



ANUGRAH MEMORIAL COLLEGE, GAYA

823001- (BIHAR)

(A Constituent Unit of Magadh University, Bodhgaya, Bihar, India)

Letter No. :

Date :

Course Outcome

Department of English

B.A. Honours in English

After completing these courses/papers, the students will be able to understand, discuss, analyse and academically respond to the following topics:

Paper- I

- The history of English Literature
- The history of English Language
- Learn about the evolution of the literary eras
- Recognise the major authors, works and trends in English Literature
- Understand the historical evolution of the English Language
- Have the knowledge of literary movements
- Critical understanding of the major texts of English Literature.

Paper- II

- The critically appreciate of Poetry of Chaucer, Donne, Milton, Pope, Coleridge and Arnold.
- Understanding Poetic devices
- Have an exposure to various types of poetry.
- Application of figures of speech in poetry.

Paper- III

- Critical understanding of English Drama
- Appreciation of Elizabethan Drama
- Appreciation of Jacobian Drama
- Appreciation of Restoration Comedy
- Appreciation of Eighteenth Century Drama

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Paper- IV

- Understanding of prose fiction .
- Biblical prose style
- Eighteenth Century prose fiction
- Women novelists
- Language, art of characterization, narrative form and literary style
- Evolution of Victorian Novels
- Historical context of the evolution of novels as a literary form

Paper- V

- Historical Context of Classical literary criticism
- Textual analysis of Aristotle, Longinus and Horace.
- Critical understanding of the critical writings of Dryden, Johnson, Coleridge, Arnold and Eliot
- Continuities between classical criticism and modern literary criticism
- Practical criticism of unseen texts
- Different eras and types of literary criticism

Paper- VI

- Poetry of the twentieth century
- Poetry movements of the twentieth century
- Close critical analysis of the poetry of Yeats and Eliot.
- Nineteenth century drama with textual analysis of G.B. Shaw.
- Nineteenth century literary fiction with textual analysis of Conrad.
- Twentieth century literary fiction with textual analysis of Lawrence, Woolf, Maugham and Achebe.


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Paper- VII

Section- A

- Understanding the historical and literary context of Indian English Poetry
- The distinctions and continuities between Indian English Poetry during the colonial and post-colonial eras.
- Close textual analysis of the poems by Derozio, Toru Dutt, Tagore, Aurobindo, Naidu, Ezekiel, Ramanujan, Daruwalla, Mahapatra etc.
- The influence of modernism on Indian English Poetry

Section – B

- Critical appreciation of Indian English Prose
- The different philosophical outlooks of Indian English Prose
- Literary analysis of style, content and historical context of Indian English Prose.

Section- C

- Critical understanding of the Indian English Novel.
- Philosophical basis of the various Indian English Novels.
- Close textual analysis of the novels by Anand, Narayanan, Aurobindo and Desai.
- Literary style and historical background of the Indian English Novel.

Paper- VIII

Option- 1

American Literature

- Evolution of poetry in nineteenth century America
- Close textual analysis of Whitman and Dickinson
- Critical understanding of twentieth century drama
- Close textual analysis of the plays by T. Williams and A. Miller.
- Twentieth century American Fiction, content, style and context.
- Close textual analysis of the novels by Twain, Melville, Bellow, James.

Option- 2

Essays

- Understanding and practice of literary essays
- Understanding the practice of general essays
- Writing techniques to compose essays of long format.

Option- 3

Journalism and Mass Communication

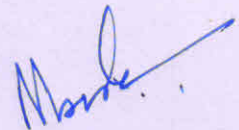

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- Definition of journalism, Role of Journalism in society
- Qualities of good journalism
- Varieties of Journalism
- Definition and characteristics of mass communication
- Features of communication
- Communication Research Interview
- Advertising and Propaganda
- Reporting, Main features of journalistic writing
- Indian Polity

Option- 4

Translation

- Definition of Translation, Types of Translation.
- Major features of translation
- Difference between translation of prose and poetry
- Lexicography
- Language Varieties
- Restricted Translation
- Register
- Dubbing
- Role of culture and geography on translation.



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Department of Hindi
B.A. Honours in Hindi

After completing these courses/papers, the students will be able to understand, discuss, analyse and academically respond to the following topics:

Paper- I

- Understanding Medieval Poetry
- The Bhakti Movement
- Critical textual analysis of the poetry of Kabir, Jayasi, Tulsidas, Meerabai and Bihari
- Evolution and development of Bhakti poetry in the Medieval Age.

