervention, instruments of trade control; role of WTO, IMF and World |
| November | Assessing International markets; designing products for foreign markets branding decisions; International promotions policy; international pricing; international logistics and distribution. |

Subject-**Entrepreneurship and Small-Scale Business**

Class -**B. Com 5th Semester**

| **Sr. No.** | **Month** | **Contents** |
| --- | --- | --- |
| 1. | **August** | Entrepreneurship: Meaning, Types, Functions, Process and Importance Entrepr eneurship and Environm ent and Small-Scale Business Developing Entrepreneurial Competencies  Promotion and development of Entrepreneurship and Entrepreneurial Motivation |
| 2. | **September** | Entrepreneurial Opportunities in Contemporary business Environment-Identification & Selection Setting Up a New Venture, Project Report and Market Survey Class Activity  Queries, Discussion, Test & Presentation |
| 3. | **October** | Managerial Roles and Functions in a Small-Scale Business  Production and Operation Management, Managing Business Growth Test and Assignment |
| 4. | **November** | Issues in Small Scale Business Marketing& Incentives and Subsidy, Institutional Support Queries and Discussion, Presentations Test & Assignment  Revision |

**Sub- Taxation –l**

**Class. B.Com 5th Semester.**

| Month | CONTENTS |
| --- | --- |
| July | Income Tax: An introduction and Important Definitions, Agriculture Income, Residential status and incidence of Tax Liability, Exempted incomes |
| August | Income from Salaries (including retirement benefits); Income from House property. |
| September | Profits and Gains from Business or Profession; Depreciation; Capital Gains. |
| October | Income from other sources, clubbing of incomes & aggregation of incomes, set off and carry forward of losses, Deductions to be made in computing total income. |

**Sub- Financial Market Operation**

**Class. B.Com 5th Semester.**

| Month | CONTENTS |
| --- | --- |
| **Jan** | Money Market: Indian Money Markets Composition Composition and Structure; (a) Acceptance houses (b) Discount houses and (c) Call money market; Recent trends in Indian money market. Capital Market : Security market- (a) New Issue Market (b) Secondary market; functions and role of stock exchange listing, procedure and legal requirements Public issue pricing and marketing, Stock exchange – National Stock Exchange and over the Counter exchangers. |
| **Feb** | es, Scope & Functions. Investors Protection:- Grievances concerning stock exchange and dealings and their removal;grievance cell in stock exchange SEBI: Company law Board: Press remedy through courts. |
| **March** | Functionaries on stock exchanges:- Brokers, Sub brokers, Market makers, Jobbers, PortfolioConsultants, Institutional Investors, Depository. Financial Services:- Merchant Banking – Functions and Roles; SEBI guidelines; credit rating concept, functions, and types. |
| **April** | .Role of Govt. in Indian Economy: MFCI, IDBI,IIBI, SIDBI, IDFCL, EXIM, NABARD & ICICI. Meaning and benefits of mutual funds, types, SEBI guidelines.monetary and Fiscal Policy; Industrial Policy Privatization. |

Subject- **Accounting for Management**

Class -**B. Com-5th Semester**

| **Sr. No.** | **Month** | **Contents** |
| --- | --- | --- |
| 1. | **August** | Management Accounting: Meaning, Functions and Scope  The Management Accountant, Controller &Treasurer  Management Accounting principles, Tools and Utility  Management Accounting Vs. Financial Accounting Vs. Cost Accounting  Analysis and Interpretation of Financial Statements: Meaning and Types  Financial analysis: Steps and Techniques |
| 2. | September | Ratio Analysis: Meaning, Classification, Advantages & Limitations Profitability Ratios and Balance Sheet Ratios  Turnover Ratios |
| 3. | October | Cash Flow Statement: Meaning, Objectives and Limitations  Cash Flow Statement: Accounting Procedure:  Capital Budgeting: Meaning, Nature, Need & Importance Appraisal Methods |
| 4 | **November** | Capital Budgeting: Numerical  Capital Rationing |

**Subject – Cost Accounting I**

| **Months** | **Contents** |
| --- | --- |
| August | Cost Accounting: Meaning, Features, Scope, Techniques, Methods, Objectives, Importance and Limitations.  Cost main elements and types.  Material Control: Meaning and objectives of material control, material purchase procedure, fixation of inventory levels- reorder level, Minimum level, Maximum level, |
| September | Labour Cost Accounting, Methods of Wage Payment  Incentive Wage plans – Individual plans and group plans. |
| October | Overheads: Meaning and Types. Collection, Classification; Allocation, Apportionment and  Absorption of Overheads – Main methods. |
| November | Unit and output costing : meaning and objectives  Cost sheet – meaning, Performa, types preparation of cost sheet Reconciliation of cost and financial accounts Meaning. Objectives and procedure. |

**Class- B.Com 5th sem**

**Even Semester**

Subject- **Financial Accounting**

Class -**B.Com 2nd Semester**

|  | **Month & Contents** |
| --- | --- |
| **Jan** | Hire Purchase System Difference between Hire Purchase System and credit sale Accounting Procedure, Numerical Problems Queries and discussion & Test Instalment Payment Systems Different Between Hire Purchase System and Instalment Payment System Accounting Procedure, Numerical Problems  Queries & Discussion, Test & Presentation |
| **Feb** | Branch Accounts (including foreign branch) and Departmental Accounts.  Accounting Procedure Numerical problems, Queries and discussion, Test & Presentation |
| **March** | Amalgamation and sale of partnership firms, Dissolution of Partnership Firm- Insolvency of Partners (including Garner v/s Murrey Rule), Gradual Realisation and Piecemeal Distribution. Numerical problems, Queries and discussion, Test & Presentation  Joint-Venture Account  Numerical problems, Queries and discussion, Test & Presentation |
| **April** | Royalty Account Numerical problems, Queries and discussion, Test & Presentation  Revision |

**Sub- Business Management**

**Class. B.Com 2nd Semester.**

| Month | CONTENTS |
| --- | --- |
| January | Staffing: concept, nature and scope, Matching job and people; Recruitment; Selection and Training of employees |
| February | Motivation and Leadership: Motivation-concept, Theories-Maslow, Herzberg, Megregor and Quchi; Financial and Non-Financial Incentives.Leadership: concept and Leadership styles, Leadership Theories. |
| March | Communication and Control: Communication Concept, Nature, Types and Process, Barriers and Remedies.Control: Concept, Process and Techniques, Effective Control System. |
| April | Management of Change: Concept, Nature and Process of Planned Change: Resistance to Change; Emerging Horizons of management in a changing environment. |

**Sub- Business Environment**

**Class. B.Com 2nd Semester.**

| Month | CONTENTS |
| --- | --- |
| January | Business Environment: concept; components and importance; SWOT Analysis |
| February | Economic Trends (overview): income; savings and investment; industry; Trade and balance of payments. |
| March | Problems of Growth: Unemployment, regional imbalances, inflation, parallel economy and industrial sickness. |
| April | .Role of Govt. in Indian Economy: Monetary and Fiscal Policy; Industrial Policy Privatization. |

**Sub- B.R.F.**

**Class. B.Com 4th Semester.**

| Month | CONTENTS |
| --- | --- |
| January | Indian Partnership Act – Nature of Partnership firm; test of partnership; Duties and Rights of partners; Relations of partners to third parties; position of minor in partnership; Reconstitution of a partnership firm; Registration of firm. Dissolution of firm: - Modes of dissolution; consequences of dissolution of firm; settlement of accounts after dissolution. |
| February | Negotiable Instruments Act: - Negotiable Instrument an introduction Promissory notes; Bills of Exchange; cheques, Parties to negotiable Instruments; Discharge of parties from Liability; Dishonour of Negotiable Instruments. Instruments; Presentment of Negotiable Instrument; Negotiation. |
| March | Sales of Goods Act: - Introduction; Formation of contract of sale of Goods; conditions and warranties;Transfer of property or ownership; Performance of contract- Delivery and Payment; Rights of unpaid seller; suits of Breach of contract. |
| April | RTI Act : features, rights and importance. |

**Sub- Corporate Accounting - 2**

**Class. B.Com 4th Semester.**

| Month | CONTENTS |
| --- | --- |
| January | Internal Reconstruction; External Reconstruction in the nature of merger and purchase. |
| February | Liquidation of a company ; Financial reporting for financial institutions. |
| March | Final Accounts of Banking Companies. |
| April | Accounts of Holding Companies. |

**Sub.- Company Law-2**

**Class. B.Com 4th Semester.**

| **Name of Teacher- Dr. Stayaparkesh** | |
| --- | --- |
| Month | CONTENTS |
| January | Depository System –meaning and importance; Shares: -; Types of shares; Allotment of Shares;; Transfer and Transmission of shares; Paperless Trading – Benefits and Procedure; Need for educating investors |
| February | Share capital: - Meaning and forms of capital; Alteration of share capital; Reduction of share capital; Further issue of share capital; Rights of pre-emption of shares. Shareholders and Members: - Difference between Shareholders and members; Modes of acquiring membership; termination of membership; who may be members? Rights and Liabilities of members |
| March | Meeting of Company: - Essentials of valid meeting; meetings of Shareholders: - Annual generalmeeting; Extra-ordinary general meeting; meetings of board ofdirectors; Proxy; Voting, Notice, Agenda and Minutes of meetings.Directors: - Duties, Powers, Liabilities, Appointment and removal of directors. |
| April | Winding Up: - Meaning; Winding up by the Tribunal-Petition for winding up; Voluntary winding up; Powers and Duties of company Liquidator, consequences of winding up.. |

**Lesson Plan of Sub- Business Statistics II**

**Class. B.Com 4th Semester**

| Month | CONTENTS |
| --- | --- |
| January | Index Numbers:- Meaning, Types and Uses; Methods of Constructing price and Quantity indices (Simple and Aggregate); Tests of adequacy; Chain-base Index numbers, Base shifting, Splicing and Deflating; Problems in constructing index numbers; Consumer price index. |
| February | Analysis of Time Series: - Causes of Variations in time series data; Components of a time series. Decomposition- Additive and Multiplicative models; determination of trend. Moving averages method and method of least squares (Including linear second degree, Parabolic and Exponential trend); Computation of seasonal indices by simple averages, Ratio to Trend, Ratio to moving average and link relative methods. |
| March | Theory of Probability: - Probability as a Concept; Approaches to defining probability, Addition and Multiplication laws of probability; Conditional probability, Baye’s Theorem. |
| April | Probability Distribution : - Probability distribution as a concept; Binomial, Poisson and Normal Distribution- Their Properties and Parameters |

**Sub- Marketing Management**

**Class-B.Com 4th Semester.**

| Month | CONTENTS |
| --- | --- |
| January | Meaning, Nature and Features of Marketing, Importance of Marketing, Meaning of Selling, Difference Between Selling and Marketing, Marketing Concept-Traditional and Modern. Marketing Segmentation: Concept, Definition, Difference Between Selling and Marketing, Marketing Concept-Traditional and Modern. Marketing Segmentation Importance, Basis of Market Segmentation Meaning and Nature of Consumer Behavior, Scope and Importance of Consumer Behavior |
| February | Consumer Behavior, Meaning, Importance and Scope of Product Planning Stages of New Product Development Stages of Product life cycle, Branding and Trademark: Difference between Brand and Trademark |
| March | Types of Branding; Brand Polices and Strategies, Pricing: Meaning; Importance, Factors Affecting Pricing, Pricing Objectives Pricing Objectives, Types of Price Policy and Pricing Strategies |
| April | Advertising: Concept; Importance and Criticism of Advertising, Media of advertising, Evaluating advertising  Effectiveness Sales Promotion: Importance, Method  Functions and Publicity |

Subject-**Banking and Banking Law**

Class -**B.Com-4th Semester**

| **Month & Contents** | |
| --- | --- |
| **Jan** | Definition of Bank, Commercial Banks-importance, functions and problems of Non-performing Assets, structure of Commercial Banking system in India. Credit Creation: Process of Credit Creation and its Limitations. |
| Queries and discussion, Test |
| Regional Rural Banks, Cooperative Banking in India.  Reserve bank of India: Functions, regulation and control of credit, monetary policy. |
| Queries and discussion, Test |
| Revision & Assignment |
| **Feb** | Determination and Regulation of Interest Rates in India. Relationship between banker and Customer, Definition of Customer, General Relationship between banker and customer, obligation of banker, Garnishee order, banker’s rights. |
| Queries and discussion, Test & Presentation |
| Special types of Bankers Customers Minor, Married Women, Illiterate persons, Lunatics, Trustees, Executors and Administrators, Customer’s attorney, Joint Account, Joint Hindu family, partnership Firm, Joint stock companies, Clubs, Societies and Charitable Institutions. |
| Queries and discussion, Test & Presentation |
| **March** | Negotiable Instruments: Definition of Negotiable instruments, Essential features of Negotiable instruments, holder and Holder in Due course. |
| Rights and Liabilities of parties for Negotiable instruments: Capacity of parties: Minor’s position, legal representative, Instruments without Consideration, Instrument obtained by Unlawful means. |
| Queries and discussion, Test & Presentation |
| **April** | Endorsements: Meaning of Negotiation, Definition of Endorsement, Legal provisions regarding Endorsement, General rules regarding forms of endorsement, regular forms of Endorsement, Kinds of Endorsement. |
| Problems, Queries and discussion, Test & Presentation |
| Revision |

Subject- **Financial Management**

Class -**B.Com- 6th Semester**

|  | **Month & Contents** |
| --- | --- |
| **Jan** | Nature of Financial Management: Scope of Finance, Finance functions, Financial Manager’s role, financial goal; Profit maximization Vs Wealth maximization, Objective of financial Management, Finance and related disciples, financial planning |
| Queries and discussion & Test |
| Working Capital Management: Meaning, nature and planning of Working Capital. Permanent and variable Working Capital. Balanced working position, determinates of working Capital, Issues of working Capital Management. |
| Management of cash and Marketable Securities and Receivables Management: Numerical Problems |
| Queries & Discussion, Test & Presentation |
| **Feb** | Cost of capital: Significance and determination, Capitalization |
| Numerical problems, Queries and discussion, Test & Presentation |
| Leverage analysis: operating, financial and composite leverage: EBIT-EPS Analysis**.** |
| Numerical problems, Queries and discussion, Test & Presentation |
| **March** | Capital structure theory and policy: Relevance of capital structure; Net income and traditional views, Irrelevance of capital structure |
| NOI Approach and the MM Hypothesis without taxes, capital structure planning and policy. |
| Numerical problems, Queries and discussion, Test & Presentation |
| Dividend Theory and Policy: Issues in dividend policy, Walter’s and Golden’s model of dividend relevance objections of dividend policy, considerations in dividend policy, stability of dividends, forms of dividend. |
| **April** | Numerical problems, Queries and discussion, Test & Presentation |
| Revision |

**Lesson Plan of Sub- Auditing**

**Class. B.Com 6th Semester.**

| Month | CONTENTS |
| --- | --- |
| January | Auditing: Meaning, objectives, importance and types of Auditing. Audit Process: internal control, internal check & internal audit, audit programmer. |
| February | Audit Procedure : Routine checking, vouching, verification & valuation of assets & liabilities |
| March | Audit of Public Company: Qualification, Appointment of company Auditors, their powers, duties and liabilities, Audit of depreciation and reserves, Divisible profits & dividends |
| April | Audit Report and Investigation Audit Report: Meaning, objectives, contents and types. Investigation: Meaning, Nature and objectives. |

**Lesson Plan of Sub- Cost Accounting II**

**Class. B.Com 6th Semester**

| Month | CONTENTS |
| --- | --- |
| January | Meaning; Uses; Preparation of process account, Treatment of Normal Wastage, Abnormal Wastage, Abnormal Effectiveness; Treatment of opening and closing stock(Excluding Work in Progress): Joint - Product and By - Product: Main methods of apportionment of Joint cost. Inter process profits. |
| February | Meaning, main features, preparation of contract account, Escalation clause; contract near completion; cost plus contract. Job and batch costing. |
| March | meaning of budget and budgetary control, budgetary control as a  management tool, limitations of budgetary control, forecasts and budgets, installation of budgetary control system, classification of budgets, fixed and flexible budgeting, performance budgeting, zero based budgeting and responsibility accounting. meaning, limitations, standard costs and budgeted costs, determination of  standard cost, cost variances, direct material and direct labour only |
| April | Marginal costing, Absorption costing, Marginal cost, Cost volume Profit analysis, BEP Analysis, Key factor, BE chart, angle of incidence, concept of decision- making and steps involved, determination of sales mix, make or buy Decisions. |

Subject- **Goods and Services Tax & Custom Laws**

Class -**B.Com-6th Semester**

|  | **Month & Contents** |
| --- | --- |
| **Jan** | Introduction: - Salient feature of GST, Benefit of GST, Constitutional Framework of Goods and Services tax, concept of GST; Important definitions; Supply under GST:- Meaning and scope of supply including composite and mixed supply ; levy and collection including reverse charge mechanism, Tax on electronic commerce operator (ECO); Exemption from GST; Composition  levy; |
| Queries and discussion & Test |
| **Feb** | Place of Supply:- Within state/Union territory, Interstate, Import and export; Time of Supply of goods and services; Value of supply including valuation rules; Input tax credit:- Eligibility and conditions for taking Input Tax Credit, Apportionment of credit and blocked credit, ITC in case of banking company and financial institutions, ITC availability in special circumstances, Reversal of ITC on switching to composition levy or exit from tax-paying status, Transfer of ITC on account of change in constitution of registered person, Input service distributors |
| Queries and discussion, Test & Presentation |
| **March** | Registration; Issue of invoices: - tax invoice, revised tax invoice, credit note, debit note, bill of supply, receipt voucher, refund voucher, payment voucher, invoices in special cases.; E-way bill; Payment of Taxes; Returns; Job work; Provision of TDS and TCS; Record keeping, Assessment and Audit; |
| Queries and discussion, Test & Presentation |
| **April** | Customs duty: Important definitions, types, importance, documents required for import and export procedure : Export Promotion Scheme. |
| Queries and discussion, Test & Presentation |
| Revision |

