

SYLLABUS FOR MSSVRAT

(This is a common syllabus for **Paper-I** for all the Ph.D. programmes offered by the University)

Paper- I Programme: Ph.D. Code: RAT- RM-01 Sub: Research Methodology Total Marks: 50

Unit I: Meaning of Research:

- Meaning, aims, nature and scope of research
- Prerequisites of research
- Types of research
- Criteria of good Research and Research Ethics.

Unit II: Types of Research:

- Descriptive vs. Analytical
- Applied vs. Fundamental
- Quantitative vs. Qualitative
- Conceptual vs. Empirical
- Research Process

Unit III: Research Formulation:

- Defining and formulating the research problem
- Sources of a research problem,
- Characteristics of a good research problem
- Necessity of defining the research problem
- Hypothesis: Meaning and types of hypothesis,
- Research Proposal or Synopsis

Unit IV: Literature Review:

- Purpose of the review
- Identification of the related literature
- Organizing the related literature

Unit V: Data Collection:

- Population and sample
- Characteristics of a good sample
- Techniques of sample Selection
- Types of data in research

Unit VI: Research Report:

- Format of the research report
- Style of writing the report

Unit VII: Information and Communication Technology:

- ICT-Meaning
- Advantages & Disadvantages
- Uses of ICT
- Basics of internet.

-sd/-

Deputy Registrar (Academic)



SYLLABUS OF MSSVRAT

Paper- II Programme: Ph.D. in Assamese Department of Assamese

Code: RAT-ASS-02 Subject: Assamese Total Marks: 50

Unit I: সাহিত্য

- ক) অসমীয়া সাহিত্যৰ ইতিহাস
 - i) উদ্ভৱকালীন অসমীয়া সাহিত্য
 - ii) মধ্যকালীন অসমীয়া সাহিত্য
 - iii) আধুনিক অসমীয়া সাহিত্য

Unit II: ভাষা

ক) অসমীয়া ভাষাৰ ইতিহাস

- (উদ্ভৱকালীনৰ পৰা সাম্প্ৰতিকলৈ)
- খ) অসমৰ ভাষাৰ ভাষিক স্থিতি
- গ) ভাষা অধ্যয়নৰ শাখাসমূহ
- ঘ) উত্তৰপূব ভাৰতৰ লিপি (ইতিহাস আৰু বিৱৰ্তন)

Unit III: সংস্কৃতি

- ক) উত্তৰ-পূব ভাৰতৰ সাংস্কৃতিক প্ৰেক্ষাপট
 - i) সাংস্কৃতিক ইতিহাস আৰু বৰ্তানৰ স্থিতি
 - ii) সাংস্কৃতিক সমাহৰণ

Unit IV: তুলনামূলক সাহিত্য

- ক) তুলনামূলক সাহিত্য ধাৰণা, পদ্ধতি আৰু প্ৰয়োগ
- খ) তুলনামূলক সাহিত্য আৰু অনুবাদ

Unit IV: গৱেষণা

ক) গৱেষণাৰ ধাৰণা, গুৰুত্ব আৰু সম্ভাৱনীয়তা (অসমৰ ভাষা সাহিত্য আৰু সংস্কৃতিৰ প্ৰেক্ষাপটত)

-sd/-Mrs. Shymoli Doloi Head (i/c) & Assistant Professor Department of Assamese



SYLLABUS OF MSSVRAT

Paper- II Programme: Ph.D. in Computer Application Department of Computer Application

Code: RAT-CA-02 Subject: Computer Application Total Marks: 50

Unit-I: Theory of Computation:

Models of computation-Finite Automata, Pushdown Automata, Nondeterministic and NFA, DPDA and PDAs and Languages accepted by these structures. Grammars, Languages, Non-computability and Examples of non-computable problems. Programming and Data

Unit-II: Algorithms and Analysis:

Sorting and searching algorithms. Analysis of algorithms, Interpolation and Binary search, Asymptotic notations – big ohm, mega and theta, Average case analysis of simple programs like finding of a maximum of n elements. Recursion and its systematic removal. Quick sortnonrecursive implementation with minimal stack storage. Design of Algorithms (Divide and Conquer, Greedy method, Dynamic programming, Back tracking, Branch and Bound). Lower bound theory, nondeterministic algorithm,-non-deterministic programming constructs. NP-hard and NP-complete problems.

Unit-III: Structures:

Programming in C/C++. Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, binary heaps, graphs. File structures : Fields, Records and files. Sequential, Direct, index-sequential and relative files. Hashing, Inverted lists and multi-lists.

Unit-IV: Computer Organization and Architecture:

Boolean algebra and Minimization of Boolean functions, Combinational Circuit Design, Sequential Circuit Design. Hardwired and Microprogrammed processor design, Instruction formats, Addressing modes, memory types and organizations, Interfacing peripheral devices, Interrupts. Microprocessor architecture, Instruction set and Programming (8085, P-III/P-IV). Microprocessor applications.

Unit-V: Computer Networks & Internet:

Concept of layering. LAN technologies (Ethernet). Flow and error control techniques, switching. IPv4/IPv6, routers and routing algorithms (distance vector, link state). TCP/UDP and sockets, congestion control. Application layer protocols (DNS, SMTP, POP, FTP, HTTP). Basics of Wi-Fi. Network security: authentication, basics of public key and private key cryptography, digital signatures and certificates, firewalls.

Unit-VI: Operating Systems:

Memory Management: Virtual memory, paging, fragmentation. Concurrent Processing : Mutual exclusion, Critical regions, Semaphores. Scheduling: CPU scheduling, I/O scheduling, resource scheduling, Deadlock and scheduling algorithms. Banker's algorithm for deadlock handling.

Unit-VII: Database Systems :

Database design. ER-model, Relational model, Storage and File Structures. Indexing and Hashing. Transactions and Concurrency control. Recovery. Query Processing & Optimization. Object Oriented DBMS. Extended ER-Model.

-sd/-Dr. Santanu Kalita Head(i/c) & Assistant Professor Department of Computer Application



SYLLABUS OF MSSVRAT

Paper- II Programme: Ph.D. in Economics Department of Economics

Code: RAT-ECO-02 Subject: Economics Total Marks: 50

Unit I: RESEARCH METHODS IN ECONOMICS:

Social Science research and its Objectives – Types: Participant Observations, Action research, Community based research; quantitative and qualitative research, research in Economics and its problems, Literature review, construction of conceptual framework, formulation of hypothesis, Data – Secondary and primary– preparation of questionnaire; sampling problems: methods of Sampling, Field Survey, report writing.

Unit II: MICRO ECONOMIC ANALYSIS:

Ordinal and Cardinal Analysis, Indirect Utility Function and Roy's Identity, Production Function-Returns to Scale and Returns to Factor- Elasticity of Substitution; Forms of Production Function, Perfect Competition - Characteristics, Equilibrium of Firm and Industry, Critique; Monopoly and Monopolistic Competition – Price Output Determination; Price Discrimination; Oligopoly-Collusive and Non Collusive- Cartels and Price Leadership- Cournot model.

Unit III: MACROECONOMIC ANALYSIS:

Classical Model of Full Employment; Keynes Criticism of Classical Theory, Keynesian theory of Income, Employment, Interest; Multiplier, Liquidity Preference Theory and Rate of Interest; IS-LM Model-Extension of IS-LM Model in an Open Economy (Mundel Fleming Model)- IS-LM Model with Flexible Prices; Real Balance Effect and Patinkin Model of Full Employment Equilibrium, Keynesian Consumption Function in Long Run; The Relative Income Hypothesis, The Permanent Income Hypothesis, The Life Cycle Hypothesis; Random Walk Hypothesis.

