पाठ्यक्रम

སློབ་ཚན། | SYLLABUS

शास्त्री- शिक्षाशास्त्री

བསྟན་བཅོས་དགེ་འོས་བསླབ་བའི་བསྟན་བཅོས།

Shastri-Shiksha Shastri

चार वर्षीय शास्त्री- शिक्षाशास्त्री

ལོ་རེམ་བཞི་ཅན་བསྟན་བཅོས་དགེ་འོས་བསླབ་བའི་བསྟན་བཅོས།

Four Year Shastri-Shiksha Shastri

केन्द्रीय उच्च तिब्बती शिक्षा संस्थान

དབུས་བོད་ཀྱི་གཙུག་ལག་སློབ་གཉེར་ཁང་།

Central Institute of Higher Tibetan Studies

(Deemed to be University)

Sarnath, Varanasi 221007

केन्द्रीय उच्च तिब्बती शिक्षा संस्थान

(मान्य विश्वविद्यालय)

सारनाथ, वाराणसी

पाठ्यक्रम

སློབ་ཚན།

SYLLABUS

शास्त्री- शिक्षाशास्त्री

བསྟན་བཅོས་དགེ་འོས་བསྒྲུབ་བའི་བསྟན་བཅོས།

Shastri-Shiksha Shastri (B.A.B.Ed./B.Sc.B.Ed.)

CENTRAL INSTITUTE OF HIGHER TIBETAN STUDIES

(DEEMED TO BE UNIVERSITY)

SARNATH, VARANASI (UP)

2022

विषय सूची

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शास्त्री-शिक्षाशास्त्री/བསྟན་བཅོས་དགེ་འོས་བསླབ་བའི་བསྟན་བཅོས།

Shastri-Shiksha Shastri (B.A.B.Ed./B.Sc.B.Ed.)

शास्त्री-शिक्षाशास्त्री

བསྟན་བཅོས་དཔེ་ཁོས་བསླབ་བའི་བསྟན་བཅོས།

Shastri-Shiksha Shastri (B.A.B.Ed./B.Sc.B.Ed.)

བསྟན་བཅོས་དགེ་འོས་བསྟན་པའི་བསྟན་བཅོས།

Shastri-Shiksha Shastri (B.A.B.Ed./B.Sc.B.Ed.)

Details of Examination Subjects

This programme will be completed in eight semesters in the following course.

Pass Criterion and Minimum Marks

In Formative Assessment, at least 50% marks or an equivalent grade in internal project /assignment/practical examination is required as pass criteria for internal assessment.

In summative assessment, a minimum of 40% marks has to be obtained to qualify in each theory paper separately i.e. in a 4-credits or a 100 marks paper, a minimum of 28 marks out of 70 and in a 2-credits or 50 marks paper, a minimum of 14 out of 35, is the pass criterion.

PROGRAMME DETAILS

A. **For Innovative B.Sc. B. Ed. Programme**

In the B.Sc.B.Ed. Programme the students will be required to choose from one of the following science stream. All other courses including compulsory Tibetan Language and Literature, General English, Pedagogy & related courses and Fundamental of Buddhist Logic, Psychology & Cognitive Science will be the same as prescribed.

Science Stream 1: Physics, Chemistry, Mathematics / Statistics.
Science Stream 2: Botany, Zoology, Chemistry.

Objective: To provide fundamentals of core subjects.

SEMESTER-I

S. No.	Name of the subjects	Paper	Caption	Credits	Total Credits
1	Tibetan Language and Literature		As prescribed in detailed syllabus	4	4
2	General English		General English-I	1	1
3	Pedagogy related		Philosophical Dimension & Challenges of Education, Personality Development – I (Based on Grading)	4 1	5
4	Physics	I	BPH 101: Mechanics and Relativity	2	6
		II	BPH 102: Mechanical Properties of matter	2	
		III	Practical	2	
5	Chemistry	I	BCH 101: Structure and Bonding	2	6
		II	BCH 102: Organic Chemistry- I	2	
		III	Practical	2	
6	Zoology	I	ZOB 101:Systematics and Animal diversity	2	

		II	ZOB 102: Animal form and function	2	6
		III	Practical	2	
7	Botany	I	BOB 101: Cryptogams I	2	6
		II	BOB 102: Cryptogams II	2	
		III	Practical	2	
8	Mathematics	I	MTB 101: Matrix Algebra	2	6
		II	MTB 102: Calculus	2	
		III	MTB 103: Integral calculus	2	
9	Statistics	I	STB-101: Descriptive	2	6
		II	STB 102: Probability	2	
		III	Practical	2	
10	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- I	1	1

SEMESTER-II

S. No.	**Name of the subjects**	**Paper**	**Caption**	**Credits**	**Total Credits**
1	Tibetan Language and Literature-II		As prescribed in detailed syllabus	4	4
2	General English		General English-II	1	1
3	Pedagogy related		Psychological Dimensions of Education Personality Development-II (Based on Grading)	4 1	**5**
4	Physics	I	BPH 201: Thermal Physics I	2	6
		II	BPH 202: Thermal Physics II	2	
		III	Practical	2	
5	Chemistry	I	BCH 201: Inorganic Chemistry-I	2	6
		II	BCH 202: Physical Chemistry-I	2	
		III	Practical	2	
6	Zoology	I	ZOB 201:Cell Biology	2	6
		II	ZOB 202:Biochemistry	2	

		III	Practical	2	
7	Botany	I	BOB 201: Microbiology and Plant Pathology	2	6
		II	BOB 202: Cytology and genetics	2	
		III	Practical	2	
8	Mathematics	I	MTB 201: Statics & Dynamics	2	6
		II	MTB 202: Algebra	2	
		III	MTB 203: Multivariable Calculus	2	
9	Statistics	I	STB 201: Descriptive Statistics	2	6
		II	STB 202: Distribution theory	2	
		III	Practical	2	
10	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- II	1	1

SEMESTER-III

S. No.	**Name of the subjects**	**Paper**	**Caption**	**Credits**	**Total Credits**
1	Tibetan Language and Lite-rature-III		As prescribed in detailed syllabus	4	4
2	General English		General English-III	1	1
3	Pedagogy related		• Educational Management • Educational Measurement & Evaluation Personality Development-III (Based on Grading)	4 4 1	9
4	Physics	I	BPH 301: OPTICS I	2	6
		II	BPH 302: OPTICS II	2	
		III	Practical	2	

5	Chemistry	I	BCH 301: Organic Chemistry-II	2	6
		II	BCH 302: Physical Chemistry-II	2	
		III	Practical	2	
6	Zoology	I	ZOB 30: Comparative physiology and Developmental Biology	2	6
		II	ZOB 302: Endocrinology	2	
		III	Practical	2	
7	Botany	I	BOB 301: Phanerogams I	2	6
		II	BOB 301: Phanerogams II	2	
		III	Practical	2	
8	Mathematics	I	MTB 301: Differential Equations	2	6
		II	MTB 302: Tensor and Geometry	2	
		III	MTB 303: Partial Differential Equations	2	
9	Statistics	I	STB 301: Statistical Inference I	2	6
		II	STB 302: Sample survey and design of experiments	2	
		III	Practical	2	
10	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- III	1	1

SEMESTER-IV

S. No.	Name of the subjects	Paper	Caption	Credits	Total Credits
1	Tibetan Language and Literature-IV		As prescribed in detailed syllabus	4	4

2	General English		General English-IV	1	1
3	Pedagogy related		• Action Research • Methodology of Teaching Tibetan Language Personality Development-IV (Based on Grading)	4 3 2	9
4	Physics	I	BPH 401: Electromagnetic Theory	2	6
		II	BPH 402: Basic Electronics	2	
		III	Practical	2	
5	Chemistry	I	BCH 401: Inorganic Chemistry-II	2	6
		II	BCH 402: Selected topics in Chemistry	2	
		III	Practical	2	
6	Zoology	I	ZOB 401: Evolution and Animal Behaviour	2	6
		II	ZOB 402: Genetics	2	
		III	Practical	2	
7	Botany	I	BOB 401: Ecology	2	6
		II	BOB 402: Physiology and Biochemistry	2	
		III	Practical	2	
8	Mathematics	I	MTB 401: Mathematical Methods		6
		II	MTB 402: Abstract Algebra		
		III	MTB 403: Programming in C		
9.	Statistics	I	STB 401: Applied Statistics	2	6
		II	STB 402: Statistical Inference and Decision Theory	2	
		III	Practicals	2	
10	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- IV	1	1

SEMESTER-V

S. No.	Name of the subjects	Paper	Caption	Credits	Total Credits
1	Tibetan Language and Literature		As prescribed in detailed syllabus	2	2
2	Pedagogy related		• Educational Technology • Teaching Subject (1st) Teaching Subject 1 (any one from the following groups- PCM/BZC) or subject opted for humanities / social science • Microteaching: 8 skills in 15 days of 30 hours duration • Simulation (1st), 5 Lessons based on Teaching Subject 1st Moral Ethics I (Based on Grading)	4 3 4 3 1	15
3	Physics	I	BPH 501: Mathematical Physics	2	6
		II	BPH 502: Classical Mechanics	2	
		III	Practical	2	
4	Chemistry	I	BCH -501: Analytical Chemistry-I	2	6
		II	BCH -502: Inorganic Chemistry-III	2	
		III	Practical	2	
5	Zoology	I	ZOB 501:Functional Anatomy and Economic Importance of Non Chordates	2	6

		II	ZOB 502: Functional Anatomy and Economic Importance of chordates	2	
		III	Practical	2	
6	Botany	I	BOB 501: Cryptogams III	2	6
		II	BOB 502: Cryptogams IV	2	
		III	Practical	2	
7	Mathematics	I	MTB 501: Analysis-I	2	6
		II	MTB 502: Differential Geometry	2	
		III	MTB 503: Discrete Mathematics	2	
8	Statistics	I	STB 501: Programming with C	2	6
		II	STB 502: Operations Research	2	
		III	Practical	2	
9	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- V	1	1

SEMESTER-VI

S. No.	Name of the subjects	Paper	Caption	Credits	Total Credits
1	Tibetan Language and Literature		As prescribed in detailed syllabus	4	4
2	Pedagogy related		• Environmental Education • Teaching Subject (2nd) (any one from the following groups- PCM/BZC) or subject opted for humanities / social science • Simulation (2nd), 5 Lessons based on Teaching Subject 2nd	3 3 3 1	10

			Moral Ethics –II (Based on Grading)		
3	Physics	I	BPH 601: Quantum Mechanics	2	6
		II	BPH 602: Electronic Devices and Circuits	2	
		III	Practical	2	
4	Chemistry	I	BCH -601: Organic Chemistry-III	2	6
		II	CHB-602: Physical Chemistry-III	2	
		III	Practical	2	
5	Zoology	I	ZOB 601: Biochemistry	2	6
		II	ZOB 602: Mammalian Physiology	2	
		III	Practical	2	
6	Botany	I	BOB 601: Phanerogams III	2	6
		II	BOB 602: Phenorogams IV	2	
		III	Practical	2	
7	Mathematics		MTB 601: Analysis II	2	6
		II	MTB 602: Business Mathematics	2	
		III	MTB 603: Special Theory of Relativity-I	2	
8	Statistics	I	STB 601: Numerical methods	2	6
		II	STB 602: Elements of Stochastic Processes	2	
		III	Practical	2	
9	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- VI	1	1

SEMESTER-VII

S. No.	Name of the subjects	Paper	Caption	Credits	Total Credits
1	Pedagogy related		• Practice Teaching (School Attachment Program)	10 2	22

			• 2 Criticism Lessons (Process Related) • 2 Evaluation Lessons (Final) • Scout Guiding and Community Work • Designing Educational Assessment Tool • Action Research Project Based on Classroom Situation	2 2 3 3	
2	Physics	I	Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading)	2	2
3	Chemistry	I	Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading)	2	2
4	Zoology	I	Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading)	2	2
5	Botany	I	Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading)	2	2
6	Mathematics	I	Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading)	2	2
7	Statistics	I	Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading)	2	2

8	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- VII	1	1

SEMESTER-VIII

S. No.	Name of the subjects	Paper	Caption	Credits	Total Credits
1	Tibetan Language and Literature		As prescribed in detailed syllabus	4	4
2	Pedagogy related		Any two of the following Elective Papers (Specialization) • Human Rights, Non Violence & Peace Education • Special Education • Elementary Education • Educational & Vocational Guidance • Value Education Moral Ethics III (Based on Grading) Moral Ethics IV (Based on Grading)	3+3=6 1 1	8
3	Physics	I	BPH 801: Statistical Mechanics	3	16
		II	BPH 802: Solid State Physics	3	
		III	BPH 803: Atomic Physics and Laser	3	
		IV	BPH 804: Topic in Modern Physics and Nano Science	3	
		V	Practical	4	
4	Chemistry	I	BCH -801: Analytical Chemistry-II	3	

		II	BCH -802: Inorganic Chemistry-IV	3	16
		III	BCH -803: Organic Chemistry IV	3	
		IV	BCH -804: Physical Chemistry IV	3	
		V	Practical	4	
5	Zoology	I	ZOB 801: Mammalian Endocrinology and Developmental Biology	3	16
		II	ZOB 802**:**Immunology and Microbiology	3	
		III	ZOB 803: Environmental Biology and Biotechniques	3	
		IV	ZOB 804: Cell Biology, Genetics and Evolution	3	
		V	Practical	4	
6	Botany	I	BOB 701: Plant Ecology I	3	16
		II	BOB 702: Plant metabolism Biochemistry and Biotechnology	3	
		III	BOB 801: Cytogenetics and Evolutionary processes	3	
		IV	BOB 802: Microbiology and plant Pathology	3	
		V	Practical	4	
7	Mathematics	I	MTB 801: Number Theory	3	16
		II	MTB 802: Probability	3	
		III	MTB 803: Operation Research	3	
		IV	MTB 804(a): Introduction to combinatorial Mathematics MTB 804(b): Computational Mathematics lab (DFT Model)	3	
		V	Project	4	

8	Statistics	I	STB 801:Demand Analysis, Analysis of Income Distribution and Queuing Theory	3	16
		II	STB 802:Reliability	3	
		III	STB 803: Distribution Theory	3	
		IV	STB 804: Statistical Inference - II	3	
		V	Practical	4	
9	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science-VIII	1	1

B. For Innovative B.A. B.Ed. Programme

The Student opting for B.A.B.Ed. shall be required to choose any three subjects from the list given below in addition to the Compulsory Subjects- Pedagogy related courses, Tibetan language and literature, General English and Fundamental of Buddhist Logic, Psychology & Cognitive Science

List of Subjects prescribed

History, Economics, Geography, English, Hindi, Psychology, Sociology, Philosophy, Tibetan History, Political Science.

Objective:

To provide fundamentals of core subjects with appropriate Pedagogy orientation.

SEMESTER I

S. No.	Name of the subjects	Paper	Caption	Credits	Total Credits
1	Tibetan Language and Literature		As prescribed in detailed syllabus	4	4
2	General English		General English-I	1	1
3	Pedagogy related		Philosophical Dimension & Challenges of Education, Personality Development –I (Based on Grading)	4 1	5
4	History	I	History of India upto 1000 A.D. (Part I)	2	6
		II	History of India upto 1000 A.D. (Part II)	2	
		III	Project & Assignment	2	
5	Economics	I	Microeconomics	2	6
		II	Structure of Indian Economy	2	
		III	Project/Assignment	2	
6	Geography	I	Physical Basis of Geography	2	6
		II	Practical: Map: Reading and Interpretation	2	
		III	Project / Assignment	2	

7	English	I	Indian English Poetry, Fiction, Critical Appreciation of Poetry (Unseen) and Essay Writing (Unseen)	2	6
		II	Guided Composition, Grammar and Vocabulary	2	
		III	Project /Assignment / Activities	2	
8	Hindi	I	मध्ययुगीन काव्य	2	6
		II	हिन्दी कहानी और व्याकरण	2	
		III	परियोजना/दत्तकार्य/शैक्षिक कार्य-कलाप	2	
9	Psychology	I	Introductory Psychology	2	6
		II	Laboratory Work (Practicals)	2	
		III	Project / Assignment	2	
10	Sociology	I	Sociology : Key Concepts	2	6
		II	Perspectives of Indian Society	2	
		III	Project / Assignment	2	
11	Philosophy	I	Indian Philosophy- I	2	6
		II	Western Philosophy-I	2	
		III	Project / Assignment	2	
12	Tibetan History	I	History of Tibet upto 9th century with brief description of Geography and People of Tibet	2	6
		II	Tibetan Monarchy Period and Political Contacts with Foreign Powers	2	
		III	Project & Assignment	2	
13	Political Science	I	Colonialism in India	2	6
		II	Political Theory: Concepts	2	
		III	Project / Assignment	2	
14	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- I	1	1

SEMESTER II

S. No.	Name of the subjects	Paper	Caption	Credits	Total Credits
1	Tibetan Language and Literature		As prescribed in detailed syllabus	4	4
2	General English		General English-II	1	1
3	Pedagogy related		Psychological Dimensions of Education Personality Development-II (Based on Grading)	4 1	5
4	History	I	History of Ancient Civilization (Part I)	2	6
		II	History of Ancient Civilization (Part II)	2	
		III	Project / Assignment	2	
5	Economics	I	Macroeconomics	2	6
		II	Indian Economic Policy	2	
		III	Project/Assignment	2	
6	Geography	I	Human Geography	2	6
		II	Practical: Elementary Statistics	2	
		III	Project / Assignment	2	
7	English	I	Indian Drama, Indian English Fiction, Critical Analysis of a prose passage (Unseen), Essay Writing (Unseen)	2	6
		II	Free Composition and Functional Grammar	2	
		III	Project / Assignment	2	
8	Hindi	I	हिन्दी एकांकी एवं व्याकरण और रचना	2	6
		II	आधुनिककविता-1 एवं आधुनिक हिन्दी कविता पर बौद्ध प्रभाव	2	

		III	परियोजना/दत्तकार्य/शैक्षिक कार्य-कलाप	2	
9	Psychology	I	Applied Psychology	2	6
		II	Laboratory Work (Practicals)	2	
		III	Project / Assignment	2	
10	Sociology	I	Social Processes	2	6
		II	Indian Society and culture	2	
		III	Project Assignment	2	
11	Philosophy	I	Indian Philosophy-II	2	6
		II	Western Philosophy-II	2	
		III	Project / Assignment	2	
12	Tibetan History	I	Tibet's Cultural Contacts with Neighbouring Countries (Part I)	2	6
		II	Tibet's Cultural Contacts with Neighboring Countries (Part II)	2	
		III	Project Assignment	2	
13	Political Science	I	Constitutional Democracy and Government in India	2	6
		II	Nationalism in India	2	
		III	Project Assignment	2	
14	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- II	1	1

SEMESTER III

S. No.	Name of the subjects	Paper	Caption	Credits	Total Credits
1	Tibetan Language and Literature		As prescribed in detailed syllabus	4	4
2	General English		General English-III	1	1
3	Pedagogy related		• Educational Management	4 4	9

			• Educational Measurement & Evaluation Personality Development-III (Based on Grading)	1	
4	History	I	History of Medieval India (Part I)	2	6
		II	History of Medieval India (Part II)	2	
		III	Project / Assignment	2	
5	Economics	I	Money and Banking	2	6
		II	Public Economics-I	2	
		III	Project/Assignment	2	
6	Geography	I	Regional Study of Selected Developed and Developing Countries: U.S.A. and China	2	6
		II	Practical: Map Projection and Weather Map	2	
		III	Project / Assignment	2	
7	English	I	Poetry (Renaissance, Romantic) Drama, Figures of Speech, Critical Appreciation of poetry (Unseen)	2	6
		II	Language Skills (Internal Assessment)	2	
		III	Project / Assignment	2	
8	Hindi	I	आधुनिक गद्य-1 (निबन्ध एवं संस्मरण)	2	6
		II	हिन्दी नाटक	2	
		III	परियोजना/दत्तकार्य/शैक्षिक कार्य-कलाप	2	
9	Psychology	I	Experimental Methods and Elementary Statistics	2	6
		II	Laboratory Work (Practicals)	2	
		III	Project / Assignment	2	
10	Sociology	I	Social Movement; Concept and theories	2	6

		II	Dynamics of Indian Societies	2	
		III	Project / Assignment	2	
11	Philosophy	I	Ethics	2	6
		II	Logic	2	
		III	Project / Assignment	2	
12	Tibetan History	I	(Revival of Buddhism in 11th Century)	2	6
		II	(History of Medieval Tibet (Part I)	2	
		III	Project / Assignment	2	
13	Political Science	I	Understanding Political Theory	2	6
		II	Introduction to Comparative Government and Politics	2	
		III	Project / Assignment	2	
14	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- III	1	1

SEMESTER IV

S. No.	Name of the subjects	Paper	Caption	Credits	Total Credits
1	Tibetan Language and Literature		As prescribed in detailed syllabus	4	4
2	General English		General English-IV	1	1
3	Pedagogy related		• Action Research • Methodology of Teaching Tibetan Language Personality Development-IV (Based on Grading)	4 3 2	9
4	History	I	History of Modern World (Part I)	2	6
		II	History of Modern World (Part II)	2	
		III	Project / Assignment	2	

5	Economics	I	Market Analysis	2	6
		II	Public Economics-II	2	
		III	Project/Assignment	2	
6	Geography	I	Economic Geography	2	6
		II	Practical: Surveying	2	
		III	Project / Assignment	2	
7	English	I	Poetry (Victorian, Modern) Drama, Prosody, Critical Appreciation of poetry (Unseen)	2	6
		II	Language Skills (Integrated) (Internal Assessment)	2	
		III	Project / Assignment	2	
8	Hindi	I	हिन्दी उपन्यास और हिन्दी उपन्यास पर बौद्ध प्रभाव	2	6
		II	हिन्दी आलोचना और आलोचक	2	
		III	परियोजना/दत्तकार्य/शैक्षिक कार्य-कलाप	2	
9	Psychology	I	Abnormal Psychology	2	6
		II	Laboratory Work (Practicals)	2	
		III	Project / Assignment	2	
10	Sociology	I	Major social movements in India	2	6
		II	Constitutional safeguards and national issues	2	
		III	Project / Assignment	2	
11	Philosophy	I	Philosophy of Religion	2	6
		II	Asian Philosophy & Religion	2	
		III	Project / Assignment	2	
12	Tibetan History	I	History of Medieval Tibet (Part II)	2	6
		II	History of Modern Tibet (Part I)	2	
		III	Project / Assignment	2	
13	Political Science	I	Theories of International Relations	2	6
		II	Indian Political Thought- I	2	

		III	Project / Assignment	2	
14	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- IV	1	1

SEMESTER V

S. No.	Name of the subjects	Paper	Caption	Credits	Total Credits
1	Tibetan Language and Literature		As prescribed in detailed syllabus	2	2
2	Pedagogy related		• Educational Technology • Teaching Subject (1st) Teaching Subject 1st (any one from the following groups- PCM/BZC) or subject opted for humanities / social science • Microteaching: 8 skills in 15 days of 30 hours duration • Simulation (1st), 5 Lessons based on Teaching Subject 1st Moral Ethics I (Based on Grading)	4 3 4 3 1	15
3	History	I	History of Modern India (Part-I)	2	6
		II	History of Modern India (Part-II)	2	
		III	Project / Assignment	2	
4	Economics	I	Factor Pricing and Welfare Economics	2	6
		II	Elementary Statistics	2	
		III	Project/Assignment	2	
5	Geography	I	Geography of India	2	6

		II	Practical: Representation of Geographical Data	2	
		III	Project / Assignment	2	
6	English	I	Prose-I: Short Stories, Essays and Sketches, Novel and Critical Analysis of a prose passage (unseen)	2	6
		II	Linguistics-I: Phonetics, Concepts of Modern Grammar and English Language Education	2	
		III	Project / Assignment	2	
7	Hindi	I	गद्य की लघु विधाएँ एवं हिन्दी साहित्य का इतिहास	2	6
		II	प्रयोजन-मूलक हिन्दी और हिन्दी साहित्य का इतिहास	2	
		III	परियोजना/दत्तकार्य/शैक्षिक कार्य-कलाप	2	
8	Psychology	I	Clinical Psychology	2	6
		II	Laboratory Work (Practicals)	2	
		III	Project / Assignment	2	
9	Sociology	I	Indian Social Thought	2	6
		II	Introduction to Sociological Thoughts	2	
		III	Project / Assignment	2	
10	Philosophy	I	Indian Epistemology	2	6
		II	Western Epistemology	2	
		III	Project / Assignment	2	
11	Tibetan History	I	History of Modern Tibet (Part II)	2	6
		II	Tibet's political Contacts with Foreign Power from 17th Century (Part I)	2	
		III	Project / Assignment	2	
12	Political Science	I	Indian Political Thought- 2	2	6
		II	India’s Foreign Policy	2	
		III	Project / Assignment	2	

13	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- V	1	1

SEMESTER VI

S. No.	Name of the subjects	Paper	Caption	Credits	Total Credits
1	Tibetan Language and Literature		As prescribed in detailed syllabus	4	4
2	Pedagogy related		• Environmental Education • Teaching Subject (2nd) (any one from the following groups- PCM/BZC) or subject opted for humanities / social science • Simulation (2nd), 5 Lessons based on Teaching Subject 2nd Moral Ethics –II (Based on Grading)	3 3 3 1	10
3	History	I	History of England, 1485, 1919 (Part-I)	2	6
		II	History of England, 1485, 1919 (Part-II)	2	
		III	Project / Assignment	2	
4	Economics	I	International Economics	2	6
		II	Population Studies	2	
		III	Project/Assignment	2	
5	Geography	I	Geomorphology	2	6
		II	Practical: Geological Map and Map Projection	2	
		III	Project / Assignment	2	

6	English	I	Prose-II: Short Stories, Essays and Sketches, Novel and Critical Analysis of a Prose Passage (Unseen)	2	6
		II	Linguistics-II: Phonetics, Concepts of Modern Grammar and English Language Education	2	
		III	Project / Assignment	2	
7	Hindi	I	आधुनिक काव्य – 1	2	6
		II	हिन्दी भाषा और लिपि	2	
		III	परियोजना/दत्तकार्य/शैक्षिक कार्य-कलाप	2	
8	Psychology	I	Developmental Psychology	2	6
		II	Laboratory Work (Practicals)	2	
		III	Project / Assignment	2	
9	Sociology	I	Methods of Social Research and Statistics	2	6
		II	Sociology of Development; Concept and Theories	2	
		III	Project / Assignment	2	
10	Philosophy	I	Contemporary Indian Philosophy- I	2	6
		II	Contemporary Western Philosophy- I	2	
		III	Project / Assignment	2	
11	Tibetan History	I	(History of Modern Tibet (Part II)	2	6
		II	(History of Modern Tibet (Part III)	2	
		III	Project / Assignment	2	
12	Political Science	I	Development Process and Social Movements in Contemporary India	2	6
		II	Global Politics	2	
		III	Project / Assignment	2	
13	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- VI	1	1

SEMESTER VII

S. No.	Name of the subjects	Paper	Caption	Credits	Total Credits
1	Pedagogy related		• Practice Teaching (School Attachment Program) • 2 Criticism Lessons (Process Related) • 2 Evaluation Lessons (Final) • Scout Guiding and Community Work • Designing Educational Assessment Tool • Action Research Project Based on Classroom Situation	10 2 2 2 3 3	22
2	History	I	Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading)	2	2
3	Economics	I	Innovative Teaching Module based on Major Subject relevant to School Teaching (Based on Grading)	2	2
4	Geography	I	Innovative Teaching Module Based On Major Subject Relevant to the School Teaching (Based on Grading)	2	2
5	English	I	Innovative Teaching Module based on Major Subject relevant to School Teaching(Based on Grading)	2	2
6	Hindi	I	Innovative Teaching Module based on Major Subject relevant to School Teaching(Based on Grading)	2	2

7	Psychology	I	Innovative Teaching Module based on Major Subject relevant to School Teaching(Based on Grading)	2	2
8	Sociology	I	Innovative Teaching Module based on Major Subject relevant to School Teaching(Based on Grading)	2	2
9	Tibetan History	I	Innovative Teaching Module based on Major Subject relevant to School Teaching(Based on Grading)	2	2
10	Political Science	I	Innovative Teaching Module based on Major Subject relevant to School Teaching(Based on Grading)	2	2
11	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- VII	1	1

SEMESTER VIII

S. No.	**Name of the subjects**	**Paper**	**Caption**	**Credits**	**Total Credits**
1	Tibetan Language		As prescribed in detailed syllabus	4	4
2	Pedagogy related		Any two of the following Elective Papers (Specialization) • Human Rights, Non Violence &Peace Education • Special Education & Inclusive Education • Elementary Education • Educational & Vocational Guidance • Value Education	3+3=6 1 1	8

			Moral Ethics III(Based on Grading) Moral Ethics IV(Based on Grading)		
3	History	I	Modern Europe (1748-1945) Part I	3	16
		II	Modern Europe (1748-1945) Part II	3	
		III	Modern Europe (1748-1945) Part III	3	
		IV	Modern Europe (1748-1945) Part IV	3	
		V	Project / Assignment	4	
4	Economics	I	International Macroeconomics	3	16
		II	Introduction to Research Methodology	3	
		III	Developmental Economics	3	
		IV	Environmental Economics	3	
		V	Project/Assignment	4	
5	Geography	I	Agricultural Geography	3	16
		II	Climatology	3	
		III	Evolution of Geographical Thought	3	
		IV	Practical: Field Study, Field Trip and Report Writing	3	
		V	Project/ Assignment	4	
6	English	I	Literary Genres, Twentieth Century Literary Tendencies, Introduction to Twentieth Century Literary Theory and Criticism, Literary Concepts/ Ideas	3	16
		II	Seminar Work, Learning Report Writing and Dissertation	3	
		III	Critical Approach to Literature	3	
		IV	Dissertation Writing	3	
		V	Project / Assignment	4	
7	Hindi	I	आधुनिक काव्य – 2	3	16

		II	भारतीय काव्य शास्त्र	3	
		III	पाश्चात्य काव्य शास्त्र	3	
		IV	लघु शोध-प्रबन्ध	3	
		V	परियोजना/दत्तकार्य/शैक्षिक कार्य-कलाप	4	
8	Psychology	I	Culture and Human Behaviour	3	16
		II	Laboratory Works (Practicals)-I	3	
		III	Psychology of Social Behaviour	3	
		IV	Laboratory Work (Practicals)-II	3	
		V	Project / Assignment	4	
9	Sociology	I	Sociology of Administration	3	16
		II	Sociology of Deviance	3	
		III	Modern Indian Social Thought	3	
		IV	Dissertation	3	
		V	Project / Assignment	4	
10	Philosophy	I	Indian Metaphysics	3	16
		II	Western Metaphysics	3	
		III	Contemporary Indian Philosophy-II	3	
		IV	Contemporary Western Philosophy-II	3	
		V	Project / Assignment	4	
11	Tibetan History	I	(14th Dalai Lama and End of Gaden Phodrang Rule (Part I)	3	16
		II	(14th Dalai Lama and End of Gaden Phodrang Rule (Part II)	3	
		III	(14th Dalai Lama and End of Gaden Phodrang Rule (Part III)	3	
		IV	(14th Dalai Lama and End of Gaden Phodrang Rule (Part IV)	3	
		V	Project / Assignment	4	

12	Political Science	I	Political Institutions and Processess	3	16
		II	Modern Political Phylosophy	3	
		III	The United Nations and Global Conflicts	3	
		IV	Indian Government and Politics	3	
		V	Project / Assignment	4	
13	FBLPCSc.		Fundamentals of Buddhist Logic, Psychology & Cognitive Science- VIII	1	1

Syllabus
for B.Sc. B.Ed.
and B.A. B.Ed.

(Common / Compulsory Subjects)

TIBETAN LANGUAGE AND LITERATURE

དགེ་འདེས་མཐོ་སློབ་ཀྱི་བོད་ཡིག་བསླབ་གཞི།

SEMESTER-I **རྒྱགས་དུས་དང་པོ།** **Credits: 4**

སློབ་ཚན།	**དག་ཡིག**
དུས་དེབ།	སློབ་ཆུང་དག་ཡིག (ཚ་སྒེའི་བར)
རྩོམ་སྒྲིག	བོད་རང་སྐྱོང་ལྷོངས་སློབ་གཞི་རྩོམ་སྒྲིག་ཁང་།
སློབ་ཚན།	**བརྡ་སྦྱོར།**
དུས་དེབ།	རྣམ་དབྱེ་དང་བྱ་བྱེད་ཀྱི་སྐོར་དཀའ་གསལ་ལ་ལེའུ་།
རྩོམ་པ་པོ།	ཨཱཀྱ་ཡོངས་འཛིན།
སློབ་ཚན།	**རྩོམ་རིག**
དུས་དེབ།	ཚིག་སྒྲུབ་བཟོ་སྟངས་ཀྱི་རྣམ་གཞག (དགེ་རྒན་གྱིས་ལམ་སྟོན་བྱེད་རྒྱུ།
སློབ་ཚན།	ཉན་བཤད་སྦྱོང་བརྡར།
དུས་དེབ།	སྒྲུ་རྩལ་སྟེ་ཚན་ཀྱི་སྤྱོད་འགྲོ་དང་ཡོའི་སློབ་དེབ། ཤོག་གྲངས། ༡༥ - ༡༩
སློབ་ཚན།	བཀའ་སློབ།
དུས་དེབ།	ཨསྒྲུབས་མཐོན་ཆེན་པོ་མཚོག་གི་ཤེས་ཡོན་སྐོང་གྱི་གལ་ཆེའི་བཀའ་ སློབ་གཅེས་བཏུས།
རྩོམ་པ་པོ།	ཨགོང་མ་ཨསྒྲུབས་མཐོན་ཆེན་པོ་མཚོག
རྩོམ་སྒྲིག	ཤེས་རིག་ལས་ཁུངས།

SEMESTER-II **རྒྱུགས་དུས་གཉིས་པ།** **Credits : 4**

སློབ་ཚན།	**དགེ་ཡིག**
དུས་དེབ།	སློབ་ཆུང་དགེ་ཡིག (ང་སྤྲའི་བར)
ཆོས་སྤྱིག	བོད་རང་སྐྱོང་ལྷོངས་སློབ་གཞི་ཆོས་སྤྱིག་ཁང་།
སློབ་ཚན།	**བརྡ་སྤྲོད། ཕད་རང་དབང་ཅན་གྱི་རྣམ་གཞག**
དུས་དེབ།	ལེགས་བཤད་འཇེན་བའི་ཐོ་ཡིག
ཆོས་པ་ཐོ།	རྡོ་རྗེ་རྒྱལ་ཐོ།
སློབ་ཚན།	**ཆོས་དིག**
དུས་དེབ།	སངད་ཀྱིས་བཅོམ་བའི་ཚེ་ཏེག གསུང་འབུམ་ཐོད་གཉིས་པ།
ཆོས་པ་ཐོ།	དཔལ་དོན་བྲག་རྒྱལ།

SEMESTER-III **རྒྱུགས་དུས་གསུམ་པ།** **Credits: 4**

སློབ་ཚན།	**བརྡ་དག ཞེ་སའི་མིང་།**
དུས་དེབ།	ཞེ་སའི་རྣམ་འབྱེད།
རྩོམ་པ་པོ།	ཚེ་དབང་རྡ་མཐིན།
སློབ་ཚན།	**བརྡ་སྦྱོར། ཕད་གཞན་དབང་ཅན་གྱི་རྣམ་གཞག**
དུས་དེབ།	ལེགས་བཤད་འདྲེན་བའི་པོ་ཏི།
རྩོམ་པ་པོ།	རྗེ་རྗེ་རྒྱལ་པོ།
སློབ་ཚན།	**རྩོམ་རིག**
དུས་དེབ།	རྩོམ་ལུགས་ཀྱི་རྣམ་གཞག་ཡི་གེའི་སྤྱི་རྣམ་བློ་གསལ་འདྲུག་ངོགས།
རྩོམ་པ་པོ།	དབུས་དགེ་བསམ་གཏན་རྒྱ་མཚོ།
སློབ་ཚན།	ཚིགས་བཅད་སྡེབ་སྦྱོར།
	ཚིག་ཉིམ་གསུམ་པ་ནས་ཚིག་ཉིམ་དྲུག་བའི་བར།
སློབ་ཚན།	མགུར་གླུ།
དུས་དེབ།	རྒྱལ་བ་ཚངས་དབྱངས་རྒྱ་མཚོའི་མགུར་གླུ། ཚིགས་བཅད་དང་ཡོ་ནས་བཅུ་དགུའི་བར།
རྩོམ་པ་པོ།	རྒྱལ་བ་ཚངས་དབྱངས་རྒྱ་མཚོ།

SEMESTER-IV **རྒྱུགས་དུས་བཞི་པ།** **Credits: 4**

སློབ་ཚན།	**དག་ཡིག**
དུས་དེབ།	དག་ཡིག་ལེགས་བཤད་སྐྱ་རེངས་གསང་པ།
རྩོམ་པ་པོ།	བསྟན་དར་ལྷ་རམས་པ་ངག་དབང་བསྟན་དར།

སློབ་ཚན།	**བརྡ་སྤྲོད། དུས་གསུམ་གྱི་རྣམ་གཞག**
དུས་དེབ།	དུས་གསུམ་རབ་གསལ་འོད་སྣང་། (སྐྱི་དང་ཟེ་བག)
རྩོམ་པ་པོ།	ཆོ་དབང་བསོད་ནམས།
དུས་དེབ།	དཀའ་གནད་གསལ་བའི་ཆེ་ཚོང་།སྔོན་འདྲུག་ཅིའི་ཕྱིར་འདྲུག་པ།
རྩོམ་པ་པོ།	དབྱངས་ཅན་གྲུབ་པའི་རྡོ་རྗེ།

སློབ་ཚན།	**རྩོམ་རིག ཚིག་བཅད་སྡེབ་སྦྱོར།**
	ཚིག་ཁྱིམ་དྲུག་པ་ནས་ཚིག་ཁྱིམ་དགུ་པའི་བར་ཚིག་བཅད་སྦྱིག་ཚུལ།

སློབ་ཚན།	**སྐྱང་རྩོམ།**
དུས་དེབ།	ཡེ་ཤེས་ལྷ་མོ་དང་མཁར་བ་སྟོབས་རྒྱལ།(དབུས་གཙང་དམངས་སྐྱང་།
རྩོམ་པ་པོ།	རྡོ་རྗེ་རྒྱལ་པོ།

SEMESTER-V **རྒྱུགས་དུས་ལྟ་བ།** **Credits: 2**

སློབ་ཚན། **བཅ་སྦྱོར། དུས་གསུམ་གྱི་རྣམ་གཞག**

དུས་དེབ། དུས་གསུམ་དབང་གསལ་འོད་སྣང་གསར་བ།(ཐོང་བྱ།ཁྲབ་མཉམ།ཚ་འཇུ།)