**Sub- Taxation -2**

**Class. B.Com 6th Semester.**

| Month | CONTENTS |
| --- | --- |
| January | Rebate & Relief of Tax, computation of Total income and Tax liability of individuals. Filling and Filing of return (ITR – I and II) |
| February | Assessment of Hindu Undivided Families, Assessment of Firms & Association of Persons. |
| March | Income Tax authorities & their powers; procedure for assessment; Deduction of Tax at Source (TDS); advance payment of tax. |
| April | Recovery & refund of tax; appeals & revision; penalties, offences & prosecutions. |

**Sub- International marketing**

**Class. B.Com 6th Semester.**

| Month | CONTENTS |
| --- | --- |
| January | Nature and Concept; Domestic Vs International Marketing; Opportunities and Challenges for marketing in International Environment ; Foreign market selection |
| February | International product life cycle research and informations; Product designing and packaging; Pricing process and methods; International price quotations and payment terms. |
| March | Channel structure and selection decisions; Managing channel conflicts; Selection and appointment of foreign sales agents; Basic export procedure and documentation. |
| April | Methods of International product Promotion; challenges in International advertising and media strategy; Web marketing; Organizing trade fairs and exhibitions. |

| **Government College for Women, Lakhanmajra Lesson Plan** | |
| --- | --- |
| Class : 1st Semester Subject :Physical Chemistry(CH-102)  Session : 2022-23 Assistant Professor : Dr. Naveen | |
|  | Syllabus |
| **August 2022** | Gaseous States Maxwell’s distribution of velocities and energies (derivation excluded) Calculation of root mean square velocity, average velocity and most probable velocity  Collision diameter, collision number, collision frequency and mean free path. Deviation of Real gases from ideal behaviour. Derivation of Vander Waal’s Equation of State, its application in the calculation of Boyle’s temperature (compression factor) Explanation of behaviour of real gases using Vander Waal’s equation.  Revision and Test |
| **September 2022** | Critical Phenomenon: Critical temperature, Critical pressure, critical volume and their determination. PV isotherms of real gases, continuity of states, the isotherms of Vander Waal’s equation, relationship between critical constants and Vander Waal”s constants. Critical compressibility factor. The Law of corresponding states. Liquification of gases.  Revision and Test |
| **October 2022** | Liquid States Structure of liquids. Properties of liquids – surface tension, viscosity vapour pressure and optical rotations and their determination.  Revision and Test |
| **November 2022** | Solid State Classification of solids, Laws of crystallography – (i) Law of constancy of interfacial angles (ii) Law of rationality of indices (iii) Law of symmetry. Symmetry elements of crystals. Definition of unit cell & space lattice. Bravais lattices, crystal system. Xray diffraction by crystals. Derivation of Bragg equation. Determination of crystal structure of NaCl, KCl. Liquid crystals: Difference between solids, liquids and liquid crystals,types of liquid crystals. Applications of liquid crystals.  Revision and Test |
| **December 2022** | Revision and Test |

| **Government College for Women, Lakhanmajra Lesson Plan** | |
| --- | --- |
| Class : 3rd Semester Subject :Organic Chemistry(CH-303) Session : 2021-22 Assistant Professor: Dr. Naveen | |
|  | Syllabus |
| **August 2022** | Monohydric alcohols nomenclature, methods of formation by reduction of aldehydes, ketones, carboxylic acids and esters. Hydrogen bonding. Acidic nature. Reactions of alcohols. Dihydric alcohols — nomenclature, methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [Pb(OAc) 4 and HIO4 ] and pinacol-pinacolone rearrangement. Epoxides Synthesis of epoxides. Acid and base- catalyzed ring opening of epoxides, orientation of epoxide ring opening, reactions of Grignard and organolithium reagents with epoxides  Revision and Test |
| **September 2022** | Phenols Nomenclature, structure and bonding. Preparation of phenols, physical properties and acidic character. Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion. Reactions of phenols — electrophilic aromatic substitution, Mechanisms of Fries rearrangement, Claisen rearrangement, Reimer-Tiemann reaction, Kolbe’s reaction and Schotten and Baumann reactions.  Revision and Test |
| **October 2022** | Ultraviolet (UV) absorption spectroscopy Absorption laws (Beer-Lambert law), molar absorptivity, presentation and analysis of UV spectra, types of electronic transitions, effect of conjugation. Concept of chromophore and auxochrome. Bathochromic, hypsochromic, hyperchromic and hypochromic shifts. UV spectra of conjugated enes and enones,Woodward- Fieser rules, calculation ofO max of simple conjugated dienes and D,E-unsaturated ketones. Applications of UV Spectroscopy in structure elucidation of simple organic compounds.  Revision and Test |
| **November 2022** | Carboxylic Acids & Acid Derivatives Nomenclature of Carboxylic acids, structure and bonding, physical properties, acidity of carboxylic acids, effects of substituents on acid strength. Preparation of carboxylic acids. Reactions of carboxylic acids. Hell- Volhard-Zelinsky reaction. Reduction of carboxylic acids. Mechanism of decarboxylation. Structure , nomenclature and preparation of acid chlorides, esters, amides and acid anhydrides. Relative stability of acyl derivatives. Physical properties, interconversion of acid derivatives by nucleophilic acyl substitution. Mechanisms of esterification and hydrolysis (acidic and basic).  Revision and Test |
| **December 2022** | Revision and Test |

| **Government College for Women, Lakhanmajra Lesson Plan** | |
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| Class : 5th Semester Subject : Organic Chemistry(CH-503) Session : 2021-22 Assistant Professor :Dr. Naveen | |
|  | Syllabus |
| **August 2022** | NMR Spectroscopy-I Principle of nuclear magnetic resonance, the PMR spectrum,number of signals,  peak areas, equivalent and nonequivalent protons positions of signals and chemical shift,shielding and deshielding of protons, proton counting,splitting of signals and coupling constants, magnetic equivalence of protons.  Revision and Test |
| **September 2022** | NMR Spectroscopy-II Discussion of PMR spectra of the molecules: ethyl bromide, npropyl bromide, isopropyl bromide, 1,1-dibromoethane, 1,1,2- tribromoethane, ethanol, acetaldehyde, ethyl acetate, toluene, benzaldehyde and acetophenone..Simple problems on PMR spectroscopy for structure determination of organic compounds  Revision and Test |
| **October 2022** | Carbohydrates-I 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. 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.  Revision and Test |
| **November 2022** | Carbohydrates-II An introduction to disaccharides (maltose, sucrose and lactose) and polysaccharides (starch and cellulose) without involving structure determination. Organometallic Compounds Organomagnesium compounds: the Grignard reagents- formation, structure and chemical reactions. Organozinc compounds: formation and chemical reactions. Organolithium compounds: formation and chemical reactions.  Revision and Test |
| **December 2022** | Revision and Test |

| **Government College for Women, Lakhanmajra Lesson Plan** | |
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| **SESSION: 2022-2023 SUBJECT: Chemistry PAPER: CH-301**  **TEACHER: Mrs. Heena** | |
|  | Syllabus |
| **August 2022:** | **Chemistry of Elements of Ist transition series:**  Definition of transition elements, position in the periodic table, General characteristics & properites of Ist transition elements, Structures & properties of  some compounds of transition elements – TiO2, VOCl2, FeCl3, CuCl2 and Ni (CO)4. |
| **September 2022:** | **Chemistry of Elements of IInd & IIIrd transition series**  General characteristics and properties of the IInd and IIIrd trans ition elements Comparison of properties of 3d elements with 4d & 5d elements with reference only  to ionic radii, oxidation state, magnetic and Spectral properties and stereochemistry |
| **October 2022:** | **Coordination Compounds**  Werner's coordination theory, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds,  valence bond theory of transition metal complexes |
| **November 2022:** | **Non-aqueous Solvents**  Physical properties of a solvent, types of solvents and their general characteristics,  reactions in non-aqueous solvents with reference to liquid NH3 and liquid SO2 |
| **December 2022:** | Revision and tests. |

| **Government College for Women, Lakhanmajra Lesson Plan** | |
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| **SESSION: 2022-2023 SUBJECT: Chemistry PAPER: CH-302**  **TEACHER: Mrs. Heena** | |
|  | Syllabus |
| **August 2022:** | **August 2022: Thermodynamics-I**  Defin ition of thermodynamic terms: system,surrounding etc. Types of systems, intensive and extensive properties. State and path functions and their differentials. Thermodynamic process. Concept of heat and work. Zeroth Law of thermodynamics,  First law of thermodynamics: statement, definition of internal energy and enthalpy. Heat capacity, heat capacities at constant volume and pressure and their relationship. Joule’s law – Joule – Thomson coefficient for ideal gass and real gas: and inversion temperature. |
| **September 2022:** | **September 2022: Thermodynamics-II**  Calculation of w.q. dU & dH for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process, Temperature dependence of enthalpy, Kirchoffs equation. Bond energies and applications of bond energies. |
| **October 2022:** | **October 2022: Chemical Equilibrium**  Equilibrium constant and free energy, concept of chemical potential,  Thermodynamic  derivation of law of chemical equilibrium. Temperature dependence of equilibrium constant; Van’t Hoff reaction isochore, Van’t Hoff reaction isotherm. Le-Chatetier’s principle and its applica tions Clapeyron equation and Clausius – Clapeyron equation  its applications. |
| **November 2022:** | **November 2022: Dis tributioln Law**  Nernst distribution law – its thermodynamic derivation, Modification of distribution law when solute undergoes dissociation, association and chemical combination.  Applications of distribution law: (i) Determination of degree of hydrolysis and hydrolysis constant of aniline hydrochloride. (ii) Determination of equilibrium constant of potassium tri-iodide complex and process of extraction. |
| **December 2022:** | **December 2022:** Revision and tests. |

| **Government College for Women, Lakhanmajra Lesson Plan** | |
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| **SESSION: 2022-2023 SUBJECT: Chemistry PAPER: CH-502**  **TEACHER: Mrs. Heena** | |
|  | Syllabus |
| **August 2022:** | **August 2022: Quantum Mechanics-I**  Black-body radiation, Plank’s radiation law, photoelectric effect, heat capacity of solids, Compton effect,wave function and its significance of Postulates of quantum mechanics, quantum mechanical operator, commutation relations, Hamiltonial operator, Hermitian operator, average value of square of Hermitian as a  positive quantity, Role of operators in quantum mechanics, To show quantum mechanically that position and momentum cannot be predicated simultaneously, Determination of wave function & energy of a particle in one dimensional box, Pictorial representation and its significance. |
| **September 2022:** | **September 2022: Physical Properties and Molecular Structure**  Optica l activity, polarization – (clausius – Mossotti equation). Orientation of dipoles  in an electric field, dipole moment, included dipole moment, measurement of dipole moment-temperature method and refractivity method, dipole moment and structure of  molecules, Magnetic permeability, magnetic susceptibility and its determination. Applica tion of magnetic susceptibility, magnetic properties – paramagnetism,  diamagnetism and ferromagnetics |
| **October 2022:** | **October 2022: Spectroscopy-I**  **Introduction**: Electromagnetic radiation, regions of spectrum, basic features of spectroscopy, statement of Bornoppenheimer approximation, Degrees of freedom. **Rotational Spectrum**  Diatomic molecules. Energy levels of rigid rotator (semi-classical principles), selection rules, spectral intensity distribution using population distribution (Maxwell-Boltzmann distribution), determination of bond length, qualitative  description of non-rigid rotor, isotope effect. |
| **November 2022:** | **November 2022: Vibrational spectrum**  Infrared spectrum: Energy levels of simple harmonic oscillator, selection rules, pure vibrational spectrum, intensity, determination of force constant and qualitative relation of force constant and bond energies, effects of anharmonic motion and isotopic effect on the spectra., idea of vibrational frequencies of different functional groups.  **Raman Spectrum**:  Concept of polarizibility, pure rotational and pure vibrational Raman spectra of diatomic molecules, selectin rules, Quantum theory of Raman spectra. |
| **December 2022:** | **December 2022:** Revision and tests. |

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| **SESSION: 2022-2023 SUBJECT: Chemistry PAPER: CH-202**  **TEACHER: Mrs. Heena & Dr. Naveen** | |
|  | Syllabus |
| **January 2023** | **January 2023:** Kinetics-I - Rate of reaction, rate equation, factors influencing  the rate of a reaction - concentration, temperature, pressure, solvent, light, catalyst. Order of a reaction,  integrated rate expression for zero order, first order, second and third order reaction.  Half - life period of a reaction. Methods of determination of order of reaction. |
| **February 2023** | **February 2023:** Kinetics-II - Effect of temperature on the rate of reaction –  Arrhenius equation. Theories of reaction rate – Simple collision theory for unimolecular and bimolecular collision. Transition state theory of Bimolecular reactions. |
| **March 2023** | **March 2023:** Electrochemistry-I - Electrolytic conduction, factors affecting  electrolytic conduction, specific, conductance, molar conductance,equivalent conductance and relation among them, their vartion with  concentration.Arrhenius theory of ionization, Ostwald’s Dilution Law. Debye-  Huckel – Onsager’s equation for strong electrolytes (elementary  treatment only) Transport number, definition and determination by Hittorfs methods, (numerical included) |
| **April 2023** | **April 2023:** Electrochemistry-II - Kohlarausch’s Law, calculation of molar ionic conductance and effect of viscosity temperature & pressure on it. Application of Kohlarausch’s Law in calculation of conductance of weak electrolytes at infinite  diloution. Applications of conductivity measurements: determination of degree of dissociation, determination of Ka of acids determination of solubility product of spa ringly soluble salts, conductometric  titrations. Definition of pH and pKa, Buffer solution, Buffer action, Henderson – Hazel equation, Buffer mechanism of buffer action.  Revision and tests. |

| **Government College for Women, Lakhanmajra Lesson Plan** | |
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| **SESSION: 2022-2023 SUBJECT: Chemistry PAPER: CH-203**  **TEACHER: Mrs. Heena & Dr. Naveen** | |
|  | Syllabus |
| **January 2023** | **January 2023:** Alkenes - Nomenclature of alkenes, mechanisms of dehydration of alcohols and dehydrohalogenation of alkyl halides. The Saytzeff rule, Hofmann elimination,  physical properties and relative stabilities of alkenes. Chemical reactions of alkenes mechanisms involved in hydrogenation, electrophilic and free radical additions, Markownikoff’s rule, hydroboration–oxidation, oxymercuration reduction, ozonolysis,  hydration, hydroxylation and oxidation with KMnO4. |
| **February 2023** | **February 2023:** Arenes and Aromaticity - Nomenclature of benzene derivatives: Aromatic nucleus and side chain. Aromaticity: Huckel rule, aromatic ions, annulenes up to 10 carbon atoms, aromatic, anti - aromatic and non – aromatic compounds. Aromatic electrophilic substitution general pattern of the mechanism, mechansim of nitration,  halogenation, sulphonation, and Friedel-Crafts reaction. Energy profile diagrams. Activating, deactivating substituents and orientation. |
| **March 2023** | **March 2023:** Dienes and Alkynes - Nomenclature and classification of dienes: isolated, conjugated and cumulated dienes. Structure of butadiene, Chemical reactions 1,2 and 1,4 additions (Electrophilic & free radical mechanism), Diels- Alder reaction, Nomenclature, structure and bonding in alkynes. Methods of formation. Chemical reactions of alkynes, acidity of alkynes. Mechanism of electrophilic and nucleophilic addition reactions, hydroboration-oxidation of alkynes. |
| **April 2023** | **April 2023:** Alkyl and Aryl Halides - Nomenclature and classes of alkyl halides, methods of formation, chemical reactions. Mechanisms and stereochemistry of nucleophilic substitution reactions of alkyl halides, SN2 and SN1reactions with energy profile diagrams. Methods of formation and reactions of aryl halides, The addition - elimination and the elimination-addition mechanisms of nucleophilic aromatic substitution reactions. Relative reactivities of  alkyl halides vs allyl, vinyl and aryl halides. Revision and tests. |

| **Government College for Women, Lakhanmajra Lesson Plan** | |
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| **SESSION: 2022-2023 SUBJECT: Chemistry PAPER: CH-402**  **TEACHER: Mrs. Heena & Dr. Naveen** | |
|  | Syllabus |
| **January 2023** | **January 2023: Thermodynamics-III**  Second law of thermodynamics, need for the law, different statements of the law, Carnot’s cycles and its efficiency, Carnot’s theorm, Thermodynamics scale oftemperature. Concept of entropy – entropy as a state function, entropy as a function ofV & T, entropy as a function of P & T, entropy change in physica l change,entropy as a criteria of spontaneity and equilibrium. Entropy change in ideal gasesand mixing of gases. |
| **February 2023** | **February 2023: Thermodynamics-IV**  Third law of thermodynamics: Nernst heat theorem, statement of concept of residual entropy, evaluation of absolute entropy from heat capacity data. Gibbs and Helmholtz functions; Gibbs function (G) and Helmholtz function (A) as thermodynamic quantities, A & G as criteria for thermodynamic equilibrium and spontaneity, their advantage over entropy change. Variation of G and A with P, V and T. |
| **March 2023** | **March 2023: Electrochemistry-III**  Electrolytic and Galvanic cells – reversible & Irreversible cells , conventional representation of electrochemical cells. EMF of cell and its measurement, Wes ton standard cell, activity and activity coefficients. Calculation of thermodynamic quantities of cell reaction ( G, H & K). Types of reversible electrodes – metalmetal ion gas electrode, metal –insoluble salt- anion and redox electrodes. Electrodereactions, Nernst equations, derivation of cell EMF and single electrode potential.Standard Hydrogen electrode, reference electrodes, standard electrodes potential, signconventions, electrochemical se ries and its applications. |
| **April 2023** | **April 2023: Electrochemistry-IV**  Concentration cells with and without transference, liquid junction potential, application of EMF measurement i.e. valency of ions, solubility product activity coefficient, potentiometric titration (acid- base and redox). Determination of pH using Hydrogen electrode, Quinhydrone electrode and glass electrode by potentiometric  methods.  Revision and tests. |