Unit IV: PUBLIC ECONOMICS:

Role of the state in economic activity: Allocation, distribution, stabilization functions; Private, Public and Merit goods; The Public Budgets, Zero-base budgeting; Public Expenditure; Hypotheses; effects and evaluation; Taxation; Public Debt: Sources, effects, burden and its management; Fiscal Federalism: Theory and problems; Problems of Centre-State Financial in India.

Unit V: INTERNATIONAL TRADE AND FINANCE:

Theories of International Trade; Terms of Trade and Economic Growth; Disequilibrium in Balance of Payment; Foreign trade multiplier; Impact of Tariffs, Partial and general equilibrium analysis; Tariff and non-tariff Barriers; IMF, World Banks; Monetary reforms in India; Trade Policy and Reforms in India.

Unit VI: INDIAN ECONOMY:

Recent changes in Indian Economy: Agriculture: Land Reforms and Green Revolution; New agricultural policy; New industrial policy; Money and banking: Concepts of money supply, inflation, monetary policy: Financial sector reforms; Public finance: Trends in revenue and expenditures of the Central an Governments, Public debt; analysis of the Union Budget; Foreign trade: Trends, Balance of payments and trade reforms Poverty, unemployment, Inequality and environment.

Unit VII: STATISTICAL ANALYSIS:

Types, Sources, techniques of data collection, Sampling versus Census, sampling techniques; Correlation and Regression: Correlation and Regression Analysis; Probability and Distribution: Probability; Rule of probability (Addition and Multiplication); Theoretical distribution: Binomial, Poisson and Normal Distribution with their properties; Tests of Hypothesis: Student's t-tests, Z-tests, chi-square test, F-test, and analysis of variance.

Unit VIII: ENVIRONMENTAL ECONOMICS:

Externalities; Market failure in case of environmental; Economic incentives for environmental protection; Environmental accounting; Global efforts for environmental protection; Environment policy framework in India: Problems of command and control Regime; Environmental legislation and implementation; Development and degradation; poverty, population and political economy; Water pollution and existing pollution control mechanism.

Unit IX: ECONOMETRICS ANALYSIS:

Ordinary Least Square, Assumptions, Estimation and Properties; Multiple Regression with two explanatory variables; Linear Regression Models and their properties – BLUE; General linear Regression models. Econometric Problems: Multicollinearity, Hertoscedasticity and Autocorrelation; Statistical Inferences, Hypothesis testing Time Series Analysis; Determination of Linear trend and seasonal indices; Dummy Variables techniques.

> -sd/-Dr. Ajit Debnath Head & Associate Professor, Department of Economics



SYLLABUS OF MSSVRAT

Paper- II Programme: Ph.D. in Education Department of Education

Unit 1: Philosophical foundation of Education

- A. Contribution of the following Indian Schools of philosophy with special reference to educational aims and methods of acquiring valid knowledge, curriculum, discipline and role of teachers
 - 1. Samkhya
 - 2. Yoga,
 - 3. Vedanta,
 - 4. Buddhism,
 - 5. Jainism
- B. Contribution of Western schools of thoughts and their contribution Education with special reference to educational aims and methods of acquiring valid knowledge, curriculum, discipline and role of teachers
 - 1. Idealism,
 - 2. Realism,
 - 3. Naturalism,
 - 4. Pragmatism,
 - 5. Existentialism)
- C. Contributions of Indian philosophers to educational thought:
 - 1. Aurobindo Ghosh
 - 2. Mahatma Gandhi
 - 3. Rabindra Nath Tagore
 - 4. Swami Vivekananda
- D. Contributions of Western philosophers to educational thought
 - 1. Aristotle
 - 2. Friedrich Froebel
 - 3. John Dewey
 - 4. Jean-Jacques Rousseau

Unit 2: Psychological foundation of Education

Schools of psychology and their bearing in education:

- 1. Structuralism
- 2. Functionalism
- 3. Behaviourism
- 4. Gestalt Schools of Psychology
- 5. Psycho-analysis
- 6. Cognitive Psychology
- A. Learning and motivation:
 - 1. Theories of learning Thorndike's connectionism; Pavlov's classical and Skinner's Operant conditioning; Learning by insight; Hull's reinforcement theory and Tolman's theory of learning;' Lewin's Field theory and Constructivism theory.
 - 2. Gagne's Hierarchy of Learning.
 - 3. Factors Influencing Learning.
 - 4. Learning and Motivation.
 - 5. Transfer of learning and its theories

- B. Intelligence and education for exceptional children:
 - 1. Concept and nature of Intelligence
 - 2. Theories of Intelligence- Unitary Theory, Spearman's Two-factor Theory, Thurstone's Group Factor Theory, Thorndike's Multifactor Theory and Guildford's Structure of Intellect and Piagetian Theory of Intellectual Development.

3. Concept and Nature of Multiple Intelligence, Emotional Intelligence and Social Intelligence.

- 4. Metacognition and Creativity, Critical thinking.
- 5. Theory of Intelligence by Sternberg
- C. Personality, mental health and hygiene and adjustment:
 - 1. Concept and nature of Personality
 - 2. Factors affecting Personality
 - 3. Theories of Personality
 - i. Type and Trait Theories
 - ii. Psychoanalytic approach of Freud,
 - iii. Behavioural Approach- Miller, Dollard and Bandura
 - iv. Humanistic Approach- Roger and Maslow
 - 4. Concept, Nature and Significance of Mental Health and Hygiene
 - 5. Concept, Nature and Process of Adjustment
 - 6. Conflicts and Defense Mechanism of Process of Adjustment

Unit 3: Development of Indian education

- A. Educational Development of India- After Independence:
 - 1. Constitutional Provision for Education
 - 2. University Education Commission (Radhakrishnan Commission) Report
 - 3. Secondary Education Commission (Mudaliar Commission) Report
 - 4. Indian Education Commission Report (Kothari Commission)
 - 5. National Policy on Education, 1986
 - 6. National Policy of Education, 1992
 - 7. Yashpal Committee Report, 2009
 - 8. National Policy on Education, 2020
- B. Education in the 21st century:
 - 1. Sarva Shiksha Abhiyan (SSA)
 - 2. The National Knowledge Commission Report, (2006)
 - 3. Committee to Advice on Renovation and Rejuvenation of Higher Education-Recommendation
 - 4. The Right to Free and Compulsory Education Act, (2009)
 - 5. Rashytriya Madhyamik Shikhsa Abhiyan (RMSA)
 - 6. Rashytriya Ushatar Shikhsa Abhiyan (RUSA)
 - C. Inclusive Education:
 - 1. Evolution of the Philosophy of Inclusive Education: Special, Integrated, Inclusive Education,
 - 2. Legal Provisions: Policies and Legislations
 - 3. (National Policy of Education (1986),
 - 4. Programme of Action of Action(1992),
 - 5. Persons with Disabilities Act (1995),
 - 6. National Policy of Disabilities (2006),

- 7. National Curriculum Framework (2005),
- 8. Concession and Facilities to Diverse Learners (Academic and Financial), Rehabilitation Council of India Act (1992),
- 9. Inclusive Education under Sarva Shiksha Abhiyan (SSA)