རྩོམ་པ་པོ། ཤུང་སྐས་པ་མཁན་པོ་ཚེ་དབང་བསོད་ནམས།

སློབ་ཚན། **རྩོམ་རིག ཇི་བཞིན་བརྗོད་པའི་རྩོམ་ཡིག**

དུས་དེབ། རྩོམ་འབྲིའི་ཤེས་བྱ། ཇི་བཞིན་བརྗོད་པའི་རྩོམ་ཡིག་གི་འབྲི་དུས།

རྩོམ་སྤྱི། ཤེས་རིག་ལས་ཁུངས།

སློབ་ཚན། **རྒྱུན་སྤྱོད་ཡིག་རིགས་ཀྱི་སྐོར།**

དུས་དེབ། རྒྱུན་སྤྱོད་ཡིག་རིགས། ཤོག་གྲངས། ༡ ནས། ༤༨ བར།

རྩོམ་སྤྱི། བོད་རང་སྐྱོང་ལྷོངས་སློབ་གྲྭས་རྩོམ་སྤྱི་བྱས། བར་ལོ།༢༠༠༩

སློབ་ཚན། **ལེགས་བཤད།**

དུས་དེབ། བསླབ་བྱ་རྣེར་བུའི་གྲིང་དུ་བགྲོད་པའི་ལམ་ཡིག

རྩོམ་པ་པོ། གྱང་ཐང་དཀོན་མཆོག་བསྟན་པའི་སྤྲུན་མེ།

སློབ་ཚན། **སྒྲུང་རྩོམ།**

དུས་དེབ། ཞལ་ཏ་ལུགས་གཉིས་སྤྱི་བཏུས།

རྩོམ་པ་པོ། རྗ་དབལ་སྤུལ་འཇིགས་མེད་ཆོས་ཀྱི་དབང་པོ། ༡༩༠༡-༡༩༩༤

SEMESTER-VI **རྒྱུགས་དུས་བྱེག་པ།** **Credits: 4**

སློབ་ཚན།	**སྟན་བཀ།** རང་བཞིན་བརྗོད་པ།དེའི་རྒྱུན་དང་པོ་གཉིས། གཟུགས་རྒྱུན་དང་པོ་གསུམ།
དེའི་དེབ།	ཚངས་སྤས་བཞད་པའི་སྒྲ་དབྱངས།
རྩོམ་པ་པོ།	བསེ་ཚང་བློ་བཟང་དཔལ་ལྡན།

སློབ་ཚན།	**ལེགས་བཤད།**
དེའི་དེབ།	མཁས་བྱན་བརྟག་པའི་རབ་བྱེད་གཉིས། ས་སྐྱ་ལེགས་བཤད།
རྩོམ་པ་པོ།	ཆོས་རྗེ་ས་པཾ་ཀུན་དགའ་རྒྱལ་མཚན།

སློབ་ཚན།	**སྒྲུང་རྩོམ།**
དེའི་དེབ།	སྟང་ས་འོད་འབུམ་གྱི་རྣམ་ཐར།
དེའི་དེབ།	སྨྱལ་སྐྱ།
རྩོམ་པ་པོ།	དཔལ་དོན་བྲྙབ་རྒྱལ།

SEMESTER-VII ཚུལ་གསལ་དུས་བདུན་པ།

སློབ་ཁཐིད་སྦྱོང་བརྡར་ཡིན།

School Attached Program

SEMESTER-VIII **རྒྱུགས་དུས་བརྒྱད་པ།** **Credits: 4**

སློབ་ཚན།	**རྩོམ་རིག**སྤྱན་དགེ་མེ་ལོང་མའི་སྒྲ་རྒྱན་སྐབས་ཀྱི་ཟུང་ལྡན་ཀྱི་རྒྱན།(བར་ཚོད་མི་ཚོད།)
དཔེ་དེབ།	ཚངས་སྤས་བཞད་པའི་སྒྲ་དབྱངས།
ཚོམ་པ་པོ།	བས་ཚང་བློ་བཟང་དཔལ་ལྡན།

སློབ་ཚན།	**ཀ་བཤད་རྩོམ་ཡིག**
དཔེ་དེབ།	ཤལ་སྐད་གསང་པོད་བརྗོད་པའི་ཀ་ཅོམ།
ཚོམ་པ་པོ།	མཁས་དབང་དགེ་འདུན་ཆོས་འཕེལ།

སློབ་ཚན།	**སྐྱང་རྩོམ།**
དཔེ་དེབ།	མེ་ཏོག་ལྷུམ་རའི་ནང་གི་སྐན་ཀ
ཚོམ་པ་པོ།	སྐང་འདུན་དཔལ་འབྱོར།
དཔེ་དེབ།	བཀྲིས་ཟུར་ཚང་གི་གསང་བའི་གཏམ་རྒྱུད།
ཚོམ་པ་པོ།	བཀྲས་སྒིང་དབང་རྡོར།

GENERAL ENGLISH

SEMESTER – I

General English-I **Credit: 1**

Content

Unit I: Reading

Comprehension Test Level 1

Unit II: Writing

Paragraph writing Or Writing CVs and Job Application

Unit III: Grammar

Verb, Preposition, Sentence, Voice

Unit IV: Literature

- R.K.Narayan, 'Out of Business'
- Ruskin Bond, 'The Thief's Story'
- S.Radhakrishnan, 'Intuition and Genius'
- Rabindranath Tagore, 'Gitanjali:18'

SEMESTER - II

General English-II **Credit: 1**

Content

Unit I: Reading

Comprehension Test Level 2

Unit II: Writing

Writing Formal & Informal Letters, Paragraph writing, CV writing and Job Application

Unit III: Grammar

Direct – Indirect, Transformation, Editing, Vocabulary building

Unit IV: Literature

- O. Henry, 'The Last Leaf'
- William Somerset Maugham, 'The Man with the Scar'
- Rabindra Nath Tagore, 'The Artist' or 'Ram Mohan Roy'
- Nissim Ezekiel, 'In the Country Cottage'
- Purushottam Lal, 'Life'

SEMESTER - III

General English-III **Credit: 1**

Content

Unit I: Reading

Comprehension Test Level 3

Unit II: Writing

Guided composition writing, Report writing and writing of essays

Unit III: Grammar

Vocabulary building, Errors and omissions, reordering sentences, degrees, subject-verb agreement

Unit IV: Literature

- R.K.Narayan, 'The Guide'
- M.K. Gandhi, 'My Experiments with Truth'

SEMESTER-IV

General English-IV **Credit: 1**

Content

Unit I: Reading

Comprehension Test Level 4

Unit II: Writing

Structure of a report, art of scientific and literary writing

Unit III: Grammar

Determiners, Articles, Connectors, Idioms and Figures of Speech, Dialogue Completion

Unit IV: Literature

To be prescribed

Fundamentals of Buddhist Logic, Psychology and Cognitive Science

Fundamentals of Buddhist Logic, Psychology & Cognitive Science

Course Objectives: After completion of eight units this course, the student will be able to:

1. details many types of the brain related sensory origins from neurology to five sensory origins and, can expand system of the modern psychology.
ད་ཡོད་གླད་རྩའི་རྣམ་གཞག་ནས་སྔོ་སྡུའེ་ཤེས་པ་སོགས་གླད་པ་ལ་བརྟེན་པའི་དབང་པོའི་ཤེས་པའི་རིགས་མང་པོ་ཞེག་ལ་ཞིབ་ཚགས་དང་། དེང་རབ་སེམས་ཁམས་རིག་པའི་རྣམ་གཞག་རྒྱ་རྟེ་ཆེར་གཏོང་ཐུབ་པ།

2. reduce the self-centered attitude, aversion, greed, discrimination, jealousy, competition etc. in our mind.
མིའི་བསམ་བློའི་ནང་གི་རང་གཅེས་འཛིན་དང་། སྡང་བ། འདོད་ཆགས། ཐྱོགས་རིས། ཟག་དོག འཕྲན་སེམས་སོགས་ཤུགས་ཆུང་དུ་གཏོང་ཐུབ་པ།

3. learn the fifty types of mind and mental factors, contradictory among the mental factors, identify the power of particular mind and how-to dissolute others.
སེམས་དང་སེམས་བྱུང་གི་ཡུ་བཅུ་ལྔག་གི་དེས་འཛིན་དང་ ། སེམས་བྱུང་ནང་གཅིག་ཚུན་འགལ་བ་ཐུའི་གནད་ལས། ཐུབ་གཅིག་ཤེས་ཀྱི་སྟོབས་སྐྱེད་དེ། ཐུབ་གཞན་དེའི་ནུས་པ་ཇི་ལྟར་འགོག་པའི་རིམ་པ་སོགས་གསལ་བར་ཤེས་པ།

4. increase altruism, loving-compassion, awareness, wisdom and etc. in human mind.
ང་ཚོའི་བསམ་བློའི་ནང་གཞན་གཅེས་འཛིན་དང་། བྱམས་བཅེ། བག་ཡོད། ཤེས་རབ་སོགས་གོང་འཕེལ་དུ་གཏོང་ཐུབ་པ།

5. to identify new educational structures in combination of modern science and psychology for promoting happiness in human society.
དེང་རབ་ཚན་རིག་དང་སེམས་ཁམས་རིག་པ་རྒྱང་འཕེལ་གྱིས་མིའི་སྡུ་ཚོགས་ནང་བདེ་སྐྱིད་ཇི་ལྟར་སྐྱེན་ཐབས་ལ་གསར་གཏོང་ཐུབ་པ།

6. to develop potential for application of reasoning methods/formulation in the subject in the context of empirical situations and fields of knowledge.
རྟགས་གསལ་གཏོང་བའི་རིགས་ལམ་ནི། བློ་གྲོས་ཀྱི་རྣམ་དབྱེད་གོང་ནས་གོང་དུ་འཕེལ་ཞིང་། རིག་པ་སྐྱར་སོང་ཡོང་བའི་ཐབས་ལམ་ཞིག་ཡིན། ཤེས་བྱའི་སྟེ་ཚན་གང་དང་གང་ཞིག་ཡིན་ཡང་དེ་དག་མཐའ་ཆོད་པ་ཤེས་རྒྱུ་དང་ ། རང་གི་བསམ་བློ་གྲུབ་ཁ་དོད་དུ་འགྲོ་བ་བཅས་ལ་ཁྱད་པར་ཆེན་པོ་ཡོད། དེས་ན་རིགས་ལམ་གྱི་ཐོག་ནས་འདི་ཡིན་ན་དེ་ཡིན་པས་ཁྱབ་པ་དང་། དེ་ཡིན་ན་འདི་ཡིན་དགོས་ཞེས་པའི་སྐུ་གསུམ་སྐུ་བཞི་དང་འགལ་བ་དོན་གཅིག་གི་སྐོར་རྣམས་སྤྲོབ་ཚད་ཆང་མའི་ནང་འགྲོ་བྱེད་པ་ཞིག་ཡོང་ཞིང་། དེ་ལྟར་བྱུང་ན་སྤྲོབ་ཚན་དེ་ཞིབ་ཚགས་ཤེས་རྒྱུ་སོགས་ལ་ཁྱད་པར་ཆེན་པོ་ཡོད་ཅེས་བཀའ་སྩལ་ཡོད། (ཥགོང་ས་མཆོག་གིས།)

FIRST SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science - I

Credit: 1

Course Content:

Unit 1- Introduction to preliminary part of Collected Topics in pramana

Bse bsdus grwa (Collected Topics in Logic/Pramana) by Ngawang Tashi Page No. (1-26)

- *bsdus grwa*: origin, meaning and classifications
- Introduction to logical arguments and conclusions (Introduction to debate)
- Mode of debating Mutually exclusive or Mutually inclusive arguments
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso Page (36-60)
  - Part of Plant and Classification.
  - Common characteristics of Plants and Animals.
  - Animal and Plants
  - Clarifications of terms and concepts
- Dam bca' (thesis) - Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, Dam bca debating, Assignment

References:

1. *Yongzin bsdus grwa*. By Phurchok Jampa Gyaltso
2. *Ra bsdus grwa*. By Sonam Wangyal
3. *Bsdus grwa' snon 'gro' sbyor wa lo gsl 'jug ngogs*. By Lobsang Kunchok
4. Teacher's Textbook for teaching science by Method of Reasoning/Logics. By Lobsang Gyatso

SECOND SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science -II

Credit: 1

Unit 2- White and Red color *[Khadog dkr dmr] Bse bsdus grwa*
Page No. (27-53)

- Presentation of one's own position (thesis)
- Refutation of other's position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso Page (61-76)
  - Living beings
  - Aquatic animals
  - Terrestrial animals and Aquatic animals
  - Living beings and Plants
  - Clarifications of terms and concepts
- Dam bca' Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, *Dam bca* debating, Assignment

References:

1. *Pramāṇavārttika*. By Acharya Dharamakriti
2. *Ra bsdus grwa.* By Serkhang damchoe Namgyal
3. Teacher's Textbook for teaching science by Method of Reasoning/Logics. By Lobsang Gyatso
4. Opening the Methods of Reasoning. By Geshe Yeshi Wangchuk

THIRD SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science- III

Credit: 1

Unit 3- Realization of Existence or Nonexistence, pramana and Opposite from being or Opposite of not being something *[yod rtogs me rtogs and yin log min log] Bse bsdus grwa Page No (53-79)*

- Presentation of one's own position (thesis)
- Refutation of other's position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso Page (77-86)
  - Things around us
  - Things and solid
  - Solid and Gases
  - Clarifications of terms and concepts
- Dam bca' Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, Dam bca debating, Assignment

References:

1. *Pramāṇavārttika.* By Acharya Dharamakriti
2. Abhidharmakosa. By Acharya Vasubandhu
3. *Riglam 'phrul lde.* By Yongzin Phurchok Lobsang Tsultrim

FOURTH SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science - IV

Credit: 1

Unit 4- Identifying isolates and Sameness or Difference *[ldog p ngo 'zin dang gcig tha dad] Bse bsdus grwa Page No. (79-105)*

- Presentation of one's own position (thesis)
- Refutation of other's position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso Page (86-92)
  - Soil and benefits of it
  - Soil and Fertility
  - Clarifications of terms and concepts
- Dam bca' Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, *Dam bca* debating, Assignment

References:

1. *Abhidharmakosa.* By Acharya Vasubandhu
2. *Pramāṇavārttika.* By Acharya Dharamakriti
3. *Tsama Rigp' sphyi lon.* By Lobsang Choedak

FIFTH SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science - V

Credit: 1

Unit 5- Theory of short presentation of Cause and Effect *[rgyu 'brs cung b'i rnam bzhag]) Bse bsdus grwa Page No. (105-131)*

- Presentation of one's own position (thesis)
- Refutation of other's position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso Page (93-104)
  - Water
  - Pure Water and Water
  - Water and Drinking Water
  - Clarifications of terms and concepts
- Dam bca' Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, Dam bca debating, Assignment

References:

1. *Pramāṇavārttika.* By Acharya Dharamakriti
2. *Tsam'bsdus tshen.* By Tsengang Dorjee Wangchuk
3. Compilation of *bsdus grwa.* By Chari Kalsang Thegme

SIXTH SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science - VI

Credit: 1

Unit 6- Theory of Perceiver and Object [yul dang yul can gyi rnam bzhag]

Bse bsdus grwa Page No. (131-157)

- Presentation of one's own position (thesis)
- Refutation of other's position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso Page (105-110)
  - Sound
  - Sound and human hearing sound
  - Sound and solid things
  - Clarifications of terms and concepts

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, *Dam bca* debating, Assignment

References:

1. *Bsdus grwa' rnam bshag rigs lam mig 'byed.* By Rabjamapa Lobsang Sonam
2. *Bsdus grwa' rig lam gnd kun gsl b'i melong.* Khenzur Kunchok Tsering
3. *Bsdus grwa' dogs dpyod.* By Kalsang Lobsal

SEVENTH SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science – VII

Credit: 1

Unit 7- *General and Specific* *[sphyi dang bye brg]) Bse bsdus grwa Page No. (157-183)*

- Presentation of one's own position (thesis)
- Refutation of other's position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso Page (111-118)
  - Wind
  - Wind and cold
  - Clarifications of terms and concepts
- Dam bca' Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, *Dam bca* debating, Assignment

References:

1. *Pramāṇavārttika.* By Acharya Dharamakriti
2. *Thun mong bsdus p' bsdoms tsig blosal dg'skyid.* By Jamyang Shantipa Lodoe Gyaltsen
3. *'grelwa lung rigs smr wa' rgyn*. By Khenchen Lobsang Zodpa

EIGHTH SEMESTER

Fundamentals of Buddhist Logic, Psychology & Cognitive Science – VIII

Credit: 1

Unit 8- Theory of Definition and Definiendum *Bse bsdus grwa Page No. (183-209)*

- Presentation of one's own position (thesis)
- Refutation of other's position (antithesis)
- Dispelling objections
- Teaching science through rigs lam (The method of reasoning) by Lobsang Gyatso Page (119-168)
  - Energy and Work
  - Energy and Contact force
  - Clarifications of terms and concepts
  - Light and shadow
  - Solar System
  - Living things
  - Clarifications of terms and concepts
- Dam bca' Debating

Transactional Strategies: Lecture, Dialogue, Debate (Dialectics)

Evaluation Rubric: Unit Test, Presentation, *Dam bca* debating, Assignment

References:

1. *Pramāṇavārttika* (3rd chapter). By Acharya Dharamakriti
2. *Tsam rig p'i shib 'jug*. By Ngawan Tenzin and Tenpa Tsering
3. *Bsdus sbyor snying po*. By Guthang Lodoe Gyatso

PEDAGOGY

SEMESTER – I

P101: Philosophical Dimensions and Challenges of Indian Education

Credits: 4

Contents

Unit-I: Concept of Education

(a) Education: Meaning, Nature and Scope of Education.

(b) Functions of Education in the context of Individual, Social and National level.

(c) Agencies of Education: school, community and family.

(d) Four Pillars of learning in the 21st century context.

Unit- II: Philosophical Dimensions of Education

(a) Philosophy and Education: Significance of studying philosophy in understanding educational practices and problems. Relationship between philosophy and education.

(b) Major Philosophical thoughts: Idealism, Naturalism and Pragmatism with their educational implications.

(c) Educational thinkers and their contribution in developing principles of education- Mahatma Gandhi, Tagore, Aurobindo, Vivekanand, J. Krishnamurti and Dalai Lama.

Unit-III: Development of Indian Education System

(a) Vedic system of Education, Buddhist and Medieval system of education.

(b) Major committees and commissions in Pre-Independence period- Wood's Dispatch, Hunter commission and Sadler commission.

(c) Major commissions and policies in Post-Independence period- University Education Commission, Secondary Education and National Education Commission ,NPE-1986 and Revised NPE-1992.

(d) Constitutional commitments for education: Fundamental rights & duties.

Unit-IV: Current Problems in Indian Education

(a) Elementary Education and its major problems: Universalization of Elementary Education, Wastage and Stagnation.

(b) Secondary Education and its major problems: Vocationalization, examination reform and its universalization.

(c) Higher Education and its major problems: Privatization and Autonomy.

(d) Problems of Teacher Education,

(e) Role and Functions of NCTE, NCERT, NIOS, UGC and IGNOU.

Assignment

The pupil-teacher is expected to conduct a study on school- community relationship and submit a report.

PERSONALITY DEVELOPMENT-I

Credit: 1

- Human Being: Qualities of a good human being. Development of personality as a good human being and attributes of competencies, commitment and confidence as the indicators of good human being.
- Empathetic behavior.

SEMESTER – II

P202: Psychological Dimensions of Education

Credits: 4

Contents

Unit I: Educational Psychology and Development of Learner

(a) Educational Psychology: Meaning, nature, methods, scope and importance of Educational Psychology for teachers.

(b) Concept and principles of growth and development, stages of human development.

Unit II: Learning and Motivation

(a) Concept and nature of learning, factors influencing teaching-learning process. Memory and Retention.

(b) Theories of learning: Trial and error, classical conditioning, operant conditioning, theory of insight, constructivism and social learning.

(c) Motivation: Nature, types, some selected content and process theories with special referenced to Abraham Maslow, Alderfer, McClelland and Skinner's reinforcement theory, techniques of enhancing learner's motivation.

Unit III: Personality, Intelligence and Creativity

(a) Personality: Meaning, Nature, Trait, Type and Psychodynamic theories; Methods of assessing Personality.

(b) Intelligence: Nature and Theories, Types of Intelligence-IQ, EQ and SQ; Measurement of Intelligence.

(c) Creativity: Meaning, nature and development of creativity among school children.

Unit IV: Psychology of Adjustment

(a) Behaviouristic and Psychoanalytic models.

(b) Characteristics of a well-adjusted person.

(c) Stress in the context of Education: Types of stress; Stress management techniques, Role of teachers.

Practical Work

Each student will be required to administer at least five psychological tests: Intelligence (verbal and non-verbal), creativity, personality, memory and aptitude.

Assignment

Conduct a case study on any child who has problems either in learning or in his/ her adjustment to the environment.

PERSONALITY DEVELOPMENT-II

Credit: 1

- How to become a good human being? Human Values, Values as indicated in ancient scriptures.
- Effective Communication

SEMESTER – III

P301: Educational Management

Credits: 4

Contents

Unit I: Concept of School Management

(a) Meaning and Scope of School Management.

(b) Nature and Importance of Management processes.

(c) Fundamental Principles of School Management in the present context.

Unit II: Maintaining a Secondary School for attaining excellence

(a) Planning and Executing: Year-plan of the School activities, Work load, School timings, time-table.

(b) Controlling and Monitoring Duties and Functions of Head master, Supervisor, teacher and non-teaching staff. Forming committees, Co-ordination committee; governing body of the School and its role and functions. Supervision and Inspection-Meaning, type, purpose and procedure.

(c) Financing: Sources of grants, budgeting and auditing procedure, Income generation- Endowment funds, reserve funds and development funds.

Unit III: Management

(a) Concept and Importance of Classroom Management.

(b) Difference between School and Classroom Management, School management and School Organization, School Management and School administration.

(c) Managing and Leading: Concepts, differences between managing and leading processes. Leadership styles in respect of school management, Situational Leadership.

(d) School discipline: Concept and its development.

(e) Human Relations in a school set up.

Unit IV: Achieving Excellence

(a) Criteria of grading a School.

(b) Total Quality Management (TQM): Concept, objectives and importance.

(c) SWOT Analysis: Concept and its Educational Implications.

(d) Resource development- Human, Material and Finance.

Assignment

Locating Strength and Weaknesses of any Educational Institution.

P302: Educational Measurement and Evaluation

Credits: 4

Contents

Unit I: Concept and Techniques of Evaluation

(a) Educational Measurement, Assessment and Evaluation: Concept, Purpose, Tools and Techniques of evaluation: Levels of measurement-nominal, ordinal, interval and ratio. Taxonomy of educational objectives and its relevance for measurement and evaluation.

(b) New concepts of Evaluation – Formative, Summative and Continuous-and- Comprehensive-Evaluation (CCE).

(c) Norm Referenced and Criterion Referenced Testing (NRT and CRT).

Unit II: Designing of tests for evaluation of learning outcomes

(a) Principles of test construction and standardization.

(b) Characteristics of a good test- reliability, validity, objectivity and practicability.

Unit III: Instructional Objectives and their use in test construction

(a) Instructional Objectives and objective based evaluation.

(b) Classification of test items-essay type and objective type test items and their construction procedures.

Unit IV: Educational Statistics

(a) Concept of statistics, Graphical representation of data.

(b) Measures of Central Tendency- Mean, Median and Mode.

(c) Measures of Variability- Quartile deviation, Average Deviation and Standard Deviation.

(d) Percentiles and Percentile Rank.

(e) Coefficient of correlation- Rank difference and Product moment.

(f) Normal distribution of scores: Properties of normal distribution curve and their implications for measurement and interpretation of scores.

(g) Concept of scaling- Z scaling and T scaling.

Assignment

Preparation and administration of an achievement test.

PERSONALITY DEVELOPMENT-III

Credit: 1

- Education for affective development.
- Emotional Maturity.

SEMESTER – IV

P401: Action Research

Credits: 4

Contents

Unit I: Concept of Research

(a) Meaning and types of Research -Basic, Applied and Action.

(b) Action Research- Meaning, Concept, Need, Importance and Application.

Unit II: Action Research

(a) Steps in Action Research.

(b) Preparation of Action Research Projects on problems based on real classroom situations.

Unit III: Developing Action Research Designs

(a) The concept of research design in action research.

(b) Components of an action research design.

(c) Strategies for implementation of action research design in schools.

Unit IV: Evaluation of Action Research Projects

(a) Approach & devices to be used.

(b) Feedback.

(c) Improvement of school situations- assessing the effectiveness of the impact of action research project.

Assignment

Study on any one environmental problem. The report on the study must include efforts of the pupil teacher in developing awareness among people about that environmental problem(s).

P402: Methodology of Teaching Tibetan Language

Credits: 3

Part – A

Theory

1. The main themes under which the contents have to be studied are :-

(i) Prose and Poetry

(ii) Grammar

(iii) Translation: Tibetan to English & English to Tibetan

(iv) Composition

(v) Methods of teaching Tibetan

(vi) Direct and pattern practice method of teaching Tibetan to lower classes as compared with the Translation Method, their relative merits and possibilities of combination.

Contents

Unit – I:

1. Aims of teaching a classical language; their application to Tibetan. Contrast and comparison with the aims of teaching Indian language such as Hindi/Sanskrit and a foreign language specially English. The importance of Tibetan in India. Its cultural, practical, literary and linguistic value.
2. The place of Tibetan in the school curriculum; the stage at which its teaching may be undertaken; its place at different stages.
3. The traditional method of teaching Tibetan: Emphasis on the study of the text and its commentaries.

Unit II:

1. **Reading**: The value of reading, pronunciation, enunciation and recitation, etc.
   (a) **Silent Reading**:- Its aims; how to make it effective: how to give the necessary training to boys; how to test comprehension and speed in silent reading. Comparison with silent reading in the mother tongue,
   (b) **Oral Reading**:- Its aims, social and other values: Essentials of good oral reading: Common errors in oral reading and how to remove them.

2. **Interpretation**:- Various devices-definition. Direct Association, Illustration, Exposition.
3. **Appreciation**:- Aims and development of literary appreciation. Its special place in the teaching of poetry. How to lead the students to appreciate. Alankaras, Chhandas and Rasas, Need for memorization.
4. **Conversation**:- Its importance. The importance of repetition, word-combination and drilling. The use of picture, drama and play methods.

Unit – III:

1. **Poetry**:- Aims and methods of teaching poetry of different kinds. Recitation to inculcate interest in the learning of Tibetan.
2. **Prose**:- Aims and methods of teaching prose, old and new.
3. **Grammar and' Phonetics**:- Special importance of grammar in the teaching of Tibetan: Aims and methods of teaching Grammar. Inductive add Deductive methods of teaching Grammar. The requirements at different stages. The traditional method. The sound system of Tibetan language, a detailed study of their production, their representation, appropriate symbols, the alphabet.

Unit – IV:

1. **Translation:-**Method and use of teaching translation.
2. **Composition** :- Aims and objectives of teaching composition; various forms to suit different stages; oral and written procedure of teaching composition; picture composition, story reproduction, letter writing and original composition.
3. The selection of text books in Tibetan. Aims and objectives requirements of good text books at different stages.
4. The library and classroom. Their equipment and atmosphere. Juvenile literature in Tibetan.
5. Examination in Tibetan:-

   The traditional method, Shastrartha, Modern Methods and New type tests-How far applicable to Tibetan.

6. The Tibetan Teacher:- His equipment-his knowledge of Tibetan Language and literature.
7. Co-curricular activities:- Debates and Kavi Goshthi.

PRACTICAL WORK

Compulsory

(1) Practice in class teaching.

(2) Ten essays on methods chosen by the students in consultation with the lecture counsellor embodying the results of supervised study and classroom experience.

(3) Collection of useful idioms, proverbs and sayings (Subhashitas).

(4) Preparation of Albums for collecting pictures for illustration, etc.

Optional

The pupil teachers should be required to do one of the following:-

1. Preparation of an Anthology of 200 verses (slokas) properly graded for the students of various stages.
2. Collection of 20 Kathas or writing of 15 model compositions suitable to the needs or standards of students at different stages.

Evaluation

The course content will be of 3 credits which are equivalent to 75 marks. Out of this 70% marks will be for summative evaluation (final exam) and rest 30% marks will be awarded on the basis of sessional work.

PERSONALITY DEVELOPMENT-IV

Credits: 2

Becoming a good teacher as well as a good human being.

- Communication skills training.
- Simulations – Role playing and various other techniques.
- Experiential learning.
- Teacher – taught relationship.

SEMESTER – V

P501: Educational Technology

Credits: 4

Contents

Unit I: Concept of Educational Technology and Information Technology

(a) Concept, Nature and Scope of Educational Technology; Difference between Technology in Education and Technology of Education

(b) Approaches of Educational Technology- Hardware, Software and System Approach.

(c) Applications of Educational Technology in improving theory and practices of education.

(d) Concept and significance of Information Technology.

(e) Different types of network: LAN, WAN, E- mail, Internet and World Wide Web.

Unit II: Teaching and Communication Technology

(a) Meaning, principles, levels and phases of teaching.

(b) Concept, process, principles and barriers of communication.

(c) Classroom Communication (Verbal and Non- Verbal).

(d) Systematic observation of classroom interaction: FIAC- encoding and decoding procedures.

Unit III: Models of Teaching & Instructional Strategies

(a) Concept, elements and needs of a teaching model.

(b) Classification of Teaching Models, Glaser's basic teaching model, Bruner's concept attainment model.

(c) Instructional Strategies- Group discussion, Brainstorming, Tutorial and Role Playing.

Unit IV: Innovation in Educational Technology and Modification of Teaching Behavior

(a) CAI, Teleconferencing and Language Laboratory.

(b) Microteaching and Simulation.

(c) Programmed learning: psychological basis, principles and types- linear, branching and mathetics.

Assignment

Preparation of a linear or branching type of programming as instructional material in the relevant teaching subject.

P502: Teaching Subject 1

Credits: 3

The student teacher shall select any two subjects as their **1st teaching subject** (In 5th Semester) and **2nd teaching subject** (In 6th Semester) from their respective elective subjects opted.

Method of Teaching Physical Science

Method of Teaching Mathematics

Method of Teaching Life Science

Method of Teaching Social Science

Method of Teaching History

Method of Teaching Geography

Method of Teaching Civics

Method of Teaching Economics

Method of Teaching English

Method of Teaching Hindi

Method of Teaching Sanskrit

Method of Teaching Tibetan History

Method of Teaching Physical Science

Maximum Marks: 100 **Internal Assessment: 30**

Theory: 70 **Credits: 04**

Contents

Unit-I Critical Review of the School Level Curriculum in physical Science

- A critical review of the school level curriculum in physical science, content analysis in terms of concepts and principles: Their pedagogic implications.
- Aims and Objectives of teaching physical science.
- Physical Science curriculum – its significance at secondary level.
- Formulation of specific objectives in behavioral terms.
- Curriculum and Textbooks – Meaning, nature, principle.

Unit-II Approaches and Methods of Teaching physical Science

- Enquiry and problem solving approach.
- Lecture-cum demonstration method.
- Laboratory method.
- Project method.
- Heuristic method.
- Constructivist approach.
- Qualities of a Good Science Teacher.

Unit-III Planning and Designing the effective Instructions in Physical Science

- Planning for instructional process – need, advantages and strategies.
- Lesson planning –design, approaches & writing the lesson plan/unit plan.
- Preparation and use of teaching aids and computer assisted learning.
- Use and management of science laboratory.

Unit-IV Evaluation in Physical Science

- Evaluation and assessment-concept and importance in physical science.
- Techniques of assessment for theory and practical.
- Construction of achievement test in physical science.
- Monitoring of learners' progress through CCE.
- Diagnostic tests and remedial measures in physical science.

Assignment

The student teachers will be asked to prepare teaching aids/ charts/ models pertaining to the topics as given by the respective subject teachers.

Method of Teaching Mathematics

Maximum Marks: 100 **Internal Assessment: 30**

Theory: 70 **Credits: 04**

Content

Unit-I: Mathematics Syllabus as Prescribed at School Level

- Mathematics syllabus as prescribed at school level and its analysis with the intent of understanding the logical structures & their pedagogic implications.
- Aims and objectives of teaching Mathematics.
- Integration of Mathematics with other subjects.
- Principles of curriculum construction.

Unit-II: Instructional Strategies in Teaching Mathematics

- Inductive, deductive approach.
- Analytic and synthetic approach.
- Heuristic and project approach.
- Graded assignments in Mathematics.
- Problem solving.

Unit-III: Organization of Teaching Mathematics and related Problems

- Developing objectives of teaching mathematics in behavioral terms.
- Preparation of a lesson plan/unit plan.
- Selecting appropriate instructional strategies and teaching aids related to various topics included in secondary education in the following areas:

  Teaching of Arithmetic (Commercial Maths), teaching of Algebra (sets, relation, functions and algebraic identities), teaching of Geometry (Congruent and Similar triangles), teaching of Trigonometry (Heights and Distance), teaching of Basic Statistics (Measures of Central Tendency), teaching of Mensuration (Surface areas and volumes of solid figures).
- Mathematics club.

Unit-IV: Evaluation in Mathematics

- Concept of measurement and evaluation in Mathematics.
- Evaluation Techniques in Mathematics.
- Summative and Formative Evaluation.
- Comprehensive and continuous evaluation (CCE).

- Construction of tests in Mathematics.

Assignment

The student teachers will prepare teaching aids/ charts/ models pertaining to the following topics or topics: Teaching of Arithmetic (Commercial Maths), teaching of Algebra (sets, relation, functions and algebraic identities), teaching of Geometry (Congruent and Similar triangles), teaching of Trigonometry (Heights and Distance), teaching of Basic Statistics (Measures of Central Tendency), teaching of Mensuration (Surface areas and volumes of solid figures).

- Tyagi, S.K. (2004). Teaching of Arithmetic, Commonwealth Publications.

Method of Teaching Life Science

Maximum Marks: 100 **Internal Assessment: 30**

Theory: 70 **Credits: 04**

Content

Unit-I: Critical Study of the School Level Syllabus prescribed for Life Science

- A critical study of the school level syllabus prescribed for life science in schools: Content analysis in terms of concepts.
- Application and significance of life science.
- Life science as an integrated area of study.
- Aims of teaching life science at secondary stage.
- Instructional objectives of teaching life science.
- Formulation of specific objectives in behavioral terms.

Unit-II: Planning and Instructional Strategies in Life Science

- Developing a Unit and Lesson plans.
- Demonstration Method.
- Lecture Method.
- Laboratory Method.
- Heuristic Method.
- Problem Solving Method.
- Project Method.
- Use of Audio Visual aids and importance of laboratory.
- Competencies associated with laboratory techniques.

Unit-III: Curriculum, Text Books and use of ICT in Life Science

- Place of Life Science in School Curriculum.
- Life Science as a component of Integrated Science at Secondary Level.
- Principles of constructing a Life Science curriculum.
- Textbooks in Life Science, its need and use, evaluation of textbooks in Life Science.
- Computer assisted learning in Life Science.

Unit-IV: Evaluation

- Concept of measurement and evaluation in Life Science.
- Evaluation Techniques in Life Science.

- Summative and Formative Evaluation.
- Comprehensive and continuous evaluation (CCE).
- Construction of tests in Life Science.

Assignment

The student teachers will be asked to prepare teaching aids/ charts/ models pertaining to the topics as given by the respective subject teachers.

Method of Teaching Social Science

Maximum Marks: 100 **Internal Assessment: 30**

Theory: 70 **Credits: 04**

Content

Unit-I: Critical Study of the School Level Syllabus for Social Science

- A critical study of the school level syllabus as prescribed for social science: content and concept analysis with pedagogic implications.
- Meaning and nature of Social Science.
- Development and scope of Social Science.
- Approaches to the study of Social Science.
- Aims and objectives of teaching Social Science.
- Writing specific objectives of teaching social science in behavioral terms.

Unit-II: Approaches and Methods of Teaching Social Science

- Enquiry and problem solving approach.
- Lecture-cum demonstration method.
- Story telling approach.
- Project method.
- Discovery approach.
- Constructivist approach.

Unit-III: Planning and Designing the effective Instructions in Social Science

- Planning for instructional process – need, advantages and strategies.
- Lesson planning –design, approaches & writing the lesson plan and unit plan.
- Preparation and use of teaching aids and computer assisted learning.
- Excursions and field trip.

Unit-IV: Evaluation

- Concept of measurement and evaluation in Social Science.
- Evaluation Techniques in Social Science.
- Summative and Formative Evaluation.
- Comprehensive and continuous evaluation (CCE).
- Nature and construction of tests in Social Science.

Assignment

The student teachers will be asked to prepare teaching aids/charts/models pertaining to the topics as given by the respective subject teachers or prepare a project on historical/geographical study of a place of local importance.

Method of Teaching History

Maximum Marks: 100 **Internal Assessment: 30**

Theory: 70 **Credits: 04**

Contents

Unit-I: School Level Curriculum in History

- A critical survey of the school level curriculum in history: The content and its relevance, Interdisciplinary perspectives in history as a subject of study.
- Aims and objectives of teaching history at the secondary stage.
- Importance of the study of history with reference to national integration and international understanding.

Unit-II: Curriculum Approaches and Methods

- Meaning and definition of curriculum: Principles of designing a school level history curriculum.
- Different approaches to organizing history curriculum.
  (i) Chronological
  (ii) Topical
  (iii) Concentric
- Methods of teaching history: Storytelling, Problem Solving, Project Methods, Socialized recitation and Source Method.

Unit-III: Co-curricular Activities and History Teacher

- Types and importance of organizing co-curricular activities.
- Organizing co-curricular activities through history teaching- excursions, dramatization and visit to museum.
- Qualities and functions of history teacher.

Unit-IV: Planning and Designing of Instructional Material and Evaluation

- Lesson plan- Designing of lesson plans and unit plans: format and structure.
- Instructional Material-
  (i) Black board, maps, graphs, charts, models, slides.

(ii) Slide projector, epidiascope, Tape recorder, radio, Television and use of ICT.

- Concept, types and techniques of Evaluation for learning outcomes in history at school level.

Assignment

Historical study of a place of local importance.

Method of Teaching Geography

Maximum Marks: 100 **Internal Assessment: 30**

Theory: 70 **Credits: 04**

Contents

Unit-I: Critical Review of the School Level Syllabus of Geography

- A critical review of the school level syllabus of geography: Structure and the Concepts emphasized.
- Geography as study of spatial relationship and spatial organization.
- Aims and objectives of teaching geography.
- Writing behavioral objectives for geography teaching.