| **Government College for Women, Lakhanmajra Lesson Plan** | |
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| **SESSION: 2022-2023 SUBJECT: Chemistry PAPER: CH-403**  **TEACHER: Mrs. Heena & Dr. Naveen** | |
|  | Syllabus |
| **January 2023** | Infrared (IR) absorption spectroscopy Molecular vibrations, Hooke's law, selection  rules, intensity and position of IR bands, measurement of IR spectrum, fingerprint region, characteristic absorptions of various functional groups and interpretation of IR spectra of simple organic compounds. Applications of IR spectroscopy in structure e lucidation of simple organic compounds.  Revision and Test |
| **February 2023** | Amines Structure and nomenclatu re of amines, phys ical properties. Separation of a  mixture of primary, secondary and tertiary amines.Structural featu res affecting basicity of amines. Prepa ration of alkyl and aryl amines (reduction of nitro compounds, nitriles, reductive amination of aldehydic and ketonic compounds. Gabrielphthalimide reaction, Hofmann bromamide reaction. electrophilic aromatic substitution in aryl amines, reactions of amines with nitrous acid. Revision and Test |
| **March 2023** | 1. Diazonium Salts: Mechanism of diazotisation, structure of benzene diazonium  chloride, Replacement of diazo group by H, OH, F, Cl, Br, I, NO2 and CN groups, reduction of diazonium salts to hyrazines, coupling reaction and its synthetic application. 2. Nitro Compounds: Preparation of nitro alkanes and nitro arenes and their chemical reactions. Mechanism of electrophilic substitution reactions in nitro  arenes and their reductions in acidic, neutral and alkaline medium.Revision and Test |
| **April 2023** | Aldehydes and Ketones Nomenclature and structure of the carbonyl group. Synthesis  of aldehydes and ketones with particular reference to the synthesis of aldehydes from acid chlorides, advantage of oxidation of alcohols with chromium trioxide (Sarett reagent) pyridinium chlorochromate (PCC) and pyridinium dichromate., Physical properties. Comparison of reactivities of aldehydes and ketones. Mechanism of nucleophilic additions to carbonyl group with particular emphasis on benzoin, aldol, Perkin and Knoevenagel condensations. Condensation with ammonia and its derivatives. Wittig reaction. Mannich reaction.Oxidation of aldehydes, Baeyer– Villiger oxidation of ketones, Cannizzaro reaction. MPV, Clemmensen, Wolff- Kishner, LiAlH4and NaBH4reductions. Revision and Test |

| **Government College for Women, Lakhanmajra Lesson Plan** | |
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| **SESSION: 2022-2023 SUBJECT: Chemistry PAPER: CH-602**  **TEACHER: Mrs. Heena & Dr. Naveen** | |
|  | Syllabus |
| **January**  **2023** | **January 2023: Electronic Spectrum**  Concept of potential energy curves for bonding and antibonding molecular orbitals, qualitative description of selection rules and Franck- Condon principle. Qualitative description of sigma and pie and n molecular orbital (MO) their energy level and respective transitions. |
| **February 2023** | **February 2023: Photochemistry**  Interaction of radiation with matter, difference between thermal and photochemical processes. Laws of photochemistry: Grotthus-Drapper law, Stark- Einstein law (law of photochemical equivalence) Jablonski diagram depiciting various processes occurring in the excited state, qualitative description of fluorescence, phosphorescence, non-radiative processes (internal conversion, intersystem crossing), quantum yield, photosensitized reactions-energy transfer processes (simple examples). |
| **March 2023** | **March 2023: Solutions:**  **Dilute Solutions and Colligative Properties**  Ideal and non-ideal solutions, methods of expressing concentrations of solutions, activity and activity coefficient. Dilute solution,Colligative properties, Raolut’s law, relative lowering of vapour pressure, molelcular weight determination, Osmosis law of osmotic pressure and its measurement, determination of molecular weight from osmotic pressure. Elevation of boiling point and depression of freezing point, Thermodynamic derivation of relation between molecular weight and elevation in boiling point and depression in freezing point. Experimental methods for determining various colligative properties. Abnormal molar mass, degree of dissociation and association of solutes. |
| **April 2023** | **April 2023: Phase Equillibrium**  Statement and meaning of the terms – phase component and degree of freedom, thermodynamic derivation of Gibbs phase rule, phase equilibria of one component system –Example – water and Sulpher systems. Phase equilibria of two component systems solid-liquid equilibria, simple eutectic Example Pb-Ag system, desilerisation of lead |

Lesson Plan 2022-23 Dr.Manisha

Semester-1st Organic Chemistry

| July | Structure and Bonding :-Localized and delocalized chemical bond, van der Waals in teractions, resonance: conditions, resonance effect and its applications, hyperconjugation, inductive effect, Electromeric effect &  their comparison. |
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| August | Stereochemistry of Organic Compounds-I Concept of isomerism. Types of isomerism. Optical isomerism, elements of symmetry, molecular chirality, enantiomers, stereogenic centre, optical activity, properties of enantiomers, chiral and achiral molecules with two stereogenic centres, diastereomers, threo and eryth ro diastereomers, meso compounds,  resolution of enantiomers, inversion, retention and racemization. |
| September | Stereochemistry of Organic Compounds-II Relative and absolute configuration, sequence rules, R & S systems of nomenclature. Geometric isomerism determination of configuration of geometric isomers. E & Z system of nomenclature, Conformational isomerism conformational analysis of ethane and n-butane, conformations of cyclohexane, axial and equatorial bonds,. Newman projection and Sawhorse formulae, Difference  between configuration and conformation. |
| October | Mechanis m of Organic Reactions Curved arrow notation, drawing electron movements with arrows, half-headed and double-headed arrows, homolytic and heterolytic bond breaking. Types of reagents – electrophiles and nucleophiles. Types of organic reactions. Energy considerations. Reactive intermediates carbocations, carbanions, free radicals, carbenes , arynes and nitrenes (formation, structure & stability).  Assigning formal charges on intermediates and other ionic species. |
| November | Alkanes and Cycloalkanes IUPAC nomenclature of branched and unbranched alkanes , the alkyl group, classi fication of carbon atoms in alkanes. Isomerism in alkanes, sources, methods of formation (with special reference to Wurtz reaction, Kolbe reaction, Corey-House reaction and decarboxylation of carboxylic acids), physical properties.  Cycloalkanes nomenclature, synthesis of cycloalkanes and their derivatives – photochemical (2+2) cycloaddition reactions, dehalogenation of -dihalides, pyrolysis of calcium or barium salts of dicarboxylic acids, Baeyer's strain theory and its limitations., theory of  strainless rings |
| Dec | Test and Revision |

Lesson Plan 2022-23 Dr.Manisha

Semester-3rd Inorganic Chemistry

| July | Chemistry of Elements of Ist transition series: Definition of transition elements, position in the periodic table, General characteristics & properites of Ist transition elements,. Structures & properties of some compounds of transition elements – TiO2, VOCl2 , FeCl3 , CuCl2 and Ni  (CO)4 |
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| August | Chemistry of Elements of IInd & IIIrd transition series General characteristics and properties of the IInd and IIIrd trans ition elements Comparison of properties of 3d elements with 4d & 5d elements with reference only to ionic radii, oxidation state, magnetic and Spectral  properties and stereochemistry |
| September | Coordination Compounds Werner's coordination theory, effective atomic number concept, chelates, nomenclature of coordination compounds, isomerism in coordination compounds, valence bond theory of transition  metal complexes |
| October- November | Non-aqueous Solvents Physical properties of a solvent, types of solvents and their general characteristics, reactions in non-aqueous solvents with  reference to liquid NH3 and liquid SO2 |
| Dec | Test and Revision |

Lesson Plan 2022-23 Dr.Manisha

Semester-5st Physical Chemistry

| july | Quantum Mechanic s-I Black-body radiation, Plank’s radiation law, photoelectric effect, heat capacity of solids, Compton effect,wave function and its significance of Postulates of quantum mechanics , quantum mechanical operator, commutation relations, Hamiltonial operator, Hermitian operator, average value of square of Hermitian as a positive quantity, Role of operators in quantum mechanics, To show quantum mechanically that position and momentum cannot be predicated simultaneously, Determination of wave function & energy of a partic le in  one dimensional box, Pictorial representation and its significance |
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| august | Physical Properties and Molecular Structure Optica l activity, polarization  – (clausius – Mossotti equation). Orientation of dipoles in an electric field, dipole moment, included dipole moment, measurement of dipole moment- temperature method and refractivity method, dipole moment and structure of molecules, Magnetic permeability, magnetic susceptibility and its determination. Applica tion of magnetic susceptibility, magnetic  properties – paramagnetism, diamagnetism and ferromagnetics. |

| September | Spectroscopy-I Introduction: Electromagnetic radiation, regions of spectrum, basic features of spectroscopy, statement of Bornoppenheimer approximation, Degrees of freedom. Rotational Spectrum Diatomic molecules. Energy levels of rigid rotator (semi-classical principles), selection rules, spectral intensity distribution using population distribution (Maxwell-Boltzmann distribution), determination of bond length,  qualitative description of non-rigid rotor, isotope effect |
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| october | Spectroscopy-II Vibrational spectrum Infrared spectrum: Energy levels of simple harmonic oscillator, selection rules, pure vibrational spectrum, intensity, determination of force constant and qualitative relation of force constant and bond energies, effects of anharmonic motion and isotopic effect on the spectra., idea of vibrational frequencies of different  functional groups. |
| November | Raman Spectrum: Concept of polarizibility, pure rotational and pure  vibrational Raman spectra of diatomic molecules, selectin rules, Quantum theory of Raman spectra. |
| Dec | Test and Review |

Lesson Plan 2022-23 Dr.Manisha

Semester-3rd Organic Chemistry

| July | 1.Alcohols Monohydric alcohols nomenclature, methods of formation by reduction of aldehydes, ketones, carboxylic acids and esters. Hydrogen bonding. Acidic nature. Reactions of alcohols. Dihydric alcohols — nomenclature, methods of formation, chemical reactions of vicinal glycols, oxidative cleavage [Pb(OAc)4 and HIO4 ] and pinacol-  pinacolone rearrangement. |
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| August | 2. Epoxides Synthesis of epoxides. Acid and base-catalyzed ring opening of epoxides, orientation of epoxide ring opening, reactions of Grignard  and organolithium reagents with epoxides |
| September | Phenols Nomenclature, structure and bonding. Preparation of phenols, physical properties and acidic character. Comparative acidic strengths of alcohols and phenols, resonance stabilization of phenoxide ion. Reactions of phenols — electrophilic aromatic substitution, Mechanisms of Fries rearrangement, Claisen rearrangement, Reimer-Tiemann reaction, Kolbe’s  reaction and Schotten and Baumann reactions |
| October | Ultraviole t (UV) absorption spectroscopy Absorption laws (Beer- Lambert law), molar absorptivity, presentation and analysis of UV spectra, types of electronic transitions, effect of conjugation. Concept of chromophore and auxochrome. Bathochromic, hypsochromic, hyperchromic and hypochromic shifts. UV spectra of conjugated enes and  enones,Woodward- Fieser rules, calculation of max of simple conjugated |

|  | dienes and , -unsaturated ketones. Applications o f UV Spectroscopy in  structure elucidation of simple organic compounds |
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| November | Carboxylic Acids & Acid Derivatives Nomenclatu re of Carboxylic acids, structure and bonding, physical properties, acidity of carboxylic acids, effects of substituents on acid strength. Preparation of carboxylic acids.  Reactions of carboxylic acids. Hell-Volhard-Zelinsky reaction. Reduction of carboxylic acids. Mechanism of decarboxylation. Structure , nomenclature and preparation of acid chlorides, esters, amides and acid anhydrides. Relative s tability o f acyl derivatives. Phys ical properties, interconvers ion of acid derivatives by nucleophilic acyl substitution.  Mechanisms of es ter ifica tion and hydrolysis (acidic and basic) |
| December | Test and Revision |

Lesson Plan 2022-23 Dr.Manisha

Semester-2nd Inorganic Chemistry

| Jan | Hydrogen Bonding & Vander Waals Forces Hydrogen Bonding – Definition, Types, effects of hydrogen bonding on properties of substances, applicat ion Brief discussion of various types of Vander Waals Forces . Metallic Bond and Semiconductors Metallic Bond- Brie f introduction to meta llic bond, band theory of meta llic bond  Semiconductors- Introduction, types and applications. |
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| Feb | s-Block Eleme nts Comparative study of the elements including , diagonal relationships, salient features of hydrides (methods of preparation excluded), solvation and complexation tendencies including their function in biosystems. Chemis try of Noble Gases Chemical properties of the noble gases with emphasis on their low chemical reactivity, chemistry of xenon, structure and bonding of fluorides, ox ides & oxyfluorides of  xenon. |
| March | p-Block Elements Emphasis on comparative study of properties of p-block elements (including diagonal relationship and excluding methods of preparation). Boron family (13th gp):- Diborane – properties and structure (as an example of electron – deficient compound and multicentre bonding), Borazene – chemical properties and structure Trihalides of Boron – Trends in fewis acid character structure of aluminium (III) chloride. Carbon Family (14th group) Catenation, p π– d π bonding (an idea), carbides, fluorocarbons, silicates structural aspects), silicons –  general methods of preparations, properties and uses. |
| April | Nitrogen Family (15th group) 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. Oxygen Family (16th group) Oxyacids of sulphur – structures and acidic strength H2O2 –structure, properties and uses. Halogen Fami l y (17th group) Basic prope r ties of ha logen, interha logens types propert ies ,hydro and  oxyacids of chlorine – structure and compari son of acid strength |
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| May | Test and Revision |

Lesson Plan 2022-23 Dr.Manisha

Semester-6th Organic Chemistry

| Jan | Heterocyclic Compounds-I Introduction: Molecular orbital p icture and aromatic characteristics of pyrrole, furan, thiophene and pyridine.  Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution. Mechanism of nucleophilic substitution reactions in pyridine derivatives. Comparison of basicity of  pyridine, piperidine and pyrrole |
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| Feb | Heterocyclic Compounds-II Introduction to condensed five and six- membered heterocycles. Prepration and reactions of indole, quinoline and isoquinoline with special reference to Fisher indole synthesis, Skraup synthesis and Bischler-Napieralski synthesis. Mechanism of electrophilic substitution reactions of, quinoline and isoquinoline 2. Organosulphur Compounds Nomenclature, structural features, Methods of formation and chemical reactions of thiols, thioethers, sulphonic acids, sulphonamides  and sulphaguanidine. Synthetic detergents alkyl and aryl sulphonates. |
| March | 1. Organic Synthesis via Enolates Acidity of -hydrogens, alkylation of diethyl malonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate: the Claisen condensation. Keto-enol tautomerism of ethyl acetoacetate. 2. Synthetic Polymers Addition or chain-growth polymerization. Free radical vinyl polymerization, ionic vinyl polymerization, Ziegler-Natta polymerization and vinyl polymers. Condensat ion or step growth polymerization. Polyeste rs ,polyamides, phenol formaldehyde resins, urea formaldehyde resins, epoxy re sins and polyurethanes. Natural and  synthetic rubbers |
| April | Amino Acids, Peptides& Proteins Classification, of amino acids. Acid- base behavior, isoelectric point and electrophoresis. Preparation of -amino acids.Structure and nomenclature of peptides and proteins. Classification of proteins. Peptide structure determination, end group analysis, selective hydrolysis of peptides. Classical peptide synthesis, solid– phase peptide synthesis. Structures of peptides and proteins: Primary & Secondary  structure. |
| May | Test and Review |

Lesson Plan 2022-23 Dr.Manisha Semester-6th Inorganic Chemistry

| Jan | Organometallic Chemistry Definition, nomenclature and classification of organometallic compounds. Preparation, properties, and bonding of alkyls of Li, Al, Hg, and Sn a brief account of metal-ethylenic complexes,  mononuclear carbonyls and the nature of bonding in metal carbonyls. |
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| Feb | Acids and Bases, HSAB Concept Arrhenius, Bronsted – Lowry, the Lux – Flood, Solvent system and Lewis concepts of acids & bases, relative strength of acids & bases, Concept of Hard and Soft Acids & Bases.  Symbiosis, electronegativity and hardness and softness |
| March | Bioinorganic Chemistry Essential and trace elements in biological processes, metalloporphyrins with special reference to haemoglobin and myoglobin. Biological role of alkali and alkaline earth metal ions with  special reference to Ca2+. Nitrogen fixation. |
| April | Sil icones and Phosphazenes Silicones and phosphazenes, their  preparation, properties,structure and uses |
| May | Test and Review |

Lesson Plan 2022-23 Dr.Manisha

Semester-4th Inorganic Chemistry

| Jan | Chemistry of f – block elements Lanthanides Electronic structure, oxidation states and ionic radii and lanthanide contraction, complex  formation, occurrence and isolation, lanthanide compounds |
| --- | --- |
| Feb | Chemis try of f – block elements Actinides General features and chemistry of actinides, chemistry of separation of Np, Pu and Am from U, Comparison of properties of Lanthanides and Actinides and with trans  ition elements . |
| March | Theory of Quali tative and Quanti tative Inorganic Analysis-I Chemistry of analysis of various acidic radicals, Chemistry of identification of acid radicals in typical combinations, Chemistry of interference of acid radicals  including their removal in the analys is of basic radicals. |
| April | Theory of Quali tative and Quanti tative Inorganic Analysis-II Chemistry of analysis of various groups of basic radicals, Theory of precipitation, co-  precipitation, Post- precipitation, purification of precipitates. |
| May | Test and Revision |

**Govt. College for Women, Lakhan Majra**

**Lesson Plan (2022-23) Even Semester (Theory)**

**Name of the Teacher: Ms. Sonali**

**Class: B.Sc. (Med.) 2ndSemester (Paper 1 & 2)**

| **Sr. No.** | **Month** | **Topic** |
| --- | --- | --- |
| **1** | **February** | Bryophytes: Introduction, Classification & Economic Importance, Case study of *Marchantia*, *Anthoceros*&*Funaria.*Pteridophytes: Introduction, Classification & Stellar System.  **Class Test** |
| **2** | **March** | Case study of *Rhynia;* Heterospory, Apospory, Apogamy, Evolution. Case study of *Selaginella*, *Equisetum*&*Pteris,* Economic Importance of Pteridophytes.  Genetic Material & Genetic Inheritance.  **Class Test** |
| **3** | **April** | Extra-nuclear Inheritance; Genetic Variations: Mutations, Transposable elements, DNA damage & repair. Gene, RNA, Transcription & Translation, Protein Structure.  **Class Test** |
| **4** | **May** | Regulation of Gene Expression.  **Class Test** |