Unit 4: Development of Indian education

- A. Social educational outcomes:
 - 1. Concept and Nature of Culture, Difference between culture and civilization,
 - 2. Enculturation and Acculturation,
 - 3. Cultural lag and Cultural diffusion
 - 4. Nature of Social Change; Factors affecting Social Change; Role of Education in bringing about Social Change
 - 5. Concept of Equality of Educational Opportunity
 - 6. Educational Diversities (gender, caste, demographic, religion as well as language) and Educational and Social remedies in regard to these diversities.
- B. Educational & social developments:
 - 1. Contemporary Issues: Literacy and Social Development, Compulsory Education, Issues and perspectives in School and Primary & Higher Education, the State and Higher education,
 - 2. Education-autonomy
 - 3. Concept of Democracy, Interrelationship of Education and Democracy, Education for Democracy: Ways and Means
 - 4. Equity: Opportunities in Education in India
- C. Theoretical framework and perspectives in the sociology of education:
 - 1. Structural-functionalism
 - 2. Conflict/Marxism
 - 3. Phenomenology/Interactionism
 - 4. Post modernism
 - 5. Feminism
 - 6. Alternatives in education & perspectives of Paulo Friere and Ivan Illich

Unit 5: Contemporary concerns in education

- A. Educational Management and Administration:
 - 1. Meaning, Principles, Functions and importance of educational administration
 - 2. Institutional building,
 - 3. POSDCORB, CPM, PERT, SWOT analysis, Taylorism,
 - 4. Administration as a process,
 - 5. Administration as a bureaucracy,
 - 6. Human relations approach to Administration,
 - 7. Organisational compliance, development and climate
- B. Concept of Educational Technology (ET) as a Discipline:
 - 1. Information Technology, Communication Technology & Information and Communication Technology
 - 2. Instructional Technology,
 - 3. Applications of Educational Technology in formal, non formal (Open and

Distance Learning), informal and inclusive education systems,

- 4. Overview of Behaviourist, Cognitive and Constructivist Theories and their implications to Instructional Design (Skinner, Piaget, Ausubel, Bruner, Vygotsky),
- 5. Relationship between Learning Theories and Instructional Strategies
- C. Pedagogy, Pedagogical Analysis:
 - 1. Concept and Stages of Teaching,
 - 2. Meaning, Need and its implications in Teacher Education,
 - 3. Levels of Teaching: Memory Level (Herbartian Model), Understanding Level (Morrison teaching Model), Reflective Level (Bigge and Hunt teaching Model),
 - 4. Concept of Andragogy in Education: Meaning, Principles, Competencies of Selfdirected Learning,
 - 5. Theory of Andragogy (Malcolm Knowles), the Dynamic Model of Learner Autonomy
- D. Curriculum
 - 1. Concept and Principles of Education; Strategies of curriculum.
 - 2. Stages of Curriculum
 - 3. Foundation of Curriculum Planning: Philosophical, Psychological, Sociological Bases.
 - 4. Role of National level Statutory Bodies UGC, NCTE and University in Curriculum Development
 - 5. Meaning and types of Curriculum change, Factors affecting curriculum change,
 - 6. Approaches to curriculum change,
- E. Concept and nature of research:
 - 1. Meaning, Nature and Limitations of Research
 - 2. Meaning, Steps and Characteristics of Scientific Method.
 - 3. Concept and Significance of Fundamental Research, Applied Research and Action Research, Exploratory, Explanatory, Descriptive.
 - 4. Need, Purpose and Scope of Educational Research
 - 5. Concept of Qualitative and Quantitative Research, Interdisciplinary and Multidisciplinary.
 - 6. Types of Scientific Method.
 - 7. Concept & Types of Variables

-sd-Dr. Tribeni Saikia Head & Associate Professor Department of Education



SYLLABUS FOR MSSVRAT

Paper- II Programme: Ph.D. in English Department of English

Code: RAT-ENG-02 Sub: English Total Marks: 50

Unit I: Literary and Cultural Theory

- Structuralism
- Poststructuralism and Deconstruction
- Psychoanalysis, Psychoanalytic criticism
- Feminism
- Colonialism and Post colonialism
- Marxism, New Historicism and Cultural Materialism
- Ecocriticism, Ecofeminism, and Deep Ecology

Unit II: Approach a text applying a literary theory

- For example- Reading Hamlet from Psychoanalytic point of view
- Exploration of Eco-critical perspectives in Amitav Ghosh's novels
- Reading Conrad's *Heart of Darkness* from Postcolonial lens.

Unit III: Review of Literature of a literary text/writer's work

Unit IV: Book Review of a Writer's work

For example- Chinua Achebe's *Things Fall Apart The God of Small Things* by Arundhati Roy *Beloved* by Toni Morrison

-sd/-

Dr. Jayanta M.Tamuly Head (i/c) & Assistant Professor Department of English



SYLLABUS FOR MSSVRAT

Paper- II Programme: Ph.D. in Juridical Studies Department of Juridical Studies

Code: RAT-JUR-02 Sub: Juridical Studies Total Marks: 50

Unit –I: Jurisprudence:

- 1. Nature and sources of law
- 2. Schools of jurisprudence
- 3. Law and morality
- 4. Concept of rights and duties
- 5. Legal personality
- 6. Concepts of property, ownership and possession
- 7. Concept of liability
- 8. Law, poverty and development
- 9. Global justice
- 10. Modernism and post-modernism

Unit-II: Constitution of India:

- 1. Preamble, fundamental rights and duties, directive principles of state policy.
- 2. Union and State executive and their interrelationship
- 3. Union and State legislature and distribution of legislative powers
- 4. Judiciary
- 5. Emergency provisions
- 6. Temporary, transitional and special provisions in respect of certain states
- 7. Election Commission of India
- 8. Nature, scope and importance of administrative law
- 9. Principle of natural justice
- 10. Judicial review of administrative actions Grounds.

Unit-III: Law of Torts:

- 1. Nature and definition of tort
- 2. General principles of tortious liability
- 3. Remedies under law of torts
- 4. Specific torts Negligence, nuisance, trespass, malicious prosecution and defamation
- 5. Remoteness of damages
- 6. Strict and Absolute liability
- 7. Vicarious liability
- 8. Tortious liability of the State
- 9. General defences in tort
- 10. Consumer Protection Act and Motor Vehicles Act

Unit IV: Law of Crimes:

1. General principles of criminal liability – *Actus reus* and *mens rea*, individual and group liability and constructive liability

- 2. Stages of crime and inchoate crimes Abetment, criminal conspiracy and attempt
- 3. General exceptions

- 4. Offences against human body
- 5. Offences against state and terrorism
- 6. Offences against property
- 7. Offences against women and children

8. Important concepts under the Code of Criminal Procedure, 1973 (cognizable, non-cognizable, bailable, non-bailable, compoundable, non-compoundable, summons, warrant, FIR, charge, chargsheet, bail, anticipatory bail, public nuisance, maintenance etc)

9. The stages of criminal trial and types.

10. Theories and kinds of punishments, compensation to the victims of crime

Unit-V: Civil Procedure Code:

- 1. Definitions
- 2. Jurisdictions of Civil Courts. Res Sub Judice, Res Judicata
- 3. Suit parties to suit, framing of suit, pleadinds
- 4. Plaint, summons, written statement, set-off and counter-claim
- 5. Interim orders and temporary injunctions
- 6. Judgment and decree
- 7. Restitution, caveat, inherent powers of the court
- 8. Appeal, reference, review and revision
- 9. Execution
- 10. Limitation Act 1963

Unit-VI: International Law:

- 1. International law Definition, nature and basis
- 2. Sources of International law
- 3. Recognition of states and governments
- 4. Nationality, immigrants, refugees and internally displaced persons (IDPs)
- 5. Extradition and asylum
- 6. United Nations and its organs
- 7. Settlement of international disputes
- 8. World Trade Organization (WTO)
- 9. International humanitarian law (IHL) Conventions and protocols
- 10. Implementation of IHL Challenges

Unit-VII: Contemporary development in the field of Law and Society.