Unit-II: Approaches to Teaching Geography

- Expository approach, Storytelling and Regional Method.
- Discovery approach.
- Project method.
- Individualized instruction.
- Map reading skills.

Unit-III: Transactional Strategies

- Preparation of lesson plans.
- Preparation of unit plans.
- Teaching aids, designing a geography laboratory and co-curricular activities, excursion.
- Bulletin board and Geography club.
- Geography exhibition.
- Use of community resources.

Unit-IV: Evaluation

- Concept of measurement and evaluation in Geography.
- Summative and Formative Evaluation.
- Comprehensive and continuous evaluation (CCE).
- Developments of test items: essay, short answer type and objective types.
- Diagnostic testing and its use for remedial teaching.

Assignment

The student teachers will be asked to prepare a project on the geographical location and features of Varanasi or other places of geographical importance and submit a report thereon.

Method of Teaching Civics

Maximum Marks: 100 **Internal Assessment: 30**

Theory: 70 **Credits: 04**

Contents

Unit-I: Content of Civics at School Level

- A Critical study of the content and its interdisciplinary perspectives at school level.
- Development of the content in a historic perspective.
- Implications of the content structure for effective pedagogy.

Unit-II: Objectives, Methodology and Approaches

- Objectives of teachings civics at school level: Formulating objectives in behavioral terms; methodology and approaches for teaching Civics: Direct Vs. Indirect: teacher presentations, monologic, dialogic, discussions, inquiry approach, project approach, seminar & quiz.

Unit-III: Planning and Instructional Aids

- Lesson Planning – Formats & structure.
- Unit Planning – Formats & structure.
- Instructional Aids – Meaning, Importance & Precautions. Use of aids in Civics teaching – Black Board, Charts, Model, Pictures, OHP, Radio & TV and ICT.

Unit-IV: Assessment of Learning Outcomes

- Concept of Testing, Measurement, Evaluation & Assessment.
- Assessment of Learning Outcomes in Civics – Oral, Written & Performance Tests.
- Various Types of Tests – Objective, Short Answer & Essay type, their characteristic, developments, merits & demerits.

Assignment

Preparing a plan to develop democratic attitude among the prospective teachers.

Method of Teaching Economics

Maximum Marks: 100 **Internal Assessment: 30**

Theory: 70 **Credits: 04**

Contents

Unit-I: School Level Curriculum in Economics

- A critical analysis of the content form pedagogic perspective: inter-disciplinary basis of the subject of economics at school level.
- Aims and objectives of teaching Economics at various levels.
- Instructional objectives: Writing objectives in behavioral terms.

Unit-II: Methodology and Planning for Effective Pedagogy of Economics

- Methodology and planning for Effective pedagogy of Economics.
- Teaching techniques- explanation, illustration, question and response technique.
- Lesson Plan- (i) Concept and importance.
  (ii) Various approaches to lesson planning.

Unit-III: Curriculum and Text Book

- Principles of designing curriculum for teaching Economics: Assessing the Congruence between content and objectives of teaching economics at the school level.
- Evaluation of text-books in Economics at the school level:
  (i) Criteria of goods text-books.
  (ii) Assignments, Exercises, Glossary and Summary in the text.
  (iii) Qualities and functions of Economics teacher in changing world perspective.

Unit-IV: Instructional Material and Evaluation in Economics

- Instructional materials- Black-board, Maps, Graphs, slides & Transparency, Audio-visual aids, Slide Projector, Overhead Projector etc.
- Concept, Purpose and Importance of evaluation in teaching of economics.
- Different type of tests, their merits and limitation (Essay type, short answer and objectives type).

Assignment

Review of a text-book at school level.

Method of Teaching English

Maximum Marks: 100 **Internal Assessment: 30**

Theory: 70 **Credits: 04**

Contents

Unit-I: English Syllabus prescribed at School Level

(a) A brief review of English syllabus as prescribed at school level and its content analysis with pedagogic implications.

(b) Nature of English language including that of language.

(c) Principles of language learning.

(d) Some specific features of English language.

(e) Aims and objectives of teaching English at junior and senior levels.

Unit-II: Foundations of Language Learning and Teaching with reference to English as a Second Language

(a) Principles of language teaching.

(b) English phonology: segmental and supra segmental phonemes in English.

(c) English morphology: Inflectional and Derivational morphemes.

(d) English Syntax; Kernel sentences: Derived sentences: Rules of formation and derivation in English language.

(e) English vocabulary: Content and function words.

Unit-III: Approaches, Methods and Techniques of Teaching English as a Second Language

- Some important approaches to the teaching of English: Audio- lingual (structural) and cognitive code approaches, Direct method, Mimicry-memorization method, pattern practice method and bilingual method.
- Four fundamental skills in learning of English: listening, speaking, reading and writing: Procedures for teaching them: Basic practice activities-substitution, replacement, transformation, expansion, reduction, integration and progressive replacement.
- Teaching of prose, poetry, grammar and composition in English language: procedures and devices used in teaching.

- Materials & techniques of instruction to be used in classrooms: the picture file, charts, flash cards or word cards, the pocket chart, the flannel board, games, real objects, the record player, the language laboratory, filmstrips, films, radio, television: programmed instruction.

Unit-IV:

- Why, when, how and what of testing in English language learning.
- Testing knowledge of the sound system, grasp of structure and knowledge of vocabulary.
- Developing an attainment test of objective type items in English and estimating its reliability and validity.
- Using tests for organizing remedial instruction.

Assignment

The student teachers will be asked to prepare teaching aids/ charts/power point presentations etc. pertaining to the topics as given by the respective subject teachers

हिन्दी शिक्षण

पूर्णांकः 100 **आंतरिक मूल्यांकनः 30**
सैद्धान्तिकः 70 **क्रेडिटः 04**

इकाई-प्रथम-विद्यालय स्तर पर निर्धारित हिन्दी पाठ्यक्रम

1. विद्यालय स्तर पर निर्धारित हिन्दी विशय के पाठ्यक्रम का समीक्षात्मक विष्लेशण एवं उसका षैक्षणिक निहितार्थ
2. भाषा का वैज्ञानिक स्वरूप - वाक्य विचार की दृष्टि से वर्ण-विचार, शब्द-विचार, पर्यायवाची, तत्सम, तद्भव, षिक्षण हेतु अपेक्षित युक्तियाँ।
3. भाषा कौशल के विकास हेतु निम्नांकित पक्षों के स्वरूप का अंकन एवं शिक्षण (क) श्रवण (ख) उच्चारण (ग) वर्तनी (घ) वाचन (ङ) अभिव्यक्ति (मौखिक एवं लिखित)
4. हिंदी के 'ध्वनि-विज्ञान' एवं 'रूप-विज्ञान' में व्यावहारिक प्रषिक्षण (पांच सत्रों में)
5. भाषायी पाठ्यक्रम निर्माण का सिद्धान्त।
6. पाठ्यक्रम स्तरीय पाठ्यपुस्तकों का विश्लेषण सिद्धान्त।
7. माध्यमिक स्तर के पाठ्यक्रम एवं पाठ्यपुस्तकों का विश्लेषण एवं उसकी समीक्षा।

इकाई-द्वितीय-पाठ योजनाएँ एवं शिक्षण विधियाँ

1. कक्षा अध्यापन के सामान्य सिद्धान्त
2. भाषा शिक्षण सम्बन्धी समस्याओं का चयन, विश्लेषण एवं समाधान
3. इकाई, दैनिक व सूक्ष्म पाठ योजनाएं (माध्यमिक स्तर पर); उद्देष्य निर्माण के सिद्धान्त एवं प्रक्रिया।
4. षिक्षण विधियाँ

इकाई-तृतीय-हिन्दी की विभिन्न विधाओं का शिक्षण एवं दृश्य-श्रवण उपकरण

1. विभिन्न विधाओं का शिक्षण एवं उनमें अन्तर।
2. गद्य शिक्षण (व्यापक एवं गहन-पाठ के रूप में, द्रुत-पाठ के रूप में)
3. पद्य शिक्षण ('रस-पाठ' एवं बोध-पाठ के रूप में)
4. एकांकी शिक्षण (वाचिक, अभिनयात्मक रूप में)
5. कहानी शिक्षण (मौखिक रूप में)
6. व्याकरण शिक्षण (अनौपचारिक एवं व्यावहारिक शिक्षण रूप में)
7. रचना षिक्षण : मौखिक एवं लिखित रचना का कौशल विकास

इकाई-चतुर्थ-हिन्दी शिक्षण में दृश्य-श्रव्य उपकरणों का महत्व एवं उपयोग

1. हिन्दी शिक्षण में मूल्यांकन एवं नवाचार
   (क) मूल्यांकन का अर्थ, महत्त्व एवं विशेशताएँ
   (ख) पाठ्यान्तर्गत एवं पाठोपरान्त मूल्यांकन
   (ग) प्रश्नों के विभिन्न प्रकार एवं रचना सम्बन्धी संस्थितियां
   (घ) मूल्यांकन हेतु प्रश्न-पत्र का निर्माण
2. 'उपचारात्मक शिक्षा' एवं 'निदानात्मक परीक्षण' : अर्थ, स्वरूप महत्व एवं उपयोग
3. भाषा-शिक्षण में नवाचार

सत्रीय कार्य

1. हिन्दी भाषा में प्रयुक्त प्रचलित अन्य भाषाओं के शब्दों का सर्वेक्षण तथा प्रतिवेदन प्रस्तुत करना।
2. माध्यमिक स्तर की किसी एक पाठ्यपुस्तक की समीक्षा एवं संक्षिप्त प्रतिवेदन प्रस्तुत करना।
3. उच्चारण एवं वर्तनी सम्बन्धी अषुद्धियों के निवारण हेतु उपचारात्मक षिक्षण की पाठ योजना निर्मित करना।

Method of Teaching Sanskrit

पूर्णांक: 100 **आंतरिक मूल्यांकन: 30**
सैद्धान्तिक: 70 **क्रेडिट: 04**

इकाई-प्रथम-विद्यालय स्तर पर निर्धारित संस्कृत पाठ्यक्रम

1. विद्यालय स्तर पर निर्धारित संस्कृत विशय के पाठ्यक्रम का समीक्षात्मक विष्लेशण एवं षैक्षिक निहितार्थ।
2. संस्कृत व्याकरण प्रयोग, अजन्त-हलन्त, शब्दरूप, सर्वनाम संख्यावाचक तिङन्तलकार, क्रिया, धातुरूप, कारक, विभक्ति, पुरुश, लिङग, विशेषण, सन्धि, समास, उपसर्ग, प्रत्यय, वाच्य-प्रयोग।
3. संस्कृत ध्वनि विज्ञान तत्व- स्वर, व्यंजन, वर्णों के उच्चारण स्थान प्रत्यय अनुस्वार अनुनासिक बलाघात (शब्द एवं वाक्य) आरोहावरोह, लय तथा हिन्दी की ध्वनियों से तुलना एवं अन्तर।
4. संस्कृत भाषा की प्रकृति एवं शिक्षण के सिद्धान्त।
5. संस्कृत शिक्षण के उद्देष्य-
   (क) उच्च प्राथमिक स्तर पर
   (ख) माध्यमिक स्तर पर
   (ग) उच्च माध्यमिक स्तर पर

इकाई-द्वितीय-भाषाई कौशल शिक्षण एवं सहसम्बन्ध, संस्कृत शिक्षण की विधाएँ एवं शिक्षण विधियाँ

1. भाषागत कौशल
   (क) श्रवण कौशल
   (ख) भाषण कौशल
   (ग) पठन कौशल
   (घ) लेखन कौशल
2. चारों कौशलों में सह-सम्बन्ध एवं समन्वयात्मक शिक्षण।
3. संस्कृत शिक्षण की विधाएँ एवं शिक्षण विधियाँ
   (क) व्याकरण शिक्षण
   (ख) गद्य शिक्षण
   (ग) पद्य शिक्षण
   (घ) नाटक शिक्षण
   (ङ) कथा शिक्षण
   (च) संवाद शिक्षण

(छ) रचना शिक्षण

(ज) अनुवाद शिक्षण

4. उपर्युक्त विधियों का निम्नांकित दृष्टि से अध्ययन एवं प्रयोग-

(क) कक्षा, कक्ष, वातावरण और परिस्थितियाँ

(ख) मातृभाषा की भूमिका

(ग) शिक्षक, छात्र, पाठ्यपुस्तक तथा दृष्य-श्रव्य सहायक सामग्री की भूमिका

(घ) त्रुटियाँ एवं उपचारात्मक कार्य

(ङ) मूल्यांकन

इकाई-तृतीय-संस्कृत भाषा शिक्षण में दृष्य-श्रव्य सामग्री एवं मूल्यांकन

1. दृष्य श्रव्य का चयन, निर्माण एवं प्रयोगः
श्यामपट्ट, चित्र, चार्ट, शब्द चित्र, तालिका, फ्लैनलकार्ड, रेडियो, टेपरिकॉर्डर, ओ.एच.पी., समाचार पत्र एवं अन्य सामग्रियां।

2. मूल्यांकन :

(क) भाषा षिक्षण में मूल्यांकन का सम्प्रत्यय

(ख) संस्कृत भाषा षिक्षण का मूल्यांकन

(ग) व्याकरण, अनुवाद एवं भाषा कौशलों का मूल्यांकन।

(घ) प्रश्न-पत्र निर्माण

इकाई-चतुर्थ-निदानात्मक एवं उपचारात्मक शिक्षण

(क) श्रवण सम्बन्धी

(ख) भाषण सम्बन्धी

(ग) पठन सम्बन्धी

(घ) लेखन सम्बन्धी

(ड़) व्याकरण सम्बन्धी

(च) अनुवाद सम्बन्धी

सत्रीय कार्य

1 माध्यमिक स्तरीय एक संस्कृत पाठ्यपुस्तक की समीक्षा

2. उच्चारण एवं वर्तनी सम्बन्धी अषुद्धियों के निवारण हेतु उपचारात्मक षिक्षण की पाठ योजना निर्मित करना।

P503: Microteaching-
8 Skills in 15 days of 30 hours duration

Credits: 4

The core teaching skills will comprise skill in Narration, Questioning, Probing, Set induction, Closure, use of teaching aids/technology, Reinforcement and formulation of Instructional objectives in behavioural terms.

Apart from the above, the subject teacher may incorporate additional teaching skills.

P504: Simulations-
5 simulated lessons in Teaching Subjects-I

Credits: 3

Moral Ethics-I **Credit: 1**

Unit I: Ethics for New Millennium: *The Foundation of Ethics*, Part I

- Modern Society and Quest for Human Happiness.
- No Magic, No Mystery.
- Dependent Origination and Nature of Reality.
- Redefining the Goal.

Unit II: Ethics for New Millennium: *Ethics and the Individual*, Part II

- The Ethic of Restraint.
- The Ethic of Virtue.
- The Ethic of Compassion.
- Ethics and Suffering.
- The Need for Discernment.

Method of Teaching Tibetan History
བོད་ཀྱི་རྒྱལ་རབས་སློབ་འཕྲིང་བྱེད་ཐབས།

M.M.100 (Theory 70+Internal Assessment 30) **Credits: 04**

Unit I: བོད་ཀྱི་ལོ་རྒྱུས་ཀྱི་གཞི་ཁྲངས་བཅོལ་སའི་ཡིག་ཚ་གཙོ་ཆེའི་ངོ་སྤྲོད།

1. བོད་བཙན་པོའི་སྐབས་ཀྱི་ཡིག་ཚ། དམ་ཆོས་བོད་དུ་དར་ཚུལ་དང་འབྲེལ་བའི་ཡིག་ཚ་སྦ་བཞེད། རྗེ་དེང་དང་བགེ་བརྐོས་ཀྱི་ཡིག་ཉེང་། ཏུན་ཧོང་དང་ལི་ཡུལ་ས་ཁུལ་ནས་ཐོན་པའི་ཡིག་ཉེང་། རྒྱ་ནག་ཐང་རྒྱལ་རབས་ཀྱི་ལོ་རྒྱུས་ཡིག་ཚ།
2. ཕྱི་དར་སྐབས་ཀྱི་ཡིག་ཚ། བཀའ་ཐང་སྡེ་ལྔ། མ་ཉེ་བཀའ་འབུམ། བཀའ་ཆེམས་ཀ་ཁོལ་མ། ལྷ་ཌུ་ཆོས་འབྱུང་སོགས་དུས་རབས་ ༡༡ ནས་ ༡༦ བ་བར་གྱི་དུས་ཡུན་རིང་དུས་ཁྲབ་བྱུང་བ།

Unit II: ལོ་རྒྱུས་བསྡུ་ཚན་ཀྱི་དགེ་ཚན།

1. ལོ་རྒྱུས་ཀྱི་གོ་དོན།
2. ལོ་རྒྱུས་སྤྱིང་བའི་དགོས་བཤམ་གཅ་གནད།
3. མི་རིགས་དང་སྤྱི་ཚོགས་ཀྱི་འཛེལ་རྒྱས་དང་དར་རྒྱུད་རྟེ་བྱུང་ཤེས་རྟགས་ཡོང་བར་ལོ་རྒྱུས་སློབ་གཉེར་གཅ་ཆེ་ཚུལ།

Unit III: ལོ་རྒྱུས་སློབ་འཕྲིང་ཀྱི་ཐབས་ལམ་བཤད་བ།

1. སློབ་དེབ་དང་ལོ་རྒྱུས་དེབ་ཞེར་ཀྱི་ནང་དོན་བརྗོད་བྱ། གནའ་གོའི་མི་རིགས་ཀྱི་བྱང་བ། དེ་སྐབས་ཀྱི་ལག་ཤེས་རྒྱ་རུལ། འཚོ་ཐབས་དང་སྟོང་གནས། ཚབ་སྲིད་ཀྱི་འགོ་འགྲུར་དང་སྤྱི་ཚོགས་ཀྱི་དར་རྒྱུད་སོགས་ཀྱི་ལོ་རྒྱུས་ཀྱི་བྱང་བ་རྣམས་རྟེ་ཡུར་བྱང་བའི་དུས་ཚེགས་ཀྱི་གོ་རིམ་དང་མཐུན་པར་བསྒྲིགས་(Chronological) ནས་བྱང་རབས་འཚད་དགོས།
2. འཇིག་རྟེན་ཐུན་མོང་དང་ཐུན་མོང་མ་ཡིན་པའི་སྡང་ཚུལ་ལྟ་སྤྱད་ལ་སོགས་པ་མཉམ་སྦེས་མ་བྱས་པར་འཇིག་རྟེན་ཐུན་སྡང་གཅོ་གོང་བཟུང་ནས་འཚད་དགོས།

Unit IV: སློབ་འཕྲིང་ཀྱི་ཐབས་ལམ་མཁོ་ཆས། (Teaching Instrumental Materials / Tools)

1. ནག་པང་། མ་ཁྲ། རི་མོ་དང་འབྲ་བརྙན། ཚོགས་བརྙན་སོགས་དང་། Power Point Presentation སོགས་ཀྱི་ འབྲེལ་ཆས་ཀྱི་མཐུན་རྐྱེན་དང་ལྡན་ན་ལག་བསྟར་གཏང་དགོས།

SEMESTER – VI

P601: Environmental Education

Credits: 3

Contents

Unit-I: Information about Environmental Education

(a) Concept of Environmental Education and Need of Environmental Education.

(b) Objectives of Environmental Education at Secondary School Level.

(c) Methodologies of Environmental Education.

(d) Curriculum Development in Environmental Education.

Unit-II: Global Environmental Issues

(a) Components of Environment.

(b) Concept of healthy environment & efforts made in this direction.

(c) Global Environment issues:

i. Conservation of environment: government commitment in national and international fields.

ii. Depletion of ozone layer.

iii. Global warming (greenhouse effect).

Unit-III: Pollution

Environmental Pollution: Various types of pollution and strategies for addressing them.

Unit-IV: Role of Schools and teachers in improving the quality of environment

(a) What can schools do?

(b) What can teachers do?

(c) What are the various agencies with which schools can collaborate?

(d) Environmental management at micro and macro level.

Assignment

Study on any one environmental problem. The report on the study must include efforts of the pupil teacher in developing awareness among people about the concerned environmental problem(s).

P602: TEACHING SUBJECT 2

Credits: 3

The student teacher has to select Teaching Subject 2 from their respective group (Group Science Subjects/Group Humanities and Social Science Subjects) mentioned in fifth (5^{th}) semester, other than subject opted as Teaching Subject I

P603: Simulations-
5 simulated lessons in Teaching Subjects-II

Credits: 3

Moral Ethics-2 **Credit: 1**

Unit I: Ethics for New Millennium: *Ethics and Society*, Part III

- Universal Responsibility.
- Levels of Commitment.
- Ethics in Society.
- Peace and Disarmament.
- The Role of Religion in Modern Society.
- An Appeal.

Unit II: Beyond Religion: *A New Vision of Secular Ethics*, Part I

- Rethinking Secularism.
- Our Common Humanity.
- The Quest for Happiness.
- Compassion, the Foundation of Well-Being.

SEMESTER – VII

Pedagogy Related: 22 Credits

P701: Practice Teaching (School attachment programme)	Credits: 10
P702: Two Criticism Lessons (Process Related)	Credits: 2
P703: Two Evaluation Lessons (Final)	Credits: 2
P704: Scouting Guiding and Community Work	Credits: 2
P705: Designing of educational assessment tool	Credits: 3
P706: Action Research project based on classroom context	Credits: 3

SEMESTER – VIII

OPTIONAL PAPERS
(Any two of the following)

P801: Human Rights, Non-Violence & Peace Education

Credits: 3

Contents

Unit 1: Human Rights: Issues and Perspectives

(a) History of the idea of Human Rights.

(b) Political, Civil, Economic, Social and Cultural Rights.

(c) Indian perspective of Rights and Duties.

(d) Problem of Violation of Human Rights: some emerging issues.

Unit 2: Non-violence

(a) Conceptual development.

(b) Vedic, Jain, Buddhist & Gandhian Tradition.

(c) Non-violence in Practice-Respect for all living beings, cruelty against animals, Animal Rights and Non-violence

(d) Non-violent Resistant methods and few examples of victory without violence.

Unit 3: Training in Non-violence

(a) Conceptual development and necessity.

(b) Change in Heart: Training of the Mind, Change in attitude: Training in open mindedness.

(c) Change in life style: Training in life style modification and structural change: Training for change in the system.

(d) Conflict & conflict Management.

Unit 4: Peace Education

(a) Concept of Peace and Peace Education.

(b) Development of Peace Education.

(c) Peace Education and Disarmament Education for a new world order.

(d) Legitimacy and limitation of Peace Education.

Assignment

Preparing a Training programme and conducting a Training of Mind/Training in open mindedness / training in life style/ Training for change in the system.

P802: Special Education

Credits: 3

Contents

Unit-I:

(a) Concept, Nature, types and objectives of Special Education.

(b) Education in Intellectual Disability: Concept, Characteristics, Teaching Strategies, Remedial Programme and Prevention of conditions leading to Intellectual Disability.

(c) Role of various regulatory bodies in special education with particular reference to RCI.

Unit-II:

(a) Education of the Visually Disabled: Concept, Characteristics, prevention and educational programmes for visually disabled.

(b) Education of the Hearing Disabled: Concept, Characteristics, prevention and educational programmes for Hearing disabled.

(c) Education of the Orthopedically Disabled: Concept, Types, Characteristics and Educational Programmes for Orthopedically disabled.

Unit-III:

(a) Education of the Gifted and creative Children: Concept, Characteristics and Educational Programmes.

(b) Creativity and Identification Process.

Unit-IV:

(a) Learning Disability in Children: Concept, Characteristics, Identification and Educational Programmes. Learning disorders.

(b) Education for Juvenile Delinquents: Concept and Characteristics, Conduct disorders. Educational Programmes for Rehabilitation.

Assignment

Preparing a lesson plan using role play/street play Model and implementing the same in the class of special children.

P803: Elementary Education

Credits: 3

Contents:

Unit-I:

Brief history and concept of elementary education and its Constitutional Provisions. National Policy on Education 1986 and the revised policy of 1992 with special reference to Elementary Education.

Unit-II:

(a) Role of Panchayats, local bodies, state governments and non-governmental organizations in Elementary Education: Special qualities of an Elementary school teacher. Need for orientation and refresher courses for elementary school teacher. Role of basic training centres and DIETs in providing training to Elementary school teacher.

(b) Programmes related to Elementary Education- MLL, ECCE, DPEP, EGS & AIE, SSA.

Unit-III:

(a) Introduction to Non-formal Education: meaning, nature, scope and importance, difference between Non-Formal, Formal and Informal Education. Agencies of Non-Formal Education.

(b) Functions of Non-Formal Education with special reference to all round development of rural people. Psychological and sociological bases of Non-Formal Education.

Unit-IV:

(a) Curriculum for Elementary and Non-Formal Education.

(b) Modern methods of teaching in Elementary and Non-Formal Education.

(c) The place of Non-formal Education in the Teacher Training Curriculum. Organization of Non-Formal Education.

Assignment

Visit to an elementary school and preparation of status report about various facilities provided in the school.

P804: Educational and Vocational Guidance

Credits: 3

Contents

Unit I:

(a) Meaning, nature, principles and needs of guidance.

(b) Objectives and functions of guidance services at Primary, Secondary and Higher education levels.

Unit II:

(a) Types of Guidance:-Educational, Vocational and Personal.

(b) Concept of informatory, preparatory, placement and follow- up services.

Unit III:

Counselling: meaning, types, methods and techniques for children with specific learning disabilities.

Unit IV:

(a) Anecdotal and cumulative records.

(b) Role of guidance services in the measurement of intelligence and personality tests.

(c) Role of guidance in school management.

Assignment

Preparing a special guidance programme for secondary students to meet out the challenges in the present day scenario.

P805: Value Education

Credits: 3

Contents

Unit-I:

(a) Meaning, nature and need of values.

(b) Meaning, nature, objectives, importance and scope of value education. Approaches to value education.

Unit-II:

Theoretical bases-

(a) Philosophical perspective Four Purusharthas- Virtue, Wealth, pleasure, self- realization. Self-Realization- Panchakosha- Annamaya, Pranamaya, Manomaya, Vijnanamaya, Anandmaya.

(b) Social Cultural Basis- Family, Neighbourhood, Religion, Education, Institute, constitution, Traditions.

(c) Psychological Basis of value development- Cognitive development approach by Lawrence Kohlberg- pre conventional, conventional and post conventional.

Unit-III:

Eight Categories of Human Values-

(a) Social Values- friendship, love, brotherhood.

(b) Aesthetic Values- beauty.

(c) Intellectual Values- knowledge, attainment of truth.

(d) Ethical Values- truthfulness, Justice, benevolence, self-control.

(e) Religious Values- worship, devotion, commitment.

(f) Health Values- Sound, Mental and Physical health, efficiency and productivity.

(g) Recreation Values- Leisure activities that enrich the life of an individual.

(h) Economic Values- instrumental in other values.

Unit-IV:

(a) Ten values to be inculcated through education: Dignity of Labour, National Integration, Patriotism, Sensitivity, Gender Equality, Courtesy, Secularism, Tidiness and Scientific temper

(b) Learning Value through various activities: Student self-government, celebration of festivals of different religions and communities, tree plantation, organizing campaigns on sanitation, nutrition etc. Participation in community development activities, service to needy, carrying out relief activities.

Assignment

1. Study of essays and articles on value concerns, autobiographies and biographies, parables, episodes from real life. Listening speeches, poems and songs. Discussion, debates and competitions for value clarification.
2. Dealing with value dilemmas: Enactment, role play, simulation, jurisprudential Model, street plays.
3. Preparing a lesson plan using role play /simulation/ jurisprudential/ street play model and implementing it.
4. Visit to community affected by a calamity and writing a report regarding relief programme based on group work.

Moral Ethics-III

Credit: 1

Unit I: Beyond Religion: *A New Vision of Secular Ethics,* Part II

- Compassion and the Quest of Justice.
- The Role of Discernment.
- Ethics in our Shared World.

Unit II: Beyond Religion: *Educating the Heart through Training the Mind,* Part III

- Ethical Mindfulness in Everyday Life.
- Dealing with Destructive Emotions.
- Cultivating Key Inner Values.
- Meditation as mental Cultivation.

Moral Ethics-IV

Credit: 1

Unit I: A Guide to the Bodhisattva's Way of Life

- Conscientiousness.
- Guarding Alertness.

Unit II: A Guide to the Bodhisattva's Way of Life

- Patience.

Syllabus
For B.Sc. B.Ed.
Science Subjects
(Electives)

PHYSICS

SEMESTER – I

BPH-101: Mechanics and Relativity

Credits: 2

Mechanics:

Inertial and non-inertial frames of reference, Effect of centrifugal and Coriolis forces due to earth's rotation, Center of mass (C.M), Lab and C.M frame of reference, motion of CM of system of particles subject to external forces, elastic, and inelastic collisions in one and two dimensions, Scattering angle in, the laboratory frame of reference, Impact parameter, Scattering cross section, Conservation of linear and angular momentum.

Relativity:

Postulates of special theory of relativity, Derivation of Lorentz transformation and physical significance of Lorentz invariance, Length contraction and time dilation, Concept of simultaneity, Relativistic velocity transformation relations, mass energy relation, Concept of zero rest mass of photon, Relativistic relation between energy and momentum.

BPH-102: Mechanical Properties of Matter

Credits: 2

Modulus of rigidity, Poisson's ratio, relation connecting different elastic-constants, twisting couple of a cylinder (solid and hallow), Statistical method (Barton's method), Dynamical method (Maxwell's needle) for determining the modulus of rigidity, Bending moment, Cantilever

(neglecting mass), Young modulus by bending of beam, Viscosity, Poiseulle's equation of liquid flow through a narrow tube, Damped harmonic oscillations, Compound pendulum, Ballistic galvanometer.

Practical

Credits-2

1. Determination of Stefan's constant.
2. PN junction diode and Zener diode characteristics.
3. Determination of Young's modulus, modulus of rigidity and Poisson's ratio of material of a wire using Searle's method.
4. Determination of absolute capacity of a condenser.
5. Determination of Young's modulus of material of a metallic bar by bending of beam Method.

6. To study series and parallel resonant L. C. R. circuit.
7. Determination of acceleration due to gravity using compound pendulum.
8. Determination of focal length of combination of lenses and nodal distance using nodal slide assembly.
9. Solar cell experiment.

SEMESTER – II

BPH-201: Thermal Physics –I

Credits: 2

Kinetic Theory:

Maxwell's speed distribution, Mean free path, Elementary treatment of transport phenomena, Viscous flow and Thermal conducion in gases.

Real gases, Andrew's curves, Equation of state, Virial coefficients, Van der Waals equation, Critical constants.

Thermodynamics:

Reversible and irreversible processes, Examples of thermal, mechanical and chemical irreversibility, Carnot's cycle and Carnot's theorem. Second law of thermodynamics, Thermodynamic scale of temperature.

Concept of entropy, Entropy change in reversible and irreversible processes. Entropy and disorder, Principle of increase of entropy, Entropy and unavailable energy, Entropy of ideal gases, Entropy as a thermodynamic variable, S-T diagram

Thermodynamic functions, Internal energy, Enthalpy, Helmholtz function and Gibb's free energy, Maxwell's thermodynamical equations and their applications, TdS equations, Energy and heat capacity equations

BPH-202: Thermal Physics-II

Credits: 2

Clapeyron equations, Application to sublimation, vaporization and freezing processes, Heat capacity of saturated vapours, Thermodynamics of liquid surfaces and paramagnetic solids. Adiabatic demagnetization, Third law of thermodynamics, Nernst heat theorem.

Criterion of equilibrium of a system, Isolated system, System in contact with constant temperature reservoir. System in contact with constant temperature and pressure reservoir, Phase transition, Coexistence of phases, Triple point.

Joule-Thomson effect, Thermodynamic analysis, Inversion temperature, Thermodynamic equations for a Van der Waals gas. Liquefaction of gases. Regenerative principle, Properties of liquid helium, Introduction to superfluidity and superconductivity.

Radiation:

The blackbody spectrum, Wien's displacement law, Rayleigh-Jean's law, Planck's quantum theory of radiation.

Practical

Credits: 2

1. Determination of internal resistance of micro ammeter and conversion of micro ammeter into voltmeter, milliammeter and Ohmmeter.
2. Determination of modulus of rigidity using Bortron's apparatus.
3. Construction of two-input 'OR' and 'AND' gates using diode logic and preparation of their truth tables.
4. Determination of viscosity of liquid using Poiseuille's method.
5. To study variation of magnetic field along the axis of Helmholtz Galvanometer and to determine reduction factor.
6. Determination of resistance per unit length and an unknown resistance using C. F. Bridge.
7. Determination of dispersive power of material of a prism.
8. Determination of temperature coefficient of resistance of material of a given coil.
9. Determination of thermal conductivity of a card-board by Lee's disc method.

* In Semester-I, half of the students will do the experiments of Group-I and the other half will do the experiments of Group-II. In Semester II, the students will exchange their groups. Addition and deletion in the list of experiments may be made from time to time by the department.

SEMESTER –III

BPH-301: Optics-I

Credits: 2

Interference:

Conditions for sustained interference, Theory of interference, Lloyd's mirror, Achromatic fringes. Interference in parallel and wedge shaped films, Colour of thin films. Newton's rings and Michelson interferometer and their applications. Multiple beam interference in parallel film and Fabry-Perot interferometer.

Diffraction:

Fresnel's diffraction, Zone plate, diffraction due to straight edge. Fraunhoffer diffraction due to single and double slits, plane transmission grating and its resolving power.

BPH-302: Optics-II

Credits: 2

Polarization:

Polarized light and its mathematical representation, Production of polarized light by reflection, refraction and scattering. Polarization by double refraction and Huygen's theory, Nicol prism, Retardation plates, Production and analysis of circularly and elliptically polarized light. Optical activity and Fresnel's theory, Biquartz polarimeter.

Practical

Credits: 2

1. Determination of wavelength of sodium yellow line by Fresnal's Biprism.
2. Determination of specific rotation of cane sugar by polarimeter.
3. Determination of wavelength of mercury lines by diffraction grating.
4. Determination of minimum resolution power of a telescope to distinguish two close objects at a large distance.
5. Determination of self inductance of a coil by Anderson's bridge.
6. To draw characteristic curves of a triode valve.
7. To determine the velocity of ultrasonic waves
8. To determine the wavelength of Balmer line of hydrogen atom

SEMESTER IV

BPH-401: Electromagnetic Theory

Credits: 2

Vector Calculus:

Gradient, divergence and curl operators; Introduction to Gauss's divergence and Stoke's theorem.

Electromagnetism:

Laws of Electromagnetism using vector calculus; electrostatics and magnetostatics in matter, concepts of electric and magnetic polarizations, bound charges and currents; electrodynamics and displacement current, Maxwell's equations in integral and differential forms; Concepts of vector and scalar potentials, and gauge transformations, Poynting vector, energy and momentum conservation.

BPH-402: Basic Electronics

Credits: 2

EM wave propagation:

EM wave equations and their solutions; Polarization; Propagation of plane EM waves in free space, dielectrics (absorption coefficient) and conductors (skin depth and plasma frequency): Laws of reflection, transmission at normal and oblique incidence in linear media and conducting media (Fresnel's equations and Brewster's angle); Elementary ideas of wave guides (TE, TM modes and cut-off frequency) and coaxial transmission line.

Physics of Semiconductors:

P-N junction diode, depletion width and potential barrier, junction capacitance, I-V characteristics, Rectifier, ripple factors, filter circuits, efficiency and percentage regulation, LED, photodiode.

Transistor circuits, Input, Output characteristics and CB and CE modes, Early effect, ~ and β parameters; DC load line, operating point, biasing and bias-stabilization circuits: Transistor as an amplifier (CE mode) and frequency response.

Practical

Credits: 2

1. Determination of wavelength of sodium yellow line by Newton's rings.

2. To determine the Plank's constants by Wein's radiation formula using an DR.
3. To determine diameter/thickness of a thin wire by diffraction method.
4. Measurement of energy band gap of Si using a p-n junction diode.
5. Determination of mutual inductance of a pair of coils.
6. Phase shift between the current and the applied voltage in (a) C.R., (b) L.R. (c) L.C.R. circuits using a CRO and an oscillator.
7. To draw the input and output characteristics of a p-n-p transistor.
8. Resolving power of prism

* In Semester-III, half of the students will do the experiments of Group-I and the other half will do the experiments of Group-II. In Semester IV, the students will exchange their groups. Addition and deletion in the list of experiments may be made from time to time by the department.

SEMESTER-V

BPH-501: Mathematical Physics

Credits: 2

Curvilinear Coordinates:

Orthogonal curvilinear coordinates; concept of a metric, spherical and cylindrical coordinates and their unit vectors.

Tensor Analysis:

Introduction to tensors, Cartesian, covariant and contravariant tensors; contractions and direct-products, Examples: pseudo, dual, isotropic, symmetric and anti-symmetric tensors.

Matrices:

Hermitian, orthogonal and unitary matrices, inverse of a matrix, similarity transformations, Eigenvalue problems and diagonalization of matrices (Examples: non-degenerate and degenerate cases).

Differential Equations:

Second order homogeneous differential equations and their series solution (example: Bessel equation), linear independence of two solutions (Wronskian), Integral and power series methods for second solution.

Special Functions:

Bessel, Legendre (spherical harmonics), Hermite and Laguerre: generating functions and recurrence relations, orthonormality conditions, Dirac delta function,

Fourier Analysis:

Fourier theorem, Fourier analysis of square wave, saw-tooth wave, plucked strings, half wave/full wave rectifier wave forms

BPH-502: Classical Mechanics

Credits: 2

System of particles, Constraints, Generalized coordinates, D'Alemberts principle and Lagrange's equation, Velocity dependent potential of electro-magnetic field.

Calculus of Variation, Hamilton's principle, Lagrange's equation, Lagrangian for simple systems, Cyclic coordinates, symmetries and conservation laws. Advantages of Lagrangian: electro-mechanical analogies, Lagrange's

undetermined multipliers, Lagrange's equation for nonholonomic systems, Virial theorem, Principle of mechanical similarity.

Legendre transformations and Hamilton's equations of motion, Hamiltonian for a charge particle in Electro-magnetic field, Cyclic coordinates and conservation laws, Poisson Brackets, Jacobi Identity, Canonical transformation.

Hamilton-Jacobi theory, Action-Angle variables, related problems.

Two body central force problem, reduction to the equivalent one body problem, Differential equation for the orbit and integrable power law potentials, Condition for stable circular orbit, Kepler problems.

Practical

Credits: 2

1. Magnetic susceptibility of nickel ion.
2. Half-life of Indium^{116}.
3. Determination of Cauchy's constant.
4. Prism Spectrograph.
5. Wavelength of laser and thickness of wire.