**Class: B.Sc. (Med.) 4thSemester (Paper 1 & 2)**

| **Sr. No.** | **Month** | **Topic** |
| --- | --- | --- |
| **1** | **February** | Floral terms & Types of Inflorescence, Diagnostic features & Economic importance of Family: Brassicaceae, Malvaceae, Fabaceae, Asteraceae, Lamiaceae, Euphorbiaceae.Taxonomy: Aim, Objectives, Fundamentals & Role of Chemotaxonomy, Cytotaxonomy & Taximetrics, Herbarium & Botanical Gardens.  **Class Test** |
| **2** | **March** | Diagnostic features & Economic importance of Family: Rutaceae, Ranunculaceae, Solanaceae, Apiaceae & Poaceae.Botanical Nomenclature, Principles and Rules, Keys to Identification, Type concept, Taxonomic Hierarchy & Systems of Classification.  **Class Test** |
| **3** | **April** | Diagnostic features & Economic importance of Family: Asclepiadaceae, Cucurbitaceae & Liliaceae. Microsporangium, Dehiscence, Pollens & Pollination, Megasporangium& its types, Fertilization, Endosperm, Embryogenesis in Dicot & Monocot.  **Class Test** |
| **4** | **May** | Polyembryony, Seed: Structure & Dispersal, Types of Fruits.  **Class Test** |

**Class: B.Sc. (Med.) 6thSemester (Paper 1 & 2)**

| **Sr. No.** | **Month** | **Topic** |
| --- | --- | --- |
| **1** | **February** | Centres of origin of crop plants. Economic Botany of: Cereals, Vegetables, Timber. Enzymology, Respiration.  **Class Test** |
| **2** | **March** | Lipid & Nitrogen Metabolism, Economic Botany of: Fiber, Beverages, Sugarcane, Oils, Medicinal Plants, Pulses & Rubber.  **Class Test** |
| **3** | **April** | Economic Botany of: Spices, Tools and techniques of recombinant DNA technology& Cloning Vectors; Genomic and cDNA library and Transposable elements. Aspects of plant tissue culture; cellular totipotency, differentiation and morphogenesis.  **Class Test** |
| **4** | **May** | Biology of *Agrobacterium* ; vectors for gene delivery and marker genes.General account of energy plantations & bio-fuels.  **Class Test** |

**Govt. College for Women, Lakhan Majra**

**Lesson Plan (2022-23) Even Semester (Practical)**

**Name of the Teacher: Ms. Sonali**

**Class: B.Sc. (Med.) 2ndSemester**

**Practical (P - 201)**

| **Sr. No.** | **Month** | **Topic** |
| --- | --- | --- |
| **1** | **February** | Slide & Specimen of *Marchantia*, *Anthoceros*&*Funaria* |
| **2** | **March** | Slide & Specimen of *Selaginella*, *Equisetum*&*Pteris*. |
| **3** | **April** | Mendelian inheritance & Gene Interaction. |

**Class: B.Sc. (Med.) 4thSemester**

**Practical (P - 401)**

| **Sr. No.** | **Month** | **Topic** |
| --- | --- | --- |
| **1** | **February** | Floral description, diagram & formula of Family: Brassicaceae, Malvaceae, Fabaceae, Asteraceae, Lamiaceae, Euphorbiaceae.  To study Pollen germination. |
| **2** | **March** | Floral description, diagram & formula of Family: Rutaceae, Ranunculaceae, Solanaceae, Apiaceae & Poaceae.  To study types of Ovules. |
| **3** | **April** | Floral description, diagram & formula of Family: Asclepiadaceae, Cucurbitaceae & Liliaceae.  To study types of Embryos. |

**Class: B.Sc. (Med.) 6thSemester**

**Practical (P-601)**

| **Sr. No.** | **Month** | **Topic** |
| --- | --- | --- |
| **1** | **February** | Study of Economically Important Plants: Cereals, Vegetables, Timber, Fiber, Beverages, Sugarcane. |
| **2** | **March** | Study of Economically Important Plants: Oils, Medicinal Plants, Pulses & Rubber. Experiment to test Carbohydrate, Fats & Protein activity. |
| **3** | **April** | To perform Plant tissue Culture Experiment. |

**Govt. College for Women, Lakhan Majra**

**Lesson Plan (2022-23) Odd Semester**

**Name of the Teacher: Ms. Sonali**

**Class: B.Sc. (Med.) 1st Semester (Paper 1 & 2)**

| **Sr. No.** | **Month** | **Topic** |
| --- | --- | --- |
| **1** | **August** | Algae: General characters; Classification; Algal bloom. |
| **2** | **September** | Algae: *Volvox; Oedogonium; Vaucheria; Ectocarpus; Polysiphonia,* Economic Importance. Cell wall and Cell organelles. |
| **3** | **October** | Fungi: General features; Classification; *Phytophthora; Mucor; Penicillium; Puccinia; Agaricus; Colletotrichum;* Economic Importance. Cell cycle & Cell division |
| **4** | **November** | Bacteria; Cyanobacteria; Virus; Lichens. Chromosomal aberrations. |
| **5** | **December** | Revision |

**Class: B.Sc. (Med.) 3rd Semester (Paper 1 & 2)**

| **Sr. No.** | **Month** | **Topic** |
| --- | --- | --- |
| **1** | **August** | Heterospory, Evolution of Seed Habit, Geological Timescale, Fossilization, General Characteristics of Gymnosperms. |
| **2** | **September** | Classification of Gymnosperms, Study of *Cycas*&*Pinus*. Plant tissue system. |
| **3** | **October** | Study of Ephedra. Economic importance of gymnosperms. Cambium. Anatomical features of Root, modifications in root. |
| **4** | **November** | Structure and types of leaf. Phyllotaxy. Anatomical features of stem and anomalous secondary growth. |
| **5** | **December** | Revision |

**Class: B.Sc. (Med.) 5th Semester (Paper 1 & 2)**

| **Sr. No.** | **Month** | **Topic** |
| --- | --- | --- |
| **1** | **August** | Plant-water Relations, Transpiration, Mineral Nutrition, Transport Mechanisms. |
| **2** | **September** | Photosynthesis: Significance; Photosynthetic Pigments; Action spectra and Enhancement effect; Concept of two photosystems; Z-Scheme; Photophosphorylation; Calvin Cycle; C4 & CAM cycle; Photorespiration, Phytochromes. |
| **3** | **October** | Plant hormones; Growth and development; Seed Dormancy; Plant movements; Photoperiodism; Flowering; Senescence; Fruit ripening.  Introduction to Ecology; Abiotic & Biotic factors; Population Ecology; Community Ecology. |
| **4** | **November** | Ecosystem structure & function; Biogeochemical cycles; Phytogeography; Environment Pollution; Global warming; Ozone depletion; Biomagnification. |
| **5** | **December** | Revision |

**Govt. College for Women, Lakhan Majra**

**Lesson Plan (2022-23) Odd Semester**

**Name of the Teacher: Ms. Sonali**

**Class: B.Sc. (Med.) 1st Semester (Practical)**

| **Sr. No.** | **Month** | **Topic** |
| --- | --- | --- |
| **1** | **August** | Slide & Specimen of Algae |
| **2** | **September** | Slide & Specimen of Algae |
| **3** | **October** | Slide & Specimen of Fungi, Lichen and Bacteria |
| **4** | **November** | Study of Cell division in Onion root-cells |
| **5** | **December** | Revision |

**Class: B.Sc. (Med.) 3rd Semester (Practical)**

| **Sr. No.** | **Month** | **Topic** |
| --- | --- | --- |
| **1** | **August** | Slide & Specimen of *Cycas* |
| **2** | **September** | Slide & Specimen of *Cycas*&*Pinus* |
| **3** | **October** | Slide & Specimen of *Ephedra*. To study anatomical features of Root and Stem. To study modification in Roots. |
| **4** | **November** | To study morphological and anatomical features of leaf. To study anomalous secondary growth. |
| **5** | **December** | Revision |

**Class: B.Sc. (Med.) 5th Semester (Practical)**

| **Sr. No.** | **Month** | **Topic** |
| --- | --- | --- |
| **1** | **August** | To study Osmosis |
| **2** | **September** | To study Imbibition and Transpiration.  To study modifications in xerophytes, hydrophytes and halophytes. |
| **3** | **October** | To study different plant pigments by paper chromatography. To study plant community by Quadrate method. To determine the rate of photosynthesis under varying conditions of carbon dioxide. |
| **4** | **November** | To study effect of different light intensities on rate of photosynthesis using Wilmot’s bubbler. To study phototropism and geotropism. |
| **5** | **December** | Revision |

**Lesson Plan**

Academic Session- **2022-23** Subject- **Zoology**

Class - **B. Sc. – 1st Semester** Assistant Professor: Dr. Pradeep Kumar

| **AUGUST 2022** | |
| --- | --- |
|  | THEORY:  General characters and classification of Protozoa up to order level; Biodiversity and economic importance of Protozoa.  Type study of *Plasmodium, Entamoeba, Leishmania* and *Giardia:* Life history, mode of infection and pathogenicity  PRACTICAL: Classification up to orders with ecological note and economic importance of  the following animal:  I. Protozoa Lamination of cultures of Amoeba, Euglena and Paramecium;permanent prepared slides: Amoeba, Euglena, Trypanosoma,Noctiluca, Eimeria, Paramecium (binary fission and conjugation),Opalina, Verticella, Balantidium, Nyctotherus, radiolarian and  formaniferan ooze. 2. Parazoa (Porifera) Specimens: Sycon. Grantia, Euplectella, Hyalonema, Spongilla, Euspongia |
| **SEPTEMBER 2022** | |
|  | THEORY  General characters and classification of Porifera up to order level; Biodiversity and economic importance of Porifera.  Type study of *Sycon: Habit, Habitat, Distribution, Different body parts with their functions;* Different types of Canal systems and Spicules in sponges.  46+3 Az .?”: 0  .  PRACTICAL  3. Coelenterata. Specimens: Porpita, Valella, Physalia, Aurelia, Rhyzostoma,  Metridium, Millipora, Alcyonium, Tubipora, Zoanthus, Madrepora, Favia, Fungia, and Astrea, Permanent prepared slides: Hydra (W.M.), Hydra with buds, Obelia (colony and medusa), Sertularia, Plumularia, Tubularia, and Bougainvillea, Aurelia (sense organs and stages of life history). 4. Platyhelminthes Specimens: Dugesia, Fasciola, Taenia, Echinococus, Permannt prepared slides: Miracidium, sporocyst, redia, cercaria, scolex and proglotttids; Taenia (mature and gravid). 5. Aschelminthes Ascaris (male & female), Trichinella, Ancylostoma, Meloidogyne. |
|  | **OCTOBER 2022** |
|  | THEORY  General characters and classification of Coelenterata up to order level; Biodiversity and economic importance of Coelenterata.  Type Study – *Obelia,* Corals and coral reefs, Polymorphism in Siphonophores.  PRACTICAL  (B) Study of the following permanent stained preparations:  I. L.S. and TS. Sycon; gemmules, spicules and sponging fibres of Sycon, canal  system of sponges. 2. TS. Hydra (testis and ovary region). 3. T.S. Fasciola (different regions). 4. T.S. Ascaris (male and female). |
|  | **NOVEMBER 2022** |
|  | THEORY  General characters and classification of Helminths up to order level; Biodiversity and economic importance of Helminths.Type study - *Fasciola hepatica;* Helminths parasites: Brief account of life history, mode of infection and pathogenesity of Schistosoma*, Ancylostoma, Trichinella, Wuchereria* and *Oxyuris.*  PRACTICAL  (C) Preparation of the following slides:  1. Temporary preparation of Volvox, Paramecium, Gemmules and spicules of Sycon  2. Preparation of permanent stained whole mounts of Hydra, Obelia, Sertularia,  Plumularia and Bougainvillea. 3. Pathogenic protozoans: Plasmodium, Giardia or as available 4. Pathogenic Helminthes: Ancylostma; Wuchereria or as available Revision  PROJECT WORK |

**Lesson Plan**

Academic Session- **2022-23** Subject- **Zoology**

Class - **B. Sc. - 3rd Semester** Assistant Professor : Dr. Pradeep Kumar

| **August 2022** | |
| --- | --- |
|  | THEORY  Principles of classification; Origin and Evolutionary tree of Chordates; Role of amnion in evolution; Salient features of chordates.  PRACTICAL  Classification upto orders, habit, habitats, external characters and economic importance (if any) of the following animals: - Protochordata : Molqula, Hetryllus, Pyrosoma, Doliolum, Olikopleura, and Amphioxus. Cyclostomata : Myxine, Petromyzon and Ammocoetus larva. |
| **September 2022** | |
|  | THEORY  General characters and classification of phyla upto orders with examples. Functional morphology of the types with examples emphasizing Chordate biodiversity, Chordate’s economic importance and conservation measures where required.  Protochordates: Systematic position, distribution, ecology, morphology and affinities.  PRACTICAL  Chondrichthyes: Zygaena, Pristis, Narcine (electric ray), Trygon, Rhinobatus, Raja and  Chimaera.  4Osteichthyes: Acipenser, Lepidosteus, Muraena, Mystus, Catla, Hippocampus,  Syngnathus, Exocoetus, Anabas, Diodon, Ostraczion, Tetradon, Echinus,  Lophius, Solea and Polypterus. Any of the Lung Fishes.  2. Preparation of models of the different systems of the following animals:  Herdmania: General anatomy  Labeo (locally available fish): Digestive and reproductive systems: cranial nerves  3. Study of the skeleton of Scoliodon, Labeo  4. Study of the following prepared slides: Tornaria larva, T.S. Amphioxus (through different  regionds). Oikopleura, different types of scales. |
| **October 2022** | |
|  | THEORY  General characters and classification of phyla upto orders with examples emphasizing their biodiversity, economic importance and conservation measures where required.  Urochordata: *Herdmania* – type4+ study  Cephalochordata; *Amphioxus –* type study.  PRACTICAL  5. Make permanent stained preparations of the following: Salpa, Spicules, and Cycloid scales 6. Zoological excursion and its report  1. Qualitative tests for identification of simple sugars, disaccharides and polysaccharides.  2. Study of human salivary amylase activity: Effect of temperature, pH, Concentration. |
| **November 2022** | |
|  | THEORY  Cyclostomes: Classification and ecological significance  Type study of *Petromyzon.*  Cyclostomes: General characters and classification of all phyla upto orders with examples emphasizing their biodiversity, economic importance and conservation measures where required.  Pisces:Scales & Fins, Parental care in fishes, fish migration.  Types study of Labeo.  PRACTICAL  Project Report:  1. Migration in fishes  2. Ornamental fishes |

**Lesson Plan**

Academic Session- **2022-23** Subject- **Zoology**

Class - **B. Sc. - 5th Semester** Assistant Professor: Dr. Pradeep Kumar

| **August 2022** | |
| --- | --- |
|  | THEORY  Introduction to world fisheries: Production, utilization and demand. Fresh Water fishes of India: River system, reservoir, pond, tank fisheries. Captive and culture fisheries, cold water fisheries.  PRACTICAL  Classification up to orders, habit, habitats, external characters and economic importance (if any) of the following animals:- Amphibia : Necturus, Proteus, Amphiuma, Salamandra, Amblystoma, Axolotie larva, Alytes, Bufo, Rana. Reptilia  : Hemidactylus, Calotes, Draco, Varanus, Phrynosoma, Chamaeleon, Typhops, Python, Eryx, Ptyas, Bungarus, Naja, Hydrus, Viper, Crocodilus, Gavialis, Chelone (Turtle) and Testudo (Tortoise). |
|  | **September 2022** |
|  | THEORY  Fishing crafts and gears.  Fin fishes, Crustaceans, Molluscs and their culture. Seed production: Natural seed resources – its assessment, collection, Hatchery production.  PRACTICAL  Aves: Casuarius, Arden, Anas, Milvus, Pavo, Eudynamis, Tyto and Alcedo, Halcyon  Mammalia: Ornithorphynchus, Echidna, Didelphis, Macropus, Loris, Macaque,  Hystrix, Funambulus, Telix, Panthera, Canis, Herpestes, Capra, Pteropus  2. Preparation of models of the different systems of the following animals:  Hemidactylus: Digestive, arterial, venous and urinogenital systems.  Rat : Digestive, arterial, venous and urinogenital systems. |
| **October 2022** | |
|  | THEORY  Nutrition: Sources of food (Natural, Artificial) and feed composition (Calorie and Chemical ingredients).  PRACTICAL  3. Study of the skeleton of Rana (Frog), Varanus, Pigeon or Gallus and Orcyctolagus/rat  4. Study of the following prepared slides: Histology of rat (compound tissues).  5. Study and collection of Quill, Contour, Filoplume and Down feathers |
| **November 2022** | |
|  | THEORY  Field Culture: Ponds-running water, recycled water, cage, culture; poly culture.  Culture technology: Biotechnology, gene manipulation and cryopreservation of gametes.  Revision  PRACTICAL  1. Estimation of abnormal constituents of urine (Albumin, sugar, ketone bodies).  2. Use of respirometer.  3. Haematein crystal preparation.  4. Estimation of Hb.  5. DLC of Man/RBC count/WBC count.  Project Report |