- 1. Current legal affairs and developments in India
- 2. New legislations

sd/-Dr. Bimal Kumar Baishya Professor & Head, Dept. of Juridical Studies



SYLLABUS FOR MSSVRAT

Paper- II Programme: Ph.D. in North East Studies Centre for North East Studies

Code: RAT-NES-02 Sub: North East Studies Total Marks: 50

Unit-I:

Familiarity with the basics of North East India especially in the areas of History, Geography, Politics and diversity with special reference to Assam.

Unit -II:

Issues that are in public knowledge in contemporary politics and society in North East India with special reference to Assam.

Unit-III:

Basic understanding of issues of culture and folklore of North East India with basic knowledge of different religious and religious sects.

Unit-IV:

Brief exposure to issues of identity and conflict in North East India wth special to extremism, peace accords and related issues.

Unit-V:

Knowledge of Srimanta Sankaradeva, Vaishnavism, neo-Vaishnavism and the principle disciples of Srimanta Sankaradeva.

-sd/-Dr. Sanjib Goswami Professor, Centre for North East Studies



SYLLABUS FOR MSSVRAT

Paper- II Programme: Ph.D. in Performing Arts Department of Performing Arts

Code: RAT-PER-01 Sub: Performing Arts Total Marks: 50

UNIT-I: CULTURE

Characteristics of Culture, Classification of Culture, Folklore, Culture of India from prehistoric to CE 1200. Performing Arts: Concept, Importance and Relevance of Performing Arts as an academic discipline, Classification.

UNIT-II: THE NATYASHASHTRA

Knowledge of Natyasashtra, Chapters including Rasa(chapter v1), chapters including Bhava (chapter v11), Four types of abhinaya, Four brittis, four pravittis, Nayaka Bheda and Nayika Bheda.

UNIT-III: DANCE

An overview of dance, Traditional Dance form of Assam Ojapali, Devadasi, Deodhani, Bagrumbha, jhumur dance, Khukshi, Lalung dance, Mising dance. Sattriya Dance

UNIT-IV: DRAMA AND THEORIES

Indian and Western –Elements and structure of drama according to Indian and Western dramas. A brief introduction to various isms in relation to drama –Realism, Naturalism, Symbolism, Absurd, Ephic Theartre. Modern Indian Theatre-Modern Assamese Theatre---History and Development------Major trends.

UNIT-V:INTRODUCTION TO THE INDIAN MUSIC

History of Indian Music, Different musical forms: Dhrupad, Dhamar,Khyal, Thumri,Tappa, Sadara.Tarana,etc. Great musicians and composers of Indian Music.

UNIT-VI: PHILOSOPHY AND AESTHETICS

Aesthetics in performing Art—Art and Aesthetics-its branches, scope, nature. Indian and Western aesthetics, Aesthetics in dance music and theatre.

-sd/-Chairman, RAC Department of Performing Arts



SYLLABUS OF MSSVRAT

Paper- II

Programme: Ph.D. in Mathematics

Department of Mathematics

Code: RAT- MAT- 02 Sub: Mathematics Total Marks: 50

<u>Real Analysis</u>: Finite, countable and uncountable sets, supremum, infimum, sequences and series, convergence, Bolzano Weierstrass theorem, Heine Borel theorem, continuity, uniform continuity, differentiability, mean value theorem, sequences and series of functions, uniform convergence, Riemann sums and Riemann integral, Improper Integrals, monotonic functions, functions of bounded variation, Lebesgue measure, Lebesgue integral.

Linear Algebra: Vector spaces, subspaces, algebra of linear transformations, Algebra of matrices, rank and determinant of matrices, eigenvalues and eigenvectors, Cayley-Hamilton theorem, matrix representation of linear transformations, hermitian, skew-hermitian, normal, orthogonal and unitary matrices, canonical forms, diagonal forms, triangular forms, Jordan canonical forms, Inner product spaces, Quadratic forms, Gram-Schmidt orthonormalization process.

<u>**Complex Analysis:**</u> Algebra of complex numbers, the complex plane, polynomials, power series, Analytic functions, Cauchy-Riemann equations, Contour integral, Cauchy's theorem, Cauchy's integral formula, Liouville's theorem, Morera's theorem, Schwarz lemma, Taylor series, Laurent series, calculus of residues, Conformal mappings, Mobius transformations.

<u>Abstract Algebra:</u> Groups, subgroups, normal subgroups, quotient groups, homomorphisms, automorphisms, isomorphisms, cyclic groups, permutation groups, Cayley's theorem, Sylow theorems.

Rings, ideals, prime and maximal ideals, quotient rings, unique factorization domain, principal ideal domain, Euclidean domain. Polynomial rings and irreducibility criteria, Eisenstein's irreducibility criterion, Fields, finite fields, field extensions.

Topology: Basis, dense sets, subspace and product topology, separation axioms, connectedness and compactness, countability and separation axioms, Urysohn's Lemma.

<u>Ordinary Differential Equations (ODEs</u>): Existence and uniqueness of solutions of initial value problems for first order ordinary differential equations, singular solutions of first order ODEs, system of first order ODEs. General theory of homogenous and non-homogeneous linear ODEs, variation of parameters, Second order linear ordinary differential equations with variable coefficients; Cauchy-Euler equation, method of Laplace transforms for solving ordinary differential equations, series solution, Sturm-Liouville boundary value problem, Green's function.

<u>Partial Differential Equations (PDEs</u>): Lagrange and Charpit methods for solving first order PDEs, Cauchy problem for first order PDEs. Classification of second order PDEs, General solution of higher order PDEs with constant coefficients.

<u>Numerical Analysis</u> : Numerical solutions of algebraic equations, Method of iteration and Newton-Raphson method, Rate of convergence, Solution of systems of linear algebraic

equations using Gauss elimination and Gauss-Seidel methods, Finite differences, Lagrange, Hermite and spline interpolation, Numerical solution of initial value problems for ordinary differential equations, Methods of Euler, Runge-Kutta method of order 2.

<u>Calculus of Variations</u>: Variation of a functional, Euler-Lagrange equation, Necessary and sufficient conditions for extrema. Variational methods for boundary value problems in ordinary and partial differential equations.

Linear Programming: Convex sets, extreme points; basic feasible solution, graphical method, simplex method, revised simplex method, alternate optima, duality theory, weak duality and strong duality; Balanced and unbalanced transportation problem (least cost method, north-west corner rule, Vogel's approximation method), optimal solution, modified distribution method, Assignment problems.

<u>Classical Mechanics</u>: Generalized coordinates, Lagrange's equations, Hamilton's canonical equations, Hamilton's principle and principle of least action, Two-dimensional motion of rigid bodies, Euler's dynamical equations for the motion of a rigid body about an axis.