Paper- II

- Evolution of Hindi Novel
- Elements of Hindi Drama
- Critical analysis of the works of Bhagwaticharan Verma, Faneshwar Nath Renu, Jayshankar Prasad.
- Developments in Hindi Prose

Paper- III

- Trends in Modern Hindi Poetry
- Critical tools of Hindi Poetry
- Close textual analysis of the works of Nirala, Pant, Mahadevi and Jayshankar Prasad
- Close textual analysis of the poetry of Bachchan, Dinkar, Aggyeya, Bharati, Mishr, Dhoomil

Paper- IV

- Categories and nomenclature in Hindi literature
- Bhakti Movement
- Hindi literature in the Modern age
- Literary context of the Modern age
- The new forms of Hindi prose


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Paper- V

- Definitions of Language
- Importance of linguistics
- Different aspects of linguistics
- Parts of speech in Hindi
- Development and evolution of the Hindi Language
- Hindi as a national language

Paper- VI

- Indian poetic theories
- Western theories of criticism
- Qualities of poetry, necessity of poetry and kinds of poetry
- Ras, Alankar, Dhvani and Riti
- Literary devices in Hindi poetry
- Western criticism by Plato, Aristotle and Matthew Arnold
- Indian school of literary criticism

Paper- VII

- Creative writing in Hindi
- The scope and spread of the Hindi Language
- The various styles of Hindi
- Hindi in the context of technology
- The Dictionary and its composition
- Types of translation
- Hindi in the context of translation
- Definition and process of journalism
- Uses of Hindi in journalism
- Technical terms in journalism

Paper- VIII

- The various aspects of Sagun Bhakti Poetry
- The source of the poetry of Surdas
- The philosophical analysis of Bhramargeet
- Bhakti poetry and philosophy
- Poetic Diction of Surdas
- Poetic style and expression of Meera
- Critical analysis of the poetry of Raskhan and Rahim
- Dalit literature
- Feminist literature


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- Folk literature
- Journalism: definition, scope and processes.

Department of History
B.A. Honours in History

After completing these courses/papers, the students will be able to understand, discuss, analyse and academically respond to the following topics:

Paper-1

- The History of India from earliest times to 1206 A.D.
- Town planning, Material culture, religion, script, social structure and legacy.
- Cultural patterns from 1500 B.C. to 600 B.C. economy, society, polity and ideological beliefs in early and later Vedic literature
- New religious movements, material and ideological background of Jainism, Buddhism.
- Monarchical and non-monarchical forms of Government in the 6th C B.C.
- Rise of the Magadh empire
- Age of the Mauryas
- Political developments in the Post Mauryan empire
- The age of the Guptas, cultural, literary, literary, scientific and technological development
- Origin and role of the Rajputs from 8th C A.D.
- Rise of the Pallavas, Cholas and Chalukyas in South India
- Advent of the Turks
- Advent of the Arabs

Paper- II

- History of Great Britain from 1603-1939
- Early Stuart Sovereign
- Civil war and the rise of Cromwell
- Constitutional policies and foreign policies
- Restoration of 1660
- James II- causes of the Glorious Revolution of 1683, its nature and significance

- Constitutional significance of the reigns of George I and George II, domestic and foreign policy
- Causes and features of the Agricultural Revolution in the 18th C
- The Industrial Revolution in the 18th C, its features and impact
- George III's attempt at the revival of royal power and its failure
- Extension of the First Reform Act (1832), the Second Reform Act (1867) and the Third Reform Act (1884)
- Achievements of Peel
- Gladstone, Social Reforms and Imperialism
- Factors leading to England's participation in WW1
- The Cabinet Crisis of 1931
- Drift towards the WW2

Paper- III

- The comprehensive history of India from 1206 to 1756
- Expansion of the Delhi Sultanate (1290-1320), the Khiljis, administration and economic reforms
- Concepts of the Delhi Sultanate (1320-1398) with special reference to the Tughlaqs and the invasion of Timur
- Rise of the Vijaynagar Empire and the Bahmani Kingdom
- The significance of the Lodis and the advent of the Mughals
- Evolution of the administrative structures of the Delhi Sultanate
- Main features of society and religion during the Sultunate period
- Establishment of the Mughal rule
- Akbar: Expansion of the empire, religion and emergence of composite culture
- Mughal empire and the North West
- Rise of the Marathas
- Mughal administration, theory of the state, administrative structures, fiscal resources and land revenue system
- Cultural development, art, architecture and literature
- Growth of the European powers in Bengal

Paper- IV

- History of Modern Europe (1729- 1945)
- The French Revolution: Causes, nature, achievements, Reign of Terror
- Rise of Napoleon, his contribution of France and Europe, causes of his downfall
- Congress of Vienna, Concept of Europe
- Revolution of 1830 and 1848
- Napoleon III
- Rise and growth of Capitalism in Modern Europe
- Italian and German unifications

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- Greek war of independence, The Crimean War, the Berlin Congress
- Czar Alexander II of Russia
- Germany after 1870
- Expansion of Europe in Africa till 1914
- World War I- causes and effects
- Russian Revolution of 1917, Causes, nature and effects
- The Treaty of Versailles
- The League of Nations- achievements and failures
- Soviet Russia achievements of Lenin and Stalin
- Rise of Fascism in Italy, achievements of Mussolini
- Rise of Nazism in Germany, achievements of Hitler
- The causes and effects of the Second World War