**Lesson Plan**

Academic Session- **2022-23** Subject- **Zoology**

Class - **B. Sc. – 2nd Semester** Assistant Professor : Dr. Pradeep Kumar

**Paper – 1; Life and diversity of Annelida to Hemichordata**

| **January 2023** | |
| --- | --- |
|  | **UNIT – I : Phylum - Annelida:**  i) General characters and classification up to order level, ii) Biodiversity and economic importance of Annelida, iii) Type study - *Pheretima* (Earthworm)  iv) Metamerism in Annelida v) Trochophore larva:. Affinities, evolutionary significance  **UNIT-II; Phylum - Arthropoda:**  i) General characters and classification up to order level, ii) Biodiversity and economic importance of insects, iii) Type study – *Periplaneta* |
| **February 2023** | |
|  | **UNIT III; Phylum - Mollusca:**  i) General characters and classification up to order level; ii) Biodiversity and economic importance; iii) Type study – *Pila;* iv) Torsion and detorsion in gastropoda; v) Respiration and foot  **UNIT-IV; Phylum - Echinodermata:**  i) General characters and classification up to order level; ii) Biodiversity and economic importance; iii) Type Study *-Asterias* (Sea Star); iv) Echinoderm larvae  v) Aristotle's Lantern  **Phylum – Hemichordata**: Type study: *Balanoglossus* |
| **March 2023**  **Paper – 2; Genetics** | |
|  | **UNIT-I**  1. Elements of Heredity and variations. 2. The varieties of gene interactions  3. Linkage and recombination: Coupling and repulsion hypothesis, crossing-over and Chiasma formation; gene mapping.  **UNIT-II**  1. Sex determination and its mechanism: male and female heterozygous systems, genetic balance system; role of Y -chromosome, male haploidy, cytoplasmic and environmental factors, role of hormones in sex determination.  2. Sex linked inheritance: Haemophilia and colour blindness in man, eye colour in *Drosophila*, Nondisjunction of sex-chromosome in *Drosophila*; Sex-linked and sex influenced inheritance.  3. Extra chromosomal and cytoplasmic inheritance: i) Kappa particles in Paramecium.  ii) Shell coiling in snails. iii) Milk factor in mice.  **UNIT-III**  1. Multiple allelism: Eye colour in Drosophila; A, B, 0 blood group in man.  2. Human genetics: Human karyotype, Chromosomal abnormalities involving autosomes and sex chromosomes, monozygotic and dizygotic twins. 3. Inborn errors of metabolism (Alcaptonuria, Phenylketonuria, Albinism, sickle-cell anaemia). |
| **April 2023** | |
|  | **UNIT-IV**  1. Nature and function of genetic material; Structure and type of nucleic acids; Protein synthesis. spontaneous and induced (chemical and radiations) mutations; gene mutations; chemical basis of mutations; transition, transversion, structural chromosomal aberrations (deletion, duplication, inversion and translocation); Numerical aberrations (autoploidy, euploidy and polyploidy in animals)  **2.** Applied genetics**:** Eugenics, euthenics and euphenics; genetic counseling, pre-natal diagnostics, DNA-finger printing, transgenic animals.  Revision |

**Lesson Plan**

Academic Session- **2022-23** Subject- **Zoology** Class - **B. Sc. - 4th Semester**

Assistant Professor : Dr. Pradeep Kumar

**Paper – 1; LIFE AND DIVERSITY OF CHORDATES – II**

**Paper II ; MAMMALIAN PHYSIOLOGY – II**

| **January 2023** | |
| --- | --- |
|  | **UNIT-I**  **Amphibia:** Origin, Evolutionary tree. Type study of frog (*Rana tigrina*), Parental Care in Amphibia  **UNIT-II**  **Reptilia:** Type study of Lizard (Hemidactylus), Origin, Evolutionary tree. Extinct reptiles; Poisonous and non-poisonous snakes; Poison apparatus in snakes. |
| **February 2023** | |
|  | **UNIT-III**  **Aves:** Type study of Pigeon (*Columba livia*); Flight adaptation, Principles of aerodynamics in Bird flight, migration in birds.  **UNIT-IV**  **Mammals:** Classification, type study of Rat; Adaptive radiations of mammals and dentition. |
| **March 2023** | |
|  | **UNIT-I**  **Circulation:** Origin, conduction and regulation of heart beat, cardiac cycle, electrocardiogram, cardiac output, fluid pressure and flow pressure in closed and open circulatory system; Composition and functions of blood & lymph; Mechanism of coagulation of blood, coagulation factors; anticoagulants, haempoiesis  **UNIT-II**  **Respiration:** Exchange of respiratory gases, transport of gases, lung air volumes, oxygen dissociation curve of hemoglobin, Bohr’s effect, Hmburger’s phenomenon (Chloride shift), control / regulation of respiration.  **Excretion:** Patterns of excretory products viz. Amonotelic, ureotlic uricotelic, ornithine cycle (Kreb’s– Henseleit cycle) for urea formation in liver. |
| **April 2023** | |
|  | **UNIT-III**  **Excretion:** Urine formation, counter-current mechanism of urine concentration, osmoregulation, micturition.  **Neural Integration:** Nature, origin and propagation of nerve impulse along with medullated & non-medullated nerve fibre, conduction of nerve impulse across synapse.  **UNIT-IV**  **Chemical integration of Endocrinology:** Structure and mechanism of hormone action; physiology of hypothalamus, pituitary, thyroid, parathyroid, adrenal, pancreas and gonads.  **Reproduction:** Spermatogenesis, Capacitation of spermatozoa, ovulation, formation of corpus luteum, oestrous-anoestrous cycle, Menstrual cycle in human; fertilization, implantation and gestation.  Revision |

**Lesson Plan**

Academic Session - **2022-23** Subject- **Zoology**

Class - **B. Sc. - 6th Semester** Assistant Professor : Dr. Pradeep Kumar

**Paper – 1; ENTOMOLOGY Paper – 2 Developmental Biology**

| **January 2023** | |
| --- | --- |
|  | **UNIT I,** Study of important insect pests of crops and vegetables:  **1. Sugarcane:**  (a) Sugarcane leaf-hopper (*Pyrilla perpusilla),* (b) Sugarcane Whitefly (*Aleurolobus barodensis),* (c) Sugarcane top borer (*Sciropophaga nivella),* (d) Sugarcane root borer (*Emmalocera depresella),* (e) Gurdaspur borer *(Bissetia steniellus),* With their systematic position, habits and nature of damage caused. Life cycle and control of *Pyrilla perpusilla*  **2**. **Cotton:** (a) Pink bollworm *(Pestinophora gossypfolla),* (b) Red cotton bug *(Dysdercus Cingulatus),* (c) Cotton grey weevil *(Myllocerus undecimpustulatus),* (d) Cotton Jassid *(Amrasca devastans),* With their systematic position, habits and nature of damage caused. Life cycle and control of *Pectinophore gossypiella.*  **UNIT II**  **3**. **Wheat:** Wheat stem borer (*Sesamia inferens*) with its systematics position, habits, nature of damage caused. Life cycle and control.  **4**. **Paddy:** (a) Gundhi bug *(Leptocorisa acuta),* (b) Rice grasshopper *(Hieroglyphus banian)*  (c) Rice stem borer *(Scirpophaga incertullus),* (d) Rice Hispa *(Diceladispa armigera)*  With their systematic position, habits and nature of damage caused. Life cycle and control of *Loptocorisa acuta.* |
| **February 2023** | |
|  | **Unit III**  **5**. **Vegetables :** (a) *Raphidopalpa faveicollis* – The Red pumpkin beetle. (b) *Dacus cucurbitas* – The pumpkin fruit fly. (c) *Tetranychus tecarius* – The vegetable mite.  (d) *Epilachna* – The Hadda beetle. Their systematics position, habits and nature of damage caused. Life cycle and control of *Aulacophora faveicollis.*  **6**. **Stored grains:** (a) Pulse beetle (*Callosobruchus maculatus),* (b) Rice weevil (*Sitophilus oryzae),* (c) Wheat weevil (*Trogoderma granarium),* (d) Rust Red Flour beetles (*Tribolium castaneum),* (e) Lesser grain borer *(Rhizopertha dominica),* (f) Grain & Flour moth *(Sitotroga cerealella),* Their systematic position, habits and nature of damage caused. Life cycle and control of *Trogoderma granarium.*  **Unit IV**  6. **Insect control:** Biological control, its history, requirement and precautions and feasibility of biological agents for control.  7. **Chemical control:** History, Categories of pesticides. Important pesticides from each category to pests against which they can be used. Insect repellants and attractants.  8. Integrated pest management.  9. Important bird and rodent pests of agriculture & their management. |
| **March 2023** | |
|  | **Unit I :** 1. Historical perspectives, aims and scope of developmental biology.  2. Generalized structure of mammalian ovum & sperm. Spermatogenesis and Oogenesis.  **Unit II :** 1. Fertilization, parthenogenesis, different types of eggs and patterns of cleavage in invertebrates and vertebrates. 2. Process of blastulation in invertebrates and vertebrates, 3. Fate-map construction in frog and chick. |
| **April 2023** | |
|  | **Unit III :** 1. Gastrulation in invertebrates and vertebrates, 2. Gastrulation & formation of three germinal layers in frog and chick. 2. Elementary knowledge of primary organizers.  **Unit IV :** 1. Extra embryonic membranes: structure & significance in birds and mammals.  2. Concepts of competence, determination and differentiation.  3. Concept of regeneration.  Revision |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor: Dr. Sunil Dhankhar**

**Class & Subject : - B.Sc. 2nd Semester (Physics)**

**Paper I – PHY-201: Properties of Matter, Kinetic Theory and Relativity**

**Paper II – PHY-202: Electro Magnetic Induction and Electronic Devices**

| **S. No.** | **Month** | **Syllabus** |
| --- | --- | --- |
| 1. | January 2023 | Properties of Matter (Elasticity): Elasticity, Hooke’s law, Elastic constants and their relations, Poisson’s ratio, torsion of cylinder and twisting couple. Bending of beam (bending moment and its magnitude) cantilevers, Centrally loaded beam. |
| 2. | February 2023 | Kinetic Theory of Gases: Assumptions of Kinetic Theory of gases, Law of equipartition of energy and its applications for specific heats of gases. Maxwell distribution of speeds and velocities (derivation required), Experimental verification of Maxwell’s Law of speed distribution : most probable speed, average and r.m.s. speed, mean free path. Transport of energy and momentum, diffusion of gases. Brownian motion (qualitative), Real gases, Vander Waal’s equation.  Theory of Relativity: Reference systems, inertial frames, Galilean invariance and Conservation laws, Newtonian relativity principle. Michelson - Morley experiment: Search for ether. |
| 3. | March 2023 | Lorentz transformations length contraction, time dilation, velocity addition theorem, variation of mass with velocity and mass energy equivalence.  Electromagnetic Induction : Growth and decay of current in a circuit with (a) Capacitance and resistance (b) resistance and inductance (c) Capacitance and inductance (d) Capacitance resistance and inductance. AC circuit analysis using complex variables with (a) capacitance and resistance, (b) resistance and inductance (c) capacitance and inductance (d) capacitance, inductance and resistance Series and parallel resonant circuit. Quality factor (Sharpness of resonance). |
| 4. | April 2023 | Semiconductor Diodes: Energy bands in solids. Intrinsic and extrinsic semiconductor, Hall effect, P-N junction diode and their V-I characteristics. Zener and avalanche breakdown. Resistance of a diode, Light Emitting diodes (LED). Photo conduction in semiconductors, photodiode, Solar Cell. Diode Rectifiers: P-N junction half wave and full wave rectifier. Types of filter circuits (L and - with theory). Zener diode as voltage regulator, simple regulated power supply. Transistors: Junction Transistors, Bipolar transistors, working of NPN and PNP transistors, Transistor connections (C-B, C-E, C-C mode), constants of transistor. Transistor characteristic curves (excluding h parameter analysis), advantage of C-B configuration. C.R. O. (Principle, construction and working in detail). Transistor Amplifers: Transistor biasing, methods of Transistor biasing and stabilization. D.C. load line. |
| 5. | May 2023 | Common-base and common-emitter transistor biasing. Common-base, common- emitter amplifers. Classification of amplifers. Resistance-capacitance (R-C) coupled amplifer (two stage; concept of band width, no derivation). Feed-back in amplifers, advantage of negative feedback Emitter follower. Oscillator: Oscillators, Principle of Oscillation, Classification of Oscillator. Condition for self sustained oscillation: Barkhousen Criterion for oscillations. Tuned collector common emitter oscillator. Hartley oscillator, Colpitt’s oscillator. |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor: Dr. Sunil Dhankhar**

**Class & Subject: - B.Sc. 4th Semester (Physics)**

**Paper I – PHY-401: Statistical Mechanics**

**Paper II – PHY-402: Optics - II**

| **S. No.** | **Month** | **Syllabus** |
| --- | --- | --- |
| 1. | January 2023 | Probability, some probability considerations, combinations possessing maximum probability, combinations possessing minimum probability, distribution of molecules in two boxes. Case with weightage (general). Phase space, microstates and macrostates, statistical fluctuations constraints and accessible States, Thermodynamical probability. |
| 2. | February 2022 | Postulates of Statistical Physics. Division of Phase space into cells, Condition of equilibrium between two systems in thermal contact. β-Parameter. Entropy and Probability, Boltzmann’s distribution law. Evaluation of A and b. Bose-Einstein statistics, Application of B.E. Statistics to Plancks’s radiation law, B.E. gas. Fermi-Dirac statistics, M.B. Law as limiting case of B.E. Degeneracy and B.E., Condensation. F.D. Gas, electron gas in metals. Zero point energy. Specific heat of metals and its solution. |
| 3. | March 2023 | Interference by Division of Amplitude: Colour of thin, films, wedge shaped film, Newton’s rings. Interferometers: Michelson’s interferometer and its application to (I) Standardisation of a meter (II) determination of wave length. Fresnel’s Diffraction : Fresnel’s half period zones, zone plate, diffraction at a straight edge, rectangular slit and circular aperture. |
| 4. | April 2023 | Fraunhoffer diffraction : One slit diffraction, Two slit diffraction N-slit diffraction, Plane transmission granting spectrum, Dispersive power of a grating , Limit of resolution, Rayleigh’s criterion, resolving power of telescope and a grating.  Polarization: Polarisation and Double Refraction : Polarisation by reflection, Polarisation by scattering, Malus law, Phenomenon of double refraction, Huygen’s wave theory of double refraction (Normal and oblique incidence), Analysis of Polarised light Nicol prism. |
| 5. | May 2023 | Quarter wave plate and half wave plate, production and detection of (i) Plane polarized light (ii) Circularly polarized light and (iii)Elliptically polarized light, Optical activity, Fresnel’s theory of rotation, Specific rotation, Polarimeters (half shade and Biquartz). |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor: Dr. Sunil Dhankhar**

**Class & Subject: - B.Sc. 6th Semester (Physics)**

**Paper I – PHY-601: Atomic Molecular and Laser Physics**

**Paper II – PHY-602: Nuclear Physics**

| **S. No.** | **Month** | **Syllabus** |
| --- | --- | --- |
| 1. | January 2023 | Vector atom model, quantum numbers associated with vector atom model, penetrating and non- penetrating orbits (qualitative description ), spectral lines in different series of alkali spectra, spin orbit interaction and doublet term separation. LS or Russel-Saunder Coupling, jj coupling (expressions for interaction energies for LS and jj coupling required) |
| 2. | February 2023 | Zeeman effect (normal and Anomalous) Zeeman pattern of D1 and D2 lines of Na-atom, Paschen Back effect of a single valence electron system. Weak field, Stark effect of Hydrogen atom. Discrete set of electronic energies of molecules. quantisation of Vibrational and rotational energies Raman effect (Quantitative description) Stoke's and anti Stoke's lines.  Main features of a laser : Directionality, high intensity, high degree of coherence, spatial and temporal coherence, Einstein's coefficients and possibility of amplification, |
| 3. | March 2023 | Momentum transfer, life time of a level, kinetics of optical absorption. Threshold condition for laser emission, Laser pumping, He-Ne laser and RUBY laser (Principle, Construction and Working). Applications of laser in the field of medicine and industry  Nuclear mass and binding energy, systematic nuclear binding energy, nuclear stability, Nuclear size, spin, parity, statistics magnetic dipole moment, quadruple moment (shape concept), Determination of mass by Bain-Bridge, Bain-Bride and Jordan mass spectrograph, Determination of charge by Mosley law Determination of size of nuclei by Rutherford Back Scattering. |
| 4. | April 2023 | Interaction of heavy charged particles (Alpha particles), alpha disintegration and its theory Energy loss of heavy charged particle (idea of Bethe formula, no derivation), Energetic of alpha -decay, Range and straggling of alpha particles. Geiger-Nuttal law. Introduction of light charged particle (Beta-particle), Origin of continuous beta-spectrum (neutrino hypothesis) types of beta decay and energetic of beta decay, Energy loss of beta- particles (ionization), Range of electrons, absorption of beta-particles. Interaction of Gamma Ray, Nature of gamma rays, Energetic of gamma rays, passage of Gamma radiations through matter (photoelectric, Compton and pair production effect) electron position annihilation. Absorption of Gamma rays (Mass attenuation coefficient) and its application |
| 5. | May 2023 | Nuclear reactions, Elastic scattering, Inelastic scatting, Nuclear disintegration, photonuclear reaction, Radiative capture, Direct reaction, heavy ion reactions and spallation Reactions, conservation laws. Q-value and reaction threshold. Nuclear Reactors General aspects of Reactor design. Nuclear fission and fusion reactors (Principles, construction, working and use) Linear accelerator, Tendem accelerator, Cyclotron and Betatron accelerators. Ionization chamber, proportional counter, G.M. counters detailed study, scintillation counter and semiconductor detector. |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor – Mr. Vijender**

**Class: - B.Sc./ B.A. 2nd Semester**

**Subject - Mathematics**

**Paper – Number Theory and Trignometry**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Divisibility, G.C.D.(greatest common divisors), L.C.M.(least common multiple) Primes, Fundamental Theorem of Arithmetic. Linear Congruences, Fermat’s theorem. Wilson’s theorem and its converse. Linear Diophanatine equations in two variables. |
| 2. | Week 5-8 | Complete residue system and reduced residue system modulo m. Euler’s ø function Euler’s generalization of Fermat’s theorem. Chinese Remainder Theorem. Quadratic residues. Legendre symbols. Lemma of Gauss; Gauss reciprocity law. Greatest integer function [x]. The number of divisors and the sum of divisors of a natural number n (The functions d(n) and V(n)). Moebius function and Moebius inversion formula. |
| 3. | Week 9-12 | De Moivre’s Theorem and its Applications. Expansion of trigonometrical functions. Direct circular and hyperbolic functions and their properties. |
| 4. | Week 13-16 | Inverse circular and hyperbolic functions and their properties. Logarithm of a complex quantity. Gregory’s series. Summation of Trigonometry series. |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor - Dr. Pradeep Maan**