-sd/-Dr. Jugal Khargharia Head & Professor Department of Mathematics



SYLLABUS OF MSSVRAT

Paper- II Programme: Ph.D. in Philosophy Department of Philosophy

Code: RAT-Phi-02 Subject: Philosophy Total Marks: 50

Unit: 1: Classical Indian: Epistemology and Metaphysics

- Vedic and Upanisadic: *Rta* the cosmic order, the divine and the human realms; *Rna*, the centrality of the institution of yajų̃a (sacrifice), theories of creation *Ātman* Self and not self), *Jāgrat, Svapna, Susupti* and *turiya, Brahman*
- Cārvāka: Pratyakṣa as the only pramāṇa, critique of anumāna and śabda
- Jainism: Concept of reality *sat, dravya, guņa, paryāya, Jiva, ajiva, anekāntavāda, syādvāda* and *nayavāda*; theory of knowledge
- **Buddhism:** Four Noble Truths, *Āstangika Mārga*, *Pratityasamutpāda*, *ksaņabhahgavāda*, *anātmavāda*. Schools of Buddhism: *Vaibhāsika*, *Sautrāntika*, *Yogacāra*, *Mādhyamika*
- **Nyāya:** *Pramā* and *apramā*, Theories of *pramāņa: pratyakṣa, anumāna, upamana, sabda. Hetvabhāsa, Anyathākhyati*
- Vaiśeşika: Concept of *padārtha* and its kinds, *Asatkāryavāda*, Kinds of *Kāraņa*: *samavāyi, asamavāyi,* and *nimitta kāraņa, paramaņukaraņavāda*
- **Sāņkhya:** *Satkāryavāda, prakrti* and its evolutes, arguments for the existence of *prakrti*, nature of *purusa*, arguments for the existence and plurality of *purusa*
- Yoga: Patañjali's Theory of *Pramāņa*, concept of *ćitta* and *ćitta vṛtti*, stages of *ćitt-bhumi*
- **Purva Mimāṃsā:** Kumārila and Prabhākara Schools of Mimāṃsa and their major points of difference, *triputi samvit, jĩatatā, abhāva and anupalabdhi, anvitadbhidhanavāda, abhihitanvayavāda,* Theories of error: *Akhyāti, Viparitakhyāti*
- Vedānta: Advait: Brahmaņ, relation between Brahmaņ and Ātman, three grades of sattā, Adhyāsa, māya, Jiva, Vivartavāda, Anirvachniya-khyāti
- Viśistādvaita: Saguņa Brahmaņ, refutation of māya, aprthaksiddhi pariņāmavāda, Jiva, bhakti and prapatti, Brahma-Pariņāmavāda, Sat-khyāti
- Dvaita: Rejection of nirguna brahman and māya, bheda and sāksi, bhakti

Unit: 2: Classical Western: Ancient, Medieval, and Modern: Epistemology and Metaphysics

Pre-Socratic Philosophers: Thales, Anaxagoras, Anaximenies, Ionians, Pythagoras, Parmenides, Heraclitus and Democritus.

The Sophists and Socrates

Plato and Aristotle:

- Plato Theory of knowledge, theory of Ideas, the method of dialectic.
- Aristotle –Logic as an organon, critique of Plato's theory of Ideas, theory of causation, form and matter, potentiality and actuality

Medieval Philosophy:

- St. Augustine: Problem of Evil
- St. Anselm: Ontological argument
- St. Thomas Aquinas: Faith and Reason, Essence and Existence, the Existence of God

Modern Western Philosophy:

- **Descartes:** Conception of method, Criteria of truth, doubt and methodological scepticism, *cogito ergo sum*, innate ideas, Cartesian dualism: mind and matter, proofs for the existence of God, interactionism
- **Spinoza:** Substance, Attribute and Mode, the concept of 'God or Nature', parallelism, pantheism
- Leibnitz: Monadology, principles of non contradiction, sufficient reason and identity

of indiscernibles, the doctrine of pre -established harmony

- Locke: Ideas and their classification, refutation of innate ideas, distinction between primary and secondary qualities, theory of knowledge
- **Berkeley:** Rejection of the distinction between primary and secondary qualities, immaterialism, critique of abstract ideas, *esse est percipi*
- **Hume:** Impressions and ideas, induction and causality, personal identity, rejection of metaphysics, scepticism
- **Kant:** The critical philosophy, possibility of synthetic a priori judgements, the metaphysical and the transcendental deduction of the categories, phenomenon and noumenon
- Hegel: The conception of *Geist* (spirit), the dialectical method, absolute idealism

Unit: 3: Indian Ethics

- Concept of Purusārtha, Śreyas and Preyas
- Varņāshrama, Dharma
- Karma-yoga, Sthitprajña, Svadharma, Lokasamgraha
- Law of *Karma*: ethical implications
- Astānga Yoga
- Jainism: Tri-ratņa, Panch-vrata
- Buddhism: Brahma-vihāra: matri, karuņā, muditā, upeksha, bodhi-sattva
- Carvaka's Hedonism

Unit: 4: Western Ethics

- Concepts of Good, right, justice, duty, obligation, cardinal virtues, Eudaemonism
- Kant's moral theory: Postulates of morality, Good-will, Categorical Imperative, Duty, Mean and ends, Maxims.
- Utilitarianism: principle of utility, kinds of utilitarianism, Moral theories of Bentham, J. S. Mill, Sidgwick
- Theories of Punishment
- Ethical cognitivism and non-cognitivism: Emotivism, Prescriptivism

Unit: 5: Contemporary Indian Philosophy

Vivekananda: Practical Vedanta, Universal Religion

Sri Aurobindo: Evolution, mind and supermind, Integral Yoga

Iqbal: God, man and superman

Tagore: Religion of man, ideas on education

K. C. Bhattacharyya: Concept of Philosophy, subject as Freedom

Radhakrishnan: Intellect and intuition, the Idealist view of life, concept of Universal Religion, Hindu view of life.

J. Krishnamurti: Freedom from the known, analysis of self **Gandhi**: Truth, Non-violence, *satyagraha*, *swaraj*, critique of modern civilization.Ambedkar: Annihilation of caste, Neo-Buddhism **M.N.Roy**: Radical Humanism, Materialism

Unit: 6: Recent Western Philosophy

Analytic and Continental Philosophy

Frege: Sense and Reference

Logical Positivism: Verification theory of meaning, Elimination of metaphysics Moore: Refutation of Idealism, Defense of common-sense

Russell: Logical Atomism, Definite Descriptions

Wittgenstein: Language and Reality, Facts and objects, names and propositions, the picture theory, critique of private language, meaning and use, forms of life Gilbert Ryle: category mistake, concept of mind, critique of Cartesian dualism A. J. Ayer: The Problem of Knowledge

Phenomenology and Existentialism:

Husserl: Phenomenological Method, Philosophy as a rigorous science, Intentionality Heidegger: The concept of Being (*Dasein*), Man as being in the world, Kierkegaard: Subjectivity as Truth, Sartre: Concept of Freedom, Bad-faith, Humanism **Pragmatism:**William James: Pragmatic Theories of Meaning and Truth **Post-Modernism:**Nietzsche: Will to Power.