SEMESTER VI

BPH-601: Quantum Mechanics

Credits: 2

Limits of Classical Physics:

Black body radiation (without derivation), Photoelectric effect, Compton Effect.

Wave Packets and Uncertainty Relation:

de Broglie hypothesis, Wave-particle duality, Davisson-Germer experiment, Wave packets, Group velocity and phase velocity, Uncertainty principle, Complimentarity.

Wave Mechanics:

Schrödinger equation, Physical interpretation of wave function, Probability current density and conservation of probability, Free particle wave function, Schroedinger equation in the presence of a potential, Linear operators, Hermitian operators, Observables, Eigenvalues and Eigenfunctions, Expectation values, Ehrenfest's theorem, Stationary states, Superposition principle, Commutation relations, Commuting observables and compatibility.

Application of Schrödinger Wave Equation:

Particle in one dimensional Box, Square well, Rectangular potential barrier and tunnelling, Linear harmonic oscillator, Spherically symmetric potential, Angular momentum operators and their eigenfunctions, Concept of spin, Hydrogen atom.

BPH-602: Electronic Devices and Circuits

Credits: 2

Electronic Devices:

Field effect transistors, I-V Characteristics of JFET and MOSFET, FET biasing, FET as an amplifier. Silicon controlled rectifier, I-V Characteristics, phase controlled rectifier. Unijunction transistor, I-V Characteristics, relaxation oscillator. Operational amplifier (block diagram), characteristics parameters, inverting and noninverting amplifier. Cathode ray oscilloscope, working of CRT, deflection sensitivity, time base and waveform display.

Analog Circuits:

Hybrid parameter model of transistor, analysis of transistor amplifier (with and without RS and RL) using h- parameters, simplified hybrid model, brief idea about hybrid π model.

Single stage amplifier in CE, CB and CC modes. RC coupled CE amplifier and its frequency response, tuned voltage amplifier. Power amplifier classification, distortion and efficiency, push pull amplifier, Feedback in amplifiers, positive and negative feedback, effect of negative feedback on the characteristics of different types of amplifiers, voltage and current series feedback circuits.

Barkhausen criterion of oscillations, tuned collector oscillator, Hartley / Colpitt oscillator, phase shift oscillator and multivibrators.

Need and types of modulation, amplitude modulation, analysis of A.M. wave, modulator and demodulator circuits.

Digital Circuits:

Boolean algebra, logic gates, NAND and NOR gates as universal gates. Simplification of Boolean expressions using K- maps. Half and full adders and subtractors.

Practical

Credits: 2

1. Experiment on logic gates- Verification of laws of Boolean algebra.
2. Transient response of LCR circuit and determination of quality factor.
3. Experiment of negative feedback amplifier.
4. Power supply and filter characteristics.
5. Design of Zener regulated power supply.
6. Experiment on Fourier analysis.

SEMESTER – VII

Innovative teaching module

Credits: 2

Introduction of Basic concepts of Physics to BSc. B.Ed. Students to make their mastery over these concepts. It may help students when they do external teaching practice in different schools.

Motion: Describing Motion (Uniform Motion and Non-uniform motion), Measuring the rate of Motion (Speed with Direction) , Rate of change of Velocity, Graphical Representation of motion(Distance – Time graphs, velocity –time graphs), Uniform circular motion.

Force, Friction, Laws of motion and Pressure: Force – a push or pull, Forces are due to an interaction, exploring forces, a force can change the state of motion, force can change the shape of an object, balanced and unbalanced forces, force of friction, first law of motion, Inertia and mass, Second law of motion and, third law of motion, conservation of momentum. Conservation laws, Pressure, Atmospheric pressure.

Gravitation: universal law of gravitation, importance of the universal law of gravitation, Free fall (to calculate the value of g, motion of objects under the influence of gravitational force of the earth), Mass, weight, weight of an object on the moon, thrust, buoyancy, why objects float or sink when placed on the surface of water, Archimedes' principle.

Work and Energy: Work Scientific conception of work, work done by a constant force), Energy(forms of energy , kinetic energy, potential energy, potential energy of an object at a height, law of conservation of energy), Rate of doing work, commercial unit of energy, sources of energy, what is a good source of energy, conventional sources of energy(fossil fuels, thermal power plant, hydro power plant, improvements in the technology for using conventional sources of energy, alternative or non-conventional sources of energy(solar energy, tidal energy, wave energy, Geothermal energy, nuclear energy).

Electricity and its Effect: Electric current and circuit, Electric potential and potential difference, ohm's law, factors on which the resistance of a conductor depends, Magnetic field and field lines, magnetic field due to a current through a circular loop, electric power, electromagnetic induction, electric generator.

Some natural phenomena: lightning, charging by rubbing, types of charges and their interaction, transfer of charge, the story of lighting, lighting safety, earthquakes.

Light: What makes thing visible, Reflection of light, Laws of reflection, regular and diffused reflection, reflected light can be reflected again, multiple images, sunlight-white or coloured, Refraction of light, refractive index, power of a lens.

Sound: Production of sound, (sound is produced by a vibrating body, sound produced by humans), propagation of sound (sound waves needs a medium to travel, sound waves are longitudinal waves, characterstics of sound in different media), reflection of sound (Echo, reverberation, uses of multiple reflection of sound), range of hearing, application of ultrasound (SONAR).

Star and the solar system: The moon, the stars, constellations, the solar system, some other members of the solar system.

SEMESTER - VIII

BPH-801: Statistical Mechanics

Credits: 3

Random Walk Problem: Probability distribution, calculation of mean and dispersion (as a measure of fluctuation), and simple numerical problems.

Basics of Statistical Mechanics: State of a system (Microscopic and Macroscopic); Phase space, density of states and Liouville's theorem; Postulates of statistical mechanics; Relation between statistical and thermodynamic parameters.

Classical Statistical Mechanics: Brief introduction to Ensemble theory (Micro-canonical, Canonical and Grand-canonical), applications to classical ideal gas and simple numerical problems; Gibbs paradox; In brief: Statistical equivalence of three ensembles.

Quantum Statistical Mechanics: Introduction to Bose-Einstein and Fermi-Dirac statistics; Maxwell-Boltzmann statistics as a classical limit; Comparison of the three statistics; Fermi and Bose gases.

BPH-802: Solid State Physics

Credits: 3

Structure and Symmetry: Elements of external symmetry of crystals, space lattice, Bravais lattices, Miller indices for direction and planes, Common crystal structures: NaCl, CsCl, ZnS and Diamond, Close packed structures, Quasicrystals.

Brief introduction to: -Bonding in solids, Lennard Jones potential, concept of cohesive energy, covalent, van der Waals, ionic and metallic bonding.

Diffraction of x-rays, Laue equations and Braggs law, reciprocal lattice, Brillouin Zones and Brief introduction of: (Ewald construction, atomic scattering and structure factors).

Lattice Vibrations: Vibrational modes of continuous medium, Debye's theory of specific heat, Brief Introduction of :(Vibrations of one dimensional monoatomic and diatomic chain, Phonons, Density of states).

Electronic Properties: Free electron gas, Electrons in periodic potential, Kronig Penny model, Bloch theorem, energy bands, metals, insulators and

semiconductors, Motion of electron in electric and magnetic fields, Hall Effect, Fermi surface.

Magnetic Properties: Dia-, Para-and Ferromagnetism, origin of magnetism, Brief Introduction of: (Langevin's theory of paramagnetism, Weiss Molecular theory, Ferromagnetic ordering, spin waves, magnons, ferromagnetic domains).

BPH-803: Atomic Physics and Lasers

Credits: 3

Atomic Physics: Brief review of Bohr and Sommerfeld model of atom. Effect of finite nuclear mass in relation to Rydberg constant. Idea of discrete energy levels and electron spin: Fanck – Hertz and Stern – Gerlach experiments.

Significance of four quantum numbers and concept of atomic orbitals. One valence electron atom: Orbital magnetic dipole moment, Orbital, spin and total angular momenta ,Larmor precession, Vector model of atom, Electronic configuration and atomic states, Spin-orbit interaction and fine structure, Intensity of spectral lines, General selection rules. Zeeman Effect.

Two valence electron atoms: LS and JJ coupling schemes and resulting spectra. Idea of normal and inverted doublet.

Lasers and Non-Linear Optics: Einstein coefficients, Threshold condition for LASER action, Rate equation for three level laser system, Characteristics of laser radiation. He-Ne and Nd-YAG Laser.

Significance of non-linear polarization of lasers and some applications.

BPH – 804: Topics in Modern Physics and Nano Science

Credits: 3

Theory of Relativity: Gravitational red-shift, Doppler effect in relativity, Four dimensional space and concept of four-vector, Transformation properties of four-momentum and four-force, Vector and scalar potentials and Gauge transformation, Four-potential and four-current, Transformation relations for E and B, Invariance of Maxwell’s equations.

Astrophysics and Cosmology: Introduction to the Universe, Expansion of the Universe, The Hertzprung-Russell Diagram, The cosmic microwave background radiation, The Big Bang Hypothesis, Nucleosynthesis: formation of nuclei and atoms, Formations of Galaxies and Stars, Thermal Nuclear Reaction, Astrophysical processes : H and He burning, the r-process, the rp-process,

Chandrashekhar-limit, White Dwarf, Neutron star and Black Hole, Dark Matter and Dark Energy.

Nano Materials: Physical, Chemical and Bio-routes for Synthesis of Nanomaterials, Experimental Techniques for Characterization of Nanomaterials, Metal Nanoparticles, Carbon Nanostructures, Electronic Properties of Nanomaterials, Some applications of Nano Materials.

Practical for Semester- VIII (A)

Credits: 2

1. Determination of Planck's constant.
2. Grating spectrograph.
3. GM Counter.
4. B-H curve and hysterisis loss.
5. Experiment on fiber optics.
6. Wedge angle and refractive index of water using laser.

Practical for Semester- VIII (B)

Credits: 2

1. Positive feedback- Hartley and phase shift oscillator.
2. Amplitude modulation and demodulation characteristics.
3. Characteristics of FET and MOSFET and their application as amplifier.
4. Wave shaping circuits.
5. Characteristics of UJT and its application as relaxation oscillator.

CHEMISTRY

SEMESTER - I

BCH-101: Structure and Bonding

Credits: 2

1 **Atomic Structure:** Schrodinger wave equation; H atom; Radial and angular wave functions: quantum numbers and concept of orbitals; S later orbitals.

2 **Chemical Bonding:** VB and MO approach of H2 molecule; MO treatment of homonuclear and heteronuclear (CO & NO) diatomic molecules; Concept of HOMO and LUMO. VSEPR theory; Structure of simple molecules and ions of main group elements

3 **Ionic Solids:** Close packing, Radius ratio rule and crystal coordination number. Examples of MX and MX2 type ionic solids (NaCl and TiO2)

4 **Metallic Bonding:** theories of bonding in metals; Free electron, VB and Band theories.

5 **Weak Interactions:** Hydrogen bonding and van der Waal's interactions.

BCH-102: Organic Chemistry

Credits: 2

1. **Concepts:** Atomic orbitals, hybridization, orbital representation of methane, ethane, ethyne and benzene.

   Polarity of bonds: Inductive, resonance and steric effects, hyperconjugation, and their influence on acidity and basicity of organic compounds.

2. **Hydrocarbons**
   - Alkanes: Chlorination of methane
   - Alkenes: Addition reactions (Electrophilic and Free radical), Hydration, hydroxylation, hydroboration, epoxidation and ozonolysis
   - Alkynes: Reduction, Electrophilic addition, acidity and metal acetylides. Conjugated and isolated Dienes: 1,2- verses 1,4-addition. Diels - Alder reaction.

3. **Alkyl Halides**
   - Nucleophilic substitution: SN1, SN2 mechanisms
   - Eliminations reactions: E1and E 2 mechanisms, Elimination versus substitution reactions; energy profile diagrams-transition states (general considerations)

- Grignard reagents: Preparation and synthetic applications.

4. **Alcohols:** Comparative study of substitution, dehydration, oxidation, and esterification of primary, secondary and tertiary alcohols.
5. **Stereochemistry:** Fischer, Saw-horse and Newman projection formulae, Chirality-optical activity, enantiomersim and diasteroisomerism involving one and two chiral centres. Configuration; D/L, erythrose, threose and R/S nomenclatures. Geometrical isomerism and E/Z nomenclatures. Conformations of n-butane.
6. **Active methylene compounds:** Preparation and synthetic applications of ethyl acetoacetate and diethyl malonate, Tautomerism.

Practical

Credits: 2

1. Qualitative Inorganic Analysis.
2. Qualitative Inorganic Mixture Analysis: Not containing more than four ions and one interfering anion.
3. Qualitative Organic Analysis: Identification of simple organic compounds (derivatives not included).

SEMESTER - II

BCH-201: Inorganic Chemistry-I

Credits: 2

1. **Periodic trends and properties:** Size, Ionization Energy, Electron Affinity, Electronegativity, Lattice and Hydration Energies, Use of redox potential and reaction feasibility.
2. **Chemistry of s and p-block elements:** Alkali and alkaline earth metals: Hydrides and Complexation tendencies. Structural features of hydrides, halides, oxides and oxyacids.
3. **Chemistry of d-block elements:** Salient features, characteristic properties of 3d-elements with reference to oxidation states, colour, magnetic behaviour, and complex formation tendency.

BCH-202: Physical Chemistry-I

Credits: 2

1. **Gaseous State:** Kinetic theory of gases, ideal gas laws based on kinetic theory. Collision in a gas- mean free path, collision diameter, collision number. Behaviour of real gases - the van der Waal's equation. Critical phenomena - critical constants of a gas and their determination, the van der Waals equation and critical state, Principle of corresponding states.
2. **Liquid State:** Surface tension of liquids - capillary action, experimental determination of surface tension, temperature effect on surface tension. Viscosity of liquids, experimental determination of viscosity coefficient, its variation with temperature.
3. **Thermodynamics:** First Law of thermodynamics and internal energy, state and state functions, sign convention for heat and work, nature of work, path dependence of heat and work. Enthalpy, heat changes at constant volume and constant pressure, heat capacities (CV, CP) and their relationship for ideal gases.

   Thermodynamic quantities (w, q, ÄU, ÄH) for isothermal and adiabatic reversible expansion of ideal gases and their comparison.

   Change in internal energy (ÄU) and enthalpy (ÄH) of chemical reactions, relation between ÄU and ÄH, variation of heat of reaction with temperature (Kirchhoff's equation).

4. **Electrochemistry:** Arrhenius theory of electrolytic dissociation, Hydrolysis of salts, hydrolysis constant, buffer solutions, indicators and theory of acid-base indicators.

   Migration of ions: transference number and its determination by Hittorf methods. Conductance of electrolyte solutions, molar conductance of electrolyte and its splitting into ionic molar conductance, Kohlrausch law of independent migration of ions, ionic mobility.

   Application of conductance measurements: determination of degree of dissociation and dissociation constant of weak electrolytes/acids, solubility of sparingly soluble salts, and Conductometric titrations.

5. **Nuclear Chemistry:**
   - Nucleus and its classification, nuclear forces, nuclear binding energy, stability of nucleus.
   - Radioactivity: Radioactive elements, general characteristics of radioactive decay, decay kinetics (decay constant, half life, mean life period), units of radioactivity.

Practical

Credits: 2

Quantitative Analysis (Physical and Volumetric)

1. Determination of water equivalent of a calorimeter (cooling curve).
2. Heat of neutralization (strong acid-strong base).
3. Heat of dissociation of weak acid.
4. Heat of solution (NH_4NO_3, $CaCl_2$).
5. Basicity of an acid by thermochemical method.

Note: Experiments may be added/deleted subject to availability of time and facilities.

SEMESTER - III

BCH-301: Organic Chemistry-II

Credits: 2

1. **Aromaticity:** Aromaticity and Huckel rule - A general concept. Molecular orbital picture of benzene.
2. **Aromatic Electrophilic Substitution:** Mechanism of nitration, halogenation, sulphonation, and Friedel-Crafts reactions (alkylation and acylation). Effects of substituents on orientation and reactivity.
3. **Aryl Halogen Compounds:** Chlorobenzene, electrophilic and nucleophilic aromatic substitutions; side chain chlorination of toluene, DDT and BHC.
4. **Chemistry of Carbonyl compounds:** Preparations and reactions: addition and condensation reactions; Cannizzaro, Perkin, aldol, benzoin, haloform, oxidation and reduction reactions.

   Important reactions of acids, HVZ reaction, Relative reactivity of acid chlorides, acid anhydrides, amides and esters. Comparative acidity of carboxylic and sulphonic acids.
5. **Phenols:** General methods of preparation and reactions. Reimer-Tiemann and Kolbe reactions. Relative acidity of phenol, alcohol and carboxylic acid.
6. **Nitrogen Containing compounds:** Nitrobenzene and reduction products. Comparative basicity of aliphatic and aromatic amines.
7. **Diazonium Salts:** Preparation and synthetic applications.

BCH-302: Physical Chemistry-II

Credits: 2

1. **Thermodynamics:** Second Law of Thermodynamics, Carnot cycle, entropy, entropy changes in reversible and irreversible processes and entropy of the universe, physical concept of entropy, entropy changes of an ideal gas in different processes, entropy of an ideal gas, entropy changes in mixture of gases. Joule-Thomson effect, Joule-Thomson coefficient of real (van der Waal) gases, inversion temperature.

   Free energy and its concept, Gibbs and Helmholtz free energies and their relationship, variation of free energy with temperature and pressure. Free energy and equilibrium constant. Maxwell's relations, Gibbs-Helmholtz equations, its application for the determination of ÄG, ÄH, ÄS of a

reversible cell reaction. Criteria for reversible and irreversible processes based on entropy and free energy.

Partial molal quantities, chemical potential, the Gibbs-Duhem equation, determination of partial molal quantities, variation of chemical potential with temperature and pressure, chemical potential in case of a system of ideal gases.

2. **Phase Equilibria:** Thermodynamics of phase transition-Clapeyron-Clausius equation and its applications. Phase, Phase rule, phase component, degree of freedom, thermodynamic derivation of phase rule, phase diagrams of one-component system (water), two component systems (phenol-water, lead-silver). The distribution law, applications to cases of dissociation and association of solutes in one of the phases, solvent extraction, equilibrium constant from distribution coefficient (KI + I2 = KI3).
3. **Electrochemical Cells:** Reactions in reversible cells, free energy and *emf* of reversible cell. Single electrode potential (Nernst equation), its measurement and sign convention. Standard electrode potential. *Emf* of reversible cell from electrode potentials. Types of reversible electrode, reference electrodes. Applications of emf measurements: determination of ionic activities, pH, and equilibrium constant. Potentiometric titration. Concentration cells with and without transference. Liquid junction potential and its elimination.
4. **Chemical Kinetics:** Order and molecularity of chemical reactions, pseudo order. Kinetic law for second order reactions, determination of the rate constant and order of reaction from kinetic data. Effect of temperature on rate of reaction: collision theory of rates of bimolecular reactions and its comparison with Arrhenius equation.
5. **Complex reactions:** Reversible (first order in both directions), concurrent, consecutive reactions. Animalcular gas reactions (Lindmann theory), steady-state approximations, theory of absolute reaction rate and its thermodynamic formulation.

Practical

Credits: 2

Quantitative Analysis (Physical and Volumetric)

1. Critical Solution Temperature.
2. Effect of impurity on Critical Solution Temperature.

3. Distribution of solute in two immiscible solvents (without association).
4. Distribution of solute in two immiscible solvents (with association in one solvent).
5. Determination of pH of a given buffer.
6. Equilibrium constant of methyl acetate hydrolysis reaction.

Note: Experiments may be added/ deleted subject to availability of time and facilities.

SEMESTER – IV

BCH-401: Inorganic Chemistry-II

Credits: 2

1. **Acids and bases:** Bronsted-Lowry, Lux-Flood, Solvent System and Lewis concepts of acids and bases. Factors affecting strengths of Lewis acids and bases. HSAB theory and applications.
2. **Non-aqueous solvents:** Physical properties of a solvent for functioning as an effective reaction medium, types of solvents and their general characteristics. Liquid NH_3 as a non- aqueous solvent.
3. **Coordination compounds:** Nomenclature, Werner's theory. Isomerism. Sidgwick's EAN concept and Valence Bond Theory. Stereochemistry of coordination compounds with coordination no. 4, 5 and 6.
4. **Magnetic Properties of Transition Metal Complexes:** Types of magnetic behavior, methods of determining magnetic susceptibility, L-S and J-J coupling, orbital contribution to magnetic moments. Correlation of magnetic moment data and stereochemistry of Co(II) and Ni(II) complexes; anomalous magnetic moments.

BCH-402: Selected Topics in Chemistry

Credits: 2

1. **Energy devices:** Batteries; Fuel cells, Solar cells, Biomass as renewable energy resources.
2. **Corrosion:** Causes of metallic corrosion, types of corrosion, measurements of corrosion by weight loss method, prevention (electrochemical and inhibitor).
3. **Green Chemistry:** Principles and concept of green chemistry, atom economic and non-economic reactions, reducing toxicity, a few examples of environment friendly reactions and reaction media.
4. **Photoisomerization:** Rotation about C-C and C=C bonds, Structure of Rhodospin, Mechanism of vision.
5. **Bioenergetics:** Gibbs and Helmholtz energies with special emphasis on biological applications: study of energy transformations in living systems (bioenergetics): standard state in biochemistry, ATP-the currency of energy, Glycolysis, limitation of applicability of thermodynamics in biology.

Practical

Credits: 2

Quantitative Analysis (Physical and Volumetric)

1. Coagulation of a solution.
2. Determination of Surface Tension of liquids.
3. Determination of viscosity coefficients of liquids.
4. Order of reaction of I_2 / Acetone / H+.
5. Iodimetric titration.

Note: Experiments may be added/ deleted subject to availability of time and facilities.

SEMESTER – V

BCH-501: Analytical Chemistry-I

Credits: 2

1. **Statistical Evaluation:** Determinant and indeterminant errors, Normal error curve, Accuracy and Precision, Relative and standard deviation, Methods for minimizing errors, Criteria for rejection of observation, Significant figures and computation rules, Error propagation.
2. **Precipitation:** Desirable properties of gravimetric precipitates, Formation of gravimetric precipitates, Conditions for quantitative precipitations, Contamination in precipitates, Method for removal of impurities in precipitates, Steps involved in quantitative precipitation, Organic precipitants (oxine, dithizone, á-nitroso-(naphthol, cupferon, dimethyl glyoxime) in chemical analysis.
3. **Analytical Reagents:** Theoretical and practical aspects of the use of EDTA, cerate, iodate, bromate, chloramine-T, Karl Fischer and periodate reagents in chemical analysis.

BCH-502: Inorganic Chemistry-III

Credits: 2

1. **Theories of Metal-Ligand bonding:** Limitations of valence bond theory; Crystal-field theory and crystal-field splitting in octahedral, tetrahedral and square planar complexes. Jahn-Teller Distortion. Factors affecting the crystal-field splitting.
2. **Thermodynamic and Kinetic aspects of Metal Complexes:** A brief outline of thermodynamic and kinetic stabilities of metal complexes and factors affecting the stability. Substitution reactions of square-planar complexes – Trans effect
3. **Chemistry of Second and Third Transition Series:** A general comparative treatment of 4d and 5d elements with their 3d analogues in respect of ionic radii, oxidation states, magnetic behaviour and electronic spectral properties
4. **Organometallic Chemistry:** Definition, nomenclature and classification of organometallic compounds. Preparation, properties, bonding and applications of alkyl and aryls of Li, Al, Hg, Sn, Ti. A brief account of metal-ethylenic complexes and homogeneous hydrogenation

Practical

Credits: 2

Preparations (Organic and Inorganic)

1. Preparation of Organic Compounds:

   (i) m-dinitrobenzene, (ii) Acetanilide, (iii) Bromoacetanilide, (iv) Oxidation of primary alcohols-Benzoic acid from benzylacohol, (v) azo dye

2. Preparation of Inorganic Compounds:

   (i) Potassium trioxalato chromate (III); (ii) $CoHg(SCN)_4$; (iii) Cu(I) thiourea complex (iv) Bis (2, 4-pentanedionate) zinc hydrate; (v) Double salts (Chrome alum/ Mohr's salt)

SEMESTER -VI

BCH-601: Organic Chemistry-III

Credits: 2

1. **Alicyclic Compounds:** Cycloalkanes, general synthesis, Bayer's strain Theory. Cyclohexanechair and boat conformations, axial and equatorial bonds, conformation of mono substituted cyclohexanes.
2. **Poly nuclear Hydrocarbons:** Alternant and non-alternant hydrocarbons. Chemistry of naphthalene.
3. **Reactive intermediates and related Rearrangement reactions:** Generation, stability and reactivity of *Free radicals* (Anti Markovnikov's, Birch Reduction, Bouveault-Blanc reduction, oxidation of phenol by metal ions); *Carbocations* (Pinacol-Pinacolone, Wagner-Meerwein Rearrangement, Baeyer-Villiger oxidation, Hydroperoxide reaction and Beckmann.) and *Carbanions* (Robinson Anuulation and Michael Addition); *Carbenes* and *Nitrenes* (Hofmann, Curtius reactions). Ylides: Sulphur ylides, phosphorous ylides, Michaelis-Arbuzov phosphonate synthesis, Witting reactions, Mitsunobu reaction.
4. **Isotope Effect in a Reaction:** Isotopic substitution in a molecule, primary and secondary kinetic isotope effects, solvent isotopic effect and their importance in mechanistic studies.
5. **Stereochemistry:** Concept of Chirality; symmetry element, symmetry operations. Enantiomers, diastereomers, racemates, racemisation, resolution, Pro-chirality, pro- stereoisomerism with suitable examples of one and two chiral centers. Regioselective, chemoselective and stereoselective reactions. Asymmetric induction, Cram's Rule: Addition of nucleophile to carbonyl function; Aldol condensation *(achiral-achiral).* Wilkinson's hydrogenation.
6. **Photochemistry:** Principles of photochemistry, photochemical reactions of carbonyl compounds and olefins.
7. **Heterocyclic Compounds:** Synthesis and chemistry of furan, pyrrole, pyridine, Indole and Quinoline.

BCH-602: Physical Chemistry-III

Credits: 2

1. **Solid State:** Crystal lattices, space lattice, unit cell, crystal systems, law of rational indices, Miller indices, crystals and x-rays (the Braggs equation). Crystal structure of NaCl, graphite, and diamond. Types of crystal

(molecular, covalent, metallic, ionic). Imperfection in crystals: point defect-Schottky and Frankel defects.

2. **Surface and Photochemistry:** Gibbs Adsorption isotherm. Multi layer adsorption-BET equation (no derivation) and its application to surface area measurement

   Heterogeneous catalysis (surface reactions): kinetics of unimolecular surface reactions- inhibition and activation energy. Nature of surface.

   Kinetics of enzymatic reactions: Michaelis-Menten equation, effect of temperature and pH, Law of photochemical equivalence, quantum efficiency, reasons for low and high quantum efficiency. Kinetics of photochemical reaction (H_2+Br_2=HBr), photostationary state, Chemical actinometers (uranyl oxalate)

3. **Thermodynamics of Solutions:** Chemical potential of a mixure of ideal gases. Chemical potential of real gases and fugacity, activity and activity coefficient (concept and physical significance), reference and standard states. Variation of fugacity with temperature and pressure, Lewis-Randall rule, thermodynamic functions of mixing (ÄGmix, ÄSmix, ÄVmix, ÄHmix), ideal solutions and their characteristic properties, Duhem-Margules equation and its application, Henry and Raoult's laws. Thermodynamics of colligative properties: Freezing point depression, elevation of boiling point, osmotic pressure. van't Hoff equation. Measurement of osmotic pressure and determination of molecular weight of macromolecules.

4. **Electrochemistry:** Theory of strong electrolytes: - Qualitative idea of Debye-Huckel theory of ion-ion interactions, Debye-Huckel limiting law for activity coefficient of ions in electrolyte solution (derivation not required), its modification for concentrated solutions. Debye-Huckel-Onsager (D-H-O) theory of electrolytic conductance: qualitative idea of electrophoretic and relaxation effects, D-H-O equation for conductance of electrolyte solutions, effect of high frequency and high field on conductance.

5. **Nuclear and Radiation Chemistry:** Nuclear reactions: Bethe notation, types of nuclear reactions (n, p, α, d and γ), conservation of quantities (mass-energy and linear momentum) in nuclear reactions, reaction cross-section, compound nucleus theory and nuclear reactions. Nuclear fission: the process, fragments, mass distribution, and fission energy,

   Nuclear reactor: the natural uranium reactor, classification of reactors, breeder reactor. Nuclear fusion and stellar energy.

Radiation chemistry: Elementary ideas of radiation chemistry, radiolysis of water and aqueous solutions, unit of radiation chemical yield (G-value), radiation dosimetry (Fricke's dosimeter), units of radiation energy (Rad, Gray, Rontgen, RBE, Rcm, Sievert).

Practical

Credits: 2

Inorganic & Physical Chemistry Practical

1. Viscosity-composition curve for a binary liquid mixture.
2. Gravimetric estimation of Cations/Anions.

SEMESTER – VII

Innovative teaching module

Credits: 2

a) Basics of atomic structure and periodic table.

b) Environmental issues in the national context and remedial measures.
(Arsenic, Mercury, Copper, Cadmium and Methylisocynate (MIC) poisonings).

SEMESTER – VIII

BCH-801: Analytical Chemistry-II

Credits: 3

1. **Solvent Extraction:** Distribution law, Single extraction, Multiple extraction, Craig concept of counter-current distribution, Important solvent systems: chelate extraction, synergic extraction, extraction by solvation, ion-pair extraction.
2. **Chromatography:** Classification of chromatographic methods, General principle and application of adsorption, partition, ion exchange, thin layer, and paper chromatography.
3. **Radio-Analytical Methods:** Elementary theory, Isotope dilution and Neutron activation methods and applications.
4. **Spectrophotometry:** Beer's law and it's application, Nomenclature and units, General instrumentations for spectrophotometry, Spectrophotometric determinations of one Component (iron, chromoium, manganese, nickel, titanium and phosphorus) and two components (overlapping and non overlapping) systems, Spectrophotometric determination of dissociation constants of indicator, Photometric errors and RINGBOM-AYRES plots.

BCH-802: Inorganic Chemistry –IV

Credits: 3

1. **Electronic Spectra of Transition Metal Complexes:** Types of electronic transitions, selection rule for dd transitions, spectroscopic ground states. Explanation of electronic spectra on the basis of Orgel energy level diagrams for d1, d4, d6 and d9 states.
2. **Chemistry of f-block Elements:**

   Actianides: Comparative study of actinide elements with respect to electronic configuration, atomic and ionic radii, oxidation states and complex formation; occurrence and principles of separation. General features and chemistry of actinides, principles of separation of Np, Pu and Am from U. Trans-Uranium elements.

   Lanthanides: Comparative study of lanthanide elements with respect to electronic configuration atomic and ionic radii, oxidation state and complex

formation, lanthanide contraction. Separation of lanthanides. Application of lanthanide complexes.

3. **Bioinorganic Chemistry:** Essential and trace element in biological process, oxygen transport with reference to haemoglobin; synthetic models of O2 carrieres. Biological role of alkali metals ions. Vitamin B-12.
4. **Environmental Pollution:** Terminology used in environmental chemistry, Atmospheric pollution, Source of air pollution, Global warming, Ozone-hole, Auto exhaust emissions and it's prevention, Air quality parameters, Acid rains, Industrial and domestic effluents, Treatment plants, Flouresis, Arsenic, Mercury and Methylisocynate (MIC) poisonings, Current environmental issues in the national context and remedial measures.

BCH-803: Organic Chemistry-V

Credits: 3

1. **Nuclear Magnetic Resonance Spectroscopy*:*** Nuclear Magnetic Resonance spectroscopy. Chemical shifts. Spin-spin splittings. Relaxation times.
2. **Polymers:** Types of polymers and polymerization process: Addition, stereo controlled, step growth polymerizations. Radical, ionic and coordination mechanisms of polymerization. Synthesis and applications of following polymers: (i) Specialty Polymers: Conducting & Electroluminescent (Organic light emitting diodes), liquid crystals (ii) Natural and synthetic rubber (iii) Synthetic Fibers: Polyester, Polyamides (iv) Foaming Agent: Plasticizers (v) biodegradable polymers.
3. **Terpenes:** Occurrence, isolation, classification. Isoprene rule. Structure and synthesis of Citral and Geraniol.
4. **Dyes:** synthesis of malachite green, fluorescein. Synthesis and structure of Indigotin.
5. **Peptide Chemistry:** Amino acids-preparative methods, physical properties, dipolar nature, chemical reactions and configuration. ***Peptides:*** peptide linkage, peptide synthesis and structure of poly peptides. ***Proteins:*** General characteristics and secondary structure.
6. **Drugs:** Preparations, and uses of following: (i) Antipyretics and Analgesics: Aspirin, Paracetamol, Phenylbutazone. (ii) Sulpha Drugs: Sulphanilamide, sulphapyridine, sulphathiazole. (iii) *Antimalarials:* Chloroquine, Primaquine. (iv) Antibiotics: Chloroamphenicol.

7. **Carbohydrates:** Characteristic reactions of aldoses and ketoses. Glucose-structure (Open and Cyclic), Fructose (only reactions), Mutarotation**s**, Sucrose, starch and cellulose (Structur**e**al aspects only).

BCH-804: Physical Chemistry-IV

Credits: 3

1. **Quantum Mechanics of Simple Systems**: Schrödinger's wave equation. Eigen functions and Eigen values and quantum mechanical operators. Expectation value of a physical quantity. Orthogonality of wave functions. The particle in a one dimensional box problem and its solutions. Particle in a three dimensional box. Degeneracy. Rigid rotor and Harmonic Oscillator.
2. **Molecular Spectroscopy:** Region of electromagnetic spectrum. Emission and absorption spectra. Transition probabilities and selection rules. Width and intensity of spectral transitions Pure rotational spectra. Diatomic molecules-Rigid rotor & non-rigid rotors. Vibrational, rotational spectra of diatomic molecules. Harmonic oscillator-rigid rotor approximation. Anharmonicity effect. Normal modes of vibration. Infrared spectra of linear and bent AB2 molecules. Electronic spectra of diatomic molecules. Vibrational structure. Franck-Condon principle.
3. **Molecular Statistics:** The Boltzmann distribution. Maxwell distribution law for distribution of molecular speeds. The Maxwell-Boltzmann distribution law for the distribution of molecular energies. The partition functions. Thermodynamic quantities from partition functions. The Sackur-Tetrode equation for molar entropy of monatomic gases. Rotational and vibrational partition functions. The characteristic temperature. The calculation of Gibbs free energy changes and equilibrium constant in terms of partition functions.

Practical

Practical 1: Analytical & Inorganic Chemistry Practical **Credits: 2**

1. Beer's Law - Determination of concentration of solution by colorimetry.
2. Chromatographic separation of metal ions.
3. Complexometric titrations: Zn^{2+}, Mg^{2+}, Ca^{2+}, Fe^{2+} with EDTA; Hardness of water.

Practical 2: Organic & Physical Chemistry Practical **Credits: 2**

1. Systematic identification of organic compounds (monofunctional and bi-functional) and preparation of their derivatives.
2. Surface tension-composition curve for a binary liquid mixture.
3. Determination of indicator constant - colorimetry.
4. Determination of pH of a given solution using glass electrode.

ZOOLOGY

SEMESTER – I

ZOB-101: Systematics and Animal Diversity

Credits: 2

1. Systematics

1.1.Definition of taxonomy and relationship with systematics

1.2.Zoological nomenclature

1.2.1. Binominal

1.2.2. Trinominal

1.3. Kinds of Zoological classification

1.3.1. Components of classification

1.3.2. Linnaean hierarchy

2. Animal Diversity

2.1. Criteria for classification of multicellular animals

2.1.1. Symmetry

2.1.2. Early development: spiral and radial cleavage.Protostomes and Deuterostomes

2.1.3. Body cavities: acoelomates, pseudocoelomates, coelomates (schizo-and enterocoelomates).

2.1.4. Homology and analogy

2.2. Non–Chordates: General characters and classification of the following up to classes with example showing distinctive /adaptive features.

2.2.1. Protozoans

2.2.2. Poriferans

2.2.3. Cnidarians

2.2.4. Ctenophorans

2.2.5 Platyhelminthes

2.2.6 Nematodes

2.2.7Annelids

2.2.8 Arthropods

2.2.9 Echinoderms.

2.3. Hemichordates: General characters and classification.

2.4. Chordates: General characters and classification of the following up to sub-classes with examples

2.4.1. Protochordates: Urochordates, Cephalochordates

2.4.2. Cyclostomes

2.4.3. Fishes

2.4.4. Amphibians

2.4.5. Reptiles

2.4.6. Birds

2.4.7. Mammals

ZOB-102: Animal Form and Function

Credits: 2

1. Nutrition & Digestion

1.1. Intracellular and extracellular digestion: food vacuole and gastrovascular cavity

1.2. Feeding mechanisms: suspension, deposit (herbivorous) and raptorial (carnivorous)

2. Gas exchange and internal transport

2.1. Structure and function of gills

2.2. Structure and functions of trachea, book lungs and vertebrate lungs

2.3. Respiratory pigments and transport of gases

2.4. Types of circulatory systems

2.5. Pattern of circulation in non-chordates and chordates

3. Types of excretory organs in non-chordates and chordates

3.1. Open tubular: metanephridia

3.2. Closed saccular: Protonephridia, Malpighian tubules and kidney

4. Nervous system

4.1. Patterns of nervous system in non-chordates

4.2. Organization of nervous system in mammal (Rabbit or Human): central and autonomous nervous system

5. Reproduction

5.1. Types of asexual reproduction: fission, regeneration and parthenogenesis

5.2. Sexual reproduction: primary and accessory sex organs

5.3. Parental care in amphibians

Practical

Credits: 2

Laboratory Exercises

Systematics and Animal Diversity & Animal Form and Function

Part A: Systematics and Animal Diversity

1. Identification of certain locally available fishes on the basis of theirmorphological characters.
2. Zoological names of some common animals.
3. Cold anesthesia in fish.
4. Narcotization of leech/earthworm and pond snail.
5. Collection and Preservation of insects.
6. Fixation of fresh water Protozoans.
7. Study of transverse sections/chart of the following: Sycon (as an example of Parazoato show its structure, spicules and canal system), *Hydra* (as an example of diploblastic animal), *Fasciola* (as an example of triploblastic acoelomate animal), *Ascaris* (as an example of triploblasticpseudocoelomate animal), *Hirudinaria* (as an example oftriploblastic schizocoelomate animal), Frog (as anexample of triploblastic enterocoelomate animal) – by charts.
8. Study of salient features and classification up to classes of the followingnon-chordates with special emphasis on their adaptive characters through specimens & slides.