Paper- V

- India in the middle of the 18th C- Forces of Continuity and change.
- Final victories of the British- Bengal and the Carnatic
- Expansion of the British up to 1857: War and diplomacy as instruments of expansion-relationship .
- Growth of administrative apparatus- Warren Hastings, Cornwallis, Bentinck, Dalhousie
- Economic changes (1757- 1857)
- Introduction of English education and the rise of the new intelligentsia with special Reference to Raja Ram Mohan Roy.
- Indian resistance to British Imperial Rule

Paper- VI

- Concepts of India's relation with Persia, Afghanistan, Nepal, Tibet and Burma
- British Policy towards Indian States
- Problems of decentralisation- separation of judicial from the executive functions
- Imperial adjustment: administration of Ripon, Morely- Minto Reforms
- Imperial offensives: Lytton and Curzon
- Imperial adjustment- Montague-Chelmsford reforms
- Indian National Movement upto 1919
- Indian National Movement 1919- 1935
- India and the Second World War: Cripps Mission, 1942 movement, Cabinet Mission
- Muslim politics since 1930 and demand for partition


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Paper- VII

Option 1

History of the Far East (mid nineteenth and twentieth century)

China:

- Taiping Rebellion
- Boxer Movement
- The Revolution of 1911
- Genesis and Principles of the Kuomintang Party
- The career and contribution of Sun Yat Sen
- The career and contribution of Chiang Kai Shek
- Rise and Growth of the Communist movement in China

Japan:

- Meiji Restoration
- Modernisation of Japan
- Causes and effects of the Sino-Japanese War of 1894-95 and the Russo Japanese War of 1904-05
- The context of the Washington Conference
- Relations between Japan and Manchuria
- Rise and Fall of Japanese imperialism

Option- 2

History of the South East Asia

- The details of the British conquest of Burma
- The History of Burmese National Movement
- The British conquest of Malaya
- History of the Malaysian National Movement
- Thailand's contact with the West, Internal administration revolt and World War II
- French imperialism in Indo-China
- Rise and Growth of national movement in Indo-China
- Dutch imperialism in Indonesia
- History of the Indonesian National Movement

Option- 3

- History of the West Asia
- The political movements of Turkey
- The Foreign policies of Turkey under Kamal Pasha
- Condition of Iran before the accession of Reza Shah Pahlavi
- Domestic and Foreign policies of Reza Shah Pahlavi
- British Mandate in Iraq and the rise of nationalism


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- The conflict of Palestine and Israel
- Rise and growth of Arab Nationalism
- Modernization of Saudi Arabia

Paper- VIII

Option- 1

- Rise of the West
- The social roots of Renaissance, crisis in feudalism, humanism, new learning
- The motives and voyages of the early colonial empires
- The origin of the European states
- The economic development of Europe in the 16th C
- The origin, course and results of the European Reformation.
- The economic and political crisis of Europe in the 17th C
- The origin, social, economic and political aspects of the English Revolution of 1688
- Rise of the modern science
- Rise of Mercantilism
- Economic developments in the 18th C
- The origin, significance and results of the American Revolution
- Problems and theories regarding the transition from feudalism to capitalism

Option- 2

- The war of American Independence
- Government and policies under George Washington
- Aspects of Jeffersonian democracy
- U.S. Foreign Relations
- Jacksonian Democracy
- Factors and impact of the American Civil War
- Imperialism and the emergence of the USA as a world power
- The causes and effects of the Spanish War
- Domestic policies of President Wilson
- The different dimensions of President Roosevelt
- Isolationism and Internationalism of America
- Social and cultural progress in the 20th C

Option- 3

- The History of Russia
- Causes and effects of the Russo Japanese war
- Russia and World War I and the causes of Russia's debacle


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- The origin of Menshevik Revolution
- The Bolshevik Revolution
- The various aspects of the New Economic Policy
- The foundations of Planned Economy
- Soviet diplomacy
- The factors and progress of the Cold War.

Department of Philosophy

B.A. Honours in Philosophy

After completing these courses/papers, the students will be able to understand, discuss, analyse and academically respond to the following topics:

Paper- I

- Basic features of Indian Philosophy
- Foundational concepts of the philosophy of Charvaka
- The main concepts of Jainism and Buddhism
- The different schools of Indian philosophy including Nyaya, Vaisheshik, Sankhya, Yog and Mimansa
- Understanding Vedanta, Shankar, Bramhan, Maya, Atma and Jagat.
- The philosophy of Ramanuj and counter of Shankar

Paper- II

- Understanding Metaphysics
- Nature of philosophy, its relation to science and religion
- Ontological theories
- Introduction to Epistemological theories
- Creationism and Evolutionism
- Theories about God
- Theories of Truth
- Causality

Paper- III

- Analysing the nature of Ethics
- Distinguishing Moral and Non- Moral actions
- Analysis of Voluntary Actions


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- Postulates of Morality
- Nature of Moral Judgement
- Motive and intention of moral judgement
- The different standards of morality
- Theories of punishment
- An understanding of the Ethics of Gita