Unit: 7: Social and Political Philosophy: Indian & Western

Secularism and Fundamental Rights, Terrorism, *Swadeshi*, Satyagrah, Sarvodaya, Social Democracy, Social Institutions: Family, Marriage, property, education and religionPlato: Ideal State and Justice, Locke, Hobbes, Rousseau: Social Contract Theory, Marxism: Critique of Capitalism, Doctrine of Class Struggleand Classless Society., Feminism: Basic Concepts: Patriarchy, misogyny, Gender, Theories of Feminism; Liberal, Socialist, radical and eco-feminism

Unit: 8: Logic

Truth and Validity, Nature of Propositions Categorical Syllogism, Laws of thought Classification of PropositionsSquare of Opposition,Truth-Functions and Propositional Logic Quantification and Rules of QuantificationSymbolic Logic: Use of symbols, Decision Procedures: Truth Table, Using Truth- Tables for testing the validity of argumentsVenn diagram, informal and formal Fallacies, Proving Validity, Argument and Argument-form Axiomatic System, Consistency, Completeness Differences between Deductive and Inductive Logic

Unit: 9: Applied Philosophy

What is applied Philosophy?, Environmental Ethics: Nature as means or end, Arne Naess: DeepEcology, Peter Singer; Animal Rights, Medical-Ethics: Abortion, euthanasia, female-infanticideProfessional Ethics: Corporate Governance and ethical responsibility, Media Ethics: ethical issues in Privacy, cyber space, pornography, Philosophical Counseling: Managing everyday problems.

-sd/-Dr. Manashi Bora Head (i/c) & Assistant Professor Department of Philosophy





SYLLABUS FOR MSSV RAT-2023

Paper-II Programme: Ph. D in Political Science. Department of Political Science.

Paper- II (Code: RAT-Pol.SC-02) Subject: Political Science

Total Marks: 50

Unit-I- Political Theory-

a) Politics, political theory and its relevance.

b) Democracy, Justice, Liberty and Gender.

UNIT-II: Political Thought-

a) Plato, Aristotle, Kautilya, St. Augustine, Machiavelli.

b) Marx, Mill, Gandhi, Nehru, Ambedkar.

UNIT-III: Indian Government and Politics-

- a) Indian Constitution- Preamble, Basic structure, Fundamental Rights, Fundamental Duties, Directive Principles of State Policy.
- b) Caste and Patriarchy, Democratic Decentralisation, Recent Social Movements.

UNIT-IV: Public Administration-

- a) New Public Administration, New Public Management, Public Policy Perspective, Use of ICT in Public Administration.
- b) Financial Administration in India, Administrative accountability and Redressal of Public grievances.

UNIT-V: Theories & Issues in International politics-

- Realism, Liberalism, Marxism, Dependency theories and Post-Modernism.
- b) Contemporary World Order, Peace and India's foreign policy.

Dr. Harekrishna Borah.

Head (i/c) Department of Political Science, MSSV, Nagaon.



SYLLABUS FOR MSSVRAT

Paper- II Programme: Ph.D. in Sankaradeva Studies Department of Sankaradeva Studies

Code: RAT-SAN-02 Sub: Sankaradeva Studies Total Marks: 50

Unit I: Biography of Srimanta Sankaradeva:

- Sources of study of Srimanta Sankaradeva's life
- Srimanta Sankaradeva's ancestors, parents, place and time of birth
- Education
- Pilgrimage
- Places of living and preaching of Eka Sarana Harinama Dharma
- Life philosophy of Srimanta Sankaradeva

Unit II: Literary works of Srimanta Sankaradeva:

- Poetic Works
- Ankiya Nats
- Bargits and Bhatimas
- Renderings
- Sanskrit compositions
- Languages of Sankari Literature

Unit III: Eka Sarana Harinama Dharma of Srimanta Sankaradeva:

- Source of Eka Sarana Harinama Dharma, Basic principles
- Notion of God and semi gods o Way of worship
- Bhakti in Eka Sarana Harinama Dharma
- Main objectives of Eka Sarana Harinama Dharma
- Religious philosophy of Eka Sarana Harinama Dharma
- Social impacts of Eka Sarana Harinama Dharma

Unit IV: Sankari Culture and other fields:

- Musical instruments used in Sankari Music
- Classical features of Sankari dance and music
- Ragas and Talas used in Sankari Music
- Sankari Education system
- Sankari Architecture, Painting, Weaving etc.
- Managerial aptitude of Srimanta Sankaradeva

Unit V: Life and Works of Mahapurusha Madhavadeva:

- Place and time of birth, places of living
- Literary and cultural contributions
- Contribution in preaching of Eka Sarana Harinama Dharma

-sd/-

Dr. Jagat Chandra Kalita Professor and Head, Department of Sankaradeva Studies



SYLLABUS FOR MSSVRAT

Paper- II Programme: Ph.D. in Social Work Department of Social Work

Code: RAT-SW-02 Sub: Social Work Total Marks: 50

Unit-I

Social Case Work- Concept, Definition, Historical Evolution in UK, USA and India, Ethics, Values, Principles of Case Work, Approaches, Tools & Techniques in Case Work, Ecomap, Genogram, Role of Social Case Worker in various settings.

Unit-II

Social Group Work- Basic Social Group Work Concept, Goals of Group Work, Principles of Group Work, Skills and Values of Social Group Work, Social Group Work Process, Group Development. Approaches and Models in Group Work Practice.

Unit-III

Community Organization, Community Development and Social Action-Definitions, Principles of Community Organization, Community Development and Social Action, Approaches of community organization, Role of community organizer, Strategies and Tactics of Social Action and Community Organization, Social Movements and Social Action in Indian scenario, Difference between Community Organization and Community Development.

Unit-IV

Social Welfare Administration- Difference between Public administration and Social Welfare Administration, Planning in India, Social Welfare Administration in India, functions, principles and scope of Social Welfare Administration, POSDCORB

Unit-V

Social Work Research- Types of research, Steps in research, Ethics, Research Design, Literature Review, Methods and Techniques of Data collection, Sampling Design, Measures of Central Tendency, Referencing, Citation Styles and Research Proposal

-sd/-

Dr. Deepshikha Carpenter Head (i/c) & Assistant Professor Department of Social Work



SYLLABUS OF MSSVRAT

Paper- II Programme: Ph.D. in Sociology Department of Sociology

UNIT-I: Sociological Concepts:

Nature of Sociology, Basic Concepts, Social Structure, Social Institution, Culture, Socialization, Social Stratification, Social Change.

UNIT-II: Classical Sociological theories:

August Comte, Herbert Spencer, Karl Marx, Emile Durkheim, Max Weber, Vilfredo Pareto.

UNIT-III: Methodology of Social Research:

Meaning and Nature, Qualitative and Quantitative Research, Methods of Social Research

UNIT-IV: Contemporary Social Issues pertaining to Crime and Deviance:

Concept of Crime and Delinquency, White Collar Crime and Deviance, Changing Profile of Crime and Deviance.

UNIT-V: Conceptualizing Indian Society:

Unity in Diversity, Group and Community, Regional, Ethnic and Religious Disharmonies.

UNIT-VI: Gender and Society:

Gender as a Social Construction, Social Structure and Gender Inequality, Gender and Development.

UNIT-VII: Rural Sociology:

Agrarian Institution, Panchayati Raj Institution, Social issues and Strategies for Rural Development, Rural Development and Change.

UNIT-VIII: Contemporary Debates:

Tradition and Modernity in India, Problems of Nation Buildings: Secularism, Pluralism, and Nation Building.

UNIT-IX: Sociology of Development:

Path of Development, Culture and Development, Sustainable Development.

UNIT-X: Problems and Issues in North East India:

Ethnic Identity and Interstate Relation, Tribal Autonomy Movement, Migration and Public Policies.