   Porifera:*Euplectella, Leucosolenia, Sycon* Coelenterata: *Physalia, Corallium,* Sea anemone, Ctenophora:*Hormiphora,* Platyhelminthes and Aschelminthes: *Taenia, Ascaris* (male andfemale), Annelida: *Nereis* (including heteronereid stage), *Hirudinaria, Bonellia,* Mollusca and Arthropoda *Chiton, Mytilus, Octopus,Peripatus, Limulus, Eupagurus, Sacculina,*Echinodermata *Asterias, Echinus, Holothuria, Ophiothrix, Antedon.*
9. Salient features and classification up to Orders of the following with special emphasis on their adaptive characters through specimens.Protochordates: *Balanoglossus, Herdmania,* Amphioxus Lower vertebrates (Pisces and Amphibians) *Lamprey, Trygon, Chimaera,* Lung Fish, *Uraeotyphlus, Ambystoma, Alytes, Hyla,* Higher vertebrates: (Reptilia, Avesand

Mammalia) *Chameleon,* Tortoise, poisonousand non-poisonous snakes, Duck, Kiwi, Duck-billed Platypus.

Part B: Animal Form and Function

1. General

1.1 To study the following permanent slides.

Protozoa : *Amoeba, Paramecium Entamoeba histolytica, Euglena, Plasmodium, Trypanosoma Vorticella, Giardia* Porifera: *Sycon* (T.S and L.S), Gemmules and spicules Coelenterata:To study the slide of *obelia* colony, Platyhelminthes T.S of *fasciola* Nemathelminthes T.S of male and female *Ascaris*

1.2 Permanent Mounting of following material Spicules, *Hydra, Obelia, Taenia* and Parapodium Of *Nereis*

2. Animal nutrition

2.1. Study and mounting of cephalic appendages of *Palaeomon*

2.2. Dissection of Digestive system of *Paleomon*.

2.3 Dissection of *Periplaneta Americana* to explore the Alimentary canal.

2.4 Dissection of Earthworm to explore Digestive system.

3. Nervous system, and receptors

3.1. Dissection of Nervous system of Cockroach and Earthworm.

3.2. Mounting of Statocyst of *Palaeomon*

4. Reproduction

4.1. Permanent preparation of gemmules of sponges

4.2. Study of the following throughpermanent slides/museum specimens: Conjugation in *Paramecium,* Miracidium Of *Fasciolahepatica,* Sporocyst of *Fasciola*,Redia, Cercaria and Metacercaria larvaeof *Fasciola hepatica*, Trochophore larva,Nauplius and Zoea larvae, Bipinnaria, Auricularia and Pluteus larvae, Tornaria, Ammocoetes and Tadpole (frog); Axolotl.

SEMESTER – II

ZOB-201: Cell Biology

Credits: 2

1. The Cell

1.1. Introduction to cell theory

1.2. Comparison of a generalized pro- and eukaryotic cell

1.3. Methods in Cell Biology: Elementary idea of microscopy and cell fractionation

2. Organization of cell

2.1. Extranuclear

2.1.1. Elementary knowledge of structure and function of plasma membrane

2.1.2. Introduction to endomembrane system (endoplasmic reticulum, Golgi complex, lysosome), peroxisome

2.1.3 Structure and functions of mitochondria

2.2 Nuclear

2.2.1. Nuclear envelope, nucleolus and biogenesis of ribosome

2.2.2. Interphase chromatin and its compaction into metaphase chromosome

2.2.3. Introduction to polytene and lamp brush chromosomes

3. Cell reproduction

3.1 Basic features of cell cycle

3.2 Mitosis, mitotic spindle and chromosome movement

3.3 Process and phases of meiosis and its significance

4. Elementary idea of cell transformation and cancer

5. Introduction to the cellular basis of immunity

ZOB-202: Biochemistry

Credits: 2

1. General

1.1. Chemistry of living system: its scope and importance, chemical bonds and energy

1.2. Biomolecules: configuration and conformation

1.3. Properties of water as biological solvent

1.4. Introduction to metabolism

2. Amino acids

2.1. Structure and classification

2.2. Properties of peptide bond

3. Proteins

3.1 Functions and diversity

3.2 Structural organization and conformation

4. Enzymes

4.1. General properties

4.2. Major classes of enzymes

4.3. Mechanism of enzyme action (binding to substrate, lowering of energy of activation, Km and Vmax)

5. Carbohydrates

5.1. Classification and nomenclature

5.2. Structure and conformation of monosaccharide

5.3. Reducing and non-reducing sugars

5.4. Oligosaccharides (disaccharides) and polysaccharides

6. Lipids

6.1. Biological significance and classification

6.2. Fatty acids

6.3. Formation of lipid bi-layer

7. Nucleic acids

7.1. Bases, nucleosides and nucleotides

7.2. DNA structure: DNA double helix (Watson and Crick model)

7.3. DNA and RNA as genetic material

7.4. DNA replication

7.4.1. Semi-conservative replication

7.4.2. Basic mechanism of replication (Prokaryotes)

7.5. Types of RNA

Practical

Credits: 2

Part- A: Cell Biology

1. Drawing of ultra structure of cell and different organelles (from photographs provided)

2. Familiarization with the student's light microscope and stereo binocular microscope
3. Basic concept of stains and staining techniques.
4. Application of centrifuge – separation of sperm from other testicular cells by low speed centrifugation
5. Diversity of eukaryotic cells – methylene blue staining of buccal epithelium, Leishman staining of mammalian blood cells
6. Permeability of plasma membrane – effect of isotonic, hypotonic and hypertonic solutions on mammalian RBC
7. Staining of mitochondria with Janus green in buccal epithelium
8. Study of various stages of mitosis and meiosis from permanent stained slides.
9. Mitosis in onion root tip.
10. Study of permanent stained slide of giant chromosome and Barr body.

Part- B: Biochemistry

1. Preparation of models of amino acids and dipeptides
2. Ninhydrin test for α-amino acids
3. To demonstrate catalase activity and its inactivation by heat
4. Benedict's test for reducing sugars
5. Iodine test for starch
6. Sudan III test for lipids.
7. Determination of acid value of oil
8. Preparation of models of nitrogenous bases, nucleosides and nucleotides

SEMESTER – III

ZOB-301: Comparative Physiology and Developmental Biology

Credits: 2

1. Respiration

1.1. Types of respiration (cutaneous, branchial, tracheal and pulmonary)

1.2. Respiratory pigments

2. Circulation

2.1. Composition of blood

2.2. Functions of blood

3. Nutrition and Digestion

3.1. Mechanical and chemical digestion

3.2. Basic concept of absorption

4. Excretion:

Mode of excretion of nitrogenous wastes: ammonotelism, ureotelism, uricotelism and guanotelism

5. Movements.

5.1. Ameboid, ciliary, flagellar and muscular.

5.2. Basic concept of contractile proteins

6. Neuronal transmission

6.1. Structure and type of neurons

6.2. Membrane potential and nature of nerve impulse

7. Environmental adaptations

7.1. Basic concept of thermal adaptation in poikilotherms and homeotherms

7.2. Osmoregulation in marine, fresh water and terrestrial animals

8. Developmental Biology

8.1. Historical perspective, aim and scope of developmental biology

8.2. Gametogenesis

8.2.1. Spermatogenesis

8.2.2. Oogenesis

8.3. Events in external and internal fertilization

8.4. Types of cleavage and fate map

8.5. Gastrulation in frog and chick up to the formation of three germ layers

8.6. Primary organizer in frog

8.7. Extra embryonic membranes in chick

8.8. Concept of regeneration

ZOB-302: Endocrinology

Credits: 2

1. Introduction to Endocrinology

1.1. Definition and classification of hormones

1.2. Endocrine, paracrine and autocrine modes of hormone delivery

1.3. Feedback mechanisms

2. Structure and functions of endocrine glands in mammals

2.1. Pituitary

2.2. Thyroid

2.3. Parathyroid

2.4. Adrenal

2.5. Endocrine pancreas

2.6. Testis

2.7. Ovary

3. Endocrine glands in insects

3.1. The Pars Intercerebralis-corpus cardiacum-corpus allatum complex

3.2. Prothoracic gland

Practical for Semester III

Credits: 2

Comparative Physiology, Developmental Biology and Endocrinology.

Part-A : Comparative Physiology.

1. Preparation of haemin crystals.
2. To study the effect of acid and alkali on the blood.
3. To Determine the clotting time of the blood.
4. Observation of slide of striated and non-striated muscles.
5. To demonstrate activity of salivary amylase and effect of acid and heat on its activity

6. Semi-quantitative test for detection of glucose by Benedict's method
7. Determination of presence of protein in a sample
8. Determination of a lipid in a sample.
9. To demonstrate knee-jerk reflex.
10. To demonstrate existence of blind spot of eye.

Part-B: Developmental Biology and Endocrinology.

1. Study of different types of eggs
2. Study of eggs and tadpoles of frog from collected/preserved material
3. Study of frog development through models
4. Frog- Study of whole embryo of the stages-blastula, gastrula, neurula, tail bud stage, tadpole, external and internal gill stages.
5. Examination of slides of testis/ovary of mammals.
6. Study of whole mount of chick embryos of 16-18, 24-28, 33-36 and 42-48 hrs of development through slides
7. Handling, sexing, numbering and maintenance of rat
8. General survey of endocrine glands in Rat.
9. Study of histological slides of the following endocrine glands in rat: Pituitary, thyroid, adrenal, endocrine pancreas, testis and ovary
10. Demonstration of Endocrine Glands in cockroach.

SEMESTER – IV

ZOB-401: Evolution and Animal Behaviour

Credits: 2

1. Concept of organic evolution

2. Evidence of Organic evolution from

2.1. Comparative anatomy

2.2. Comparative embryology

2.3. Palaeontology

2.4. Biochemistry and Genetics

2.5. Zoogeography

3. Theories of organic evolution

3.1.Lamarckism

3.2. Darwinism

3.3. Development and concept of synthetic theory

3.4. Natural selection in action (industrial melanism, antibiotic and DDT resistance)

4. Evolution of man

5. Concepts and patterns of behaviour

6. Instinct and learning

6.1. Innate behaviour

6.2. Learned behaviour and types of learning

7. Genetic basis of behaviour

8. Control of behaviour

8.1. Neural control

8.2. Hormonal control

9. Social organization

9.1. Communication

9.2. Living in groups

9.3. Evolution of sociality: eusocial organisation

10. Biological rhythms

ZOB-402: Genetics

Credits: 2

1. Elements of heredity and variation

1.1. Mendel and his experiments

1.2. Principles of segregation and independent assortment and their chromosomal basis

1.3. Test cross

1.4. Application of laws of probability to Mendelian inheritance

2. Extension of Mendelism

2.1. Dominance relationships (complete dominance, incomplete dominance and co-dominance

2.2. Multiple allelism

2.3. Lethal alleles

2.4. Pleiotropy

2.5. Epistasis

2.6. Penetrance and expressivity

2.7. Polygenic inheritance

3. Cytoplasmic and infective inheritance

4. Linkage

4.1. Linkage and crossing over

4.2. Cytological demonstration of crossing over in *Drosophila*

5. Sex chromosomes and sex-linkage

5.1. Sex chromosome systems : XX/XO,XX/XY, ZZ/ZW and haploidy/diploidy types

5.2. Sex Linked inheritance : Haemophilia and colour blindness in man.

6. Basic concept of Mutation : Chromosomal Mutation, Deletion, Duplication, Inversion Translocation Aneuploidy and polyploidy.

7. Human Genetics

7.1. Human Karyotype and banding.

7.2. Genetic disorders

7.2.1 Chromosomal aneuploidy (Down, Turner and Klinefelter syndromes)

7.2.2 Chromosome translocation (chronic myeloid leukemia) and deletion ("cry of cat" syndrome)

7.2.3 Gene mutation (cystic fibrosis)

7.3. Genetic counseling

8. Introduction to applications of genetic engineering

8.1. Molecular diagnosis of genetic disorders and gene therapy

8.2. Crop and livestock improvement

Practical

Credits: 2

Part-A: Genetics

1. Application of probability in the law of segregation with coin tossing
2. Frequency of the following genetic traits in human: widow's peak, attached ear lobe, dimple in chin, colour blindness, PTC tasting
3. Study of mode of inheritance of the following traits by pedigree charts – attached ear lobe, widow's peak.
4. To study the genetic exercises based upon Dominance and Recessive relationship, Incomplete dominance and law of Independent assortment.
5. To study the genetic exercises based upon Interaction of genes, Multiple alleles and sex linked inheritance.
6. Familiarization with techniques of handling *Drosophila*, identifying males and females; observing wild type and mutant (white eye, wing less) flies.
7. Demonstration of sex-linked inheritance in *Drosophila* making a cross between white eye and wild type flies *(criss-cross inheritance).*
8. Preparation of temporary mount of stained onion root tip by squash method to study stages of mitosis.
9. Study of human karyotypes and numerical alterations (Down syndrome, Klinefelter syndrome and Turner syndrome).
10. Study of permanent stained slides of giant chromosomes and Barr body

Part- B: Evolution and Animal Behaviour.

1. Adaptive modifications in feet of birds and mouth parts of insects (from slides)
2. Embryological evidence of evolution (through charts) Phylogeny of horse and study of Darwin finches.
3. Analogy and homology (wings of birds and insects, forelimbs of bat and rabbit)

4. Serial homology in appendages of *Palaemon.*
5. Habituation in earthworms/mosquito larvae.
6. Phototactic response in Earthworm.
7. Locomotory behaviour of dipteran Larvae (Housefly/blowfly/fruitfly):
   7.1 Locomotion on different types of substrata (writing paper, plastic sheet and sand paper
   7.2 Effects of light intensity and light quality on the rate of locomotion.
8. Study of individual and social behavioural patterns of a troop of monkey
9. Social organization and Dominance in Rhesus and Langurs.
10. Study of interspecific association between cattle and egrets
11. Visit to a Natural history museum or fossil park and submission of visit report.

SEMESTER – V

Z0B-501: Functional Anatomy and Economic Importance of Non-Chordates

Credits: 2

1. Protozoa

1.1. Study of *Euglena and Monocystis (*locomotion, nutrition and reproduction)

1.2. Parasitic protozoans of man: *Entamoeba, Trypanosoma* (diagnostic characters, mode of infection and diseases caused)

2. Porifera

2.1. Study of *Leucosolenia* and *Sycon* (structure, skeleton and canal system)

2.2. Sponge culture and its importance in industry and commerce

3 Cnidaria

3.1. Study of *Obelia* and *Aurelia* (structure and reproduction)

3.2. Coral reefs and coral in commerce and industry

4 Platyhelminthes

4.1 *Fasciola* and *Taenia:* structure, reproduction, life-cycle and parasitic adaptations

5. Nemathelminthes

5.1. *Ascaris*: structure, reproduction and life-cycle

5.2. Nematode parasites of man: *Ascaris, Ancylostoma* and *Wuchereria*: diagnostic characters, mode of infection and diseases caused.

6. Annelida

6.1. Nereis: structure with special reference to reproduction

6.2. Earthworms and soil improvement

7. Arthropoda

7.1. Palaeomon: structure with special reference to reproduction

7.2. Zoological importance of *Limulus*

8. Mollusca

8.1. *Unio:* structure with special reference to Reproduction

8.2. Torsion and detorsion in gastropods

8.3. Utility of mollusks in food and ornaments.

8.4. Pearl culture

9. Echinodermata

9.1.Asterias: structure with special reference to water vascular system

9.2. Larval forms of Echinoderms and their significance

Z0B-502: Functional Anatomy and Economic Importance of Chordates

Credits: 2

1. Origin of vertebrates

2. Integument and its derivatives

2.1. Structure of integument

2.2. Scales, feathers, hair, beaks, nails hoofs, horns, glands

3. Skeletal system

3.1 Axial skeleton of human: Hyoid bone, Vertebral column and Thorax

4. Digestive system

4.1. Stomach, its modifications in relation to feeding habits

4.1.1. Length and surface area

4.1.2. Internal folds

4.2. Oesophagus

4.3. Stomach its modification in ruminant mammals

4.4. Dentition

4.5. Dental formula in mammals

5. Respiratory system

5.1. Aquatic respiration

5.2. Aerial respiration

6. Circulatory system

6.1. Aortic arches

6.2. Lymphatic system

7. Nervous system

7.1. Evolution of cerebral hemispheres and cerebellum

7.2. Chemoreceptors

8. Urinogenital system

8.1 Excretory system

8.1.1 Types and evolution of kidney tubules

8.1.2 Urinary duct and bladder

8.2. Reproductive system

8.2.1 General plan of gonads (mammals)

8.2.2 Accessory reproductive organs (mammals)

9. Economic importance

9.1. Fish industry and economy.

9.1.1 Fish preservation

9.1.2 Fish by-products

9.2. Amphibians as biological control agent

9.3. Snake venom, its uses and antivenin production

Practical

Credits: 2

Part-A : Functional anatomy and economic importance of non-chordates.

1. Protozoa

1.1. Survey of pond water for study of free living Protozoans

1.2. Culturing of *Paramecium* and *Euglena* and observation of their locomotion

2. Porifera

2.1. Study of canal systems (asconoid, syconoid, leuconoid) from preparedslides and models

2.2 Mounting of spicules

2.3. Study of the following museum specimens: *Leucosolenia, Sycon, Euplectella, Hyalonema, Spongilla, Cliona, Euspongia,*

3. Cnidaria

3.1. Study of the following through prepared slides: T.S. of *Hydra* through ovary and testis, *Scyphistoma* and *Ephyra.*

3.2. Study of the following museum specimens: *Physalia, Porpita, Vellala, Aurelia,Tubipora, Corallium, Gorgonia,Pennatula, Metridium, Fungia, Millepora.*

3.3. Study of coral and coral reefs from chartand specimen

3.4 Permanent stained preparation Obelia and Hydra.

4. Ctenophora

4.1. Study of the following museum specimens: *Hormiphora, Pleurobranchia, Beroe*

5. Platyhelminthes

5.1. Study of the following from slides/specimen: *Dugesia, Polystoma, Schistosoma, Echinococcus, Fasciola, Taenia,* Miracidium, sporocyst, redia, cercaria, metacercaria, Hexacanth bladder worm

6. Nemathelminthes

6.1. Study of the following from slide specimen: *Ascaris*(male and female)
T.S. of *Ascaris , Wuchereria, Ancylostoma and Enterobius.*

7. Annelida

7.1. Leech and Earthworm.

7.1.1 External features

7.1.2 Dissections: Digestive, urinogenital and nervous systems

7.1.3 Mounting of jaws and salivary glands

7.2. *Nereis:* Permanent stained preparation of parapodium

7.3. Study of the following museum specimens/slides: *Nereis, Aphrodite, Arenicola, Sabella, Acanthobdella, Branchellion, Bonellia*

7.4. Trochophore Larva, T.S. of Leech through crop sac

8. Arthropoda

8.1. Scorpion

8.1.1. External features

8.1.2. Dissections: Digestive and nervous system (cockroach and scorpion)

8.1.3. Permanent preparation of book –lungs

8.2. Study of the following museum specimens/slides: *Daphnia, Cypris, Cyclops (male and female),*

Lepas, Balanus, Cancer, Julus, Scolopendra, Peripatus, Limulus Lepisma, Cricket, beetle, grasshopper, termite, *Apis,* wasp, butterfly, moth.

8.3. Study of the following larval forms from slides: Nauplius, Zoea and Megalopa.

8.4. Study of life cycle of silk worm fromchart and model/specimen

8.5. Study of prawn culture from chart/model.

9. Mollusca

9.1. *Unio*

9.1.1 Dissection of nervous system

9.1.2 Stained preparation of gill lamella

9.2. Study of the following museum specimens: *Chiton, Cyprea, Patella, Aplysia, Doris, Vaginula, Achatina, Dentalium, Mytilus, Pecten, Teredo, Solen, Sepia, Loligo, Octopus.*

9.3. Study of pearl formation and its culturefrom chart/model

10. Echinodermata

10.1 Study of the following museum specimen: Star fish, brittle star, sea urchin, sea cucumber, sea lily

10.2 Study of the following larval form from slides: Bipinnaria, Brachiolaria, Auricularia, Ophiopluteus and Echinopluteus.

Part-B: Fuctional anatomy and economic importance of Chordates.

1. Lower chordates (specimen) :

*Branchiostoma, Balanoglossus, Herdmania*Slides: Section of *Branchiostoma* with Pharynx and Intestine, *Amphioxus* section through Pharyngeal, intestinal and caudal region

2. Pisces (specimen)*Petromyzon, Pristis, Zygaena, Trygon, Torpedo, Echenis, calarias, Labeo, Myleobates, Synganthus,* Cat fish, Puffer fish, Flat fish, Flying fish.

3. Amphibians.(Specimen) Salamander, *Triton, Necturus, Rana tigrina,* toad, *Bufo, Hyla, Rachophorus.* Axotol larva

4. Reptilia (specimen) : *Testudo, Draco* and *Chamaeleon*

5. Aves (specimen) Vulture, koel, owl, woodpecker, ostrich, parrot, pigeon, crow.

6. Mammal: specimen –Bat, hedgehog shrew, dolphin, squirrel.

7. Osteology

a) To study the disarticulated skeleton of Rabbit and frog.

b) To study the human bones through disarticulated human skeleton.

9. Visit to fish culture farm or Aquarium/Zoological Park and submission of field report.

SEMESTER – VI

ZOB-601: Biochemistry

Credits: 2

1. Proteins

1.1. Amino acids: Ionization, titration curve, pK and pI

1.2 Reactions involving α amino group (Sanger and Edman's reactions)

1.3. Primary structure and general properties of amino acids.

2. Enzymes

2.1. Kinetics (determination of Km and Vmax using Michaelis-Menten and Lineweaver-Burk plots)

2.2. Concept of regulation of enzyme activity (inhibition, allosterism and effects of temperature and pH)

2.3. Introduction to ribozymes and abzymes

3. Carbohydrates

3.1 .Structural polysaccharides

3.1.1 Homopolymers (cellulose and chitin)

3.1.2 Heteropolymers (peptidoglycans and glycoseaminoglycans)

3.2. Carbohydrate metabolism.

3.2.1 Glycolysis

3.2.2 Krebs cycle

3.2.3 Electron transport chain and ATP synthesis

4. Lipids :

4.1 Structural and functional significance of triglycerides, phospholipids, cholesterol and prostaglandins

5. Nucleic acids

5.1. Conformation of DNA (A, B and Z)

5.2. Mechanism of DNA replication

5.3. RNA

5.4. Mechanism of transcription and Processing of hnRNA

5.5 Mechanism of translation

6. Genetic engineering

6.1. Tools: Restriction enzymes, vectors

6.2. Construction of recombinant DNA

ZOB-602: Mammalian Physiology

Credits: 2

1. Respiration

1.1. Mechanism and regulation of breathing

1.2. Transport of oxygen and carbon dioxide

1.3. Respiratory quotient

2. Circulation

2.1. Buffer system in blood

2.2 Blood groups

2.3. Cardiac cycle and its regulation

2.4. Haemostasis

3. Nutrition and Digestion

3.1. Balanced diet

3.2. Digestion and absorption of carbohydrates, proteins and fats

4. Excretion

4.1. Nephron

4.2. Urine formation

4.3. Hormonal control of renal function

5. Nervous System

5.1. Myelinated and non-myelinated nerve fibres

5.2. Resting and action potential

5.3. Initiation and conduction of nerve impulse

5.4 Types of synapses and chemical transmission

6. Muscles

6.1. Types and functional diversity

6.2. Ultrastructure of skeletal muscle

6.3. Muscle proteins

6.4. Chemistry of muscle contraction

6.5. Elementary knowledge of muscle twitch, tetanus and fatigue, isotonic and isometric contractions

Practical

Credits: 2

Part-A : Biochemistry

1. Determination of pK and pI values ofglycine
2. Identification of amino acids in the mixture using Paper chromatography
3. Estimation of protein by Biuret method
4. To test the urine for urea, Proteins, ketones and sugar.
5. Qualitative analysis (colour test) for detection of carbohydrate, lipids and proteins.
6. Isolation of Milk protein
7. To study the effect of inhibitors on salivary amylase.

Part-B : Mammalian Physiology

1. To observe the coagulation of blood.
2. Counting of red blood corpuscles
3. Counting of white blood corpuscles
4. To Determine the Blood Group and Rh factor of man.
5. Determination of haemoglobin content in human blood.
6. Measurement of blood pressure using sphygmomanometer
7. Determination of oxygen consumption (cockroach)
8. To study the permanent histological slides of spinal cord, duodenum, liver, lung, kidney, bone, cartilage, testis, ovary, artery, vein, stomach, intestine, spleen.
9. To demonstrate the process of osmosis.
10. Physiology lab attachment programme.

SEMESTER – VII

Modern trends in school Zoology

Credits: 2

1. Reproductive health:

Infertility in male and females: causes, diagnosis and management, assisted reproductive technology : sex selection, sperm bank, frozen embryo, in vitro fertilization, EFT, ZIFT, GIFT, PROST, modern contraceptive technology.

2. Non infectious diseases:

Causes, types, symptoms, complication diagnosis and prevention of Diabetes (Type I and Type II) Hypertension (Primary & secondary)

3. Infectious diseases

Causes types symptoms, diagnosis and prevention of Tuberculosis and hepatitis

4. Tumours

Types (benign/malignant) detection and metastasis

Medical imaging: X-ray of bone fracture, MRI and CT scan (using photograph)

5. Wild Life

Concept and importance of wild life as a resource, concept of habitat, niche biodiversity and bioindicators

SEMESTER – VIII

Z0B-801: Mammalian Endocrinology and Developmental Biology

Credits: 3

Endocrinology

1. Classification of chemical messengers

1.1. Hormones

1.2. Neurohormones and neurotransmitters

1.3. Pheromones

2. General mechanism of hormone action

3. Hypothalamo-hypophysial system

3.1. Structure of the hypothalamo-hypophysial system

3.2. Neurohypophysial hormones – oxytocin and vasopressin

3.3. Hormones of the adenohypophysis

3.4. Hypothalamic control of adenohypophysis

4. Biological actions and regulation of secretion of hormones of following glands

4.1. Thyroid

4.2. Adrenal

4.3. Endocrine pancreas

4.4. Testis

4.5. Ovary

5. Gastrointestinal hormones (gastrin, CCK, secretin and motilin)

6. Hormonal dysfunctions and diseases

6.1. Dwarfism and acromegaly

6.2. Goiter

6.3. Addison's disease

6.4. Diabetes mellitus

Developmental Biology

7. Mechanism of fertilization

8. Growth and differentiation: Measurement of growth, growth controlling, promoting and arresting factors, differentiation of germ layers (development of

CNS and eyes), skin, notochord, somites, coelom and digestive tube (upto rudiments only)

9. Cleavage, gastrulation and fate map

9.1. Comparison of cleavage in frog and chick

9.2. Comparison of fate map of sea frog and chick

9.3. Comparison of gastrulation in frog and chick

10. Mechanism of metamorphosis in frog

11. Development and functions of placenta in mammals

12. Embryonic stem cells

ZOB-802: Immunology& Microbiology

Credits: 3

Immunology and Microbiology.

1. Introduction to immunity

2. Cells and organs of immune system

2.1. Types of immune cells: lymphoid and myeloid

2.2. Primary and secondary lymphoid organs and lymphatic system

3. Humoral immunity

3.1. Antigen

3.2. Immunoglobulins: types, structure and function

3.4. Complement system

4. Cell mediated immunity

4.1. Structural organization of MHC complex

4.2. Antigen processing and presentation

4.3. Functions of T-cells

5. Introduction to immunological disorders

6. Introduction of Microbiology

7. Microbial diversity

7.1. Viruses

7.2. Archaea

7.3. Bacteria

7.4. Eukaryotic microorganisms

8. Techniques in microbiology

8.1. Culture and growth of microorganisms

8.2. Classification of bacteria based on staining of microbes

9. Host-parasite relationship

9.1. Beneficial and harmful interactions of microbes with human

9.2. Virulence factors and toxins

10. Applied microbiology

10.1. Useful microbial products: antibiotics, amino acids, bioinsecticides and biopolymers

10.2. Biodegradation

ZOB-803: Environmental Biology and Biotechniques

Credits: 3

1. Environmental Biology General concepts

1.1. Introduction to environmental biology

1.2. Major ecosystems of the world

1.3. Energy flow in ecosystem Productivity, food chain and food web

2. Populations and communities

2.1 Population characteristics: density, natality, mortality and growth curve

2.2. Nature, structure and attributes of biological communities

3. Pollution

3.1 Sources and impact of environmental pollutants – air, water and soil Global environmental changes – greenhouse gases and their effects

4. Natural resources

4.1. Soil, water, mineral resources and their conservation

4.2. Biodiversity – benefits, hotspots, threats and conservation

4.3. Human impact on natural resources

5. Biotechniques : Principles and uses of analytical instruments

5.1. pH meter

5.2. UV-visible spectrophotometer

5.3. Centrifuges (clinical, high-speed and ultra-centrifuge)

6. Microtomy and Microscopy

6.1. Tissue preparation

6.1.1. Fixation

6.1.2. Block preparation

6.1.3. Microtomy (paraffin and frozen tissue sectioning)

6.2. Types of Microscopes

6.2.1. Bright field

6.2.2. Dark-field

6.2.3. Phase contrast

6.2.4. Fluorescence

6.2.5. Scanning and transmission electron microscopes

7. Cell and tissue culture techniques

7.1. Culture media

7.2. Sterilization: room, media and glasswares

7.3. Types of animal cell culture.

7.4. Cell viability testing

7.5. Cryopreservation

8. Separation techniques

8.1. Chromatography

8.2. Electrophoresis

ZOB-804: Cell Biology, Genetics and Evolution

Credit: 3

1. Membrane transport

1.1. Principles of membrane transport, Channel proteins, carrier proteins

1.2. Passive and active transport

2. Intracellular transport and protein sorting

2.1. Signal peptides and protein targeting

2.2. Entry and passage of proteins through endoplasmic reticulum

2.3. Processing and sorting of proteins in Golgi Apparatus

2.4. Endosomes and lysosomes

3. Mitochondria and energy transfer

3.1. Mitochondria: origin, structure and functions

3.2. Electron transport and oxidative phosphorylation

4. Cell-cell communication:

4.1. Cell junctions.

4.2. Cell adhesion and extracellular matrix.

4.3. General principles of cell signalling.

5. Cell proliferation

5.1. Events in different phases of cell cycle.

5.2. Genetic regulation of cell proliferation

5.3. Cell transformation and malignancy

5.4. Genetic basis of tumourigenesis

6. Gene mapping

6.1. Point test cross in *Drosophila*

6.2. Tetrad analysis in *Neurospora*

6.3. Elementary knowledge of modes of recombination in bacteria

7. Mutation and mutagenesis

7.1. Molecular basis of mutation

7.2. Spontaneous and induced mutations

7.3. DNA Damage and repair

8. Genetic determination of sex

8.1. *Drosophila*

8.2. Human

9. Introduction to quantitative inheritance

10. Human genetic disorders

10.1. Metabolic (Phenylketonuria)

10.2. Triplet repeat expansion (Huntington)

10.3. Multifactorial (Diabetes mellitus)

11. Transgenic animals: strategies and applications

12. Evolution through ages

12.1. Fossils and dating of fossils

12.2. Geological column

12.3. Evolution of horse

13. Process of evolution

13.1. Genetic variations in population

13.2. Hardy-Weinberg Equilibrium

13.3. Evolutionary forces

13.4. Isolating mechanisms

13.5. Speciation: Allopatric and sympatric

13.6. Adaptive colouration and mimicry

Practical

Credits: 4

Part-A : Endocrinology and Developmental Biology& Cell Biology, Genetics and Evolution.

1. Survey of endocrine glands and accessory sex organ.
2. Surgical Techniques
   - 2.1. Ovariectomy
   - 2.2. Orchidectomy
   - 2.3. Adrenalectomy
3. Study of effects of orchidectomy/ovariectomy and replacement therapy on the seminal vesicle/uterus
4. Study of histological slides of the following:
   - 4.1. Pituitary
   - 4.2. Thyroid
   - 4.3. Endocrine pancreas
   - 4.4. Adrenal
   - 4.5. Testis
   - 4.6. Ovary
   - 4.7. Uterus
   - 4.8. Seminal vesicle
5. Frog embryology
   - 5.1 Collection of spawn and identification of stages

5.2 Study of developmental stages

6. Demonstration of early developmental stages of a freshwater snail
7. Study of whole mounts of chick embryos of 4 hours of incubation, 16 hours, 18 hours, 24 hours, 28 hours, 33 hours, 36 hours, 43 hours, 55 hours, 72 hours, 96 hours, six days chick embryo (W.M) Twelve day chick embryo, Eighteen day chick embryo and Twenty one day chick embryo
8. Study of development of chick embryo from permanent slides of sections through following regions

   8.1 T.S of 24 hours chick embryo through the head region and mid body region.

   8.2 T.S of the 28 hours chick embryo through the pericardial region.

   8.3 T.S of the 33 hours chick embryo through mid brain region.

   8.4 T.S of 48 hours chick embryo through brain and optic vesicles.

   8.5 T.S of 48 hours chick embryo through Auditory vesicles.

   8.6 T.S of 48 hours chick embryo through heart.

   8.7 T.S of 72 hours chick embryo through brain and eye.

   8.8 T.S of 72 hours chick embryo through pharynx.

   8.9 T.S of 72 hours chick embryo through Auditory vesicles.
9. Study of placental development in human by ultrasound scans.
10. Visit to poultry farm or animal breeding Centre and submission of the visit Report.
11. Identification of study of cancer cells from slides and photomicrograph
12. Study of stages of mitosis and meiosis from permanent slides
13. Simulation of principles of segregation and independent assortment using coloured beads.
14. Application of law of probability and chi-square test.
15. Mono and dihybrid crosses in *Drosophila.*
16. Study of sex-linkage – reciprocal crosses between red and white eyed flies.
17. Study of pattern of inheritance in human population of the traits Rolling of tongue and interlocking, and of the sex-influenced trait long vs short second finger in relation to the fourth finger (apply Hardy-Weinberg law).
18. To study the sex linked inheritance

    a) Colour blindness b) Haemophilia.

19. Genotype analysis in the pedigree chartof the Victorian family affected with haemophilia

20. Preparation of flow charts to depict steps involved in the following:

    20.1. Production of transgenic mouse for a chosen gene

    20.2. Gene therapy for a chosen human disease

21. Genotypic analysis of blood groups inhuman population to estimate allele frequencies by Hardy–Weinberg equation

22. Study of human karyotypes Normal and abnormal.

Part-B: Immunology, & Microbiology and Environmental Biology & Biotechniques

1. Demonstration of lymphoid organs.

2. Histological study of spleen, thymus and lymph nodes through slides/ Photographs.

3. ABO Blood group determination.

4. Preparation of culture media, sterilization

5. Culturing methods (bacterial plating, making stab, slant and growing liquid culture)

6. Gram staining

7. Methylene blue reductase staining

8. To estimate the dissolved oxygen (D.O.) content of given water sample by Winkler Method.

9. Estimation of grasshopper population density by capture-recapture method

10. Estimation of percent frequency, abundance and dominance of producers and consumers in grass land by quadrat sampling method

11. Determination of carbonate and nitrate in soil samples

12. Determination of free CO2 in different samples of pond water

13. To record the atmospheric temperature, Relative humidity and atmospheric pressure.

14. To study the physical characteristics (texture, colour and temperature) of the soil.

15. To estimate the alkalinity of given sample of water.

16. To study the chemical characteristics (like pH, moisture, carbonate content & nitrate content of soil.

17. Qualitative study of plankton in the sample of fresh water.
18. Visit to local/out station national park/zoological park to study the management and estimation of wild animals and submission of project/ field report.
19. To measure the total hardness of given sample of water and to estimate the pH of water sample by pH meter.
20. Preparation of a buffer and determination of pH using pH meter
21. Demonstration of functioning of spectrophotometer
22. Demonstration of use of bright field, phase contrast, dark field, fluorescence, confocal and electron microscopes
23. Tissue fixation, paraffin block preparation, sectioning and stained slide preparation

BOTANY

SEMESTER – I

BOB101: Cryptogams-I

Credits: 2

General classification of Cryptogams; study of structure, reproduction and life history of the following representative forms included in various groups.

1. Main characteristics of Chlorophyceae, Xanthophyceae, Phaeophyceae, Rhodophyceae and Cyanophyceae.
2. Chlorophyceae: Volvox, Oedogonium, Draparnaldiopsis.
3. Xanthophyceae: Vaucheria.
4. Phaeophyceae: Ectocarpus, Sargassum.
5. Rhodophyceae: Polysiphonia.
6. Cyanophyceae: Nostoc, Scytonema.
7. General characteristics of Mastigomycotina, Zygomycotina, Ascomycotina, Basidiomycotina and Deuteromycotina.
8. Mastigomycotina: Saprolegnia, Albugo.

BOB102: Cryptogams-II

Credits: 2

1. Zygomycotina: Rhizopus.
2. Ascomycotina: Peziza.
3. Basidiomycotina: Agaricus, Puccinia.
4. Deuteromycotina: Alternaria, Cercospora.
5. General characteristics of Hepaticopsida, Anthocerotopsida and Bryopsida.
6. Hepaticopsida: Marchantia.

Practical

Credits: 2

Lab. work based on Course BOB101 and BOB 102

SEMESTER – II

BOB201: Microbiology & Plant Pathology

Credits: 2

1. History and scope of Microbiology.
2. Position of microorganisms in the living world; morphological, metabolic and molecular criteria for the classification of bacteria (scheme not required).
3. Structure of a bacterial cell: capsule and slime, flagella, cell wall, cell membrane, chromosome, plasmid and endospore.
4. Structure of bacteriophages belonging to 'T' series.
5. Lysogenic and lytic cycles.
6. A brief account of genetic recombination in bacteria (transformation, conjugation and transduction).
7. Role of microorganisms in cycling of carbon and nitrogen.
8. Microorganisms and the production of alcoholic beverages, antibiotics and single cell protein.
9. General symptoms of viral, bacterial and fungal diseases of plants.
10. The study of the following plant diseases: Tobacco mosaic, citrus canker, late blight of potato, powdery mildew of pea, loose smut of wheat, covered smut of barley and wilt of pigeon pea.