**Class: - B.Sc./ B.A. 2nd Semester**

**Subject - Mathematics**

**Paper – Ordinary Differential Equations**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Geometrical meaning of a differential equation. Exact differential equations, integrating factors. First order higher degree equations solvable for x,y,p Lagrange’s equations, Clairaut’s equations. Equation reducible to Clairaut’s form. Singular solutions. |
| 2. | Week 5-8 | Orthogonal trajectories: in Cartesian coordinates and polar coordinates. Self orthogonal family of curves.. Linear differential equations with constant coefficients. Homogeneous linear ordinary differential equations. Equations reducible to homogeneous. |
| 3. | Week 9-12 | Linear differential equations of second order: Reduction to normal form. Transformation of the equation by changing the dependent variable/ the independent variable. Solution by operators of non-homogeneous linear differential equations. Reduction of order of a differential equation. Method of variations of parameters. Method of undetermined coefficients. |
| 4. | Week 13-16 | Ordinary simultaneous differential equations. Solution of simultaneous differential equations involving operators x (d/dx) or t (d/dt) etc. Simultaneous equation of the form dx/P = dy/Q = dz/R. Total differential equations. 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. |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor - Dr. Neelam**

**Class: - B.Sc./ B.A. 2nd Semester**

**Subject - Mathematics**

**Paper - Vector Calculus**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Scalar and vector product of three vectors, product of four vectors. Reciprocal vectors. Vector differentiation. Scalar Valued point functions, vector valued point functions, derivative along a curve, directional derivatives |
| 2. | Week 5-8 | Gradient of a scalar point function, geometrical interpretation of gradient of scalar field function, character of gradient as a point function. Divergence and curl of vector point function, characters of Div f & and Curl f & as point function, examples. Gradient, divergence and curl of sums and product and their related vector identities. Laplacian operator. |
| 3. | Week 9-12 | Orthogonal curvilinear coordinates Conditions for orthogonality fundamental triad of mutually orthogonal unit vectors. Gradient, Divergence, Curl and Laplacian operators in terms of orthogonal curvilinear coordinates, Cylindrical co-ordinates and Spherical coordinates. |
| 4. | Week 13-16 | Vector integration; Line integral, Surface integral, Volume integral. Theorems of Gauss, Green & Stokes and problems based on these theorems. |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor – Dr. Pradeep Maan**

**Class: - B.Sc./ B.A. 4th Semester**

**Subject - Mathematics**

**Paper – Sequence and Series**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Boundedness of the set of real numbers; least upper bound, greatest lower bound of a set, neighborhoods, interior points, isolated points, limit points, open sets, closed set, interior of a set, closure of a set in real numbers and their properties. Bolzano-Weiestrass theorem, Open covers, Compact sets and Heine-Borel Theorem. |
| 2. | Week 5-8 | Sequence: Real Sequences and their convergence, Theorem on limits of sequence, Bounded and monotonic sequences, Cauchy’s sequence, Cauchy general principle of convergence, Subsequences, Subsequential limits. Infinite series: Convergence and divergence of Infinite Series, Comparison Tests of positive terms Infinite series, Cauchy’s general principle of Convergence of series, Convergence and divergence of geometric series, Hyper Harmonic series or p-series. |
| 3. | Week 9-12 | Infinite series: D-Alembert’s ratio test, Raabe’s test, Logarithmic test, de Morgan and Bertrand’s test, Cauchy’s Nth root test, Gauss Test, Cauchy’s integral test, Cauchy’s condensation test. |
| 4. | Week 13-16 | Alternating series, Leibnitz’s test, absolute and conditional convergence, Arbitrary series: abel’s lemma, Abel’s test, Dirichlet’s test, Insertion and removal of parenthesis, rearrangement of terms in a series, Dirichlet’s theorem, Riemann’s Re-arrangement theorem, Pringsheim’s theorem (statement only), Multiplication of series, Cauchy product of series, (definitions and examples only) Convergence and absolute convergence of infinite products. |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor – Mr. Vijender**

**Class: - B.Sc./ B.A. 4th Semester**

**Subject - Mathematics**

**Paper – Special Functions and Integral Transforms**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Series solution of differential equations – Power series method, Definitions of Beta and Gamma functions. Bessel equation and its solution: Bessel functions and their propertiesConvergence, recurrence, Relations and generating functions, Orthogonality of Bessel functions. |
| 2. | Week 5-8 | Legendre and Hermite differentials equations and their solutions: Legendre and Hermite functions and their properties-Recurrence Relations and generating functions. Orhogonality of Legendre and Hermite polynomials. Rodrigues’ Formula for Legendre & Hermite Polynomials, Laplace Integral Representation of Legendre polynomial. |
| 3. | Week 9-12 | Laplace Transforms – Existence theorem for Laplace transforms, Linearity of the Laplace transforms, Shifting theorems, Laplace transforms of derivatives and integrals, Differentiation and integration of Laplace transforms, Convolution theorem, Inverse Laplace transforms, convolution theorem, Inverse Laplace transforms of derivatives and integrals, solution of ordinary differential equations using Laplace transform. |
| 4. | Week 13-16 | Fourier transforms: Linearity property, Shifting, Modulation, Convolution Theorem, Fourier Transform of Derivatives, Relations between Fourier transform and Laplace transform, Parseval’s identity for Fourier transforms, solution of differential Equations using Fourier Transforms. |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor - Dr. Neelam**

**Class: - B.Sc./ B.A. 4th Semester**

**Subject - Mathematics**

**Paper – Programming in C and Numerical Methods**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Programmer’s model of a computer, Algorithms, Flow charts, Data types, Operators and expressions, Input / outputs functions. |
| 2. | Week 5-8 | Decisions control structure: Decision statements, Logical and conditional statements, Implementation of Loops, Switch Statement & Case control structures. Functions, Preprocessors and Arrays. |
| 3. | Week 9-12 | Strings: Character Data Type, Standard String handling Functions, Arithmetic Operations on Characters. Structures: Definition, using Structures, use of Structures in Arrays and Arrays in Structures. Pointers: Pointers Data type, Pointers and Arrays, Pointers and Functions. Solution of Algebraic and Transcendental equations: Bisection method, Regula-Falsi method, Secant method, Newton-Raphson’s method. Newton’s iterative method for finding pth root of a number, Order of convergence of above methods. |
| 4. | Week 13-16 | Simultaneous linear algebraic equations: Gauss-elimination method, Gauss-Jordan method, Triangularization method (LU decomposition method). Crout’s method, Cholesky Decomposition method. Iterative method, Jacobi’s method, Gauss-Seidal’s method, Relaxation method. |

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor - Dr. Neelam**

**Class: - B.Sc./ B.A. 6th Semester**

**Subject - Mathematics**

**Paper – Real and Complex Analysis**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Jacobians, Beta and Gama functions, Double and Triple integrals, Dirichlets integrals, change of order of integration in double integrals. |
| 2. | Week 5-8 | Fourier’s series: Fourier expansion of piecewise monotonic functions, Properties of Fourier Co-efficients, Dirichlet’s conditions, Parseval’s identity for Fourier series, Fourier series for even and odd functions, Half range series, Change of Intervals. |
| 3. | Week 9-12 | Extended Complex Plane, Stereographic projection of complex numbers, continuity and differentiability of complex functions, Analytic functions, Cauchy-Riemann equations. Harmonic functions. |
| 4. | Week 13-16 | Mappings by elementary functions: Translation, rotation, Magnification and Inversion. Conformal Mappings, Mobius transformations. Fixed pints, Cross ratio, Inverse Points and critical mappings. |

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor - Mr. Vijender**

**Class: - B.Sc./ B.A. 6th Semester**

**Subject - Mathematics**

**Paper – Linear Algebra**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Vector spaces, subspaces, Sum and Direct sum of subspaces, Linear span, Linearly Independent and dependent subsets of a vector space. Finitely generated vector space, Existence theorem for basis of a finitely generated vactor space, Finite dimensional vector spaces, Invariance of the number of elements of bases sets, Dimensions, Quotient space and its dimension. |
| 2. | Week 5-8 | Homomorphism and isomorphism of vector spaces, Linear transformations and linear forms on vactor spaces, Vactor space of all the linear transformations Dual Spaces, Bidual spaces, annihilator of subspaces of finite dimentional vactor spaces, Null Space, Range space of a linear transformation, Rank and Nullity Theorem, |
| 3. | Week 9-12 | Algebra of Liner Transformation, Minimal Polynomial of a linear transformation, Singular and non-singular linear transformations, Matrix of a linear Transformation, Change of basis, Eigen values and Eigen vectors of linear transformations. |
| 4. | Week 13-16 | Inner product spaces, Cauchy-Schwarz inequality, Orthogonal vectors, Orthogonal complements, Orthogonal sets and Basis, Bessel’s inequality for finite dimensional vector spaces, Gram-Schmidt, Orthogonalization process, Adjoint of a linear transformation and its properties, Unitary linear transformations |

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor - Dr. Pradeep Maan**

**Class: - B.Sc./ B.A. 6th Semester**

**Subject - Mathematics**

**Paper – Dynamics**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Velocity and acceleration along radial, transverse, tangential and normal directions. Relative velocity and acceleration. Simple harmonic motion. Elastic strings. |
| 2. | Week 5-8 | Mass, Momentum and Force. Newton’s laws of motion. Work, Power and Energy. Definitions of Conservative forces and Impulsive forces. |
| 3. | Week 9-12 | Motion on smooth and rough plane curves. Projectile motion of a particle in a plane. Vector angular velocity. |
| 4. | Week 13-16 | General motion of a rigid body. Central Orbits, Kepler laws of motion. Motion of a particle in three dimensions. Acceleration in terms of different co-ordinate systems. |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Odd Semester 2022-23)**

**Name of Assistant Professor – Dr. Pradeep Maan**

**Class: - B.Sc./ B.A. 1st  Semester**

**Subject - Mathematics**

**Paper – Calculus**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Definition of the limit of a function. Basic properties of limits, Continuous functions and classification of discontinuities. Differentiability. Successive differentiation. Leibnitz theorem. Maclaurin and Taylor series expansions. |
| 2. | Week 5-8 | Asymptotes in Cartesian coordinates, intersection of curve and its asymptotes, asymptotes in polar coordinates. Curvature, radius of curvature for Cartesian curves, parametric curves, polar curves. Newton’s method. Radius of curvature for pedal curves. Tangential polar equations. Centre of curvature. Circle of curvature. Chord of curvature, evolutes. Tests for concavity and convexity. Points of inflexion. Multiple points. Cusps, nodes & conjugate points. Type of cusps |
| 3. | Week 9-12 | Tracing of curves in Cartesian, parametric and polar co-ordinates. Reduction formulae. Rectification, intrinsic equations of curve. |
| 4. | Week 13-16 | Quardrature (area)Sectorial area. Area bounded by closed curves. Volumes and surfaces of solids of revolution. Theorems of Pappu’s and Guilden. |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Odd Semester 2022-23)**

**Name of Assistant Professor - Dr. Neelam**

**Class: - B.Sc./ B.A. 1st Semester**

**Subject - Mathematics**

**Paper – Algebra**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Symmetric, Skew-symmetric, Hermitian and skew Hermitian matrices. Elementary Operations on matrices. Rank of a matrices. Inverse of a matrix. Linear dependence and independence of rows and columns of matrices. Row rank and column rank of a matrix. Eigenvalues, eigenvectors and the characteristic equation of a matrix. Minimal polynomial of a matrix. Cayley Hamilton theorem and its use in finding the inverse of a matrix. |
| 2. | Week 5-8 | Applications of matrices to a system of linear (both homogeneous and non– homogeneous) equations. Theorems on consistency of a system of linear equations. Unitary and Orthogonal Matrices, Bilinear and Quadratic forms. |
| 3. | Week 9-12 | Relations between the roots and coefficients of general polynomial equation in one variable. Solutions of polynomial equations having conditions on roots. Common roots and multiple roots. Transformation of equations. |
| 4. | Week 13-16 | Nature of the roots of an equation Descarte’s rule of signs. Solutions of cubic equations (Cardon’s method). Biquadratic equations and their solutions. |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Odd Semester 2022-23)**

**Name of Assistant Professor – Mr. Vijender**

**Class: - B.Sc./ B.A. 1st Semester**

**Subject - Mathematics**

**Paper - Solid Geometry**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | General equation of second degree. Tracing of conics. Tangent at any point to the conic, chord of contact, pole of line to the conic, director circle of conic. System of conics. Confocal conics. Polar equation of a conic, tangent and normal to the conic. |
| 2. | Week 5-8 | Sphere: Plane section of a sphere. Sphere through a given circle. Intersection of two spheres, radical plane of two spheres. Co-oxal system of spheres Cones. Right circular cone, enveloping cone and reciprocal cone. Cylinder: Right circular cylinder and enveloping cylinder. |
| 3. | Week 9-12 | Central Conicoids: Equation of tangent plane. Director sphere. Normal to the conicoids. Polar plane of a point. Enveloping cone of a coincoid. Enveloping cylinder of a coincoid. |
| 4. | Week 13-16 | Paraboloids: Circular section, Plane sections of conicoids. Generating lines. Confocal conicoid. Reduction of second degree equations. |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Odd Semester 2022-23)**

**Name of Assistant Professor – Dr. Neelam**

**Class: - B.Sc./ B.A. 3rd Semester**

**Subject - Mathematics**

**Paper – Advanced Calculus**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Continuity, Sequential Continuity, properties of continuous functions, Uniform continuity, chain rule of differentiability. Mean value theorems; Rolle’s Theorem and Lagrange’s mean value theorem and their geometrical interpretations. Taylor’s Theorem with various forms of remainders, Darboux intermediate value theorem for derivatives, Indeterminate forms. |
| 2. | Week 5-8 | Limit and continuity of real valued functions of two variables. Partial differentiation. Total Differentials; Composite functions & implicit functions. Change of variables. Homogenous functions & Euler’s theorem on homogeneous functions. Taylor’s theorem for functions of two variables. |
| 3. | Week 9-12 | Differentiability of real valued functions of two variables. Schwarz and Young’s theorem. Implicit function theorem. Maxima, Minima and saddle points of two variables. Lagrange’s method of multipliers. |
| 4. | Week 13-16 | Curves: Tangents, Principal normals, Binormals, Serret-Frenet formulae. Locus of the centre of curvature, Spherical curvature, Locus of centre of Spherical curvature, Involutes, evolutes, Bertrand Curves. Surfaces: Tangent planes, one parameter family of surfaces, Envelopes. |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Odd Semester 2022-23)**

**Name of Assistant Professor - Dr. Pradeep Maan**

**Class: - B.Sc./ B.A. 4th Semester**

**Subject - Mathematics**

**Paper – Statics**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Composition and resolution of forces. Parallel forces. Moments and Couples. |
| 2. | Week 5-8 | Analytical conditions of equilibrium of coplanar forces. Friction. Centre of Gravity. |
| 3. | Week 9-12 | Virtual work. Forces in three dimensions. Poinsots central axis. |
| 4. | Week 13-16 | Wrenches. Null lines and planes. Stable and unstable equilibrium |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Odd Semester 2022-23)**

**Name of Assistant Professor – Mr. Vijender**

**Class: - B.Sc./ B.A. 4th Semester**

**Subject - Mathematics**

**Paper – Partial Differential Equations**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Partial differential equations: Formation, order and degree, Linear and Non-Linear Partial differential equations of the first order: Complete solution, singular solution, General solution, Solution of Lagrange’s linear equations, Charpit’s general method of solution. Compatible systems of first order equations, Jacobi’s method. |
| 2. | Week 5-8 | Linear partial differential equations of second and higher orders, Linear and non-linear homogenious and non-homogenious equations with constant co-efficients, Partial differential eqution with variable co-efficients reducible to equations with constant coefficients, their complimentary functions and particular Integrals, Equations reducible to linear equations with constant co-efficients. |
| 3. | Week 9-12 | Classification of linear partial differential equations of second order, Hyperbolic, parabolic and elliptic types, Reduction of second order linear partial differential equations to Canonical (Normal) forms and their solutions, Solution of linear hyperbolic equations, Monge’s method for partial differential equations of second order. |
| 4. | Week 13-16 | Cauchy’s problem for second order partial differential equations, Characteristic equations and characteristic curves of second order partial differential equation, Method of separation of variables: Solution of Laplace’s equation, Wave equation (one and two dimensions), Diffusion (Heat) equation (one and two dimension) in Cartesian Coordinate system. |

**Lesson Plan (Odd Semester 2022-23)**

**Name of Assistant Professor - Mr. Vijender**

**Class: - B.Sc./ B.A. 5th Semester**

**Subject - Mathematics**

**Paper – Real Analysis**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Riemann integral, Integrabililty of continuous and monotonic functions, The Fundamental theorem of integral calculus. Mean value theorems of integral calculus. |
| 2. | Week 5-8 | Improper integrals and their convergence, Comparison tests, Abel’s and Dirichlet’s tests, Frullani’s integral, Integral as a function of a parameter. Continuity, Differentiability and integrability of an integral of a function of a parameter. |
| 3. | Week 9-12 | Definition and examples of metric spaces, neighborhoods, limit points, interior points, open and closed sets, closure and interior, boundary points, subspace of a metric space, equivalent metrics, Cauchy sequences, completeness, Cantor’s intersection theorem, Baire’s category theorem, contraction Principle |
| 4. | Week 13-16 | Continuous functions, uniform continuity, compactness for metric spaces, sequential compactness, Bolzano-Weierstrass property, total boundedness, finite intersection property, continuity in relation with compactness, connectedness , components, continuity in relation with connectedness. |

**Lesson Plan (Odd Semester 2022-23)**

**Name of Assistant Professor - Dr. Neelam**

**Class: - B.Sc./ B.A. 5th Semester**

**Subject - Mathematics**

**Paper – Numerical Analysis**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Finite Differences operators and their relations. Finding the missing terms and effect of error in a difference tabular values, Interpolation with equal intervals: Newton’s forward and Newton’s backward interpolation formulae. Interpolation with unequal intervals: Newton’s divided difference, Lagrange’s Interpolation formulae, Hermite Formula. |
| 2. | Week 5-8 | Central Differences: Gauss forward and Gauss’s backward interpolation formulae, Sterling, Bessel Formula. Probability distribution of random variables, Binomial distribution, Poisson’s distribution, Normal distribution: Mean, Variance and Fitting. |
| 3. | Week 9-12 | Numerical Differentiation: Derivative of a function using interpolation formulae as studied in Sections –I & II. Eigen Value Problems: Power method, Jacobi’s method, Given’s method, HouseHolder’s method, QR method, Lanczos method. |
| 4. | Week 13-16 | Numerical Integration: Newton-Cote’s Quadrature formula, Trapezoidal rule, Simpson’s one- third and three-eighth rule, Chebychev formula, Gauss Quadrature formula. Numerical solution of ordinary differential equations: Single step methodsPicard’s method. Taylor’s series method, Euler’s method, Runge-Kutta Methods. Multiple step methods; Predictor-corrector method, Modified Euler’s method, Milne-Simpson’s method. |