Paper- IV

- A critical understanding of the History of Western Philosophy
- The methods of Descartes
- Substance, Attributes, Modes and Mind-Body relation in Spinoza
- The concept of Monads and God in Leibnitz
- The main arguments of Locke
- The philosophy of Berkeley
- Impressions and ideas, Causality and Scepticism in Hume
- Nature and formation of Knowledge, Space and Time, Categories, Phenomenon and Noumenon as explained by Kant

Paper- V

- Nature of Religion
- Religious consciousness
- The foundations of religious faith
- The various arguments for the existence of God
- The qualities and personality of God
- The problem of Evil
- Religious unity and tolerance
- Religious language and the problem of its meaning.

Paper- VI

- Social and Political Philosophy
- Meaning and nature of Social philosophy
- The various social practises like Marriage, Divorce, Trust etc and their relation to philosophy
- Nature and types of Political philosophy.
- Meaning of freedom.
- Meaning of political obligation
- Political ideals, Democracy and Socialism

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Paper- VII

- Ways to approach Logic, arguments and analysis
- Understanding Logic
- Various kinds of prejudices
- The Meaning of statement, proposition

Paper- VIII

Option – 1

Concepts of Indian Philosophy

- Understanding the concepts of Brahman and God
- Attachment and Moksha
- Karma and rebirth
- Maya
- Universals

Option- 2

Modern Indian Philosophy

- The philosophy of Swami Vivekanand
- The concept of the Whole
- Maya and the Soul
- Yog and Karmayog
- The distinctions between Bhaktiyog and Rajyog
- Salvation and the concept of universal laws.


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Department of Economics

B.A. Honours Economics

After completing these courses/papers, the students will be able to understand, discuss, analyse and academically respond to the following topics:

Paper- I

- Nature and scope of Economics.
- Various types of Economics like Micro & Macro Economics, Static and Dynamic Economics.
- The Micro-theory of Consumption, utility analysis, Indifference curve analysis.
- The theory of Demand, Elasticity of Demand.
- Concept of Cost revenues, Analysis of cost curves and revenue curves.
- Production Function- Laws of return.
- Theories of Price- Price determination under perfect competition, Monopoly, Duopoly, Monopolistic competition.
- Distribution, Marginal productivity, theory of distribution- modern theories.
- Wages- the demand and supply theory of wages, wage determination in different situation.
- Interest- the classical and liquidity theory of interest.
- Different theories of Profit.

Paper- II

- Money- All aspects related to Money.
- Income and Expenditure approach in the light of Money.
- Inflation and its impact, Inflation gap.
- Transaction and cash balance approach of the quantity, Objectives of Monetary Policy
- National Income and its component, liquidity function, Investment function, Consumption function.
- Banking- commercial banking principles, credit creation and credit control methods.
- International Monetary system- IMF, IBRD, IFC & IDA.
- International Trade system- role in economic development, Ricardian theory Heckscher-Ohlin, Balance of methods and methods of correcting adverse b.o.p.


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Paper- III

- Indian Economy, National income and growth.
- Population – policy and programmes.
- Agriculture- role in economic development, green revolution.
- Land reforms, farming, various impact on economy.
- Credit and its sources, co-operative system, nationalised bank, rural bank, NABARD.
- Agriculture labour, Wages system and implementation.
- Industries types & policies, public sector, different industries like sugar, cotton etc.
- Industrial finance, sources, industrial labour trade union movement, Foreign trade and policies.
- Various transportation system and its contribution in economic development.
- Unemployment, employment programs, N.R.E.P.
- Price trends in India.
- Planning in India- seventh five-year plan- objectives, strategies.

Paper- IV

- Nature of public Economics, Public Finance.
- Taxation, types and theories.
- Public Expenditure- Growth & Effects.
- Public Debt- Types, Burden & Forms.
- Principles of Federal Finance
- Public Enterprises- Objectives & Types, Price policies.
- Profitability & accountability of Public Enterprises.
- Public Sector in India- Growth & Performance.
- Unemployment and full Employment in India.

Paper- V

- Economic Growth- meaning & measurement, Economic & Non-Economic factors.
- Characteristics of underdeveloped Economics, Role of state in Economic growth.
- Economic growth and its relation with various factors like Capital formation, Foreign capital, Population, Technology etc.
- Stages of Economic growth.
- Planning- types, need and objectives.
- Planning in India- strategy and technology of Indian planning, Planning Commission, National Development Council, Decentralised Planning.


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Paper- VI

- Economic development of U.K., U.S.S.R., U.S.A., and Japan.
- U.K.- Industrial revolution causes and consequences, Agricultural revolution, History of agriculture since 1950, Commercial revolution, Decline of Economic Power of Great Britain.
- U.S.A.- American Economy since 1914, Great depression and new deal, American Agriculture & Industry since 1914, Tariff policy-1914.
- U.S.S.R.- State Capitalism, War communism, New Economic policy, Scissor's crisis, Industrial development during post war period, Tenth & eleventh five year plan of USSR.
- JAPAN- Meiji restoration- Industrial development and foreign trade since 1914, Economic recovery of Japan after WWII, Small scale industry in JAPAN.