BOB202: Cytology and Genetics

Credits: 2

1. Ultrastructure of plant cell: Nucleus, cytoskeleton.
2. Cell cycle: Interphase nucleus: euchromatin and heterochromatin, mitosis, meiosis; genetic significance of meiosis.
3. Basic tenets of Cytogenetics: Terminologies: Cytology, genetics, cytogenetics, cell and cell theory, germplasm theory, genotype-phenotype concept.
4. Mendel's laws of inheritance: Law of dominance, law of segregation, law of independent assortment, deviation from Mendel’s Law (Neo-Mendelism).
5. Interaction of genes: intragenic and intergenic interactions, Incomplete dominance, Lethal Genes, Complementary Genes, Supplementary Genes, Inhibitory Genes, Duplicate Genes, Epistatic Genes.

6. Linkage and crossing over: Interrelationships and importance, crossing over and meiosis, cytological basis of crossing over, crossing over and linkage maps, linkage groups, interference.
7. Sex determination: Bases of sex determination, chromosome theory of sex determination, sex determination in plants.
8. Theories of organic evolution: Theory of inheritance of acquired characters. (Lamarckism), theory of natural selection (Darwinism), de Vries Mutation theory, synthetic theory.

Practical

Credits: 2

Lab. work based on Course BOB201 and BOB202

SEMESTER – III

BOB301: Phanerogams-I

Credits: 2

1. Gymnosperms:
   - Classification (Sporne).
   - Morphology, anatomy, reproduction and economic importance of: Cycas, Pinus, Ephedra.
2. Angiosperms:

   Taxonomy
   - Bentham and Hooker's system of classification: Principles, outline, merits and demerits.
   - Distinguishing characteristics of the following families and their economic importance: Ranunculaceae, Papaveraceae, Rosaceae, Myrtaceae, Apiaceae, Cucurbitaceae, Rubiaceae, Asclepiadaceae, Apocynaceae, Acanthaceae, Solanaceae, Lamiaceae, Amaranthaceae, Poaceae.
   - Brief account of Plant collection and herbarium techniques and important herbaria of world.

BOB-302 Phanerogams II

Credits: 2

1. Anatomy of stems and roots with special reference to plants showing anomalies: Stem: Nyctanthes, Bignonia, Strychnos, Boerhaavia, Laptadenia, Dracaena, and root: Vanda.
2. Embryology - General Account
   - Microsporangium and Microsporogenesis.
   - Megasporangium and Megasporogenesis.
   - Male gametophyte.
   - Female gametophyte (monosporic, bisporic and tetrasporic embryosac).
   - Double fertilization.
   - Endosperm (Different modes of development, functions of endosperm).
   - Embryogeny: (Classification, development of any typical dicot and monocot embryo).

Practical

Credits: 2

Lab. work based on Course BOB301 and BOB302

SEMESTER – IV

BOB401: Ecology

Credits: 2

1. Introduction to ecology.
2. Environment: Abiotic and biotic environment; plant adaptations in response to water, temperature and light.
3. Population ecology: Population characteristics; ecotypes and ecads.
4. Community ecology: Community characteristics; frequency, density, cover.
5. IVI: life forms and biological spectrum.
6. Ecosystem ecology: Ecosystem structure (abiotic and biotic components, food chain, food web, ecological pyramids); ecosystem function (energy flow, biogeochemical cycles of carbon and phosphorus).
7. Ecological succession: Types and pattern.
8. Biogeographical regions of India.

BOB402: Plant Physiology & Biochemistry

Credits: 2

Water relation of plants: Water potential, water absorption, loss of water.

1. Cell Membrane: Structure, transport/Ion Transport.
2. Transport of solutes: Sugar translocation.
3. Mineral nutrition of plants: Role of micro-and macronutrients, symptoms of nutrient deficiency.
4. Photosynthesis: Structure of chloroplast, absorption of light, transfer of light energy, electron transport, photophosphorylation, C3, C4 and CAM pathways of carbon fixation, photorespiration.
5. Respiration: Structure of mitochondria, glycolysis, TCA cycle, electron transport, Oxidative phosphorylation.
6. Nitrogen metabolism: Forms of nitrogen, assimilation of nitrate.
7. Protein structure and Synthesis: RNA, transcription, translation, post translational modification of protein.

8. Enzymes: Classification, nomenclature, mechanism of action (binding to substrate, lowering of activation energy), factors controlling enzyme activity.
9. Plant growth hormones: Physiological role of auxins, gibberellins, cytokinins, abscisic acid and ethylene.
10. Phytochromes: Structure and functions.

Practical

Credits: 2

Lab. work based on Course BOB401 and BOB402

SEMESTER – V

BOB501: Cryptogams – III

Credits: 2

1. Classification (Fritsch's system) of algae and general characteristics of major classes.
2. Pigmentation and storage products.
3. Thallus organization and evolutionary tendencies.
4. Reproduction and life history types with reference to Chlorophyceae, Phaeophyceae, Rhodophyceae and Cyanophyceae.
5. Economic importance of algae.
6. General features of fungi and their classification (Ainsworth's system).
7. Structure, reproduction and life cycle of representative classes of fungi.
8. Types of fungal spores and mode of their liberation.
9. Evolutionary trends in fungi.

BOB502: Cryptogams – IV

Credits: 2

1. Economic importance of fungi.
2. General features and classification of Bryophyta (Smith's system).
3. Life histories of bryophytes with reference to Cyathodium, Pellia, Notothylus, Sphagnum and Polytrichum.
4. General account of evolution of sporophyte.
5. General features and contemporary system of classification of Pteridophyta.
6. Stelar evolution in Pteridophyta.
7. Evolutionary tendencies in sporangia.
8. Life histories of Psilotum, Isoetes, Adiantum, Ophioglossum, Marselia.

Practical

Credits: 2

Lab. work based on Course BOB401 and 402

SEMESTER – VI

BOB601: Phanerogams III

Credits: 2

1. Classification of Gymnosperms and general account of morphology and reproduction of the following: Cycadales (Zamia), Ginkgoales (Ginkgo), Coniferales (Biota) and Gnetales (Gnetum).
2. General account of Williamsonia and Pentaxylon.
3. Phylogenetic trends in Gymnosperms.
4. Distribution of living Gymnosperms in India.
5. Economic importance of Gypnosperm.

BOB602: Phanerogams IV

Credits: 2

1. Classification of Angiosperms (Takhtajan) and general account of numerical and chemotaxonomy.
2. Distinguishing characters of the following families and their economic importance: Annonaceae, Rutaceae, Meliaceae, Asteraceae, Convolvulaceae, Scrophulariaceae, Verbenaceae, Polygonaceae, Euphorbiaceae, Moraceae, Zingiberaceae, Liliaceae, Cyperaceae.
3. Embryology: General account of polyembryony, apomixis and experimental embryology with reference to another, embryoculture.

Practical

Credits: 2

Lab work based on BOB 601 and BOB602

SEMESTER – VII

BOB701: Environmental Toxicology

Credits: 2

1. Water Pollution: Sources, impact of pollution on aquatic ecosystems, eutrophication of water bodies.
2. Air Pollution: Sources, impact of air pollution on plants; acid rain, causes and effects.
3. Soil Pollution: Sources, impact on plants and ecosystems.
4. Green House gases: An overview, Impact on ozone layer depletion and global Warming.
5. Ecotoxicology: Concept of toxicity; role of ecological factors in modifying toxicity, biomagnifications.
6. Emerging Contamination: an overview.

SEMESTER – VIII

BOB801: Plant Ecology

Credits: 3

1. Population: Patterns and concepts, population growth, mechanisms of population differentiation.
2. Community: Community characteristics and their analyses, species diversity, niche.
3. Ecosystem: Concept, components and organization; primary productivity and its measurement Energy flow Nutrient cycling within ecosystems: C, N and P.
4. Mechanisms of ecological succession; concept of climax.
5. Environmental Pollution
   - Water Pollution: Sources and kinds, impact on aquatic ecosystem, eutrophication of water bodies.
   - Air Pollution: Sources and kinds, impact on plants, acid rain, causes and effects.
   - Soil Pollution: Sources and kinds, impact on plants and ecosystem.
6. Ecotoxicology: Concept of toxicity and its ecological implications, important toxicants, dose-response relationship, role of ecological factors in modifying toxicity, biomagnifications.

BOB802: Plant Metabolism, Biochemistry and Biotechnology

Credits: 3

1. Sulphur and phosphorus metabolism: Activation and assimilation of sulphur, energy-rich phosphorus compounds, ATP synthesis.
2. Nitrogen metabolism
   - Biological nitrogen fixation: The enzyme nitrogenase, substrate for nitrogenase and mechanism.
   - Nitrate metabolism: uptake and reduction into Ammonia, Ammonia assimilation.
3. Nucleic acids: Structure and properties of different forms of DNA and RNA, DNA replication.
4. Protein structure and synthesis: Basic aspects of protein conformation, protein synthesis transcription (mRNA processing), translation (activation

of amino acids, initiation, elongation, termination & release of peptides), post-translational modification of proteins.

5. Enzymes: mechanisms of enzyme action, coenzymes, allosteric enzyme, isozymes
6. Biosynthesis of carbon compounds: Sucrose, Starch, Cellulose, Lipids.
7. Biosynthesis and mode of action of: Auxins, Gibberellins, Cytokinins, Abscisic acid, Ethylene.
8. Biotechnological tools and techniques: Cloning vectors (pBR322, pUC8), recombinant DNA techniques, transgenic plant production.

BOB803: Cytogenetics and Evolution Process

Credits: 3

1. Chromosome structure: Physical Architecture, chemical composition, ultra structural organization.
2. Chromosome structural aberrations: Deletion, duplication, inversion, translocation, origin, cytological and genetical consequences, permanent translocation, hetrozygosity.
3. Genomic Variations
   - Aneuploidy: monosomics, trisomics, nullisomics.
   - Polyploidy: autopolyploidy, allopolyploidy, segmental allopolyploidy, autoallopolyploidy.
   - Sources and consequences of chromosomal anomalies.
4. Evolution of Karyotype and its importance: Concept and components of Karyotype, trends of Karyotype evolution, Karyotype in systematic and evolution of species.
5. Mapping of genes on chromosomes: Physical and Genetic maps, deletion mapping, linkage analysis, somatic cell fusion, in situ hybridization.
6. Multiple alleles and multiple factors: multiple allelism, ABO and Rh blood groups in man, eye colour in Drosophila, self sterility in plants, quantitative inheritance, kernel colour in wheat, skin colour in human beings, enhancer and suppresser genes.
7. Non Mendelian inheritance and organellar genetics: maternal influence, coiling in snail shells, plastoid inheritance in Mirabilis jalapa, petites in fungi, Kappa particles in Paramecium, sex factor in bacteria.
8. Mutation and mutagens: Types of mutation, molecular basis of mutation, physical and chemical mutagens and mechanism of their action.

9. Hybridization and its role in evolution: Heterosis, theories of hybrid vigour, evolutionary significance.

BOB804: Microbiology & Plant Pathology

Credits: 3

Section A: Microbiology

1. Introduction and scope of Microbiology.
2. General account of: Methanococcus, Halobacterium, Agrobacterium, Mycoplasma and Thermoplasma.
3. Growth of microorganisms in batch culture.

Section B: Plant Pathology

1. History and scope of plant pathology.
2. Modes of infection and physiology of parasitism.
3. Mechanisms of host–pathogen interactions.
4. Transmission and spread of plant diseases.
5. Methods of plant disease control.
6. Causal organism, symptoms, disease cycle and control measures of the following plant diseases: Green ear disease of bajra, downy mildew of crucifers, powdery mildew of sheesham, rusts of pea and linseed, smut of bajra, wilt of tomato, bacterial blight of rice, mosaic of sugarcane and little leaf of brinjal.

Practical

Credits: 4

Lab Work based on Course BOB801, BOB802, BOB803 and BOB804

MATHEMATICS

SEMESTER - I

MTB-101: Matrix Algebra

Credits: 2

Matrix algebra: Introduction, Elementary operations of matrices. Inverse of a matrix. Rank of a matrix, Determinants. Application of matrices to the system of linear equations, Consistency of the system.

MTB-102: Calculus

Credits: 2

Differential Calculus: Successive differentiation and Leibnitz theorem. Limit (ε-δ definition), Continuity, Discontinuity, properties of continuous functions. Differentiability, Chain rule of differentiation, Mean value theorems, Taylor's and Maclaurin theorems. Application of differential calculus in curve sketching.

MTB-103: Integral Calculus

Credits: 2

Definite Integral as the limit of sum

SEMESTER – II

MTB-201: Statics & Dynamics

Credits: 2

Statics: Analytic condition of equilibrium for coplanar forces. Equation of the resultant force. Virtual work.

Dynamics: Rotation of a vector in a plane. Velocity and acceleration components in Cartesian, polar and intrinsic systems. Central orbit, Kepler's laws of motion, rectilinear simple harmonic motion. Vertical motion on circular curves.

Motion with respect to linearly moving and rotating plane. Coriolis force and centrifugal force.

MTB-202: Algebra

Credits: 2

Algebra: Definition of a group with examples and simple properties, Subgroups, Generation of groups, Cyclic groups, Coset decomposition, Lagrange's theorem and its consequences. Homomorphism and Isomorphism. Permutation groups and Cayley's theorem. Normal subgroups, Quotient group, Fundamental theorem of Homomorphism. The Isomorphism theorems for groups.

MTB-203: Multivariable Calculus

Credits: 2

Functions of Two Variables: Limit, Continuity, Differentiability. Partial differentiation, Change of variables, Euler's, Taylor's theorem. Maxima and minima. Double and triple integrals, Beta and Gamma functions.

Vector Calculus: Gradient, Divergence and Curl. Greens, Stokes and Gauss Theorems with applications.

SEMESTER - III

MTB-301: Differential Equations

Credits: 2

Ordinary differential equations of first order: initial and boundary conditions, homogeneous equations, linear equations, Exact differential Equation. First order higher degree equations solvable for x, y, p. Singular solution and envelopes.

Linear differential equations with constant coefficients, homogeneous linear differential equations, linear differential equations of second order with variable coefficients.

Series solutions of differential equations. Bessel and Legendre equations. Bessel and Legendre functions.

MTB-302: Tensor & Geometry

Credits: 2

Contravariant and Covariant vectors, Transformation formulae, Symmetric and Skew symmetric properties, Contraction of tensors, Quetient law.

Polar equation of a conic, Sphere, Cone, Cylinder, Paraboloids, Central Conicoids.

MTB-303: Partial Differential Equation

Credits: 2

Linear partial differential equations of first order. Nonlinear PDE of first order: Charpit's method. Linear partial differential equation of second and higher order of homogeneous and non-homogeneous forms with constant coefficients. Second order PDE with variable coefficients. Monge's method.

SEMESTER – IV

MTB-401: Mathematical Methods

Credits: 2

Integral Transforms: Laplace Transformation, Laplace Transforms of derivatives and integrals, shifting theorems, differentiation and integration of transforms, convolution theorem. Application of Laplace transform in solution of ordinary differential equations. Fourier series expansion.

Calculus of Variations: Functionals, Deduction of Euler's equations for functionals of first order and higher order for fixed boundaries. Shortest distance between two non-intersecting curves. Isoperimetric problems. Jacobi and Legendre conditions (applications only)

MTB-402: Abstract Algebra

Credits: 2

Automorphism and inner automorphism, Automorphism groups and their computations. Normalizer and centre, Group actions, stabilizers and orbits. Finite groups, Commutator subgroups. Rings, Integral Domains and Fields. Ideal and quotient Rings. Ring Homomorphism and basic isomorphism theorems. Prime and maximal ideals. Fields of quotients of an integral domain. Principal ideal domains. Polynomial Rings, Division algorithm. Euclidean Rings, The ring Z[i].

MTB-403: Programming in C

Credits: 2

C fundamentals. Constants, Variables and Data types, Operators and expression, formatted input and output. Decision makings, Branching and Looping. Arrays. User defined functions. Structures. Pointers. File handling. Programming based on above.

SEMESTER - V

MTB-501: Analysis-I

Credits: 2

Riemann Integral, Integrability of continuous and monotonic functions, Fundamental theorems of integral calculus, Mean Value theorems of integral calculus.

Improper integrals and their convergence. Comparison test, Abel's and Dirichlet's test, Integral as a function of a parameter and its applications.

Sequences, Theorems on limits of sequences, Monotone convergence theorem, Cauchy's convergence criterion. Infinite series, series of non-negative terms. Comparison test, Ratio test, Rabbe's, logarithmic, De Morgan and Bertrand's tests. Alternating series, Leibnitz's theorem.

MTB-502: Differential Geometry

Credits: 2

Theory of space curves: Space curves, Planer curves, Serret-Frenet formulae. Osculating circles and spheres. Existence of space curves and evolutes and involutes.

Theory of surfaces: Parametric curves on surfaces. Direction coefficients. First and second Fundamental forms. Principal and Gaussian curvatures. Lines of curvature, Euler's theorem. Rodrigue's formula, Conjugate and Asymptotic lines. Developables, Developable associated with space curves, Developable associated with curves on surfaces. Minimal surfaces.

MTB-503: Discrete Mathematics

Credits: 2

Lattices and Boolean algebra: Logic: propositional and predicate. Lattices as partially ordered sets and as algebraic systems. Duality, Lattices and Boolean Algebra. Boolean functions and expressions. Application of Boolean algebra to switching circuits (using AND, OR and NOT gates)

Graphs and Planar Graphs: Graph, Multigraph, Weighted Graphs, Directed graphs. Paths and circuits. Matrix representation of graphs. Eulerian Paths and Circuits. Planar graphs.

SEMESTER – VI

MTB-601: Analysis-II

Credits: 2

Complex Analysis: Analytic functions, Harmonic functions, Elementary functions. Mapping by elementary functions, Mobius transformations, Conformal mappings.

Metric spaces: Introduction. Neighbourhood, limit points, interior points, open and closed set, closure and interior, boundary points. Subspace of a metric space, Completeness. Cantor's intersection theorem. Construction of real numbers as the completion of the incomplete metric space of rationals.

Dense subsets. Separable metric spaces. Continuous functions. Uniform continuity, Isometry and homeomorphism. Equivalent metrics.

MTB-602: Business Mathematics

Credits: 2

Financial Management: Financial Management. Goals of Financial Management and main decisions of financial management. Time Value of Money: Interest rate and discount rate. Present value and future value-discrete case as well as continuous compounding case. Annuities and its kinds.

Meaning of return. Return as Internal Rate of Return (IRR). Numerical Methods like Newton Raphson Method to calculate IRR. Measurement of returns under uncertainty situations. Meaning of risk. Difference between risk and uncertainty. Types of risks. Measurements of risk. Risk.Taylor series and Bond Valuation. Calculation of Duration and Convexity of bonds.

Mathematics in Insurance: Insurance Fundamentals - Insurance defined. Meaning of loss. Chances of loss, peril, hazard, and proximate cause in insurance. Costs and benefits of insurance to the society and branches of insurance-life insurance and various types of general insurance. Insurable loss exposures-feature of a loss that is ideal for insurance. Life Insurance Mathematics. Construction of Mortality Tables. Computation of Premium of Life Insurance for a fixed duration and for the whole life.

MTB-603: Special Theory of Relativity

Credits: 2

Review of Newtonian mechanics: Inertial frames. Speed of light and Gallilean relativity. Michelson-Morley experiment. Lorentz - Fitzgerald Contraction Hypothesis. Relative character of space and time. Postulates of special theory of

relativity. Lorentz transformation equations and its geometrical interpretation. Group properties of Lorentz transformations.

Relativistic kinematics: Composition of parallel velocities. Length contraction. Time dilation. Transformation equations for components of velocity and acceleration of a particle and Lorentz contraction factor.

SEMESTER - VII

MTB-701: Introduction to Teaching in School Mathematics

Credits: 2

1) Sets, Venn diagram, Basic algebra, Statistics, Bar graph, Line graph, Frequency Polygon, Histogram & Ogive.
2) MATLAB - High performance numeric computation and visualization software: User's Guide.

SEMESTER – VIII

MTB-801: Number Theory

Credits: 3

Primes and factorization. Division algorithm. Congruence and modular arithmetic. Chinese remainder theorem. Euler phi function. Primitive roots of unity. Quadratic law of reciprocity, application. Arithmetical functions. Mobius inversion formula. The Diophantine equations x2 + y2 = z2, x4 + y4 = z4. Farey sequences.

MTB-802: Operations Research

Credits: 3

Linear Programming problem, Convexity, Simplex and Revised Simplex algorithm, Duality theory, Dual simplex. Transportation, Assignment and Traveling Salesman problems. Portfolio Theory, Principle of Optimality and its applications.

MTB-803: Probability

Credits: 3

Notion of probability: Random experiment, sample space, axiom of probability, elementary properties of probability, equally likely outcome problems.

Random Variables: Concept, cumulative distribution function, discrete and continuous random variables, expectations, mean, variance, moment generating function.

Discrete random variables: Bernoulli random variable, binomial random variable, geometric random variable, Poisson random variable.

Continuous random variables: Uniform random variable, exponential random variable, Gamma random variable, normal random variable.

Conditional probability and conditional expectations, Baye's theorem, Independence, computing expectation by conditioning; some applications - a list model, a random graph, Polya's Urn model.

MTB-804(a) Combinatorial Mathematics

Credits: 3

Introduction to Basic ideas. Selection and Binomial Coefficients: Permutations, Ordered selections, Unordered selections, Remarks on Binomial theorem.

Pairing problems: Pairing within a set, Pairing between sets, an optimal assignment problem, Gale's optimal Assignment Problem.

Introductory knowledge of Recurrence: Fibonacci type relations, using generating functions, Miscellaneous methods.

Inclusion-Exclusion Principle: The Principal, Rook polynomials. Block Diagrams and Error-Correction codes: Block Design, Square Block Design, Hadanard Configurations, Error Correction Codes, Steiner Systems, Golay's Perfect Code.

(b) Computational Mathematics Lab

Introduction to Basic ideas of Mathematics lab. Familiarity with popular Softwares for numerical computations.

Real life problems requiring numerical algorithms for linear and non-linear algebraic equation Matrix computation and its Application DFT Model

MTB-805: Project

Project-I: Mathematics Lab **Credits: 2**

Application of Mathematical Software for plotting of functions, data analysis and curve fitting, 2D graphics and 3D graphics

Project-II: **Credits: 2**

Some innovation in form of the written project, in Mathematics/application of Mathematics, based on the knowledge gained during the under graduate course of studies in view of the developments in Mathematics.

STATISTICS

SEMESTER – I

STB – 101: Statistical Methods

Credits: 2

1. Types of data: Discrete and continuous data, Frequency and non-frequency data, Different types of scales, Primary data (designing a questionnaire and schedule), Secondary data (major sources including some government publication).
2. Construction of tables (with one or more factors), diagrammatic and graphical representation of grouped data, frequency and cumulative frequency distribution and their applications, histogram, frequency polygon, ogives, stem and leaf charts, box plot.
3. Concept of central tendency and its measures, partition values, dispersion and relative dispersion, moments, Sheppard's correction for moments (without derivation), skewness, kurtosis and their measures.

STB – 102: Probability

Credits: 2

1. Random experiment: Trial, sample point, sample space, definitions of equally likely, mutually exclusive and exhaustive events, definition of probability, classical and relative frequency approach to probability, axiomatic approach to probability and its properties, merits and demerits of these approaches, total and compound probability, conditional probability theorems, independence of events, Bayes theorem and its applications.
2. Random Variable: Concept of discrete random variable, probability mass function and distribution function, joint probability mass function of several discrete random variables, marginal and conditional probability mass functions.
3. Continuous random variable: Probability density function, distribution function, joint density function of two continuous variables, marginal and conditional probability density functions.

Practical

PRACTICALS BASED ON COURSE No. STB – 101 & 102 **Credits: 2**

Basic ideas of functioning of Windows and data entry in MS Excel will be given to the students. Students will be required to do practical, listed below (based on the contents of the theory paper STB – 101), using MS Excel:

1. Presentation of data by frequency tables, diagrams and graphs.
2. Measures of central tendency, partition values,
3. Measures of dispersion, relative measure of dispersion.
4. Moments, measures of skewness and kurtosis.
5. Evaluation of probability: using addition and multiplication theorems, conditional probabilities and Bayes theorem.

SEMESTER – II

STB–201: Descriptive Statistics

Credits: 2

1. Bivariate data: Scatter diagram, product moment correlation coefficient and its properties, coefficient of determination, correlation ratio, interclass correlation, concept of error in regression, principle of least square, fitting of linear regression and related results, rank correlation.
2. Partial and multiple correlation in three variables, their measures and related results.
3. Theory of attributes: Independence and Association of attributes, various measures of association for two way and three way classified data.

STB–202: Distribution Theory

Credits: 2

1. Expectation of random variable and its properties, conditional expectation, moment in terms of expectation, moment generating function of a random variable, their properties and uses, probability generating function, Tchebycheff's inequality and its applications, convergence in probability and in distribution.
2. Discrete and continuous probability distributions and their properties including degenerate distribution.
3. Standard discrete and continuous distributions: Uniform, binomial, Poisson, geometric, negative Binomial, hypergeometric, normal, beta, gamma, bivariate Normal distributions.

Practical

PRACTICALS BASED ON COURSE No. STB – 201 & 202 **Credits: 2**

Elementary ideas of binary number system, hardware and software components of computer system, and DOS operating system will be given to the students.

The students will be required to do the practicals, listed below (based on the contents of the theory paper STB – 201), using MS Excel:

1. Product moment correlation coefficient, correlation ratio, interaclass correlation coefficient.
2. Fitting of curves by least square method.
3. Regression of two variables.
4. Rank correlation.
5. Partial and Multiple correlations and regressions.
6. Fitting of discrete and continuous distributions.

SEMESTER – III

STB–301: Statistical Inference I

Credits: 2

1. Concept of random sample from a distribution, statistic and its sampling distribution, standard error of an estimate, standard errors of sample mean and proportion, sampling distribution of sum of Binomial, Poisson random variables and mean of normal distribution, requirement of a good estimator with examples.
2. Simple, composite null and alternative hypotheses, critical region, types of error, level of significance, p-values, size and power of a test, chi-square, t and f distributions and their properties (without proof), testing of equality of two means and two variances of two normal distributions, testing for the significance of sample correlation coefficient and testing the equality of means and variances of bivariate normal distributions.

STB–302: Sample Surveys and Design of Experiments

Credits: 2

1. Concept of population and sample, need for sampling, complete enumeration versus sampling, Basic concepts in sampling, sampling and Non-sampling errors, Acquaintance with the working (questionnaires, sampling design, methods followed in field investigation, principal findings, etc.) of NSSO and other agencies under taking sample surveys.
2. Simple random sampling with and without replacement, estimation of population mean, population proportions and their standard errors. Stratified random sampling, proportional and optimum allocation, comparison with simple random sampling for fixed sample size.
3. Ratio, product and regression methods of estimation, estimation of population mean, evaluation of bias and variance to the first order of approximation, comparison with simple random sampling.
4. Systematic sampling (when population size (N) is an integer multiple of sampling size (n)). Estimation of population mean and standard error of this estimate, comparison with simple random sampling. Elementary idea of cluster sampling.
5. Analysis of variance for one way and two way classifications, need for design of experiments, basic principle of experimental design: randomization, replication and local control, complete analysis and layout of completely randomized design, randomized block design and Latin square design.

Factorial experiments and their advantages, main and interaction effects in 2x2 and 2x3 factorial experiments.

Practical

PRACTICALS BASED ON COURSE No. 301 & 302 **Credits: 2**

Programming with FORTRAN: The students will be given basic introduction of FORTRAN, such as:

FORTRAN Character Codes, Constants, Variables, names, arithmetic, logic and relational operators, expression, Arithmetic, relational and logical expression, Rules for writing arithmetic expressions, commands for using FORTRAN compiler.

Writing FORTRAN programs for simple mathematical expressions such as, factorial of a positive integer, summation of simple finite series, & solution of some mathematical expressions.

SEMESTER – IV

STB–401: Applied Statistics

Credits: 2

1. Demographic Methods: Sources of demographic data, census, registration, ad hoc surveys, hospital records, demographic profiles of the Indian census.
2. Measurement of Mortality and Life Table: Crude death rate, Standardized death rates, Age-specific death rates, Infant Mortality rate, Death rate by cause, Complete life table and its main features, Uses of life table.
3. Measurement of Fertility: Crude birth rate, general fertility rate, age specific birth rate, total fertility rate, gross reproduction rate, net reproduction rate.
4. Index Numbers: Price relatives and quantity or volume relatives, Link and chain relatives composition of index numbers; Laspeyre's, Paasche's, Marshal Edgeworth's and Fisher's index numbers; chain base index number, tests for index number, cost of living index number.
5. Time Series Analysis: Economic time series, different components, illustration, additive and multiplicative models, determination of trend, seasonal and cyclical fluctuations.
6. Statistical process and product control: Quality of a product, need for quality control, basic concept of process control, process capability and product control, general theory of control charts, causes of variation in quality, control limits, sub grouping summary of out of control criteria. Charts for attributes: p chart, np chart, c-chart, V chart. Charts for variables: R, (X, R), (X, σ) charts.

STB–402: Statistical Inference And Decision Theory

Credits: 2

1. Parametric model, parameter, random sample and its likelihood, statistics and its sampling distribution.
2. Point estimation : properties of estimators, mean square and minimum mean square error estimator, unbiasedness and minimum variance unbiased estimator, Cramer-Rao lower bound, amount of information, consistency of estimators and sufficient conditions for consistency, relative efficiency of an estimator, asymptotic efficiency, sufficiency, factorization theorem (without proof), concept of complete sufficient statistics, Rao-Blackwell theorem.
3. Methods of estimation : moments, maximum likelihood, minimum chi-square, least square with examples, BAN and CAN estimators, point estimates of measures of location, dispersion, regression, correlation and other useful parameters.

4. Concepts of confidence interval and confidence coefficient, confidence intervals for the parameters of univariate normal, two independent normal distributions and exponential distributions.
5. Statistical hypotheses, critical region, size and power of a test, most powerful test, randomized and non-randomized test, Neyman Pearson lemma and its applications, uniformly most powerful unbiased test, power likelihood ratio test and its applications, functions of UMP with simple illustration.
6. Elements of decision problems: Loss function, risk function, estimation and testing viewed as decision problems. Bayes rule.

Practical

Practicals Based On Course Nos . STB – 401 AND STB – 402 Credits: 2

1. CDR, STDR, CBR, Age specific death rates, life tables, GRR, NRR, Logistic curve and related practicals.
2. Laspeyre's, Passche's, Fisher's index numbers.
3. Problems related to trend, seasonal and cyclical fluctuations.
4. Charts: p, np, c, R, (X , R), (X, σ).
5. Practicals on moment, maximum likelihood, Minimum chi-square, least squares methods of estimation.
6. Testing of hypothesis for mean, variance, correlations, etc.

SEMESTER – V

STB - 501: Programming with C

Credits: 2

1. History and features of C language, components of C language, structure of a C program. Data type: Basic data types, enumerated data types, derived data types. Variable declaration, local, global, parametric variables, assignment of variables, numeric, character, real and string constants, arithmetic relation and logical operators, assignment operators, increment and decrement operators, conditional operators, Bitwise operators, type modifiers and expressions, writing and interpreting expressions, using expressions in statements. basic input / output.
2. Control Construct. I Control statements, conditional statements, if else, nesting of if. else, else lf ladder, switch statements. Loops in C: for, while, do while loops
3. Control Constructs II

   Break, continue, exit ( ), go to and label declarations.
4. One dimensional two dimensional and multidimensional arrays.
5. Storage classes: Automatic variables, External variables, Static variables, Scope and lifetime of declarations.
6. Functions, classification of functions, functions definition and declaration, assessing a function, return statement, parameter passing in functions, rewise on in Functions. Pointers (concept only).
7. Structure: Definition and declaration; structure (initialization) comparison of structure variable array of structures : array within structures, structures within structures, passing structures to functions, unions accessing a union member, union of structure, initialization of a union variable, uses of union. Introduction to linked list, linear linked list, insertion of a node in list, removal of a node from list.
8. Files in C. Defining and opening a file, input – output operation con a file, creating a file, reading a file.

STB – 502: Operations Research

Credits: 2

1. Definitions and scope of operation research, different types of models in operations research – their construction and general method of solution.

   Elements of linear programming problem (LPP): Canonical and standard forms, formulation of LPP, graphical method to solve two variable LPP,

solution of LPP using simplex procedure, use of artificial variables in LPP, generation of extreme point solutions, principle of duality in LPP, statement and proof of duality theorem, simple problems based on duality theorem.

2. Allocation Models: Transportation problem (T.P.), different methods of finding initial feasible solution of a T.P., UV method of finding optimal solution of a T.P., solution of assignment problem using Hungarian method.
3. Inventory Control: Definitions of various costs involved in inventory control. Deterministic Economic Lot Size problems with and without shortages.
4. Theory of games: Two person zero-sum games, pure and mixed strategies, saddle point, maximinminimax principle of rectangular games, games without saddle point, dominance and modified dominance principles, graphical solution of 2xN and Mx2 games, reduction of game problems to a L.P.P.

Practical

PRACTICALS BASED ON COURSE Nos. STB – 501 AND STB – 502

Credits: 2

SEMESTER – VI

STB–601: Numerical Methods

Credits: 2

1. Finite differences of different orders, Ä, E and D operators, factorial representation of a polynomial, separation of symbols, sub-division of intervals, differences of zero.
2. Concept of interpolation and extrapolation: Newton Gregory's forward and backward interpolation formulae for equal intervals, divided differences and their properties, Newton's formula for divided difference, Lagranges formula for unequal intervals, central difference formula due to Gauss, Stirling, Bessel, Laplace and Everett, concept of error terms in interpolation formula.
3. Inverse interpolation: Different methods of inverse interpolation.
4. Numerical differentiation.
5. Numerical Quadrature: trapezoidal rule, Simpson's one-third and three-eight rules, Weddle's rule.
6. Summation of series: Series whose general term (i) is the first difference of a function (ii) is in geometric progression.
7. Numerical solutions of differential equations: Euler's method, Milne's method, Picard's method and Runge-Kutta method.

STB–602: Elements of Stochastic Processes

Credits: 2

1. Definition and examples of stochastic process: classification of general stochastic processes into discrete/continuous time, discrete/continuous state spaces, types of stochastic processes elementary problems, random walk, gambler's ruin problem.
2. Markov chains: Definition and examples of Markov chain, transition probability matrix, classification of states, recurrence, simple problems, basic limit theorem of Markov Chain (statement only): stationary probability distribution, applications.
3. Continuous time Markov Chain: Poisson process and related inter-arrival time distribution, pure birth process, pure death process, birth and death process, problems.
4. Branching process: Definition and examples of discrete time branching process, probability generating function, mean and variance, probability of extinction problems.

Practical

PRACTICALS BASED ON COURSE Nos. STB – 601AND STB – 602 Credits: 2

SEMESTER- VII

Innovative Teaching Module in Statistics **Credits: 2**

Relevant to School Teaching

SEMESTER – VIII

STB–801: Demand Analysis, Analysis of Income Distribution and Queuing Theory

Credits: 3

1. Theory and analysis of consumer's demand, law of demand, price elasticity of demand, estimation of demand curves, forms of demand functions, Engel's curve, income elasticity of demand.
2. Analysis of income and allied distributions: Pareto distribution, graphical test, fitting of Pareto law, illustration, lognormal distribution and properties, Lorenz curve, Gini's coefficient.
3. Elements of queuing theory, characteristics of queues, Poisson process, distribution of inter-arrival time, definition of steady state condition, (M/M/1) : (~ / FIFO) and (M/M/1) : (N/ FIFO models, birth and death process, (M/M/K) : (~ / FIFO) and (M/M/K) : (N / FIFO) models.
4. Finite and infinite length models with associated distribution of queue length and waiting time, steady – state solutions of (M/Ek / 1) and (Ek / 1) queues, machine interface problem.

STB-802: Reliability

Credits: 3

1. Life testing and reliability theory: Basic concepts of life testing experiments, reliability, hazard function and their relationship.
2. Elementary notion of censored data, type I and type II censoring schemes, Poisson process.
3. Parametric distributions: Weibull, gamma, lognormal, exponential as life time distributions, point and interval estimation procedures for the above distributions.
4. Testing reliability hypothesis for exponential and Weibull distributions.
5. System reliability concepts: Parallel system, series system and k out of n system.
6. Elementary idea of reliability models for non – maintained systems.

STB-803: Distribution Theory

Credits: 3

1. Brief review of basic distribution theory, joint, marginal conditional p.m.f.'s and p.d.f's, standard discrete and continuous distributions, bivariate normal, bivariate exponential, multivariate normal and multinomial distributions,

functions of random variables and their distributions using Jacobian of transformation and other tools.

2. Compound, truncated and mixture distributions, conditional expectation, multiple and partial correlations, linear and multiple regressions. Markov, Holder, Jensen, Liapunov inequalities. Sampling distributions, non-central chi-square, t and F distributions and their properties. Distributions of quadratic forms under normality and related distribution theory. Order statistics, their distributions and properties, joint and marginal distributions of order statistics, extreme values and their asymptotic distributions (statement only) with applications. Approximating distributions Delta method and its applications, approximating distributions of sample moments, transformations of statistics.

STB-804: Statistical Inference-II

Credits: 3

1. Extension of Cramer-Rao inequality for multi-parameter case, Bhattacharya bounds, information in data about the parameters as variation in likelihood function.
2. Ideas of sufficient and minimal complete-sufficient statistics, sufficiency when the range of ariate depends on parameter, minimum variance unbiased estimators, Rao-Blackwell and Lehman-Scheffe theorems, examples based on some standard distributions.

Practical

PRACTICALS BASED ON COURSE Nos. SBT – 801 AND STB – 802 **Credits: 2**

Practical Work: Project **Credits: 2**

The project work shall be spread over the whole semester. A project be undertaken by a group of students. However, the project report shall be submitted by each member of the group separately. A project report shall clearly state the problem addressed, the methodology adopted, the assumptions and the hypotheses formulated, any previous reference to the study undertaken, statistical analyses performed and the broad conclusion drawn.

Syllabus
for B.A. B.Ed.
Humanities & Social Sciences Subjects
(Electives)

HISTORY

SEMESTER – I

PAPER I **Credits: 2**

HISTORY OF INDIA UPTO 1000 A.D. (PART-I)

Geographical Features

- Its impact on Indian History.
- Sources of Indian History:
  - Archeological source and their significance, Coins and Inscription
  - Literary sources: religious and secular
  - Foreign Accounts.

Early Man in India

- Paleolithic, Mesolithic, Neolithic and Chalcolithic Ages.
- Indus Civilization
  - Extend of the Civilization
  - Town Planning
  - Agriculture
  - Technology and Crafts
  - Trade and Commerce
  - Religion
  - Script
  - Decline of the Indus Culture.

The Aryans

- Theories of Migration:
- Vedic Political Institutions.
- Social and Economic Conditions.
- Vedic Religion, Varna and Caste system.