-sd/-Dr. Karabi Konch Head & Associate Professor Department of Sociology



SYLLABUS FOR MSSVRAT

Paper- II Programme: Ph.D. in Yogic Science and Naturopathy Department of Yogic Science and Naturopathy

Code: RAT-YSN-02 Sub: Yogic Science and Naturopathy Total Marks: 50

Unit-I: Fundamentals of Yoga:

The Concept of Yoga: Mis-conceptions about Yoga, Difference between Asanas & Physical exercise, Importance of Yoga in life, Scope of Yoga, Evolution and History of Yoga, Ancient & Modern Yogis, Personality Characteristics of a Yogi in Yoga Texts, Historical Study of Yoga: Yoga in Veda, Upanishads, Gita, Yog-Vasishtha, Tantric scriptures, Jain philosophy, Buddha Philosophy, Sankhya philosophy, Vedanta philosophy and Ayurveda, Different systems of Yoga: Karma Yoga, Bhakti Yoga, Jnana Yoga, Dhyana Yoga, Mantra Yoga, Laya Yoga, and Raja Yoga, Important Yoga teachers and their Contributions: Swami Vivekananda and his propagation of Yoga & Vedanta, Swami Shivananda of Rishikesh and Divine Life movement, Maharshi Ramana: his philosophy and works, Tirumulai Krishnamacharya and the trend of Modern Yoga, Acharya Shriram Sharma and Pragya Yoga, Swami Sivananda of Umachal and his contribution

Unit-II: Principles and practices of Hatha Yoga:

Introduction of Hatha Yoga Texts- Yoga Beeja, Hatha Pradipika (H.P.), Gheranda Samhita (Gh.S.), Goraksha Samhita (G.S.), Vashishtha Samhita (V.S.), Shiv Samhita (S.S.), Siddha-Siddhant Paddhati (S.S.P.), Hatha Ratnavali (H.R.), Introduction to Hatha Yoga- Aim and Objectives, Misconceptions about Hatha Yoga, Prerequisites of Hatha-Yoga- dasha Yama & dasha Niyama, Sadhaka and badhaka tattvas in hathayoga, Concept of Ghata, Ghatashuddhi, Concept of Matha, Concept of Mitahara and diet, Proper season and time, Characteristics of Hatha-siddhi, Hatha Yogic practices: Concept and importance of shodhan kriyas in hatha yoga, pre requisites & special features of Asanas, Asanas in H.P., Gh.S., H.R., S.S., V.S., Concept of Prana & Pranayama, Pranayama- its phases and stages, Pre-requisites of Pranayama in hatha yoga sadhana, Pranayama in H.P., Gh.S., S.S., V.S., Concept, definition, benefits and techniques of Pratyahara, Concept & definition of bandha & mudras in H.P., Gh.S., H.R., S.S. and V.S., Concept of Dharana in Gheranda Samhita, Concept of Dhyana in Gheranda Samhita, Concept of Nadanusandhan in Hatha Pradipika

Unit-III: Basic Yoga Texts:

Principal Upanishads: Isha: Concept of Karmanishta; Concept of Vidya & Avidya; Knowledge of Brahman; Atma Bhava, Kena: Indwelling Power; Self & the Mind; Indriva & Antahkarana; Moral of Yaksha Upakhyana, Katha: Definition of Yoga; Nature of Soul; Importance of Self Realization, Prashna: Concept of Prana and rayi (creation); Pancha pranas; the five main questions, Mundaka: Two approaches to Brahma Vidya-the Para and Apara; The greatness of Brahmavidya, The worthlessness of Selfish-karma, Mandukya: Four States of Consciousness and its relation to syllables in Omkara, Aitareya: Concept of Atma, Universe and Brahman. Taittiriya: Concept of Pancha Kosha. Chandogya: Om Meditation; Shandilya vidya, Brihadaryanaka: Concept of Atman and Jnana Yoga. Union of Atman and Paramatman, Bhagavad Gita: General Introduction to Bhagavad Gita (B.G.). Definitions of Yoga in B.G. and their relevance; Essentials of B.G- the meanings of the terms Atmaswarupa, Stithaprajna, Sankhya Yoga (Chpt.II), Karma Yoga (Chpt.III), Sanyasa Yoga & Karma Swarupa (Sakama and Nishkama) etc; Samnyasa, Dhyana Yoga(Chpt. VI); Nature of Bhakti (Chpt.XII), Means and Goal of Bhakti-Yoga; The Trigunas and modes of Prakriti; Food for Yoga Sadhaka, Classification of food (Chpt.XIV & XVII); Moksa-Upadesa Yoga (Chpt. XVIII), Yoga Vashishtha: Highlights of Yoga Vashistha, Concept of Adhis and Vyadhis; Psychosomatic Ailments; The four Gatekeepers to Freedom; How Sukha is attained the Highest State of Bliss; Practices to overcome the Impediments of Yoga; Development of Satvaguna; Eight limbs of Meditation; Jnana Saptabhumika.

Unit-IV: Yoga Therapy:

Principles of Yoga Therapy; Integrated Approach of Yoga Therapy, Concept of disease, Concept of Body, How Yoga therapy works on each koshas, Scope and limitations of Yoga Therapy; Role of lifestyle and diet in Yoga Therapy; Approach of Yoga towards Holistic Health, Yoga for Health-care of children and adolescence, Adult, Women, Pregnant women, Corporate person, Sport person; Yogic management of Arthritis, Spondylitis, Backache, Sciatica, Hernia, Muscle fatigue, Kidney disorder, Hypo and Hyperthyroidism, Diabetes, Obesity, Liver disorder, Heart disease, Hyperacidity, Constipation, Asthma, Hypertension, Stress, Anxiety, Depression, Insomnia.

Unit-V: Patanjal Yoga Sutras:

Brief historical outlines of the Yoga system of Patanjali; Sage Patanjali and Commentators of the Yoga Sutras with their Commentaries; Brief Introduction to the subject matter of the Yoga Sutras, Definition of Yoga; Chitta, Chitta Bhumi, Chitta Vrittis; Abhyas and Vairagya; Ishwar and Ishwar pranidhan; Types of Samadhis; Chaturvyuhvada, Obstacles of Yoga; Means of Chitta-prasadan; Kriya Yoga; Panch-kleshas; Karmashaya; Vivek-khyati; Saptadha Pragya, Ritambhara Pragya, Ashtanga Yoga; Samyam; Yoga Vibhutis; Nirmana-chitta, Samskar and Vivek-jnana; Five types of Siddhis; Types of Karma; Dharmamegha Samadhi; Kaivalya; Swaroop-pratishthan.

-sd/-

Dr. Ujjwal Arun Maske Head(i/c) & Assistant Professor Department of Yogic Science and Naturopathy



SYLLABUS OF MSSVRAT

Paper- II Programme: Ph.D. in Geography Department of Geography

Unit-I: Geographical Research- Approaches and Methodology

Concept of Geographic research; Approaches in Geography: Systematic and Regional; Ideographic and Nomothetic; Inductive and deductive approaches in geographic research; Key elements in scientific practice; Spatial Concepts in Geography: Concept of space and place; Geographic space (Absolute Space and Relative Space); Spatial Process and Pattern; Spatial Organization; Spatial Relationship; Spatial Diffusion; Spatial Interaction; Spatial Integration; Models in geography: basic concepts of Gravity Model, Spatial Diffusion Model and Distance Decay Model; Place of Geography in the classification of knowledge; relation of geography with natural and social sciences; multi-disciplinary nature of geography; model building and hypothesis testing; research write-up.