Paper- VII

- Definition and scope of Statistics.
- Measures of central tendency- Mean, Median, Mode.
- Measures of Dispersion- Mean Deviation & Standard Deviation.
- Census and sample methods of Investigation.
- Primary and Secondary data.
- Index number, Sample Correlation and analysis.
- Statistical organisation in India.
- National income statistics in India.
- Census report of government of India.
- National sample survey report.

Paper- VIII

Labour Economics

- Nature and scope of Labour Economics.
- Characteristics and peculiarities of Labour, Labour Market.
- Recruitment and working condition of Indian Labour.
- Market, Nature, Demand and Supply of Labour.
- Wage determination, Collective bargaining, trade function and role in Economic development w.r.t. INDIA.
- Labour welfare measures in India, social security in India, Industrial disputes, Arbitration and worker's participation in management.


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Agricultural Economics

- Agricultural Economics- Nature & Scope, Role of Agriculture in Developing Economy.
- Land Reforms- types of Farming, Farm management practices.
- Agricultural Finance- role of institutional financing in agricultural development.
- Marketing Structure and market agencies and its aspects.
- Farm Productivity- factors affecting, technology, instability, measures for stabilization of agricultural productivity.
- Agricultural priced- variation in prices, measures of price and income stabilization.
- Role of state in agricultural development, strategies & programmes.

Business Organisation and Industrial Economics

- Principles of modern industry - division of labour.
- Scientific management, Rationalisation Integration and combination.
- Syndicates, Holding companies, Multinational Organisation.
- Business Organisation- forms and roles.
- Types of companies, Agency system, Monopoly and its aspects.
- Capitalism and Socialism- definitions and features, allocation of resources.
- State policy, Industrial Finance and structure.

Mathematical Economics & Statistics

- Demand & Supply, Elasticity of Demand, Equation, Function, Limit, Differential coefficient.
- Determinants, matrix, price theory and mathematical analysis.
- Definition and scope of Statistics, classification and tabulation of Data.
- Measures of central tendency- mean, median, mode.
- Measures of dispersion, Range, standard deviation, Time series, Correlation.
- Index Numbers, Inter Polation& Extra Polation


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Department of Chemistry

B.Sc. Honours Chemistry

After completing these courses/papers, the students will be able to understand, discuss, analyse and academically respond to the following topics:

Paper- I-A (Physical Chemistry)

- States of Matter (Gas, Liquid, Solid, Colloid)
- Equilibrium, thermochemistry, thermodynamics, Chemical Kinetics.
- Dilute solution and changes of state.

Paper- I-B (Inorganic Chemistry)

- Atomic structure, Bonding Models, Vander waal's forces.
- Nomenclature, Acid base chemistry, Periodicity.
- Principles of Metallurgy, Hydrogen & hydrides, principles of various concentrated methods.
- Methods of refining and purification.
- Molecular symmetry, Elementary Magnetochemistry, Isotopes.

Paper- I-C (Organic Chemistry)

- Shapes and structure of Organic Molecules, Nomenclature of Organic compounds.
- Introductory Organic Reaction Mechanism, Elementary stereochemistry.
- Classes of Compounds, Application Techniques, purification or Organic Compounds.

Paper- II (Practical)

- Volumetric Analysis- acidimetric and alkalimetric

Paper- III-A (Physical Chemistry)

- States of Matter (Gas, Liquid, Solid, Colloid)
- Equilibrium, Phase equilibrium, thermodynamics, Distribution Law, Chemical Kinetics
- Catalyst, Conductance, Electrochemical cells.

Paper- III-B (Inorganic Chemistry)


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- Atomic structure, Bonding Models, Nomenclature of Inorganic compounds
- Chemistry in aqueous and non-aqueous solutions
- Spectroscopy, Analytical Chemistry, oxidation and reduction.
- Idea of major chemical pollutants in environment.

Paper- III-C (Organic Chemistry)

- Stereochemistry, Reaction Mechanism, Name Reaction.
- Different classes and compounds.
- Polymers and resins.
- Test of Functional groups.

Paper- IV (Practical)

- Duma's Bulb Method
- Victor Meyer Method
- Parachor Values
- Ostwald Viscometer
- Gravimetric Analysis

Paper- V (Physical Chemistry)

- States and Structures.
- Equilibrium, Wave Mechanics.
- Chemical Kinetics, Electrochemistry, Surface Chemistry

Paper- VI (Inorganic Chemistry)

- Atomic Structure, Bonding Models, Co-Ordination Chemistry, Nuclear Chemistry.
- Complex formation in block elements.
- General chemistry of F-block elements.
- Organometallic chemistry, Inorganic chemistry in Biological system, Spectroscopy
- Inorganic chains, Rings, Cages, and Clusters.