Second Urbanization

- Sixteen Mahajanapadas: Rise of Magadh Empire.
- Religious Upheavel:
  - Rise and Development of Jainism and Buddhism
  - Hinayana and Mahayana Philosophy

- Decline of Buddhism.

- Macedonian and Iranian Invasions: Their Impact.

Mauryan Empire:

- The Mauryan rise to power.
- Political and administrative organization, society and economy.
- Ashoka's Dhamma.
- Decline of empire.
- Arthashastra and Indica.

PAPER II **Credits: 2**

HISTORY OF INDIA UPTO 1000 A.D. (PART-II)

Rise of Minor Kingdoms

- Kushanas:
  - Kanishka: Chronology and achievements
  - Gandhara and Mathura Arts.
- Sakas.

Gupta Empire

- SamudraGupta and ChandraGupta II.
- Administrative and Cultural Achievements.
- Fahein.
- Decline of Gupta Empire.

Vardhan Dynasty

- Political Conditions of Northern India in 6^{th} century A.D.
- Harsha Campaigns and Political relations.
- Administrations, Religion.
- Yuan Chewang.

Important powers in the South

- Satavahanas.
- Vakatakas.
- Chalukyas.
- Rashtrakutas.
- Pallavas: their contribution to culture.

- The Cholas: polity, administrative and culture.

Rajput Polity

- Society and culture.
- Arab Conquest of Sindh.

PAPER - III **Credits: 2**

Project and Assignment

SEMESTER-II

PAPER - I **Credits: 2**

HISTORY OF ANCIENT CIVILIZATION (PART-I)

Egyptian Civilization

- Pre-dynastic period polity.
- The Pharoah.
- Egyptian Religion, Philosophy, Science, Language and Literature, Art, Social and Economic life.
- Contribution.

Mesopotamian Civilization

- Polity.
- Summerian.
- Old Babylonian contributions.
- Changes under Assyria.
- Chaldean Renaissance.
- Mesopotamian legacy.

Chinese Civilization

- Polity (upto Han Dynasty).
- Society, Trade and Commerce.
- Ancient Chinese Religion, Confucius, Language and Literature.

Civilization of Ancient Persia

- Rise of Cyrus.
- Darius the Great.
- Decline of Persian Empire.
- Persian Culture.
- Zorastrianism- its fusion with Mithraism and Manicheism.
- Herbrews Religion and Culture.
- Rise of Christianity and its impact in the world.

PAPER - II **Credits: 2**

HISTORY OF ANCIENT CIVILIZATION (PART-II)

Greek Civilization

- Homeric Age: Polity, Culture, Social and Economic life.
- Athens and Sparta.
- Hellenic thoughts and culture: Philosophy, science, literature, Greek Art.
- Aristotle and Plato.
- Greek society, economy and religion.
- Alexander the Great.

Roman Civilization

- Early Settlements – their government overthrew of Monarchy.
- Early republic political changes.
- Struggle between Patricians and Plebeians.
- Carthegean wars.
- Pompey and Julius Ceaser.
- Cultural life: society, economy, philosophy, art and religion.
- The Principate-Augustus.
- Roman Law.
- Late Empire : Diocletian, Cultural stagnation, Decay and Decline.

Byzantine Empire:

- Polity ,Despotic Government.
- Religion, Society.
- Intellectual achievements.
- Justinian Codes.
- Byzantine Art.

Sassanid Empire

PAPER - III **Credits: 2**

Project and Assignment

SEMESTER-III

PAPER - I **Credits: 2**

HISTORY OF MEDIEVAL INDIA (Part –I)

Turkish Conquest of Northern India

- Political and social conditions of India at the time of Turkish Invasion.
- Factors responsible for the success of the Turks.
- Establishment of Delhi Sultanate in the 13th century.
- Qutubuddin Aibak.
- Illtumish – His military and administrative achievements, composition of nobility.
- Balban Theory of Kingship and organization of Govt.

Indian under the Khaljis and the Tughluqs

- Khilji revolution.
- Mongol Invasions during the regime of Allauddin Khilji.
- Agrarian Measures and Market Control Policy of Allauddin Khilji.
- Muhammad Tughlag's ambitious projects.
- Firoz Tughlug's humanitarian measures and Tughlug's role in the downfall of the Sultanate.
- Administration of the Delhi Sultanate- Central Govt, Iqta system and the army.

Vijaynagar and Bahamani Empire

- Salient features of political administration.
- Economic and social history.
- Rise of feudatories and disintegration.

Religious Thought of 14th and 15th century: Non-Muslim and Sufi.

PAPER II **Credits: 2**

HISTORY OF MEDIEVAL INDIA (PART II)

Mughal Empire

- India on the eve of Babur's Invasion
  - Factors which led to Babur's success.
- Humayun's Problems.

- Sher Shah and his administration.
- Religious Policy of Akbar and Aurangzeb.
- Deccan Policy of the Mughals.
- North-west Frontier policy of the Mughals.
- Factors that led to the downfall of the Mughal Empire.
- Economic and Political Institutions of Mughal India
    - The Mughal Administration: Central and Provincial Administration
    - Land revenue system
    - Mansab and Jagir system.

The rise of the Marathas

- Factors responsible for the rise of Shivaji.
- Administrative system of Shivaji.
- Marathas under Peshwas.

The Sikhs

- Their rise.
- Sikhs under Banda Bahadur.

PAPER - III **Credits: 2**

Project and Assignment

SEMESTER – IV

PAPER I **Credits: 2**

HISTORY OF MODERN WORLD (PART I)

Age of Mercantilism:

- Breakdown of the feudal order.
- Characteristic features of Feudalism.
- The discoveries and Growth of world commerce.
- Renaissance, Reformation, Calvinism and Lutherism.
- Counter Reformation.
- Rise of nation states.
- Struggle between Charles I and the Parliament.
- English Revolution of 1688.

The Industrial Revolution in Britain

- Agricultural Revolution and the Enclosure Movement.
- Mechanical invention and source of power.
- The factory system.
- Growth of Industrial capital.

The American Revolution

- Its Causes and Significance.

The French Revolution

- Causes of the French Revolution.
- The new political and social ideas.
- Political and economic consequences.
- Age of Reaction Matternich.

National Liberalism and Socialism during the 19th century

- German and Italian Unification.
- Marxian Socialism.

PAPER - II **Credits: 2**

HISTORY OF MODERN WORLD (PART II)

Imperialism and the World War I

- New Imperialism.
- Cause of World War I.

Colonialism in the 19th Century

- The Opium War and the Development of the Treaty Port.
- The Partition of Africa.

The Russian Revolution 1917

- Causes of the Russian Revolution.
- Civil War.
- The Communist International Building of Socialism in USSR.

Anti-Imperialist Movement

- The Revolution in China 1919-1949.
- Freedom and Reform in Emergence of Modern Turkey under Kamal Attaturk.

Inter-War Collective Security and its Failure

- League of Nations: Causes of its failure.
- Nazism and Fascism in Germany and Italy.
- World Depression of 1929 – 1932.
- Origin and impact of World War II.
- The U.N.O.

PAPER III **Credits: 2**

Project and Assignment

SEMESTER – V

PAPER I **Credits: 2**

HISTORY OF MODERN INDIA (PART I)

Advents of Europeans in India

- Anglo French Rivalry in South India (Carnatic wars).
- Establishment of British Supremacy in Bengal: Battle of Plassey and Buxar.

Anglo Mysore, Anglo Maratha and Anglo Sikh relation.

Subsidiary alliance.

Doctrine of lapse.

The Land Settlements.

- Permanent, Ryotwari and Mahalwari system.
- Drain of wealth.
- De-industrialization and Decline of towns till 1872.

Rebellion of 1857:

- Nature, Causes, Consequences and Failures.
- Company and the native states (1757 – 1947).

Social and National Awakening

- Causes.
- Raja Ram Mohan Roy and subsequent reform movements.
- Brahma Samaj.
- Arya Samaj.
- Aligarh Movement.

PAPER – II **Credits: 2**

HISTORY OF MODERN INDIA (PART II)

Growth of national movements in India

- Causes.
- Formation of Indian National Congress.
- Moderates and militant.
- Partition of Bengal.

Gandhiji's Political Philosophy

- Khilafat and Non-Cooperation Movement.
- Pro Changers and No Changers.
- Swarajists: achievements and failures.
- Revolutionary Terrorism.
- Civil Disobedience Movements.
- Development of Communalism in India.

Constitutional Developments in India

- Regulating Act.
- Queen's Proclamation.
- Act of 1909, 1919, 1935.

Simon Commission.

Nehru Report.

Cripps Mission.

Quit India Movement.

Cabinet Mission Plan.

PAPER - III **Credits: 2**

Project and Assignment

SEMESTER-VI

PAPER 1 **Credits: 2**

HISTORY OF ENGLAND (1485- 1919) (Part I)

Tudor England (1485 – 1603)

The New Monarchy:

Henry VII anti-haronial measures, The Beginning of the English Commercial Power: The Reformation, the Radical Reformation and the Counter Reformation under Edward VI and Mary, Erig and Europe.

The reign of Elizabeth (1553- 1603): The Religious settlement, Scotland. Conflict with Spain. The rise of the gentry. Parliament its growing power. English Renaissance.

Regime of the Early Stuarts (1603-40):

James I: The Doctrine of Divine Right. Arbitrary Government under Charles I. Foreign Policy of the Early Stuarts, overseas expansion.

The English Revolution (1640- 1660): The conflict between King and Parliament, The Civil War (1642- 45), Domestic and Foreign Achievements of Cromwell Government, Cromwell and Ireland, Causes of the fall of Common wealth.

Restoration (1660- 1688)- Significance of the Restoration, Domestic and Foreign Policies of Charles II ,James II and his fall. The Glorious Revolution (1689 – 1714): The nature of the compromise of 1689.

The Emergence of Whig Oligarchy. William and Anne, and the Foreign Wars (1689-1714).

PAPER II **Credits: 2**

HISTORY OF ENGLAND (1485- 1919) (Part-II)

The Whig Oligarchy (1714-60)

The nature of the Oligarchy. Walpole and Cabinet system. The beginning of Colonial system and overseas wars (from 1739).

The Industrial Revolution 1760- 1815:

The Agricultural Revolution, Enclosures, Growth of population.

The new industrial technology, textile and Iron and coal. Improvements in transport.

Conditions of working class.

Government and Politics.

Structure of Parliament and Regime of George III (1760-84), Revolt or American Colonies and England, Pitt the younger and impact of French Revolution war with revolutionary and Napoleonic France.

Economic impact of the war. Social unrest after 1815.

The Bourgeois Order 1815-16

(Last Phase of Industrial Revolution- Railways: Utilitarianism and drive for reform. Reform act of 1832, Free Trade, Chartism, Peels Ministry (1841- 1846), Corn Laws Repeal.

The Liberal Era (1846 – 85):

British Economic Supremacy Foreign policy, Palmerston. The Liberals and the Conservatives, Disraeli and the Reform Act of 1867.

Gladsoone and liberalism (1868-1885), Disraeli and new conservatism (1874—80), Gladstone and Ireland (1880-1885).

New Imperialism: The Great Depression**,** English Internal Politics (1885-1905)**,** Trade Unions**,** Fabians**,** Lib-Lab pact, Rise of Labour Party.

Rivalry with Germany and the causes of the First World War, consequences of the war.

PAPER III **Credits: 2**

Project and Assignment

SEMESTER – VII

PAPER I **Credits: 2**

TIBET:

Understanding Basic Tibetan Cultures and History; a Training based teaching in School Level:

Introducing basic Tibetan cultures and history through the readings of:

1. Tibetan Civilization by R. A Stein.
2. My Land and My People by Tenzin Gyatso, the 14th Dalai Lama.
3. Tibet: A Political History by W. D Shakapba.

SEMESTER VIII

PAPER-I **Credits: 3**

MODERN EUROPE (1748-1945) Part –I

1. Napoleon III: His Foreign Policy, Domestic Policy.
2. Emergence and developments of nationalism: Italy, Germany.
3. The Eastern Question disintegration of Turkish empire
   - The Crimean Wars (1854 – 56).
   - Berlin Congress, 1878.
   - Young Turk Revolution, 1908.
   - Balkan Wars (1912-13).

PAPER-II **Credits: 3**

MODERN EUROPE (1748-1945) Part-II

1. Socialist Though and Movement in Europe with reference to:
   - St. Simon.
   - Robert Owen.
   - Charles Fourier.
   - Prodhoun.
   - Karl Marx.
2. The Third Republic in France-Its achievements.
3. Bismarck: His Foreign Policy, Domestic Policy.

PAPER-III **Credits: 3**

MODERN EUROPE (1748-1945) Part-III

1. New Imperialism-Partition of Africa.
2. Kaiser William II – His Foreign Policy.
3. Formation of Triple Entente and division of Europe into two armed campus.
4. World War- I:
   - Causes and effects.
   - Peace Settlements of 1919.
5. The Russian Revolution of 1917:
   - Events leading to the Revolution.
   - Lenin-

- His role in the Revolution.
- New Economic Policy.
- His Foreign Policy.

- Stalin-
  - His Five Year Plan.
  - His Foreign Policy.

PAPER-IV **Credits: 3**

MODERN EUROPE (1748 – 1945) Part –IV

1. The League of Nations
   - Its aim and Organization.
   - Achievements and Failure.
2. Inter-War Dictatorship
   - Italy and Germany.
3. Policy of Appeasement.
4. World War II – Causes.

PAPER-V **Credits: 4**

Project, Assignment

Internal Assessment/Paper Based on Seminar, Panel, Workshop/Conference:

ECONOMICS

SEMESTER – I

PAPER-I: Microeconomics **Credits: 2**

Introduction-Economic Agents - Consumer, Producer and Government. Definitions of Economics, Approaches to the study of economics - Micro and Macroeconomics.

- **Theory of Consumer Behaviour**-Utility Function – Types and Measurement Cardinal Utility theory; Marginal Utility and Law of Diminishing Marginal Utility, Consumer's Equilibrium.
- **Ordinal Utility Theory** – Indifference Curve Analysis. Properties, Budget line, consumer's Equilibrium, Price, Income and Substitution Effect, Elasticity of Demand – Types and Measurement.
- Related Preference Hypothesis.
- **Theory of Production**- Production Functions Laws of Production – Laws of variable Proportion; Law of Returns to Scale, Isoquants, Iso-cost lines, Producer's Equilibrium, Expansion Path; Ridgelines, Concept of Costs.

PAPER-II: Structure of Indian Economy **Credits: 2**

- Indian Economy on the eve of Independence, Development of Planning Exercise in India.
- National Income (Output) and Employment Structure of Indian Economy, Composition and Relative growth of Agriculture, Industry and Service Sector.
- Trends and Patterns in Structure of Population – Growth Rate, Gender, Rural-Urban Literacy, Trends of Poverty and inequality, Inflation – Trends, Structure and Causes; Unemployment – Trends, Structure and Types.
- Trends in Agricultural Production; Land Reforms, Green revolution and its Effects.
- Trends and Patterns of Industrial Sector; Changes in the Structure of Indian Public Sector – Growth, Structure and its role.
- Trends in exports and Imports, Composition and Direction of Foreign Trade, Balance of Payments.

PAPER-III: Project /Assignment **Credits: 2**

SEMESTER – II

PAPER-I: Macroeconomics **Credits: 2**

- Nature and Scope.
- Natural Income Accounting and Natural Income Identities, Measurement of National Income.
- Theory of Employment and Output; The Classical Analysis, the Keynesian Analysis and the Neo Classical IS-LM Model.
- Consumption Function – Keynes' Absolute Income Hypothesis – APC and MPC, Permanent Income Hypothesis, Life Cycle Hypothesis.
- Investment Multiplier – Leakages and Limitations.
- Investment Functions – MEC & MEI, saving and Investment Identity.
- Acceleration Principle.
- Economic Fluctuations, Theories of trade cycles & Samulson Hicks. Recent Global Recessions.

PAPER-II: Indian Economic Policy **Credits: 2**

- Population Policy, Anti-Poverty Programmes, Employment Policy, Poverty-Unemployment Relationship.
- Evaluation of Agricultural Price Policy, Food Policy; Components, Measures and Effectiveness.
- Public distribution System; Evolution and Effectiveness.
- Industrial Policy – FERA, FEMA de-licensing, Disinvestment MRTP, SMEs; Growth, Structure, Policy, Performance.
- Monetary and Fiscal Policy and Macroeconomic Policy in India: Exim Policy, Policy on Foreign capital.

PAPER-III: Project /Assignment **Credits: 2**

SEMESTER – III

PAPER-I: Money and Banking **Credits: 2**

- Meaning and functioning of Money.
- Demand for Money – Conventional, Neo Classical and Keynes' approach.
- Value of Money – Cash Transaction and Cash Balances approach, Keynes' view.
- Inflation and Deflation – Causes and Effects and Measures to control, Inflationary Gap.
- Commercial Banking– Measuring and Functioning, Process of Credit creation.
- Central Banking – Functions, Methods of Credit Control, Role and Functions of RBI.
- Financial Market – Structure and Components.

PAPER-II: Public Economics – I **Credits: 2**

- Role of Public Finance; Equity and the Social Welfare Function.
- Public Goods – Concept of Public and Private Goods. The Principle of Maximum social Advantage; Models of efficient Allocation.
- Public Budget – Optimum Budget, Budget Vs. Plan, Budgetary Procedure in India.
- Principles of Taxation – Ability to Pay and its different criteria, Types of Taxes, Incidence and Shifting of Tax, Taxable capacity, Effect of Tax on Price and output.
- Indian Tax System – Types, Issues of Tax buoyancy in India, General Sales tax and Value Added Tax.

PAPER-III: Project /Assignment **Credits: 2**

SEMESTER – IV

PAPER-I: Market Analysis **Credits: 2**

- Market Structure- Market Definition, Concept of product and Factor Markets; Features and the Shapes of the Demand (or Average Revenue) Curve under Perfect Competition, Monopoly, Monopolistic competition and Oligopoly Market Structures; Concepts of Firm and industry, Equilibrium of the firm- total and marginal approach.
- Theory of Product Pricing- Perfect Competition, Price-output Determination in the short and Long Run.

  Monopoly: Price–output determination in the short and long run, Monopoly power: sources and measurement; Price Discrimination- Concept and conditions; Typology- first, second and third degree price discrimination;

  Monopolistic Competition: Price–output discrimination, Product Differentiation, Concepts of the 'industry' and the 'group', Excess capacity;

  Oligopoly: Equilibrium in the Oligopolistic market; Cournot Model, Price Rigidity, Price Leadership.

PAPER-II: Public Economics – II **Credits: 2**

- Budgetary deficit; Concepts and Types, Public Debt – Classification and its impact, Methods of debt redemption and Management, Fiscal Deficit and Public Debt.
- Public expenditure Wagner's Law and Wiseman-Peacock hypothesis, Relationship between Public expenditure and Fiscal Deficit, Public expenditure in India; Pattern and Growth.
- Fiscal Policy – Keynesian and Neoclassical framework, Fiscal policy and Neo-liberalism; Instruments and Effectiveness of fiscal Policy in India in context of roll back of state.
- Federal Finance – Principles, financial relationship between the Centre and States in India, Finance Commissions.

PAPER-III: Project /Assignment **Credits: 2**

SEMESTER – V

PAPER-I: Factor Pricing and Welfare Economics **Credits: 2**

- Theory of Factor Pricing – Marginal Productivity theory, Factor Pricing under perfect and Imperfect Market Conditions. Theories of Wage - Modern theory of Wages, Collective Bargaining, Rent - Differential Surplus approach, Modern Theory of Rent, Quasi rent; Interest - Money Rate and Real Rate of Interest, Classical and Keynesian Theory; Profit – Economic Profit; Gross and Net Profits; Risk and Uncertainty Bearing Theory.
- Welfare Economics – Individual and Social Welfare, Old Welfare Economics (Pigourvian), Pareto Optimality, Compensation Principle.

PAPER-II: Elementary Statistics **Credits: 2**

- Classification of Data, Graphical Presentation.
- Measures of Central Tendency – Mean, Median and Mode.
- Dispersion – Mean Deviation and Standard Deviation.
- Correlation – Spearman and Kaul Pearson.
- Index Number – Laspeyer, Paasche and Fisher.
- Skewness and Kurtosis.
- Concept of Probability, Theory of Probability.

PAPER-III: Project /Assignment **Credits: 2**

SEMESTER – VI

PAPER-I: International Economics **Credits: 2**

- Importance of International Economics, regional and International Trade.
- Theories of Trade – Absolute and Comparative Advantage, Reciprocal Demand and Opportunity Cost, Heckscher-Ohlin theory.
- Trade and Growth, Import-substitution Vs. Export Orientation.
- Concept of items of Trade; its relation with Economic Development, Gains from trade.
- Tariffs and Quota, Free trade Vs. Protection, The globalization debate.

PAPER-II: Population Studies **Credits: 2**

- Demography-Meaning and Difference from Population Studies.
- Population Theories-Malthusian, Neo Malthusian and Optimum Theory, Theory of Demographic transition.
- Age Pyramids-Concepts and Objects.
- Fertility-Measurement, Factors Affecting Fertility.
- Mortality-Measurement, Factors Responsible for Decline in Mortality.
- Basic Statistical Methods in Population Studies; Sources of Demographic Data, Mortality Analysis and Models, Population Growth, Composition and Distribution. Stable Population Theory, Health Statistics.

PAPER-III: Project /Assignment **Credits: 2**

SEMESTER – VII

Innovative Teaching Module relevant to School Teaching **Credits: 2**

SEMESTER –VIII

PAPER-I: International Macroeconomics **Credits: 3**

- Balance of Payments; Concept and Component, Disequilibrium and Measures to Correct Disequilibrium in the BOP.
- Concept of Foreign Trade Multiplier.
- International Monetary System; Foreign Exchange Market-Functions, Nominal and Real Exchange Rates, Fixed and Floating Exchange Rates, Buying and Selling Rate, Theories of Exchange Rate Determination.
- International Capital Movement; FDI and Portfolio Investment, Role of MNCs, Foreign Aid, Dual Gap Theory.
- International Institutions; IMF and World Bank, the GATT/WTO Agreements, Problems of International Liquidity and SDR, New International economic order.

PAPER-II: Introduction to Research Methodology **Credits: 3**

- The Nature of Economic Reality.
- Introduction to Descriptive, Analytical, Fundamental, Quantitative and Qualitative Research Approaches.
- The Time consideration; Historical, Experimental and Ex Post Facto.
- Positivism and Scientific Method, question of Objectivity and Subjectivity.
- Formulation of Research Problems; Review of Literature, Aim/objective, Hypothesis and Hypothesis testing.
- Data – Nature of Data, collection of Primary and secondary Data, Preparation of Questionnaire/Schedule, Reliability and validity.
- Introduction to Sampling Methods.
- Writing of a Report.

PAPER-III: Development Economics **Credits: 3**

- Meaning, Definition and Measurement of Economic Development, Concept of Sustainable development, Concept of Human Development, Indicators of Development, economic Growth Vs. Development
- Dualism – Technical, Economic, Social, Financial and Structural.
- Level of living, Poverty and Basic Needs – Indices of Poverty, Relative inequality, rural Poverty, Development with Disguised unemployment.
- Development Theories and Approaches; Strategies of Economic growth, stages of Economic growth (Rostow), Low Level Equilibrium trap (Nelson

Model), Critical Minimum Effort Thesis, theory of Big-Rush, Theory of Balanced Growth, Unbalanced Growth Strategies, Harrod-Domar and Solow Model.

PAPER-IV: Environmental Economics **Credits: 3**

- Historical Development of Environmental Economics; The Environment-Economy Interaction, Basic Concepts of Resource Economics.
- Pollution as an Economic Problem; Market Failure, Externality, Alternative Definitions of Pollution, Optimal Pollution, Marginal Damage and Marginal Abatement Cost.
- Instruments of Pollution control; Economic Instruments, International Agencies and Environment; UNEP, UNFCC.
- Environment Valuation; Concept of Total Economic Value, Uncertainty and Irreversibility; Economic Growth and Environment.
- The Basic Issues of Sustainable Development, Meaning, Indicators and Measurement.
- Environment Policy; National and International.

PAPER-V: Project /Assignment **Credits: 4**

GEOGRAPHY

SEMESTER-I

PAPER-I: Physical Basis of Geography **Credits: 2**

Unit I

Origin of the solar system and earth (James and Jeffereys, Russell, Lytilleton, Lemaitre); Interior of the earth; Rocks: origin and classification; Earth's movements.

Unit II

Major landforms: mountains, plateaus and plains; Gradational processes: weathering and erosion; Works of water, glacier and wind.

Unit III

Composition and structure of the atmosphere; Insolation; Temperature: vertical and horizontal distribution; Pressure and pressure belts; Winds: planetary, periodic and local.

Unit IV

Theories on origin of ocean basin, Physical properties of sea water: temperature and salinity; Ocean currents; Tides and Coral reefs.

PAPER-II: Practical: Map: Reading and Interpretation **Credits: 2**

Meaning and types of scale: simple, diagonal and comparative; Elements of map reading and Interpretation of toposheets, Relief features and profiles (serial, superimposed, composite and projected), Reduction and enlargement of maps.

PAPER-III: Project / Assignment **Credits: 2**

SEMESTER-II

PAPER-I: Human Geography **Credits: 2**

Unit I

Meaning, nature and scope of human geography; Development and branches of human geography; Concepts of human geography, Man-environment dynamic relationships: determinism, possibilism and probabilism.

Unit II

Evolution of man; Classification of races; Characteristics of races and their broad distribution; Human adaptation to environment: Eskimo, Masai and Bushman; Primitive people of India: Naga and Bhil.

Unit III

Growth of population; Distribution of population; Major human agglomerations; Trends of urbanization.

Unit IV

Rural settlements: characteristics, types and regional patterns; Urban settlements: evolution and classification; Rural houses in India: types, classification and regional patterns; Cultural regions of the world: classification and its attributes.

PAPER-II: Practical: Elementary Statistics **Credits: 2**

Sources of data; Tabulation and classification of data.

Measures of central tendency: mean, median and mode; quartile, decile and percentile; Measures of dispersion: range, quartile deviation, mean deviation, standard deviation and relative dispersion;

Measures of skewness: coefficient of skewness.

Correlation (Karl Pearson and Spearman) and regression analysis.

PAPER-III: Project / Assignment **Credits: 2**

SEMESTER – III

PAPER-I: Regional Study of Selected Developed Developing countries- USA and China **Credits: 2**

Unit I

Concepts, bases and characteristics of developed and developing countries, level of development: First, Second, Third and Fourth Worlds.

Unit II

Physical resources base: Physiography, climate, soil, vegetation, power and mineral resources.

Unit III

Cultural resource **base**: Population, Agriculture and Industries.

Unit IV

Agricultural and Industrial regions of USA, Agricultural and geographical regions of china.

PAPER-II: Practical: Map Projection and Weather Map **Credits: 2**

Map Projection: Conical: simple conic with one and two standard parallels, Bonne's, Cylindrical: simple and equal area.

Zenithal (Polar case): equidistant and equal area.

Weather Map: Weather symbols, Representation of atmospheric features, Interpretation of Indian daily weather maps (July, October and January).

PAPER-III: Project / Assignment **Credits: 2**

SEMESTER – IV

PAPER-I: Economic Geography **Credits: 2**

Unit I

Meaning, scope and approaches to economic geography; Main concepts of economic geography; Resource: concept and classification; Natural resources: soil, forest and water.

Unit II

Mineral resources: iron ore and bauxite; Power resources: coal, petroleum and hydroelectricity; Resource conservation; Principal crops: wheat, rice, sugarcane and tea

Unit III

Agricultural regions of the world (Derwent Whittle sey); Theory of agricultural location (Von Thunen); Theory of industrial location (Weber); Major industries: iron and steel, textiles, petrochemical and sugar; industrial regions of the world.

Unit IV

World transportation: major trans-continental railways, sea and air routes; International trade: patterns and trends; Major trade blocks: NAFTA, EEC, ASEAN; Effect of globalization on developing countries.

PAPER-II: Practical: Surveying **Credits: 2**

Surveying: meaning, classification and significance. Chain and Tape surveying; Plane Table surveying; Prismatic Compass,

Abney Level and Indian Clinometer

PAPER-III: Project / Assignment **Credits: 2**

SEMESTER – V

PAPER-I: Geography of India **Credits: 2**

Unit I

Geology; Physiographic divisions; Drainage system; Climate and climatic regions; Soil and vegetation.

Unit II

Minerals and power resources (iron ore, bauxite, coal and petroleum); Multipurpose projects; Irrigation; Major industries (iron and steel, cotton textile, sugar and cement).

Unit III

Crops (rice, wheat, sugarcane, cotton and tea) and agricultural regions, Green revolution and its consequences.

Unit IV

Macro-regions of India and their geographical specialties; Transport and communication; Trade: composition and recent changes.

PAPER-II: Practical: Representation of Geographical Data **Credits: 2**

Graphical Representation:

Bar diagram, Histogram, Frequency polygon, Frequency curve, Cumulative frequency curve or Ogive Rainfall dispersion diagram, Climograph, Hythergraph, Ergograph.

Cartographic Representation

Distribution maps: Dot, Isopleth, Choropleth, Chorochromatic and Choroschematic; Pie diagram. Cartogram: Traffic flow diagram, Isochronic cartogram.

PAPER-III: Project / Assignment **Credits: 2**

SEMESTER – VI

PAPER-I: Geomorphology **Credits: 2**

Unit I

Nature and scope of geomorphology; Principles and basis of geological time scale; Fundamental concepts: uniformitarianism and dynamic equilibrium, relief and differential rates of geomorphic processes; Models of landscape development- Davis, Penck and King.

Unit II

Cycle of erosion and slope evolution; Isostasy, Plate tectonics, Earthquakes; Folded structure and topography; Faulted structure and topography.

Unit III

Mass wasting and different geomorphic agents and processes- running water, wind, glacier, wave and underground water.

Unit IV

Evolution and development of river valleys; Drainage pattern and their significance; concept of graded stream; river channels- form, pattern and dynamics; Photo-geology and remote sensing application; Regional geomorphology of Appalachian Highland, Uttarakhand, Himalaya and Middle Ganga Plain.

PAPER-II: Practical: Geological Map and Map Projection **Credits: 2**

Geological Map: Conformable and folded geological structure and their description.

Map Projection: Conical: Polyconic, Sinusoidal, and Mollweide's; Cylindrical: Gall's and Mercator's; Zenithal: Gnomonic, Stereographic and Orthomorphic; International Map Projection

PAPER-III: Project / Assignment **Credits: 2**

SEMESTER-VII

Innovative Teaching Module relevant to School Teaching

Credits: 2

SEMESTER-VIII

PAPER-I: Agricultural Geography **Credits: 3**

Unit I

Meaning and scope of agricultural geography; Approaches to agricultural geography; Physical, cultural and institutional factors affecting agriculture.

Unit II

Crop concentration and crop diversification; Delineation of crop combination regions; Agricultural regions of the world; detailed study of subsistence, plantation, commercial and mixed farming.

Unit III

Agricultural land-use and carrying capacity; Land use pattern with special reference to India; Measures of agricultural efficiency and agricultural productivity.

Unit IV

Agricultural planning and policies in India, Agro-climatic regions of India, Green revolution in India; Second generation reforms in Indian agriculture: Land and institutional reforms, Evergreen revolution; Organic and contract farming.

PAPER-II: Climatology **Credits: 3**

Unit I

Meaning and scope of climatology; Atmospheric chemistry; Insolation: determinants and distribution, Temperature: factors, Distribution and processes of heating and cooling of the atmosphere.

Unit II

Heat budget of earth and atmosphere, Temperature change, Air stability and its importance, Laws of horizontal motion and general atmospheric circulation.

Unit III

Monsoon, Jet Stream and their significance with reference to India; Precipitation: forms and types; Air Masses: classification and modification; Fronts: source regions, types and associated weather.

Unit IV

Cyclones: tropical and temperate; Climatic classification: Koppen and Thornthwaite; Climatic change: evidences and theories; Global warming and micro-climate.

PAPER-III: Evolution geographical thought **Credits: 3**

Unit I

The field of geography; Geography as a discipline: natural science vs. social science; Relation with other branches of knowledge; Approaches to geography; Relevance of geography.

Unit II

Classical contributions to geographical thought: Greek, Roman, Indian, Arab; Geography rethought: Varenius and Immanuel Kant.

Evolution of geography in India: formative periods and establishments.

Unit III

Foundations of geography: major contributions of Alexander von Humboldt, Carl Ritter, and Frederick Ratzel; Dualism and Unity in geography.

Unit IV

Schools of geographical thought: French, British, Swedish and American; Evolution of modern geography in India; Recent trends in geography.

PAPER-IV: Practical: Field study, Field Trip and Report writing

Credits: 3

Fieldwork: Meaning, types and objectives of fieldwork; Fieldwork methods and techniques; Importance of fieldwork in geography, Field work-based report writing.

Field Study in Local Environment: Preparation of field report through fieldwork on any **ONE** of the following areas:

A locality of Varanasi city, a village near BHU, a river course near Varanasi.

Field Trip: Garhwal Himalaya, Kumaon Himalaya, Vindhyan Plateau, Thar Desert.

PAPER-V: Project/Assignment **Credits: 4**

ENGLISH

SEMESTER – I

ENGLISH-I **Credits: 2**

Indian English Poetry

1) R.N. Tagore - (i) Where the mind is without fear (ii) I had gone a-begging from door to door.
2) Henry L. Derozio – To the Pupils of the Hindu College.
3) Toru Dutt – The Lotus.
4) Sarojini Naidu – Awake!
5) Nissim Ezekiel – Very Indian Poem in Indian English.
6) A.K. Ramanujan – Another View of Grace, Striders.
7) Jayanta Mahapatra – Dawn at Puri.
8) Kamala Das – The Old Playhouse.

Indian English Fiction

1) R.K. Narayan – The Guide.

Critical Appreciation of Poetry (Unseen)

Essay Writing (Unseen)

ENGLISH-II **Credits: 2**

Guided Composition

1) Paragraph Development (With given hints).
2) Note Making

   Selecting essential information, note-taking from reading, drawing recommendations, summarizing, taking down the bare essentials, writing definitions and precise descriptions.
3) Précis Writing.

Grammar and Vocabulary

1) Parts of Speech (especially forms and functions of nouns, pronouns, verbs, adjectives, conjunctions, prepositions and interjections).
2) Re-arranging jumbled words into a meaningful order.
3) Correction of Errors in Sentences.
4) Antonyms.
5) Synonyms.
6) Homonyms.
7) One-word Substitution.

- Wren, P.C. & H. Martin (2009). High School English Grammar and Composition, revised by N.D.V. Prasada Rao, New Delhi: S. Chand.

ENGLISH-III **Credits: 2**

Project Work

- A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.
- The Supervisor/the Board of Supervisors may allot a new topic for Project if the topics suggested by the student-teacher are found to be lacking merit.
- Each student-teacher has to prepare a synopsis followed by a final draft on the topic she/he chooses for her/his Project.

SEMESTER – II

ENGLISH-I **Credits: 2**

Indian Drama

1) Girish Karnad – The Dreams of Tipu Sultan.
2) Vijay Tendulkar – Silence! The Court is in Session.

Indian English Fiction

1) Amitav Ghosh – The Hungry Tide.

Critical Analysis of a Prose Passage (Unseen).

Essay Writing (Unseen).

ENGLISH-II **Credits: 2**

Free Composition

Letter Writing – Formal and Informal

(a) Formal Letters
   i. Business Letters or Commercial Letters.
   ii. Application Letters.
   iii. Official Letters.
   iv. Editorial Letters.

(b) Informal/personal correspondence to parent(s), friend(s) or relative(s)
   i. Story Writing (A few hints may be given from which the story needs to be developed; the moral also requires to be mentioned).
   ii. Essay Writing – Approximately 350-500 words.

Functional Grammar

1) Agreement of the verb with the subject.
2) Use of Tense.
3) Active and Passive Voice.
4) Use of Articles and Prepositions.
5) Direct and Indirect Speech.
6) Use of Punctuation.
7) Use of Phrasal Verbs and Everyday Idioms.
8) Words commonly Misspelt.
9) Correction of Errors.

10) Transformation of Sentences
    i) Interchange between Parts of Speech.
    ii) Interchange between the Degrees of Comparison.
    iii) Interchange between Positive, Negative, Interrogative and Exclamatory Sentences.
    iv) Interchange between Simple, Complex and Compound Sentences.

ENGLISH-III **Credits: 2**

Project Work

- A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.
- The Supervisor/the Board of Supervisors may allot a new topic for Project if the topics suggested by the student-teacher are found to be lacking merit.
- Each student-teacher has to prepare a synopsis followed by a final draft on the topic she/he chooses for her/his Project.

SEMESTER – III

ENGLISH-I **Credits: 2**

Poetry

Renaissance Poetry

1) William Shakespeare – True Love (Sonnet 116).
2) John Milton – On his Blindness.

Romantic Poetry

1) William Blake – The Tiger.
2) William Wordsworth – Ode on Intimations of Immortality.
3) S.T. Coleridge – Kubla Khan.
4) P.B. Shelley – To a Skylark.
5) John Keats – Ode to Autumn.
6) Lord Byron – She Walks in Beauty.

Drama

1) William Shakespeare – The Merchant of Venice.

Figures Of Speech/ Literary Terms

Simile, Metaphor, Allegory, Parable, Fable, Metonymy, Synecdoche, Hypallage or Transferred Epithet, Allusion, Antithesis, Epigram, Climax, Personification, Apostrophe, Vision, Hyperbole, Innuendo, Irony, Periphrasis, Euphemism, Pun, Onomatopoeia, Alliteration, Assonance, Interrogation, Exclamation, Chiasmas, Zeugma.

Critical Appreciation of Poetry (Unseen).

ENGLISH-II **Credits: 2**

Listening

Concept, Significance and Activities to Develop Listening (Audio CDs prepared by BBC and other standard companies may be used in the Language Laboratory).

Speaking

Concept, Significance and Activities to Develop Speaking (Recording of own articulation following a standard variety of English may be encouraged during the Language Laboratory practices).

ENGLISH-III **Credits: 2**

Project Work

- A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.

- The Supervisor/the Board of Supervisors may allot a new topic for Project if the topics suggested by the student-teacher are found to be lacking merit.
- Each student-teacher has to prepare a synopsis followed by a final draft on the topic she/he chooses for her/his Project.

SEMESTER – IV

ENGLISH-I **Credits: 2**

Poetry

Victorian Poetry

1) Lord Tennyson – The Lotos Eaters.
2) Robert Browning – My Last Duchess.

Modern Poetry

1) W.B. Yeats – An Acre of Grass.
2) Wilfred Owen – Strange Meeting.
3) T.S. Eliot – The Hollowmen.
4) W.H. Auden – Musee des Beaux Art.