**Lesson Plan (Odd Semester 2022-23)**

**Name of Assistant Professor - Dr. Pradeep Maan**

**Class: - B.Sc./ B.A. 5th Semester**

**Subject - Mathematics**

**Paper – Groups and Rings**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | Week 1-4 | Definition of a group with example and simple properties of groups, Subgroups and Subgroup criteria, Generation of groups, cyclic groups, Cosets, Left and right cosets, Index of a sub-group Coset decomposition, Largrage’s theorem and its consequences, Normal subgroups, Quotient groups, |
| 2. | Week 5-8 | Homoomorphisms, isomophisms, automorphisms and inner automorphisms of a group. Automorphisms of cyclic groups, Permutations groups. Even and odd permutations. Alternating groups, Cayley’s theorem, Center of a group and derived group of a group. |
| 3. | Week 9-12 | Introduction to rings, subrings, integral domains and fields, Characteristics of a ring. Ring homomorphisms, ideals (principle, prime and Maximal) and Quotient rings, Field of quotients of an integral domain. |
| 4. | Week 13-16 | Euclidean rings, Polynomial rings, Polynomials over the rational field, The Eisenstein’s criterion, Polynomial rings over commutative rings, Unique factorization domain, R unique factorization domain implies so is R[X1 , X2,……Xn] |

**Psychology Department**

**Lesson Plan (Odd Semester)**

**(Session- 2022-23)**

**Subject name- Introduction to Psychology**

**Class - B.A. Semester- 1st**

| **Months** | **Syllabus** |
| --- | --- |
| **August, 2022** | **Theory- History of psychology, Emergence as science and Subject matter of psychology. Experimental method, Observation method and survey method.**  **Practical’s- Study of emotions.** |
| **September, 2022** | **Theory- Structure and function of human eye and ear. Nature and perception of form- Figure and ground, Perceptual organization, Depth perception- cues.**  **Practical’s- Eysenck personality questionnaire, Verbal test of intelligence.** |
| **October, 2022** | **Theory- Nature of emotions, Bodily changes in emotions, James- Lange theory, Cannon Bard and Schachter- Singer theory. Nature of motivation, Biological and Psychological motives.**  **Practical’s- Sound localization, Performance test of intelligence.** |
| **November, 2022** | **Theory- Nature and determinants of personality, Type and trait approach of personality. Nature of intelligence. Spearman, Thurstone and Cattell theory of intelligence.**  **Practical’s- Test of motivation.** |
| **December, 2022** | **Tests, Revision and Presentation of assignments.** |

**Subject name- Social Psychology**

**Class - B.A. Semester- 3rd**

| **Month** | **Syllabus** |
| --- | --- |
| **August, 2022** | **Theory-Introduction, nature, subject matter of social psychology, Sociometric method. Nature of socialization, process and agents of socialization.**  **Practical’s- Measurement of attitude, Leadership style.** |
| **September, 2022** | **Theory-Types and functions of group, Meaning, characteristics and formation of social norms, Types and functions of leadership, Theories- Traits, situational and interactional.**  **Practical’s- Aggression scale, Altruism scale** |
| **October, 2022** | **Theory-Characteristics and development of attitudes, Attitude change. Nature and development of prejudice, Stereotypes.**  **Practical’s- Social conformity, Stereotypes** |
| **November, 2022** | **Theory-Nature and determinants of prosocial behaviour, Cognitive model. Nature, determinants and prevention of aggression.**  **Tests and Revision** |
| **December, 2022** | **Test, Revision, Presentation of assignments.** |

**Subject name- Psychopathology**

**Class - B.A. Semester- 5th**

| **Month** | **Syllabus** |
| --- | --- |
| **August, 2022** | **Theory- Generalized anxiety disorder, Obsessive compulsive disorder, Symptoms and causes of Phobia disorder.**  **Practical’s- Depression inventory, Defense mechanism inventory (DMI).** |
| **September, 2022** | **Causes, consequences and rehabilitation of substance/drug abuse.**  **Practical’s- Word association test (WAT), Wechsler adult intelligence scale (WAIS).** |
| **October, 2022** | **Theory-Symptoms and causes of Unipolar and Bipolar disorder.**  **Practical’s- Emotional intelligence and Anxiety Scale.** |
| **November, 2022** | **Theory- Nature, types and causes of Schizophrenia.**  **Test and revision.** |
| **December, 2022** | **Test, Revision and Presentation of assignments.** |

**Lesson Plan - Even Semester**

**(Session- 2022-23)**

**Subject name- Experimental Psychology**

**Class- B.A. Semester- 2nd**

| **Months** | **Syllabus** |
| --- | --- |
| **January, 2023** | **Theory- Attention: Nature, Characteristics and types.**  **Practical’s- Problem solving ability test.** |
| **February, 2023** | **Theory- Learning: Definition, Factors affecting trial and error learning, Insight learning, classical and operant conditioning.**  **Practical’s- Retroactive inhibition, Muller lyre illusion.** |
| **March, 2023** | **Theory- Memory: Definition, Stages, STM and LTM. Methods to study memory.**  **Forgetting: Factors leading to forgetting, Pneomonics.**  **Practical’s- Bilateral transfer of training.** |
| **April, 2023** | **Theory- Problem solving and thinking, Statistics.**  **Practical’s- Span of attention, Long term memory.**  **Revision of syllabus and Assignment presentations.** |

**Subject name- Developmental Psychology**

**Class - B.A. Semester- 4th**

| **Months** | **Syllabus** |
| --- | --- |
| **January, 2023** | **Theory- Human development: Concept and Principles, Factors in human development, Biological, Social and Cultural factors.**  **Practical’s- Youth problem inventory.** |
| **February, 2023** | **Theory- Prenatal development, Determinants and stages.**  **Infancy: Characteristics, Hazards and Adjustment.**  **Practical’s- Emotional maturity scale, Parents-child relationship scale.** |
| **March, 2023** | **Theory- Childhood: Characteristics, Perceptual, Motor, Emotional, Cognitive development.**  **Adolescents: Characteristics, Problems of adolescents and Adjustment.**  **Practical’s- Study of values, Self-concept/Esteem.** |
| **April, 2023** | **Theory- Early adulthood, Late adulthood and Aging- Changing patterns and problems.**  **Measures of Variability: Quartile deviation, Standard deviation.**  **Practical’s- Case study.**  **Revision of syllabus, Tests and Presentation of assignments.** |

**Subject name- Applied Psychology**

**Class - B.A. Semester- 6th**

| **Months** | **Syllabus** |
| --- | --- |
| **January, 2023** | **Theory- Applied Psychology: Meaning, History, Fields, Career in psychology.**  **Organizational Psychology: Nature, Scope, Objectives and Development.**  **Practical’s- Stress scale, Well-being Scale.** |
| **February, 2023** | **Theory- Guidance: Objectives, Principles, Types, Organization of guidance programme.**  **Counselling: Needs, Principles, Special areas and types.**  **Practical’s- Adjustment Inventory, Job Satisfaction Scale.** |
| **March, 2023** | **Theory- Health Psychology: Meaning, Scopes and Objectives, Concept of health & illness. Psychological factors in physical illness, Lifestyle and health, Stress & coping.**  **Practical’s- Interest inventory, General health questionnaire.** |
| **April, 2023** | **Theory- Forensic Psychology: Psychology and law, Eyewitness memory, Accuracy and improvement.**  **Statistics: Meaning, Rank difference method and Product moment method.**  **Revision, Tests and Presentation of assignments.** |

**Lesson Plan**

**2022-23**

Class and Section: **B.A-Ist PASS COURSE 1st Sem**

Subject:**Political Science** Paper: **Indian Government and Politics**

**Teacher’s Name:- Dr.Kavita**

| **Months** | **Topics** |
| --- | --- |
| **July** | Indian Constitution – Sources and Features |
| **August** | Preamble, Fundamental Right |
| **August** | Fundamental Duties and Directive Principles of State Policy |
| **August** | Union Executive – President |
| **August** | Prime Minister, Council of Ministers |
| **September** | State Executive – Governor, Chief Minister |
| **September** | Council of Ministers |
| **September** | Union and State Legislature – Parliament-Composition and Functions |
| **September** | Speaker of Lok Sabha |
| **October** | Amendment Process |
| **October** | State Legislature-Vidhan Sabha |
| **October** | Judiciary – Supreme Court |
| **October** | High Courts |
| **November** | Judicial Review |
| **November** | Revision |
|  |  |

**Lesson Plan**

**2022-23**

Class and Section: **B.A-Ist PASS COURSE 1st Sem**

Subject:**Political Science** Paper: **Indian Government and Politics**

**Teacher’s Name:- Dr.Maher Singh**

| **Months** | **Topics** |
| --- | --- |
| **July** | Indian Constitution – Sources and Features |
| **August** | Preamble, Fundamental Right |
| **August** | Fundamental Duties and Directive Principles of State Policy |
| **August** | Union Executive – President |
| **August** | Prime Minister, Council of Ministers |
| **September** | State Executive – Governor, Chief Minister |
| **September** | Council of Ministers |
| **September** | Union and State Legislature – Parliament-Composition and Functions |
| **September** | Speaker of Lok Sabha |
| **October** | Amendment Process |
| **October** | State Legislature-Vidhan Sabha |
| **October** | Judiciary – Supreme Court |
| **October** | High Courts |
| **November** | Judicial Review |
| **November** | Revision |

**Lesson Plan**

**2022-23**

Class and Section: **B.A-II PASS COURSE 3Rd Sem**

Subject:**Political Science** Paper:**Principles of Political Science-I**

**Teacher’s Name:-Dr.Kavita**

| **Weeks** | **Topics** |
| --- | --- |
| **July** | Political Science: introduction, Definition and Meaning Political Science: Nature and Scope |
| **August** | Political Science : Traditional & modern approach |
| **August** | Relations of Political Science with other Social Sciences. |
| **August** | State: Definition and Elements |
| **August** | State: Relations with the other organizations and Test |
| **September** | Theories of the Origin of the State : Divine Theory & Force Theory |
| **September** | Theories of the Origin of the State. Patriarchal & Matriarchal |
| **September** | Theories of the Origin of the State: Social Contract Theory & Marxician |
| **September** | Nature of State: Liberal &Marxian and test |
| **October** | Functions of State: Liberal Views & Socialist Views |
| **October** | Welfare State: Concept &Functions |
| **October** | Functions of State: |
| **October** | Tests, presentations and discussions |
| **November** | Sovereignty: Definition, Attributes and Types. |
| **November** | Theories of Sovereignty: Monistic and Pluralistic |
|  |  |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Odd Semester 2022-23)**

**Name of Assistant Professor: Mr. Maher Singh**

**Class: - B.A 3rd,5th Semester**

**Subject: Political Science**

**Paper - International Organizations**

| **Months** | **Topics** |
| --- | --- |
| **July** | International Organization: Meaning, Nature and Scope |
| **August** | International Organization: Meaning, Nature and Scope |
| **August** | Evolution and growth of International Organization. |
| **August** | Evolution and growth of International Organization. |
| **August** | League of Nations, Structure, Objectives, Functions |
| **September** | League of Nations- Causes of Failure. |
| **September** | U.N.O.: Origins, Objectives and Principles, Membership, Structure and Functions |
| **September** | Organs of United Nations: General Assembly |
| **September** | Security Councils |
| **October** | Economic and Social Council |
| **October** | U.N. Secretariat, International Court of Justice |
| **October** | Specialized Agencies of the United Nations: UNESCO |
| **October** | IMF, ILO |
| **November** | UNICEF, WHO |
| **November** | Revision |
|  |  |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor: Mr. Maher Singh**

**Class: - B.A 2nd Semester**

**Subject: Political Science**

**Paper -** Indian Politics

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | January 2023 | Federalism.  Federalism and its Working with reference to Centre-State Relations. |
| 2. | February 2023 | Demand for State Autonomy.  Emerging Trends in Indian Federalism. |
| 3. | March 2023 | Election Commission & Electoral Process.  Problem of Defection.  Party System in India. |
| 4. | April 2023 | Role of Caste in India.  Role of Religion in India.  Role Language and Regionalism in India.  Politics of Reservation. |
|  |  |  |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor: Dr.Kavita**

**Class: - B.A 2nd Semester**

**Subject: Political Science**

**Paper -** Indian Politics

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | January 2023 | Federalism.  Federalism and its Working with reference to Centre-State Relations. |
| 2. | February 2023 | Demand for State Autonomy.  Emerging Trends in Indian Federalism. |
| 3. | March 2023 | Election Commission & Electoral Process.  Problem of Defection.  Party System in India. |
| 4. | April 2023 | Role of Caste in India.  Role of Religion in India.  Role Language and Regionalism in India.  Politics of Reservation. |
|  |  |  |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor: Dr.Kavita**

**Class: - B.A 4th Semester**

**Subject: Political Science**

**Paper - Principles of Political Science**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | January 2023 | Right:- Related Themes  Relationship between Right and Duties |
| 2. | February 2023 | Universal Declaration of Human Rights  Liberty:- Meaning and Themes, Positive Liberty and Negative Liberty |
| 3. | March 2023 | Equality:- Liberal and Different Themes, Relationship between Liberty and Equality  Development :- Meaning and Features |
| 4. | April 2023 | Liberal and Marxist Approach of Development, Gandhi an Approach of Development  RTI Meaning, Feature ,Shortcomings  Consumer Protection and Welfare. |
|  |  |  |

**Govt. College for Women Lakhan Majra, Rohtak**

**Lesson Plan (Even Semester 2022-23)**

**Name of Assistant Professor: Mr. Maher Singh**

**Class: - B.A 6th Semester**

**Subject: Political Science**

**Paper - Regional Organizations**

| **Sr. No.** | **Date/Week/Month** | **Syllabus** |
| --- | --- | --- |
| 1. | January 2023 | Regional Organizations :European Community ,Formation of European Economic Community and Institutions of European Union.. |
| 2. | February 2023 | Regional Organizations :SAARC, objectives of the Establishment Of SAARC, SAARC Summits,  Role of India in SAARC, problems of SAARC and it's solution. Regional Organization :ASEAN Introduction and Background, Formation and Organization structure Of ASEAN. |
| 3. | March 2023 | United Nations and Human Rights Introduction, main features if Human Rights, classification and Criticism of Rights.  Introduction of Decolonization, Meaning and Features of colonialism, main Causes of Origin of Colonialism, Kinds Of Colonialism. |
| 4. | April 2023 | Peace -Making and Peace Enforcemen,United Nation and peace Making.  Peace Building and Peace keeping  Assessment of the United Nations and Democratization of U. N. and India Claim for Permanent Membership of the Security Council. |
|  |  |  |

**LESSON PLAN**

**B.A. 1st Year; Semester Ist**

**Geography department**

| **Month** | **Syllabus** |
| --- | --- |
| **October** | 1. India- Location 2. Relief Structure 3. Drainage System 4. Climate 5. Soils |
| **November** | 1. Natural Vegetation 2. Natural Hazards & Disaster 3. Population: Distribution, Density, Growth and Composition 4. Migration 5. Human Settlement: Types and Levels of Urbanization |
| **December** | 1. Land Resources 2. Irrigation 3. Regional Variations in Cropping Pattern 4. Green Revolution 5. Problems of Indian Agriculture |
| **January** | 1. Minerals and Energy Resources 2. Manufacturing Industries 3. Transport Communication 4. International Trade |

**MAPS AND SCALES (Practical)**

# B.A 1ST SEM.

* First Week of August
  + Introduction of Cartography
  + Nature, Scope and importance of Cartography
* Second Week of August
  + Maps and their definitions
  + Importance and essentials of Maps
  + Classification of Maps
* Third and Fourth Week of August
  + Types of maps according to Scale
  + Types of maps according to Topographic details
* First Week of September
  + Types of maps according to Content
* Second Week of September
  + Quantitative and Qualitative Maps
* Third Week of September
  + Distribution maps
* Fourth week of September
  + Definition of Scale
  + Methods of expressing a Scale
* First Week of October
  + Plain Scale
  + Comparative Scale
* Second and Third week of October
  + Time Scale
  + Pace Scale
  + Revolution Scale
* Fourth Week of October
  + Diagonal Scale
  + Measurement of Distance and Area on Maps
  + Enlargement and Reduction of Maps

**LESSON PLAN**

**B.A. 1st Year; 2nd Sem**

| **Month** | **Syllabus covered** |
| --- | --- |
| **January** | **Chapters:**   1. Definition, Nature and Scope of Physical Geography 2. Constitution of the Earth’s Interior 3. Geological time Scale 4. Rocks 5. Earth Movement |
| **February** | 1. Earthquakes and Volcanoes 2. Theory of Isostasy 3. Theory of Continental Drift 4. Plate Tectonics 5. Weathering 6. Mass Movement |
| **March** | 1. Cycle of Erosion 2. The work of wind and Aeolian Landforms 3. The work of Rivers and Produced Landforms 4. Underground water and Karst landforms 5. The work of Glaciers and Glaciated Landforms 6. Work of Sea waves and Coastal Landforms |
| **April** | Revision of the syllabus |

**B.A 1st year**

**2nd SEM. (Practical)**

| **Month** | **Syllabus covered** |
| --- | --- |
| **January** | * Topographical Maps |
| **February** | * Methods of Representing Relief |
| **March** | * Profiles |
| **April** | * Revision of syllabus |

**LESSON PLAN**

**B.A. 2nd Year; Semester III**

| **Month** | **Syllabus** |
| --- | --- |
| **October** | 1. Weather and Climate 2. Composition and Structure of Atmosphere 3. Insolation and Temperature |
| **November** | 1. Atmospheric Pressure and Winds 2. Atmospheric Humidity and Precipitation 3. Airmasses, Fronts and Cyclones |
| **December** | 1. Climatic Classification 2. Climate Change and Global Warming 3. Surface Configuration of the Ocean Floor |
| **January** | 1. Temperature and Salinity of Oceanic Water 2. Circulation Of oceanic Water 3. Oceanic Resources |