Paper- VII (Organic Chemistry)

- General Principles, Types of Reactions, Name Reaction and Rearrangement.
- Alkaloids and Terpenes.
- Analytical and Applied Organic Chemistry.

Paper- VIII (Practical)

- Quantitative Inorganic analysis


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Department of Mathematics
B.Sc. (Honours) Mathematics

After completing these courses/papers, the students will be able to understand, discuss, analyse and academically respond to the following topics:

Paper- I

- Sets and algebra of sets
- Demorgan's Laws
- Definition and examples of partial and total order relation
- Hyperbolic functions
- Operation of Matrices including transpose, inverse and rank of matrices.
- Solution of system of linear equations
- Convex sets and their properties
- Linear programming
- Fundamental theory of algebra
- Polynomial equations and their roots

Paper- II

- Successive differentiation and Leibnitz theorem
- Curvature
- Tangent, normal and asymptotes
- Partial differential equation
- Indeterminate form and L. Hospital rule
- Integration of rational irrational and trigonometric functions
- Evaluation of definite integrals
- Curve tracing
- Volume and surface areas of solids of revolution
- Parabola, ellipse and hyperbola
- Different types of coordinate systems
- Planes and straight line in space
- Sphere, cone and cylinder
- Standard equation of conicoids

Paper- III

- Dedekind's theory of real numbers
- Sequences and its convergence
- Cauchy sequence
- Continuity and differentiability


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- Roll's theorem ad Lagranges mean value theorem
- Taylors ad Maclaurin's series
- Infinite series and their convergence
- Binary operations
- Notion of group
- Abelian and non-abelian group
- Homomorphism and isomorphism group
- Ring of residue classes, ring of matrices ad fundamental theorem of homomorphism of ring

Paper-I V

- Vector calculus
- Different types of differential equations
- Statics
- Principle of virtual work in two dimension
- Stable equilibrium
- SHM
- Newton's law of Gravitation
- Kepler's laws ad planetary motion

Paper- V

- Continuity ad differentiability of function of two variables
- Young's ad Schwarz condition of equality
- Taylors theorem of maxima and minima
- Lagrange's method of undetermined multipliers
- Riemann integral
- Improper integral ad their convergence
- Differentiation under integral sign
- Multiple integral
- Line, surface and volume integral
- Sequence ad series of functions ad their convergence
- Metric spaces and topological space

Paper- VI

- Group theory
- Ring
- Linear algebra
- Vector spaces
- Dual spaces
- Direct sum of subspaces


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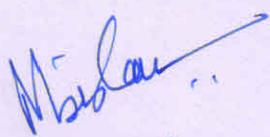
- Claeu –Hamilton theorem

Paper- VII

- Motion of a body in resisting medium
- Linear ad angular velocity
- Moment of inertia
- Angular momentum ad kinetic energy of rigid body
- D'Alembert's principle
- Attraction and potential
- Theorems on equipotential surfaces
- Hydrostatics
- Differential equations

Paper- VIII

- Interpolation ad inverse interpolation
- Numerical differentiation
- Numerical integration
- Solution of difference equation of first order
- Solution of ordinary differential equation using Euler's method, Picard's ad Runge-Kutta's method
- Simultaneous linear equations using Gauss elimination, Gauss-Seidel's ad relaxation methods
- Different numerical methods for finding the roots of polynomial equations
- Significant figures and errors computations


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Department of Botany

B.Sc. (Honours) Botany

After completing these courses/papers, the students will be able to understand, discuss, analyse and academically respond to the following topics:

Paper- I

- General characters and classification of algae.
- Cyanophyceae with reference to Oscillatoria and Rivularia.
- Study of Economic Importance of Algae.
- Characters and classification of Fungi.
- Structure and life history of Syncytium, Albugo, Erythraea, Puccinia and Alternaria.
- General character and classification of Bryophytes.
- Structure and life history of the following genera with the reference to comparative studies of gametophytes and saprophytes. Machantia, Pellia, Anthoceros, Sphagnum, and Polytrichum.
- General characters and classification of Stelar evolution.
- Structure and life history of the Psilotum, Lycopodium, Selaginella, Equisetum, Marattia and Azolla.
- Study of Rhynia, Lepidodendron and calamites.

Paper- II

MICROBIOLOGY AND PLANT PATHOLOGY

- Historical background of Microbiology.
- Classification of bacteria, Modern concept of bacterial cell.
- Role of microbes in biological nitrogen fixation.
- Industrial importance of bacteria and fungi.
- Mushroom cultivation.
- Structure and nature of TMV and Bacteriophage.
- Role of Enzymes and Toxins in Plant Pathogenesis.
- Symptoms, etiology and control of diseases.

Paper- III

- Comparative study of the morphological, anatomical and embryological features of the following Plums, Taxus, Gnetum.
- Fossils – definition and scope, conditions for fossilization and mode of preservation, uses of fossils.
- Types of Lyginopteris and cycadesites.