Unit-II: Geomorphology

History of development of geomorphic ideas; recent trends in Geomorphology; Fundamental concepts in geomorphology: uniformitarianism and catastrophism, system concepts in geomorphology, steady state, and dynamic equilibrium. Theories of landform development: Continental Drift; Theory of Kober, theory of Holmes, Isostacy and Plate tectonic theory, Geomorphic cycle (W.M. Davis and W. Penck) Geomorphic processes: endogenetic and exogenetic; glacial, fluvial and Aeolian; Theories and Process of Slope Development; Techniques, tools and mapping techniques in Applied Geomorphology; Fluvial Geomorphology; Palaeogeomorphology, Environmental geomorphology; Geomorphic hazards (Flood, Landslides and Earthquakes)

Unit-III: Climatology

Composition and Structure of Atmosphere; Insolation, Heat Budget of Earth, Temperature, Pressure and Winds, Atmospheric Circulation (air-masses, fronts and upper air circulation, cyclones and anticyclones (tropical and temperate), Climatic Classification of Koppen & Thornthwaite: ENSO Events (El Nino, La Nina and Southern Oscillations), Weather forecasting: Principles and techniques, conventional and modern Techniques; Monsoon climate: origin, mechanism of development and distribution; Meteorological Hazards and Disasters (Cyclones, Thunderstorms, Tornadoes, Hailstorms, Heat and Cold Waves Drought and Cloudburst, Glacial Lake Outburst (GLOF), Climate Change: Evidences and Causes of Climatic Change in the past, Human impact on Global Climate

Unit-IV: Biogeography

Fields of Biogeographic study, its importance and recent trends; Zoogeographic regions of the world and their characteristics; Bio- energy cycles in the terrestrial ecosystem; Biodiversity: Concept, types, factors causing bio-depletion, Biodiversity hotspots, their criteria and characteristics; conservation of forest and wildlife; national forest and environment policy of India

Unit-V: Oceanography

Ocean bottom relief features, Ocean currents (Warm and Cold Currents), Temperature, Density and Salinity, Sea Level Changes; Ocean deposits: Basis of ocean deposits classification, types and their characteristics.

Unit-VI: Economic Geography

Agricultural Geography: Land capability classification and Land Use Planning, Cropping Pattern: Methods of delineating crop combination regions (Weaver, Doi and Rafiullah), Crop diversification, Von Thunen's Model of Land Use Planning; Agricultural classification: according to Whittlesey, Richard Thoman and Peter Corbin; Agricultural productivity and efficiency: Methods of Kendal, Sapre and Despande, J. Singh and Bhatia.

Industrial Geography: Classification of Industries, Factors of Industrial Location; Theories of Industrial Location (A. Weber, August Losch). World Industrial Regions, Impact of Globalisation on manufacturing sector in Less Developed Countries, Tourism Industry, World distribution and growth of IT Industries.

Unit-VII: Population and Settlement Geography

Population Geography: World Population Distribution (patterns and determinants), World Population Growth (prehistoric to modern period). Sources of population data (census, sample surveys and vital statistics, data reliability and errors). Demographic Transition, Theories of Population Growth (Malthus, and Ricardo). Fertility and Mortality Analysis (indices, determinants and world patterns). Migration (types, causes and consequences and models), laws of migration –Raveinstein and Lee; and theories of migration –Reilly, Zipf, Staufer; Population Policies in Developed and Developing Countries: concept of under population, optimum population, over population, population explosion and population pressure.

Settlement Geography: Rural Settlements (types, patterns and distribution), Contemporary Problems of Rural Settlements (rural-urban migration; land use changes; land acquisition and transactions), Characteristics and Processes of Urbanization in Developed and Developing Countries (factors of urban growth, trends of urbanisation, size, structure and functions of urban areas). Urban Systems (the law of the primate city and rank size rule) Central Place Theories (Christaller and Losch), Internal Structure of the City, Models of Urban Land Use (Burgess, Harris and Ullman, and Hoyt), Concepts of Megacities, Global Cities and Edge Cities, Changing Urban Forms (peri-urban areas, rural-urban fringe, suburban, ring and satellite towns), Social Segregation in the City, Urban Social Area Analysis, Manifestation of Poverty in the City (slums, informal sector growth, crime and social exclusion).

Unit- VII: Environmental Geography

Emergence of environmental geography as a branch of geography; scope and significance of environmental geography; Human Interaction and Impacts; Concept of environment and development; sustainable development; Environmental Ethics and Deep Ecology, Environmental Hazards and Disasters (Global Warming, Urban Heat Island, Atmospheric Pollution, Water Pollution, Land Degradation), National Programmes and Policies: Legal Framework, Environmental Policy, International Treaties, International Programmes and Polices (Brundtland Commission, Kyoto Protocol, Agenda 21, Sustainable Development Goals, Paris Agreement)

Unit-VIII: Geographic Thought

Contributions of Greek, Roman, Arab, Chinese and Indian Scholars, Contributions of Geographers (Bernhardus Varenius, Immanuel Kant, Alexander von Humboldt, Carl Ritter, Scheafer & Hartshorne), Impact of Darwinian Theory on Geographical Thought. Contemporary trends in Indian Geography: Cartography, Thematic and Methodological contributions. Major Geographic Traditions (Earth Science, man-environment relationship, area studies and spatial analysis), Dualisms in Geographic Studies (physical vs. human, regional vs. systematic, qualitative vs. quantitative, ideographic vs. nomothetic), Paradigm

Shift, Perspectives in Geography (Positivism, Behaviouralism, Humanism, Structuralism, Feminism and Postmodernism).

Unit-IX: Geographical techniques

Quantitative technique: Application of quantitative techniques in geography; Significance of Sampling in geography; Types of sampling; Correlation and regression analysis (Simple and multiple); non-linear relationship (rank-size relationship and distance decay) analysis; Composite scores - composite z score and principal component analysis; Application of relevant hypothesis testing techniques (parametric and nonparametric) in geographical data analysis; use of z, t, f and x2 (Chi-square) statistics; Questionnaire design, data collection, data processing and analysis;

Cartographic technique: Concept of scale in map; Types of scale; Cartogram (line graph, bar graph, histogram, pie diagram); Choropleth and isopleth mapping; Concept of point, line, area and volume, data representation in thematic cartography; Map projection (principles and methods of construction: Cartographic design – graphic representation, design, and lay out of maps; Map types and map series – general classification, map types and map series of India, International map series; principles of ground survey; geodetic and plane surveying;

Remote sensing and GIS techniques: Basic concepts and principles of Remote sensing; Data characteristics and data products of aerial and satellite remote sensing visual interpretation techniques of aerial photographs and satellite imagery; Digital image processing; Application of remote sensing in geographical research (geomorphology, land use; settlements and urban planning, natural resource management; natural hazards management)

Unit-X: Regional Geography: India and North-east India

Concept of region, regional geography, regionalism and regionalization; Types of region and their underlying characteristics;

India: India as a geographical entity; unity in diversity; Physical background of regional development: relief, drainage, climate, soil and vegetation; Mineral and power resources and development: iron ore, coal, petroleum and hydro- electric power potential; Population and development issues: population growth and its socio-economic implications, literacy, urbanization, occupation and social structure and development inequalities; Regional disparities in economic development: agriculture, industry and transport and communication;

India's geo-economic position in Asia and the world; its economic development policies and international relations.

North-East India: Location and strategic significance; Physical characteristics and their relation to development: relief, drainage, climate, soil and vegetation; Natural resources, their utilization and development (coal, Petroleum, natural gas, water and forests); Agriculture and development: agricultural modernization (problems and prospects) and economic development; Population and development: population growth and distribution, Migration, population characteristics and their socio-economic Implications. International and internal migration; consequences of migration; migration problems in North East India. Major thrust areas of geographical research in northeast India.