# LESSON PLAN

**B.A. 2nd Year; Semester 3 (Practical)**

# Paper – Representation of Climatic Data

| **Month** | **Syllabus covered** |
| --- | --- |
| **July** | Measurement of weather Elements |
| **August** | Presentation of Climatic Data |
| **September** | Weather Maps and Their Interpretation |
| **October** | Chain and Tape Survey |

**LESSON PLAN**

**B.A. 2nd Year; 4th Sem**

| **Month** | **Syllabus covered** |
| --- | --- |
| **January** | **Unit 1**   1. Nature and Scope of Human Geography 2. Human Races and Tribes of India |
| **February** | **Unit 2**   1. The Concept of Man – Environment Relations 2. Human Adaptation to The Environment 3. Resources: Meaning, Nature and Components 4. Classification of Resources 5. Distribution and Utilization of Biotic Resource |
| **March** | **Unit 3**   1. Conservation of Natural Resources 2. Concept of Optimum Population, Overpopulation and Under Population 3. Theories Of Population 4. Rural Settlement 5. Origin and Growth Of Towns |
| **April** | **Unit 4**   1. Classification and Functions Of Town 2. Population Resources, Resource Use and Environmental Degradation 3. Sustainable Development |

**Paper – Map Projections (Practical)**

| **Month** | **Syllabus covered (Practical)** |
| --- | --- |
| **January** | 1. Map Projections: General Principles |
| **February** | 1. Cylindrical Map Projections 2. Conical Map Projections 3. Zenithal Projections |
| **March** | 1. Conventional Projections 2. Identification and Choice of Map |
| **April** | 1. Plane Table Survey |

**LESSON PLAN**

**B.A. 3rdYear; Semester 5th**

| **Month** | **Syllabus covered** |
| --- | --- |
| **October** | 1. The Nature and Scope of Economic Geography 2. Classification of Economic Activity 3. World Natural Resources |
| **November** | 1. Utilization and Conservation Of Natural Resources 2. Agricultural Resources 3. Mineral Resources |
| **December** | 1. Manufacturing Industries 2. Transport and Communication |
| **January** | 1. International Trade |

**LESSON PLAN**

**B.A. 3rdYear; Semester 5th (PRACTICAL)**

| **Month** | **Syllabus covered(Practical)** |
| --- | --- |
| **October** | Principles of map design & layout |
| **November** | Principles of map design & layout  Symbolization |
| **December** | Symbolization  Distribution of Map |
| **January** | Prismatic Compass Survey |

**LESSON PLAN**

**B.A 6ST SEM. (THEORY)**

| **Month** | **Syllabus to be covered** |
| --- | --- |
| **January** | * Introduction to Aerial Photographs * Interpretation of Aerial Photographs |
| **February** | * Remote Sensing * Imageries and Their Application * Geographical Information System |
| **March** | * Applications of Geographical Information System * Measures of Central Tendency: Mean, Median and Mode |
| **April** | * Measures of Dispersion * Coefficient of Variation |

**B.A 6ST SEM. (Practical)**

| **Month** | **Syllabus covered** |
| --- | --- |
| **January** | * Demarcation of Principal Elements on Aerial Photographs * Scale of Aerial Photographs |
| **February** | * Interpretation of Single Vertical Photograph |
| **March** | * Use of Stereoscope in Aerial Photographs |
| **April** | * Identification of Features on IRS-ID Imagery |

**Tentative Lesson Plan for Even Sem. (2nd)**

**Session-2022-2023**

**Paper- Business Economics**

**SECTION-A**

* Third, Fourth and Fifth Week of Jan. (16-31)
* Price Determination under Perfect Competition
* Equilibrium of Firm and Industry under Perfect Competition
* In the month of Feb. (1-28)
* Monopoly
* Monopolistic Competition
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-B**

* First and Second Week of March (1-12)
* Oligopoly

**Holi Break**

* Third, Fourth and Fifth Week of March (13-31)
* Theory of Factor Pricing
* Determination of Wage Rates
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-C**

* First, Second and Third Week of April (1-15)
* Rent
* Interest
* Fourth and Fifth Week of April (17-29)
* Profit
* Test (Oral/Written) and Revision of Completed Syllabus

**May 2023**

Tests (Oral/Written)

Revision of Complete Syllabus

Alka

Asst. Prof. in Economics

GCW Lakhan Majra, Rohtak

**Tentative Lesson Plan for Even Sem. (6th)**

**Session-2022-2023**

**Paper- International Economics**

**SECTION-A**

* Third, Fourth and Fifth Week of Jan. (16-31)
* Inter-Regional and International Trade
* Theory of Comparative Costs
* Modern Theory of International Trade
* In the month of Feb. (1-28)
* Foreign Trade Multiplier
* Balance of Payments
* Free Trade Vs. Protection
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-B**

* First and Second Week of March (1-12)
* Foreign Exchange

**Holi Break**

* Third, Fourth and Fifth Week of March (13-31)
* Exchange Rate Policy in India
* Exchange Control
* Terms of Trade
* India’s Foreign Trade
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-C**

* First, Second and Third Week of April (1-15)
* International Monetary Fund
* World Bank
* Fourth and Fifth Week of April (17-29)
* World Trade Organisation
* South Asian Association for Regional Cooperation
* Test (Oral/Written) and Revision of Completed Syllabus

**May 2023**

Tests (Oral/Written)

Revision of Complete Syllabus

Alka

Asst. Prof. in Economics

GCW Lakhan Majra, Rohtak

**Tentative Lesson Plan for Even Sem. (4th)**

**Session-2022-2023**

**Paper- Macro Economics**

**SECTION-A**

* Third, Fourth and Fifth Week of Jan. (16-31)
* Money in a Modern Economy
* Supply of Money
* Demand for Money and Liquidity Preference Theory of Interest
* In the month of Feb. (1-28)
* Gains from International Trade
* Balance of Payments
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-B**

* First and Second Week of March (1-12)
* Foreign Exchange

**Holi Break**

* Third, Fourth and Fifth Week of March (13-31)
* Harrod-Domar Growth Model
* IS-LM Analysis
* Theories of Trade Cycle: Samuelson and Hicks Models
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-C**

* First, Second and Third Week of April (1-15)
* Nature and Scope of Public Finance
* Principle of Maximum Social Advantage
* Public Expenditure
* Fourth and Fifth Week of April (17-29)
* Taxation System
* Impact and Incidence of Taxation
* Test (Oral/Written) and Revision of Completed Syllabus

**May 2023**

* Quantity Theory of Money
* Credit Creation
* Monetary Policy

Alka

Asst. Prof. in Economics

GCW Lakhan Majra, Rohtak

**Tentative Lesson Plan for Even Sem. (2nd)**

**Session-2022-2023**

**Paper- Micro Economics**

**SECTION-A**

* Third, Fourth and Fifth Week of Jan. (16-31)
* Market Structure
* Theory of Perfect Competition
* In the Month of Feb. (1-28)
* Theory of a Monopoly Firm
* Theory of Monopolistic Competition
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-B**

* First and Second Week of March (1-12)
* Oligopoly

**Holi Break**

* Third, Fourth and Fifth Week of March (13-31)
* Theory of Factor Pricing
* Market Success and Market Failure
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-C**

* First, Second and Third Week of April (1-15)
* Rent
* Interest
* Fourth and Fifth Week of April (17-29)
* Profit
* Test (Oral/Written) and Revision of Completed Syllabus

**May 2023**

Revision of Whole Syllabus

Alka

Asst. Prof. in Economics

GCW Lakhan Majra, Rohtak

**Tentative Lesson Plan for odd Sem. (5th)**

**Session-2022-2023**

**Paper- Development Economics**

**SECTION-A**

* In the month of August (16 onwards) & September
* Characteristics of Underdeveloped Countries
* Economic Growth and Development
* Determinants of Economic Development
* Measurement of Economic Development
* Obstacles to Economic Development
* Vicious Circle of Poverty
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-B**

* In the month of October
* Balanced Growth
* Unbalanced Growth
* Lewis Model
* Leibenstein’s Critical Minimum Effort Thesis
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-C**

* In the month of November
* Natural Resources
* Environment -A Necessity and Luxury
* Population-Environment Linkage
* Environment as a Public Good
* Environmental Pollution
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-D**

* In the month of December
* Sustainable Development
* Test (Oral/Written) and Revision of Complete Syllabus

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**Tentative Lesson Plan for odd Sem. (3rd)**

**Session-2022-2023**

**Paper- Macro Economics**

**SECTION-A**

* In the month of August (16 onwards) & September
* Introduction to Macroeconomics
* Basic Concepts of National Income Accounting
* Measurement of National Income and Related Aggregates
* Central Statistical Organisation and Measurement of National Income in India
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-B**

* In the month of October
* Some Basic Concepts Relating to National Income Determination
* Consumption Function
* Investment Function
* Determination of Equilibrium GDP in a Two Sector Economy
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-C**

* In the month of November
* The Concept of Multiplier
* National Income Determination in a Three Sector Closed Economy
* National Income Determination in an Open Economy
* Determination of GDP and Price Level in the Short Run
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-D**

* In the month of December
* Determination of GDP and Price Level in the Long Run
* Test (Oral/Written) and Revision of Complete Syllabus

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**Tentative Lesson Plan for odd Sem. (1st)**

**Session-2022-2023**

**Paper- Micro Economics**

**SECTION-A**

* In the month of August (22 onwards) & September
* Nature and Scope of Economics
* The Economic Problem: Scarcity and Choice
* Economic Organization and Economic Systems
* Micro and Macro Economics
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-B**

* In the month of October
* Concepts of Demand and Law of Demand
* Elasticity of Demand: Concept, types, measurement, determinants, and importance
* Consumer Theory: Cardinal Utility Analysis
* Ordinal Utility Theory: Indifference Curve Analysis
* Firms as agents of Production
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-C**

* In the month of November
* Production Function and Laws of Production
* Isoquant Curves and Producer’s Equilibrium
* Concepts of Supply and Law of Supply
* Theory of Costs
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-D**

* In the month of December
* Concepts of Revenue
* Test (Oral/Written) and Revision of Complete Syllabus

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**Tentative Lesson Plan for odd Sem. (1st)**

**Session-2022-2023**

**Paper- Business Economics**

**SECTION-A**

* In the month of August (22 onwards) & September
* Basic Problems of an Economy
* Working of Price Mechanism
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-B**

* In the month of October
* Elasticity of Demand
* Utility Analysis
* Indifference Curve Analysis
* Theory of Supply
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-C**

* In the month of November
* Theory of Production
* Producer’s Optimisation- Isoquant Curve Analysis
* Theory of Costs
* Test (Oral/Written) and Revision of Completed Syllabus

**SECTION-D**

* In the month of December
* Market Structure
* Test (Oral/Written) and Revision of Complete Syllabus

Alka

Asst. Prof. in Economics

GCW Lakhan Majra, Rohtak

**B.A. Home Science Semester I 1st****Year**

**Lesson Plan (2022-23)**

**Resource Management (Theory)**

| **MONTH** | **WEEK** | **SYLLABUS** |
| --- | --- | --- |
| **August** | 4th  week | Introduction of Home Science, Concept of Home Science |
|  | 5th week | Scope of Home Science |
| **September** | 1st week | Function of Home |
|  | 2nd week | Selection of Sight for an Ideal House |
|  | 3rd week | Soil, locality and Orientation of house |
|  | 4th week | Kitchen Gardening |
|  | 5th week | Revision & Monthly test |
| **October** | 1st week | Elements of Art |
|  | 2nd week | Principles of Art |
|  | 3rd week | Consumer Protection Act |
|  | 4th week | Consumer rights, duties, Consumer problems |
|  | 5th week | Revision & Monthly test |
| **November** | 1st week | Meaning and Process of Home Management |
|  | 2nd week | Resources- classification, management of family resources |
|  | 3rd week | Money Management |
|  | 4th week | Time Management |
|  | 5th week | Energy Management |
| **December** | 1st week | Revision & Monthly test |
|  | 2nd week | Revision & Monthly test |

**Lesson Plan (2022-23)**

**Resource Management (Practical)**

| **MONTH** | **WEEK** | **SYLLABUS** |
| --- | --- | --- |
| **August** | 4th  week | Drawing Rangoli designs- Geometric |
|  | 5th week | Drawing Rangoli designs- Traditional |
| **September** | 1st week | Dyeing Rangoli Colours |
|  | 2nd week | Making Rangoli with Colours & Flowers |
|  | 3rd week | Making Rangoli with other materials |
|  | 4th week | Making Alpana |
|  | 5th week | File checking and query solving |
| **October** | 1st week | Cleaning and polishing of brass and copper |
|  | 2nd week | Cleaning and polishing of silver and aluminium |
|  | 3rd week | File checking and query solving |
|  | 4th week | Preparation of monthly budget for LIG, MIG, HIG |
|  | 5th week | File checking and query solving |
| **November** | 1st week | Care and cleaning of mixer and grinder, refrigerator |
|  | 2nd week | Care and cleaning of Microwave and washing machine |
|  | 3rd week | File checking and query solving |
|  | 4th week | Table setting |
|  | 5th week | Table manners |
| **December** | 1st week | File checking and practice |
|  | 2nd week | File checking and practice |

**B.A. Home Science Semester III 2nd Year**

**Lesson Plan (2022-23)**

**Clothing and Textiles (Theory)**

| **MONTH** | **WEEK** | **SYLLABUS** |
| --- | --- | --- |
| **August** | 4th  week | Definition and Classification of Fibres |
|  | 5th week | Properties and Uses of Cotton Fibres |
| **September** | 1st week | Properties and Uses of Silk & Wool |
|  | 2nd week | Properties and Uses of Nylon |
|  | 3rd week | Revision & Monthly test |
|  | 4th week | Brief Introduction of Weaving |
|  | 5th week | Finishing Process in Fabrics |
| **October** | 1st week | Types of Finishing and Types of Printing |
|  | 2nd week | Dying – Simple and Resist |
|  | 3rd week | Revision & Monthly test |
|  | 4th week | Selection of Fabric according to occasion |
|  | 5th week | Traditional Embroideries and Textiles of India |
| **November** | 1st week | Soaps and Detergent |
|  | 2nd week | Types and Uses of Starches, bleaches and blues |
|  | 3rd week | Revision & Monthly test |
|  | 4th week | Different methods of Laundry |
|  | 5th week | Reagents used in Laundries |
| **December** | 1st week | Stain Removal |
|  | 2nd week | Revision & Monthly test |

**Lesson Plan (2022-23)**

**Clothing and Textiles (Practical)**

| **MONTH** | **WEEK** | **SYLLABUS** |
| --- | --- | --- |
| **August** | 4th  week | Basic stitches – tucking running stitches |
|  | 5th week | Back stitch, Hemming |
| **September** | 1st week | Button hole stitch, Blanket stitch |
|  | 2nd week | File checking and query solving |
|  | 3rd week | Embroidery stitches- Chain stitch, Laisy daisy stitch |
|  | 4th week | Stem stitch, Herring bone stitch |
|  | 5th week | File checking and query solving |
| **October** | 1st week | Preparation of samples of basic seams: plain, French, lapped, Counter, run and fell seam |
|  | 2nd week | Gathers into a band, Pleats (knife and box) |
|  | 3rd week | Dart (simple and fish dart) |
|  | 4th week | Placket opening (continuous and two piece) |
|  | 5th week | File checking and query solving |
| **November** | 1st week | Tucks (pin and cross) |
|  | 2nd week | Studying different techniques of tie and dye |
|  | 3rd week | Making samples different tie and dye design |
|  | 4th week | Making samples of block printing |
|  | 5th week | File checking and query solving |
| **December** | 1st week | File checking and practice |
|  | 2nd week | File checking and practice |

**B.A. Home Science Semester V 3rd Year**

**Lesson Plan (2022-23)**

**Food and Nutrition (Theory)**

| **MONTH** | **WEEK** | **SYLLABUS** |
| --- | --- | --- |
| **August** | 4th  week | Food-classification & functions of food groups |
|  | 5th week | Essential food constituents: Carbohydrates, Protein |
| **September** | 1st week | Essential food constituents: Fat, Water |
|  | 2nd week | Essential food constituents: Vitamins-A, D, C |
|  | 3rd week | Essential food constituents: Water |
|  | 4th week | Essential food constituents: B1, B2, Niacin |
|  | 5th week | Essential food constituents: Calcium, Phosphorus & Iodine |
| **October** | 1st week | Importance, Methods of cooking, their advantages and disadvantages. Effect of cooking on different nutrients. |
|  | 2nd week | Methods of enhancing nutritive value of food stuffs, Importance. |
|  | 3rd week | Food Preservation: Importance. Causes of food spoilage in brief |
|  | 4th week | Methods of food preservation |
|  | 5th week | Revision & Monthly test |
| **November** | 1st week | Meal Planning, Balanced diet. Principles of Meal Planning, factors affecting it. |
|  | 2nd week | Planning meals for: Children-school going child |
|  | 3rd week | Planning meals for: Adolescents |
|  | 4th week | Planning meals for: Adults |
|  | 5th week | Planning meals for: Pregnant women and lactating mother |
| **December** | 1st week | Revision & Monthly test |
|  | 2nd week | Revision & Monthly test |

**Lesson Plan (2022-23)**

**Food and Nutrition (Practical)**

| **MONTH** | **WEEK** | **SYLLABUS** |
| --- | --- | --- |
| **August** | 4th  week | Methods of coking and recipe writing |
|  | 5th week | Preparation of different types of hot beverages |
| **September** | 1st week | Preparation of soups |
|  | 2nd week | Preparation of cold beverages |
|  | 3rd week | Preparation of deserts and sweets |
|  | 4th week | Preparation of different cakes |
|  | 5th week | File checking and query solving |
| **October** | 1st week | Recipe writing |
|  | 2nd week | Preparation of salads |
|  | 3rd week | Preparation of breakfast dishes |
|  | 4th week | File checking and query solving |
|  | 5th week | Recipe writing |
| **November** | 1st week | Preparation of main meal dishes |
|  | 2nd week | Preparation of different type of rice |
|  | 3rd week | File checking and query solving |
|  | 4th week | Preparation of different chutneys |
|  | 5th week | Query solving |
| **December** | 1st week | File checking and Practice |
|  | 2nd week | File checking and Practice |