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- A brief idea of the plant fossil flora of Bihar.
- Principles of plant classification with emphasis on modern trends in taxonomy. A knowledge of system of classification of plant proposed by Bentham and Hooker Hutchinson and Cronquist.
- A comparative account of the diagnostic features, relationship and economic importance.

Paper- IV

- Meristematic tissue – their structure, distribution and functions.
- Mechanical tissue their structure distribution of function.
- Organisation of tissue in relation to environment.
- Anomalous secondary growth in Begonia, Nyctanthes, Achyranthes, Boerhaavia, Tecoma, Dracema.
- Various developmental processes in microsporogenesis, male gametophyte, megasporogenesis, female gametophyte, endosperm and embryogeny,
- Uses of plants in medicine and idea about important drug yielding plants.
- Agricultural and horticultural products of Bihar Special reference to oil seeds, pulses cereals, fruits and timber especially found in Bihar,

Paper- V

- Water potential in the plant – Diffusion, Osmosis, Osmotic relation of plant cell, Determination of water potential.
- Structure and composition of plasma membrane, brief account of earlier models the fluid – mosaic lipoproteia model,
- Active uptake of mineral salts Role of ATP as a carrier and related hypothesis.
- Photosynthesis – characterization of photo system.
- Stomatal regulation of transpiration, Hormonal and Energy dependent hypothesis.
- Translocation of solutes path substances translocated and mechanism.
- Structure and composition of plasma membrane, brief account of earlier models, the fluid mosaic lipoproteia model,
- Physiology of flowering Photoperiodism, Role of phytochromes and Florigen.
- Physiology of tropic movements in plants,
- Carbohydrates – structure and classification.
- Proteins Biosynthesis of amino acids and proteins.
- Enzymes Nomenclature, Classification, Catalytic properties, mode of action,
- Outline of the secondary plant metabolites and their role.


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Paper- VI

- Eco system and its aspects
- Population and attributes
- Ecological adaption
- Environment pollution Natural resource, Biological diversity
- Phytogeographical regions
- Vegetation types and florostic region of India.
- Qualitative and quantitative characteristics of plant communities.

Department of Psychology

B.A. Honours Psychology

After completing these courses/papers, the students will be able to understand, discuss, analyse and academically respond to the following topics:

Paper- I

- Method, observation, advantages and limitations.
- Nervous system, perception, Learning, Different kinds of Personality traits.
- Thinking- theories, central and peripheral.
- Emotions & Intelligence
- Personality- nature and types approach.

Paper- II

- Abnormality- brief history of psychopathology.
- Mind and its different states.
- Mental conflict and defence mechanism, psychosexual development.
- Dream, Neuroses, Psychoses, Psychopathic disorder.
- Techniques of psychotherapy, mental retardation.
- Difference between Neuroses and psychosis.


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Paper- III

- Definition, methods of Educational Psychology
- Measurement of intelligence, aptitude and achievements.
- Learning, program learning, formal and distant education
- Role of motivation in learning, examination in learning.
- Education of special types of children, physically and mentally handicapped and problems children.
- Guidance and counselling – meaning uses and methods.

Paper- IV

- Structuralism.
- Functionalism
- Behaviourism
- Psychoanalytic schools
- Neo Freudianism
- Humanistic psychology of Rogers and Maslow.

Paper- V

- Introduction subject matter and scope, relation of social psychology of with sociology and anthropology.
- Methods observation, socialisation -factors and processes
- Attitudes – meaning and concept, prejudice meaning and attitude.
- Group – structure, types and functions.
- Leadership nature and function,
- Public opinion, media role of public opinion in democracy.
- Social tension in India, national integration.
- Propaganda meaning and techniques.

Paper- VI

Psychological research – nature and stages.

- Hypothesis sources, problem and criteria.
- Interview meaning and schedule, sources and error of in interview.
- Observation and experiment.
- Sampling, meaning techniques and purpose.
- Measures of central tendency and variability.
- Probability, curve and its applications.
- Co relation product movement and bank difference methods.
- Vocational selections.
- Methods of worker and analysis – uses and limitation.


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Paper- VII

- Definition and scope of Statistics.
- Measures of central tendency- Mean, Median, Mode.
- Measures of Dispersion- Mean Deviation & Standard Deviation.
- Census and sample methods of Investigation.
- Primary and Secondary data.
- Index number, Sample Correlation and analysis.
- Statistical organisation in India.
- National income statistics in India.
- Census report of government of India.
- National sample survey report.

Paper- VIII

Labour Economics

- Nature and scope of Labour Economics.
- Characteristics and peculiarities of Labour, Labour Market.
- Recruitment and working condition of Indian Labour.
- Market, Nature, Demand and Supply of Labour.
- Wage determination, Collective bargaining, trade function and role in Economic development w.r.t. INDIA.
- Labour welfare measures in India, social security in India, Industrial disputes, Arbitration and worker's participation in management.

Agricultural Economics

- Agricultural Economics- Nature & Scope, Role of Agriculture in Developing Economy.
- Land Reforms- types of Farming, Farm management practices.
- Agricultural Finance- role of institutional financing in agricultural development.
- Marketing Structure and market agencies and its aspects.
- Farm Productivity- factors affecting, technology, instability, measures for stabilization of agricultural productivity.
- Agricultural priced- variation in prices, measures of price and income stabilization.
- Role of state in agricultural development, strategies & programmes.

Business Organisation and Industrial Economics

- Principles of modern industry - division of labour.
- Scientific management, Rationalisation Integration and combination.
- Syndicates, Holding companies, Multinational Organisation.
- Business Organisation- forms and roles.


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- Types of companies, Agency system, Monopoly and its aspects.
- Capitalism and Socialism- definitions and features, allocation of resources.
- State policy, Industrial Finance and structure.

Mathematical Economics & Statistics

- Demand & Supply, Elasticity of Demand, Equation, Function, Limit, Differential coefficient.
- Determinants, matrix, price theory and mathematical analysis.
- Definition and scope of Statistics, classification and tabulation of Data.
- Measures of central tendency- mean, median, mode.
- Measures of dispersion, Range, standard deviation, Time series, Correlation.
- Index Numbers, Inter Polation & Extra Polation

Department of Physics

B.Sc. (Honours) Physics

After completing these courses/papers, the students will be able to understand, discuss, analyse and academically respond to the following topics:

Paper- I (Theory)

- Frames of reference
- Galilean transformation
- Postulates of Einstein's theory
- Lorentz transformation and its consequences
- Michelson-Morley experiment
- Coriolis & centrifugal forces and their applications
- Gravitational field and potential

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- Kepler's laws
- Elasticity and elastic coefficients
- Beams and cantilevers
- Surface tension, surface energy and principle of virtual work
- Ripple and gravity wave

Paper- II (Theory)

- Maxwell's velocity distribution law, equipartition of energy and mean free path
- Transport phenomenon: Diffusion, Brownian motion
- Rectilinear flow of heat in a metal rod
- Thermal conductivity
- Relation between thermal and electrical conductivities
- Laws of thermodynamics
- Carnot's theorem and Carnot's engine
- Entropy and enthalpy
- Latent heat of transition
- Clapeyron equation
- Liquefaction of gases
- Black body radiation
- Specific heat of solids

Practical

The study of this course intends to provide practical understanding of subjects by performing different experiments related to theories in paper-I & paper-II

Paper- III (Theory)

- Wave front and division of amplitude
- Interference and interferometer
- Different types of diffraction
- Polarisation of light
- Lasers and its applications
- Maxwell's equations
- Electromagnetic waves
- Poynting vectors
- Reflection and refraction of light
- Scattering by free and bound charges

Paper- IV (Theory)

- Scalar potentials in electrostatic

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- Dielectrics and its polarization
- Energy stored in electric field
- Magnetic material and its properties
- Magnetic hysteresis curve
- Magnetic flux and its measurement
- Dia, para and ferromagnetism
- Growth and decay of current in L C R circuits
- Galvanometers
- AC circuits
- Transformer
- Photoelectric emission
- Photovoltaic cells

Practical

The study of this course intends to provide practical understanding of subjects by performing different experiments related to theories in paper-III & paper-IV.

Paper- V (Theory)

- Different types of coordinate systems
- Curl, gradient and divergence
- Orthogonal transformation of coordinates
- Partial differential equations and its solutions
- Function of complex variable
- Integration of complex functions
- Classical mechanics
- Hamilton's principle
- Euler's and Lagrange's equation
- Canonical transformation
- Postulates of quantum mechanics
- Schrodinger wave equation and its applications
- Pauli's exclusive principle
- Linear harmonic oscillator

Paper- VI (Theory)

- Statistical mechanics
- Probability distributions
- Canonical ensemble and thermodynamics
- Boltzmann distribution
- Fermi-Dirac distribution

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- The probability of thermodynamics function
- Working ad applications of different types of semiconductor devices
- Different electrical network theorems
- Different types of filters
- Different types of solid state electric devices
- Different logic gates
- Knowledge of computer and its components
- BASIC and FORTRAN languages

Paper- VII (Theory)

- Plasma and its properties
- Wave propagation in isotropic plasma
- Saha's theory of ionization
- Field due to oscillating current
- Maxwell's equations under lorentz transformation
- Crystallography ad its elements
- Miller indices
- X-rays diffraction
- Crystal binding
- Free electron theory of metals
- Band theory of solids
- Hall effect
- Origin of atomic spectra
- X-ray spectra
- Bohr's theory ad Bohr-Sommerfield theory of hydrogen atom
- Nuclear mass ad its properties
- Classical theory of Rutherford scattering

Paper- VIII (Practical)

The study of this course intends to provide practical understanding of subjects by performing different experiments related to theories in paper-V, paper-VI and paper-VII

M. S. Singh
08/03/2021

Principal

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