Drama

1) T.S. Eliot – Murder in the Cathedral.

Prosody (Scansion)

Critical appreciation of poetry (Unseen)

ENGLISH-II **Credits: 2**

Listening

Sentence drilling while listening to Audio CDs, Recorded Prepared Speeches by Famous Orators may also be shown as exemplary articulation patterns.

Speaking

Group Discussion, Framing and Delivering Dialogues on a Given Situation, Prepared and Extempore Speeches.

Reading

Recitation of a given poem, Reading a given prose piece etc. Intellectually stimulating topics should be carefully selected as reading passages to practise both silent and loud readings. A precise lecture on reading styles and types may be delivered by the teacher before the sessions of practice.

Writing

1) Speech(s) on given topic(s).
2) Newspaper reports.

Integration of the Four Skills

Tasks should be designed integrating the four skills viz., Listening, Speaking, Reading, Writing, by the teacher for more practice.

ENGLISH-III **Credits: 2**

Project Work

- A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.
- The Supervisor/the Board of Supervisors may allot a new topic for Project if the topics suggested by the student-teacher are found to be lacking merit.
- Each student-teacher has to prepare a synopsis followed by a final draft on the topic she/he chooses for her/his Project.

SEMESTER – V

ENGLISH-I **Credits: 2**

Short Stories

1) Somerset Maugham – The Lotus Eater.
2) James Joyce – Araby.

Essays and Sketches

1) Michael Thorpe – The 'Modernity' of Modern Prose.
2) E.M. Forster – Notes on the English Character.
3) Virginia Woolf – The Mark on the Wall.

Novel

1) Charles Dickens – David Copperfield**.**

Twentieth Century Literary Criticism

1. Absurd Drama.
2. Imagism.
3. Symbolism.
4. Naturalism.

Critical analysis of a Prose Passage (Unseen)

ENGLISH-II **Credits: 2**

Phonetics

Phonemic transcriptions, Phonemes and their articulation patterns.

Concepts of Modern Grammar

1) Difference between traditional and modern grammars.
2) Morphology.
3) Immediate Constituent (IC) Analysis.

English Language Education

1) Introduction to English Language Education.
2) Role of English in Indian Education.
3) English in Indian Classrooms.
4) Methods of Teaching English.
5) Recent Trends in Teaching English.

ENGLISH-III **Credits: 2**

Project Work

- A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.
- The Supervisor/the Board of Supervisors may allot a new topic for Project if the topics suggested by the student-teacher are found to be lacking merit.
- Each student-teacher has to prepare a synopsis followed by a final draft on the topic she/he chooses for her/his Project.

SEMESTER – VI

ENGLISH-I **Credits: 2**

Short Stories

1) H.E. Bates – The Ox.
2) Katherine Mansfield – The Fly.

Essays and Sketches

1) George Orwell – Shooting an Elephant.
2) D.H. Lawrence – The Spinner and the Monks.
3) G.B. Shaw – Freedom.

Novel

1) Rudyard Kipling – Kim.

Critical Analysis of a Prose Passage (Unseen).

ENGLISH-II **Credits: 2**

Phonetics

Accents, Intonations, Rhythm and Rhyme, Word articulation.

Concepts of Modern Grammar

1) Phrase Structure (PS) Grammar.
2) Transformational Generative (TG) Grammar.

English Language Education

1) Behaviourism – The Behaviourist View of Language Learning and the Language Teacher.
2) Cognitivism – Cognitive views on Learning, the Cognitive Theory of Learning Extended to Learning of Languages.
3) Developing Teaching Materials.
4) Curriculum Designing.

ENGLISH-III **Credits: 2**

Project Work

- A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.
- The Supervisor/the Board of Supervisors may allot a new topic for Project if the topics suggested by the student-teacher are found to be lacking merit.
- Each student-teacher has to prepare a synopsis followed by a final draft on the topic she/he chooses for her/his Project.

SEMESTER - VII

Innovative Teaching module for School teaching **Credits: 2**

SEMESTER - VIII

ENGLISH-I **Credits: 3**

Literary Genres

1) The Epic.
2) Tragedy.
3) Comedy.
4) The Novel.

Twentieth Century Literary Tendencies

1) Absurd Drama. 2) Imagism. 3) Symbolism. 4) Naturalism.

An Introduction to Twentieth Century Literary Theory and Criticism

1) What is Theory?
2) What is Literature and does it matter?
3) Language, Meaning and Interpretation.
4) Literature and Cultural Studies.

ENGLISH-II **Credits: 3**

Literary Concepts/Ideas

1) 'Imitation' as an Aesthetic Form.
2) Poetic Truth.
3) Art and Nature.
4) Art and Morality.

Critical Approaches to Literature

1) A Historical Approach to Literature Reading.
2) A Philosophical Approach to Literature Reading.

ENGLISH-III **Credits: 3**

Contributions/Theories of Some Selected Critics to Literary Criticism

1) Philip Sidney: Superiority of poetry over other sciences/disciplines (From An Apology for Poetry).
2) Samuel Johnson: Defence of Shakespeare's intermingling of the tragic and the comic in drama (From Preface to Shakespeare)**.**
3) William Wordsworth: Definition of Poetry: Language of Poetry and Objects of Poetry (From Preface to Lyrical Ballads).

4) T.S. Eliot: Concept of Tradition, Idea of History and the Theory of Impersonality (From Tradition and the Individual Talent).

Film Appreciation

Critical Analysis of a Prose Passage (Unseen).

ENGLISH – IV **Credit: 3**

Seminar Work

- From a proposed list of topics each student-teacher will finally opt for one topic.
- The Supervisor/the Board of Supervisors may allot a new topic for Seminar if the topics suggested by the student-teacher are not the mark.
- Each student-teacher shall prepare a synopsis followed by a final draft and a presentation thereon.

Report Writing

- Report Writing – Types, Structure and Format.

Acquiring Dissertation Writing skills such as

1) Structure and Format of Dissertation.
2) Studying the MLA style.

Critical Analysis of Poem (Unseen).

ENGLISH – V **Credits: 4**

Dissertation Writing

A number of topics may be suggested by each student-teacher out of which a single one is to be approved by the Supervisor/the Board of Supervisors.

The Supervisor/the Board of Supervisors may allot a new topic for dissertation if the topics suggested by the student-teacher are found to be lacking merit.

हिन्दी

(HINDI)

प्रथम अधिसत्र, प्रथम प्रश्नपत्र
हिन्दी

मध्ययुगीन काव्य **क्रेडिट - 2**

पाठय-

कबीर ग्रन्थावली	-	सम्पादक- श्यामसुन्दर दास, नागरी प्रचारिणी सभा, काशी, संस्करण-संवत् 2021 गुरुदेव कौ अंग - 1-5 सुमिरन कौ अंग - 4, 5, 8, 9, 10 मन कौ अंग - 1, 5, 8, 15, 17 माया कौ अंग - 1, 2, 5, 7, 8 कुसंगति कौ अंग - 1, 2, 3, 4, 5
सूरसागर	-	सम्पादक- आचार्य नन्द दुलारे वाजपेयी, भाग-1, भाग-2 नागरी प्रचारिणी सभा, वाराणसी, संस्करण-संवत् 2033 भाग-1 - वात्सल्य - छन्द - 110, 115, 171 भाग-2 - भ्रमरगीत - 3507, 3631, 3988, 4073
विनयपत्रिका	-	गीतप्रेस, गोरखपुर, संस्करण-संवत् 2050 पद संख्या - 79, 87, 102, 105, 162
मीराबाई की पदावली	-	सम्पादक- आचार्य परशुराम चतुर्वेदी, हिन्दी साहित्य सम्मेलन, प्रयाग, संस्करण- 1983 ई. पद संख्या - 5, 17, 18, 19, 22
बिहारी रत्नाकर	-	प्रणेता - जगन्नाथ दास रत्नाकर शिवाला, वाराणसी, संस्करण- 1969 ई. दोहा- 1, 63, 103, 127, 128
घनानन्द ग्रन्थावली	-	सम्पादक- विश्वनाथ प्रसाद मिश्र, वाणी वितान, वाराणसी, संस्करण-2009 सुजानहित - 1, 4, 5, 7, 18

व्याख्या - दो 6+6=12

- मध्ययुगीन काव्य का विकास, पाठ्यांशों की काव्यगत विशेषताएं एवं प्रतिपाद्य से सम्बन्धित एक दीर्घ उत्तरीय निबन्धात्मक प्रश्न। 7
- कविताओं का मूल स्वर, रचनाकारों का साहित्यिक परिचय आदि पर चार लघूत्तरीय प्रश्न। 4x3=12
- पाठ्य ग्रन्थों से सम्बन्धित तीन अति लघूत्तरीय प्रश्न। 3x3=9
- पाठ्य ग्रन्थों पर आधारित दस अत्यन्त लघूत्तरीय प्रश्न। $10x^{1}/_{2}=5$

प्रथम अधिसत्र, द्वितीय प्रश्नपत्र
हिन्दी

हिन्दी कहानी और व्याकरण **क्रेडिट-2**

पाठ्य-

क. कथा एकादशी - सम्पा.- डॉ. विजयपाल सिंह, संजय बुक सेण्टर, गोलघर, वाराणसी।
ख. व्याकरण

क. कथा एकादशी

- व्याख्या- दो 5 + 5 = 10
- हिन्दी कहानी का उद्भव एवं विकास, पठित कहानियों का प्रतिपाद्य एवं सारांश, कहानी-सारांश आदि पर आधारित एक दीर्घ उत्तरीय निबन्धात्मक प्रश्न- 7
- कथा एकादशी के पाठ्यांशों की विषय-वस्तु, विशेषताएँ, चरित्र-चित्रण आदि से संबंधित चार लघूत्तरीय प्रश्न- 4 x 3 =12
- पठित कहानियों की समीक्षा, मूल-स्वर, उद्देश्य आदि पर तीन अति लघूत्तरीय प्रश्न- 3 x 2 = 6
- पठित कहानियों एवं व्याकरण पर पाँच वस्तुनिष्ठ प्रश्न- 5 x 1 = 5

ख. व्याकरण—

- शब्द-रचना - उपसर्ग और प्रत्यय- 3
- वाक्य-भेद और वाक्य रूपान्तरण – (सरल, मिश्र एवं संयुक्त)- 3
- लोकोक्तियाँ एवं मुहावरे- 3

प्रथम अधिसत्र, तृतीय प्रश्नपत्र

हिन्दी

क्रेडिट-2

परियोजना (Project)

दत्तकार्य (Assignment)

शैक्षिक कार्य-कलाप (Academic Activities)

द्वितीय अधिसत्र, प्रथम प्रश्नपत्र

हिन्दी

हिन्दी एकांकी एवं व्याकरण और रचना **क्रेडिट-2**

पाठ्य-

क. एकांकी-कुञ्ज - सम्पा.- डॉ. गोपीनाथ तिवारी, डॉ. देवर्षि सनाढ्य, विश्वविद्यालय प्रकाशन, चौक, वाराणसी।

ख. व्याकरण

क. एकांकी-कुञ्ज

- व्याख्या- दो 5 + 5 = 10
- एकांकी का परिचय, लेखक का साहित्यिक परिचय एवं पठित अंशों की विषयवस्तु पर आधारित एक दीर्घ उत्तरीय निबन्धात्मक प्रश्न- 7
- पठित एकांकियों पर तीन लघूत्तरीय प्रश्न- 4 x 3 = 12
- पठित एकांकियों का पाठ-सारांश, विषयवस्तु, विशेषताओं आदि पर तीन अति लघूत्तरीय प्रश्न- 3 x 2 = 6
- पठित एकांकियों पर पाँच वस्तुनिष्ठ प्रश्न- 5 x 1 = 5

ख. व्याकरण—

- पत्र-लेखन (कार्यालयी और सम्पादक के नाम)- 4
- निबन्ध-लेखन - (सामाजिक एवं सामयिक विषयों पर) 6

द्वितीय अधिसत्र, द्वितीय प्रश्नपत्र

हिन्दी

आधुनिक कविता- 1 एवं आधुनिक हिन्दी कविता पर बौद्ध प्रभाव **क्रेडिट-2**

पाठ्य-

क. 1. यशोधरा - मैथिलीशरण गुप्त, साहित्य-सदन, झाँसी (उ०प्र०)

2. बुद्ध काव्याञ्जलि - सम्पादक- डॉ० श्रीप्रसाद, केन्द्रीय उच्च तिब्बती शिक्षा संस्थान, सारनाथ, वाराणसी

ख. आधुनिक हिन्दी कविता पर बौद्ध प्रभाव

क. यशोधरा एवं बुद्ध काव्याञ्जलि

- व्याख्या- दो 5 + 5 = 10
- आधुनिक हिन्दी कविता का विकास, पठित रचनाकारों का साहित्यिक परिचय, काव्य-सौष्ठव आदि पर आधारित एक दीर्घ उत्तरीय निबन्धात्मक प्रश्न- 7
- पठित अंशों का कथासार, विशेषताएँ, आदि से सम्बद्ध चार लघूत्तरीय प्रश्न- 4 x 3 = 12
- पाठ्य रचनाओं की शिल्पगत विशेषताओं, विषयवस्तु, मूल-स्वर आदि पर तीन अति लघूत्तरीय प्रश्न- 3 x 2 = 6
- पाठ्यांशों के काव्य-सौष्ठव पर आधारित पाँच अत्यन्त लघूत्तरीय प्रश्न- 5 x 1 = 5

ख. हिन्दी कविता पर बौद्ध प्रभाव 10

द्वितीय अधिसत्र, तृतीय प्रश्नपत्र

हिन्दी

क्रेडिट-2

परियोजना (Project)

दत्तकार्य (Assignment)

शैक्षिक कार्य-कलाप (Academic Activities)

तृतीय अधिसत्र, प्रथम प्रश्नपत्र

हिन्दी

आधुनिक गद्य- 1 **क्रेडिट-2**

(निबन्ध एवं संस्मरण)

पाठ्य-

1. निबन्ध-निकष - सम्पादक- डॉ० रामचन्द्र तिवारी, विश्वविद्यालय प्रकाशन, चौक, वाराणसी।
2. अतीत के चलचित्र - महादेवी वर्मा

- दो-व्याख्या- 5 + 5 = 10
- हिन्दी निबन्ध एवं संस्मरण का परिचय, प्रतिपाद्य, मूलस्वर, निबन्ध और संस्मरण का अन्तर, चरित्र-चित्रण, लेखकों का साहित्यिक परिचय आदि पर दो दीर्घ उत्तरीय आलोचनात्मक प्रश्न- 7 + 7 = 14
- पाठ्य वस्तु पर आधारित चार लघूत्तरीय प्रश्न- 4 x 3 = 12
- पाठ्य वस्तु पर आधारित तीन अति लघूत्तरीय प्रश्न- 3 x 3 = 9
- निबन्ध एवं संस्मरण पर आधारित दस वस्तुनिष्ठ प्रश्न- 10 x ½ = 5

तृतीय अधिसत्र, द्वितीय प्रश्नपत्र

हिन्दी

हिन्दी नाटक **क्रेडिट-2**

पाठ्य-

क. ध्रुव-स्वामिनी - जयशंकर प्रसाद

ख. आन का मान - हरिकृष्ण प्रेमी

ध्रुव स्वामिनी एवं आन का मान

- दो व्याख्या- 6 + 6 = 12
- नाटक का उद्भव और विकास, नाटक के तत्व, तत्वों के आधार पर समीक्षा, कथानक आदि पर एक दीर्घ उत्तरीय प्रश्न- 7
- पठित नाटकों पर चार लघूत्तरीय प्रश्न- 4 + 3 = 7
- कथावस्तु, चरित्र-चित्रण, उद्देश्य नाटक एवं एकांकी में अन्तर आदि पर तीन लघूत्तरीय प्रश्न- 3 x 3 = 9
- पठित नाटकों पर आधारित दस वस्तुनिष्ठ प्रश्न- 10 x 1 = 10

तृतीय अधिसत्र, तृतीय प्रश्नपत्र

हिन्दी

क्रेडिट-2

परियोजना (Project)

दत्तकार्य (Assignment)

शैक्षिक कार्य-कलाप (Academic Activities)

चतुर्थ अधिसत्र, प्रथम प्रश्नपत्र

हिन्दी

हिन्दी उपन्यास और हिन्दी उपन्यास पर बौद्ध प्रभाव **क्रेडिट-२**

पाठ्य-

क. 1. निर्मला - प्रेमचन्द
2. चित्रलेखा - भगवतीचरण वर्मा

ख. हिन्दी उपन्यास पर बौद्ध प्रभाव

क. निर्मला एवं चित्रलेखा-

- व्याख्या - दो $6 + 6 = 12$
- हिन्दी उपन्यास का उद्भव और विकास, उपन्यास कला की कसौटी पर पठित उपन्यासों का मूल्यांकन, उपन्यासकारों का साहित्यिक परिचय आदि पर आधारित एक दीर्घ उत्तरीय निबन्धात्मक प्रश्न- 7
- उपन्यास की कथावस्तु, विशेषताएँ, चरित्र-चित्रण, उद्देश्य आदि पर आधारित चार लघूत्तरीय प्रश्न- $4 \times 3 = 12$
- पठित उपन्यासों के प्रतिपाद्य एवं शिल्पगत विशेषताओं से सम्बद्ध तीन अतिलघूत्तरीय प्रश्न- $3 \times 2 = 6$
- पठित उपन्यासों पर पाँच अत्यन्त लघूत्तरीय प्रश्न $5 \times 1 = 5$

ख. हिन्दी उपन्यास और बौद्धधर्म से सम्बद्ध प्रश्न- 8

चतुर्थ अधिसत्र, द्वितीय प्रश्नपत्र

हिन्दी

हिन्दी आलोचना और आलोचक **क्रेडिट-2**

पाठ्य-

क. हिन्दी आलोचना-

ख. हिन्दी के प्रमुख आलोचक- आचार्य रामचन्द्र शुक्ल, आचार्य हजारी प्रसाद द्विवेदी, आचार्य नन्द दुलारे वाजपेयी, डॉ. नगेन्द्र, डॉ. रामविलास शर्मा

- आलोचना का स्वरूप, आलोचना का विकास, आलोचना की प्रवृत्तियाँ एवं आलोचकों की आलोचना पद्धति पर तीन दीर्घ उत्तरीय निबन्धात्मक प्रश्न- 7 x 3 = 21
- आलोचना और आलोचकों से सम्बन्धित चार लघूत्तरीय प्रश्न- 4 x 4 = 16
- आलोचकों के आलोचना सिद्धान्त पर तीन अति लघूत्तरीय प्रश्न- 3 x 2 = 6
- आलोचना और आलोचकों पर आधारित सात वस्तुनिष्ठ प्रश्न- 7 x 1 = 7

चतुर्थ अधिसत्र, तृतीय प्रश्नपत्र

हिन्दी

क्रेडिट-2

परियोजना (Project)

दत्तकार्य (Assignment)

शैक्षिक कार्य-कलाप (Academic Activities)

[300]

पंचम अधिसत्र, प्रथम प्रश्नपत्र
हिन्दी

गद्य की लघु विधाएँ एवं हिन्दी साहित्य का इतिहास **क्रेडिट-2**

पाठ्य-

क. विविधा - सम्पा०- डॉ० श्रद्धानन्द, अमृत प्रकाशन, ईश्वरगंगी, वाराणसी।
ख. हिन्दी साहित्य का इतिहास - (रीतिकाल एवं आधुनिककाल)

क. विविधा-

- व्याख्या-दो 6 + 6 = 12
- हिन्दी गद्य का उद्भव और विकास, हिन्दी गद्य की लघु विधाएँ—संस्मरण, जीवनी, आत्म-कथा, रेखाचित्र, रिर्पोताज आदि का परिचयात्मक अध्ययन एवं लेखकों का साहित्यिक परिचय से सम्बन्धित एक दीर्घ उत्तरीय निबन्धात्मक प्रश्न- 7
- संस्मरण, जीवनी, आत्म-कथा, रेखाचित्र, रिर्पोताज की विषय-वस्तु, सारांश, चरित्र-चित्रण, मूल-स्वर आदि से सम्बन्धित चार लघूत्तरीय प्रश्न- 4 x 3 = 12
- संस्मरण, जीवनी, आत्म-कथा, रेखाचित्र, रिर्पोताज का अर्थ, परिभाषा, विशेषता आदि से सम्बद्ध तीन अति लघूत्तरीय प्रश्न- 3 x 2 = 6
- विविधा के पाठों एवं हिन्दी-साहित्य के इतिहास पर आधारित पाँच अत्यन्त वस्तुनिष्ठ प्रश्न- 5 x 1 = 5

ख. हिन्दी साहित्य का इतिहास (रीतिकाल एवं आधुनिककाल)- 8

- रीतिकाल एवं आधुनिक काल का नामकरण, परिस्थितियाँ, प्रवृत्तियाँ एवं उनका महत्त्व आदि पर प्रश्न।

पंचम अधिसत्र, द्वितीय प्रश्नपत्र

हिन्दी

प्रयोजन-मूलक हिन्दी और हिन्दी साहित्य का इतिहास **क्रेडिट-2**

पाठ्य-

क. प्रयोजन-मूलक हिन्दी

- प्रयोजन-मूलक हिन्दी का अभिप्राय और महत्त्व
- हिन्दी-भाषा के विभिन्न रूप - राष्ट्रभाषा, राज्यभाषा, राजभाषा एवं सम्पर्क भाषा
- व्यावहारिक हिन्दी - पत्राचार के प्रकार

ख. हिन्दी साहित्य का इतिहास (आदिकाल एवं भक्तिकाल)

- काल-विभाजन सीमा एवं नामकरण
- आदिकाल की प्रमुख रचनाएँ
- आदिकाल की प्रवृत्तियाँ एवं महत्त्व
- भक्तिकाल का नामकरण एवं औचित्य
- भक्तिकाल के प्रमुख कवि एवं उनकी कृतियाँ
- भक्ति-आन्दोलन एवं भक्तिकालीन काव्य की प्रवृत्तियाँ
- हिन्दी साहित्य में भक्तिकाल का महत्त्व
- प्रयोजन-मूलक हिन्दी : आदिकाल एवं भक्तिकाल पर तीन दीर्घ उत्तरीय निबन्धात्मक प्रश्न - $7 + 6 + 6 = 19$
- आदिकाल एवं भक्तिकाल से सम्बद्ध तीन लघूत्तरीय प्रश्न - $4 \times 3 = 12$
- पाठ्यांशों पर आधारित तीन अति लघूत्तरीय प्रश्न - $3 \times 3 = 9$
- प्रयोजन-मूलक हिन्दी एवं हिन्दी साहित्य के इतिहास पर आधारित दस वस्तुनिष्ठ प्रश्न - $10 \times 1 = 10$

पंचम अधिसत्र, तृतीय प्रश्नपत्र

हिन्दी

क्रेडिट-2

परियोजना (Project)

दत्तकार्य (Assignment)

शैक्षिक कार्य-कलाप (Academic Activities)

षष्ठ अधिसत्र, प्रथम प्रश्नपत्र

हिन्दी

आधुनिक काव्य -1 **क्रेडिट-2**

पाठ्य-

1. साकेत (नवम सर्ग) - मैथिलीशरण गुप्त
2. कामायनी (श्रद्धा एवं लज्जा सर्ग) - जयशंकर प्रसाद
3. तारापथ (मौन निमंत्रण, द्रुत झरो जगत के जीर्णपत्र, बापू के प्रति, भारतमाता) - सुमित्रानन्दन पंत
4. राग-विराग (सरोज-स्मृति) - सं० रामविलास शर्मा

- दो-व्याख्या 5 + 5 = 10
- आधुनिक कविता : एक परिचय पर एक दीर्घ उत्तरीय निबन्धात्मक प्रश्न 7
- काव्य की विषय-वस्तु, प्रतिपाद्य, मूल स्वर एवं सन्देश, काव्यगत विशेषताएँ, चरित्र-चित्रण, कवियों का साहित्यिक परिचय आदि पर एक आलोचनात्मक प्रश्न 7
- पाठ्य वस्तु पर आधारित तीन लघूत्तरीय प्रश्न 4 x 3 = 12
- पाठ्य वस्तु पर आधारित तीन अति लघूत्तरीय प्रश्न 3 x 3 = 9
- पाठ्य वस्तु पर आधारित पाँच वस्तुनिष्ठ प्रश्न 5 x 1 = 5

षष्ठ अधिसत्र, द्वितीय प्रश्नपत्र

हिन्दी

हिन्दी भाषा और लिपि **क्रेडिट-2**

पाठ्य-

(क) हिन्दी भाषा-

(ख) लिपि

- हिन्दी शब्द की व्युत्पत्ति, अभिप्राय एवं प्रयोग, हिन्दी क्षेत्र का विस्तार, हिन्दी शब्द-समूह, हिन्दी भाषा का उद्भव और विकास, देवनागरी लिपि का उद्भव और विकास आदि पर तीन दीर्घ उत्तरीय निबन्धात्मक प्रश्न- 7 x 3 = 21
- देवनागरी लिपि का नामकरण, विशेषताएँ, गुण-दोष एवं सुधार के प्रयास, देवनागरी लिपि की वैज्ञानिकता, लोकप्रियता आदि पर चार लघूत्तरीय प्रश्न- 4 x 4 = 16
- हिन्दी भाषा और लिपि पर तीन अति लघूत्तरीय प्रश्न- 3 x 2 = 6
- हिन्दी भाषा और लिपि पर आधारित सात वस्तुनिष्ठ प्रश्न- 7 x 1 = 7

षष्ठ अधिसत्र, तृतीय प्रश्नपत्र

हिन्दी

परियोजना (Project)

दत्तकार्य (Assignment)

शैक्षिक कार्य-कलाप (Academic Activities)

सप्तम अधिसत्र

School Attached Programme

अष्टम अधिसत्र, प्रथम प्रश्नपत्र (1-Paper)

हिन्दी

आधुनिक काव्य -2 **क्रेडिट-3**

पाठ्य-

1. कनुप्रिया- - धर्मवीर भारती, भारतीय ज्ञानपीठ प्रकाशन, नई दिल्ली
2. काव्य-निधि- - सम्पा०-डॉ० विश्वनाथ प्रसाद, डॉ० रामसुधार सिंह, संजय बुक सेंटर, गोलघर, वाराणसी

जयशंकर प्रसाद	- आशा सर्ग (प्रारम्भ के केवल दस छन्द)
सूर्यकान्त त्रिपाठी 'निराला'	- सन्ध्या सुन्दरी, बादल-राग-6
सुमित्रानन्दन पन्त	- मोह, मैं नहीं चाहता चिर सुख
सच्चिदानन्द हीरानन्द वात्सायन 'अज्ञेय'	- नदी के द्वीप, बावरा अहेरी
गजानन माधव मुक्तिबोध	- भूल-गलती, भूरी-भूरी खाक-धूल
सर्वेश्वर दयाल सक्सेना	- भूख, मेरे भीतर की कोयल, दस्ताने
सुदामा पाण्डेय 'धूमिल'	- मोचीराम

कनुप्रिया एवं काव्य-निधि

- व्याख्या - दो 6 + 6 = 12
- आधुनिक हिन्दी काव्य का विकास, पाठ्यांशों की काव्यगत विशेषताएँ एवं प्रतिपाद्य से सम्बन्धित दो दीर्घउत्तरीय निबन्धात्मक प्रश्न 7 + 6 = 13
- कविताओं का मूल स्वर, पात्रों का चरित्र-चित्रण, रचनाकारों का साहित्यिक परिचय आदि पर आधारित चार लघूत्तरीय प्रश्न 4 x 3 = 12
- पाठ्य ग्रन्थों से सम्बन्धित तीन अतिलघूत्तरीय प्रश्न 3 x 2 = 6
- पाठ्य-ग्रन्थों पर आधारित सात वस्तुनिष्ठ प्रश्न 7 x 1 = 7

अष्टम अधिसत्र, द्वितीय प्रश्नपत्र (2nd Paper)

हिन्दी

भारतीय काव्यशास्त्र **क्रेडिट-3**

पाठ्य-

- काव्य का स्वरूप
- काव्य-प्रयोजन
- काव्य-हेतु
- काव्य के प्रकार
- काव्य-गुण
- काव्य-दोष
- रस-सिद्धान्त - रस का स्वरूप, भेद एवं उनका सामान्य परिचय
- अलंकार सिद्धान्त - प्रमुख अलंकारों का सामान्य परिचय
- रीति-सिद्धान्त, वक्रोक्ति-सिद्धान्त एवं ध्वनि-सिद्धान्त का सामान्य परिचय

- पाठ्यांशों पर आधारित तीन दीर्घ उत्तरीय निबन्धात्मक प्रश्न- 7 + 6 + 6 = 19
- पाठ्य-वस्तु पर चार लघूत्तरीय प्रश्न- 4 x 3 = 12
- पाठ्य-वस्तु पर तीन अति लघूत्तरीय प्रश्न- 3 x 3 = 9
- रस, अलंकार, वक्रोक्ति एवं ध्वनि-सिद्धान्तों पर आधारित दस वस्तुनिष्ठ प्रश्न- 10 x 1 = 10

अष्टम अधिसत्र, तृतीय प्रश्नपत्र (3rd Paper)

हिन्दी

पाश्चात्य काव्यशास्त्र **क्रेडिट-3**

पाठ्य-

- प्लेटो - काव्य-सिद्धान्त
- अरस्तू - अनुकरण सिद्धान्त, विरेचन-सिद्धान्त एवं प्लेटों तथा अरस्तू के काव्य-सिद्धान्तों की तुलना
- टी.एस. इलियट - परम्परा की परिकल्पना एवं वैयक्तिक प्रज्ञा
- आई.ए. रिचर्ड्स - व्यावहारिक आलोचना
- वर्ड्सवर्थ - काव्य-भाषा के सिद्धान्त
- लांजाइनस-काव्य के उदात्त की अवधारणा

- तीन दीर्घ उत्तरीय निबन्धात्मक प्रश्न- 7 + 6 + 6 = 19
- चार लघूत्तरीय प्रश्न- 4 x 3 = 12
- तीन अति लघूत्तरीय प्रश्न- 3 x 3 = 9
- दस वस्तुनिष्ठ प्रश्न- 10 x 1 = 10

अष्टम अधिसत्र

प्रश्नपत्र-4 (4th Paper)

हिन्दी

क्रेडिट-3

लघु शोध-प्रबन्ध (Dissertation)

निबन्ध (Essay)

अष्टम अधिसत्र

प्रश्नपत्र -5 (5th Paper)

हिन्दी

क्रेडिट-4

परियोजना (Project)

दत्तकार्य (Assignment)

शैक्षिक कार्य-कलाप (Academic Activities)

PSYCHOLOGY

SEMESTER – I

PAPER-I: Introductory Psychology — Credits: 2

Unit-I

1 Introduction. Psychology as a science

2 Biological basis of behaviour

3 Structure and function of visual and auditory senses

4 Sensory and Perceptual Processes

5 Perception; nature and determinants

6 Gestalt laws of perceptual organization: Attention: selective, sustained and divided.

Unit-II

a. Learning:Classical and Instrumental conditioning, Schedules of Reinforcement, Extinction

Memory: Sensory, STM, LTM, Forgetting and its causes.

b. Affective processes: Autonomic, expressive and cognitive components

Theories: James-Lange, Cannon-Bard, Schachter-Singer and Lazarus. Motivation; nature and types; Need hierarchy model.

Unit-III

a. Individual differences: Intelligence structures and measurement.

b. Personality: Traits and Type approaches, assessment of personality, objective and projective tests.

PAPER-II: Laboratory Work (Practicals) — Credits: 2

Practicals: (Laboratory Work)

1. Effect of knowledge on performance
2. Span of attention
3. Serial position effect (human memory)
4. Human Maze Learning
5. Verbal test of Intelligence (Mohsin)
6. Personality Measure: TPPS.

PAPER-III: Project & Assignment — Credits: 2

SEMESTER – II

PAPER-I: Applied Psychology **Credits: 2**

a. Nature and fields.

b. Psychology in education: school as an agent of Socialization, Factors influencing scholastic achievement. Exceptional children: Problems and remedial measures.

   Test anxiety, Mental retardation, antisocial behavior and Psychopathy.

c. Mental health, mental disorders, psychoneuroses and Psychoses, Psychotherapies.

d. Psychology in industry and organization, personnel selection. Job-analysis, Fatigue and accidents, advertising and salesmanship.

e. Psychology and social behavior-Prejudice, stereotypes; conflict and its resolution.

PAPER-II: Laboratory Work (Practicals) **Credits: 2**

Practicals (Laboratory Work)

a. Anxiety test (state-trait and free-floating)

b. Mental fatigue

c. Adjustment test

d. Emotional maturity test

e. Nonverbal intelligence test

PAPER-III: Project & Assignment **Credits: 2**

SEMESTER – III

PAPER-I: Experimental Methods and Elementary Statistics **Credits: 2**

a. Experiments: Steps in experimentation. Problem, hypothesis, variables, their types and their control.

b. Experimental design: Meaning and purpose; single group design, pre and post measurements. Between subjects designs. Randomized and matched.

c. Statistics and its application in Psychology: Frequency distribution and graphical representation of data.

   Descriptive statistics: Mean, Median, Mode, Range, Quartile Deviation and Standard Deviation.

d. Hypothesis testing: significance of difference between two means and standard deviations. Correlations and Chi-square-test.

e. Normal Probability Curve: Properties and applications.

   Correlation: Product-moment and Rank Difference.

PAPER II: Practicals: (Laboratory Work) **Credits: 2**

1. Formulation of Before and After Test Design in Learning Experience.
2. Experimental design between* experimental and control groups.
3. Significance of difference between related and unrelated means (given-data).
4. Testing the reliability of means and SDs (given-data)

PAPER-III: Project & Assignment **Credits: 2**

SEMESTER - IV

PAPER-I: Abnormal Psychology **Credits: 2**

a. Concepts of normality an abnormality, Causes of Psychopathology. Classification of disorders according to DSM-IV-TR.
b. Disorders of childhood: Mental retardation, Autism, Attention-Deficit Hyperactivity disorder (ADHD)
c. Anxiety disorders: Panic, Phobic, Obsessive- compulsive and generalized anxiety disorder.
d. Psychotic disorders: schizophrenia, bipolar mood disorder, delusional disorder.
e. Personality disorders: Psychopathy-moral insanity.

PAPER-II: Practicals (Laboratory Work) **Credits: 2**

a. NEO-FFI.
b. MMPI, (Indian adaptation) M C Joshi
c. WAIS
d. TPPS, R. R. Tripathi
e. Anxiety (State Trait and Free-floating)

PAPER-III: Project & Assignment **Credits: 2**

SEMESTER – V

PAPER-I: Clinical Psychology **Credits: 2**

a. Historical development. Diagnosis: Meaning and nature. Differential diagnosis.
b. Diagnostic assessment and clinical tools, Interview, Case Study, Observational Assessment.
c. Diagnostic Tests: Intelligence tests: Scatter analysis. S-B Test and WAIS. Personality tests: MMPI, NEO-FFI, TAT and Rorschach
d. Therapies: Psychoanalytic, Person-centred, Behaviour therapies: Systematic desensitization. Response shaping, successive approximation.
e. Cognitive and Cognitive behavior therapies: Rational Emotive therapy. Beck's cognitive therapy, Beck's Triads.

PAPER-II: Practicals (Laboratory Work) **Credits: 2**

a. Anxiety Scale (State-Trait and Free-floating) RRT
b. MMPI (Clinical Scales, Indian adaptation) M C Joshi
c. Eysenck Personality Questionnaire (EPQ)
d. Systematic desensitization. Wolpe, J.
e. WAIS-II – Indian adaptation

PAPER-III: Project & Assignment **Credits: 2**

SEMESTER – VI

PAPER-I: Developmental Psychology **Credits: 2**

a. Introduction to human development: Concepts of growth and maturation, Developmental stages (Piaget).
b. Infancy: Sensory and perceptual development. Language, emotional and social development.
c. Childhood: Developmental tasks, cognitive, social and moral development.
d. Adolescence: Physical and Psychological changes: Development of Identity.
e. Adulthood and old age: Adjustment problems and specific issues.

PAPER-II: Practicals (Laboratory Work) **Credits: 2**

a. Moral Development.
b. Eysenck Inventory Questionnaire (EPQ).
c. Embedded Figure Test.
d. Assessment of Life Satisfaction.
e. Self-esteem.

PAPER-III: Project & Assignment **Credits: 2**

SEMESTER - VII

Innovative Teaching Module relevant to School Teaching

Credits: 2

SEMESTER - VIII

PAPER-I: Culture and Human Behaviour **Credits: 3**

a. Introduction: Concept of culture. Cross-Cultural Psychology, Ethnocentrism and multiculturalism.

b. Methods of Study. Observation, Survey and Experimentation. Measuring tools, sampling and comparative study.

c. Sensation and Perception, colour perception (culture specific). Interpreting Patterns and Pictures, perception of time.

d. Culture and Intelligence. Cultural differences in Intelligence. Jensen's study.

e. Culture and emotions. Similarities and differences. Physiological arousal and evaluation. Expression of emotions and judgment.

PAPER-II: Practical **Credits: 3**

1. Psychological Survey and field experiments.
2. Measurement and Evaluation

PAPER-III: Psychology of Social Behaviour **Credits: 3**

a. Introduction: Nature and scope group structure and functions. Social facilitation, social loafing and social conformity.

b. Communication: Verbal and non-verbal processes. Language and social interaction. Whorfian Hypothesis.

c. Social perception: Impression formation. Attribution process: theories of Kelley and Weiner, self-attribution. Errors in attribution.

d. Attitude, formation and change Measurement: Scales. Prejudice and discrimination. Techniques of fighting prejudice.

e. Pro-social behavior: Cooperation and helping behavior Detrainments of helping behaviour.

PAPER-IV: Dissertation **Credits: 3**

PAPER-V: Project & Assignment **Credits: 4**

SOCIOLOGY

SEMESTER – I

PAPER-I: Sociology: Key Concepts **Credits: 2**

1) Emergence of Society as a scientific discipline, its meaning, nature and scope.
2) Concepts
   - Social group: Meaning and types
   - Community: Meaning and characteristics
   - Society: Rural and Urban
   - Status and Role: Ascriptive and achieved
   - Class: Definition and determinations

PAPER-II: Perspectives of Indian Society **Credits: 2**

1. Indological and Historical perspectives
2. Traditional bases: Varna, Ashram, Purushartha, Dharma, Karma
3. Trends in the Tradition of Indian Society

PAPER-III: Project & Assignment **Credits: 2**

SEMESTER – II

PAPER-I: Social Processes **Credits: 2**

a. Socialization: Agencies and theories.
b. Stratification: Meaning and Basis.
c. Social Control: Agencies.
d. Social Change: Meaning and factors.

PAPER-II: Indian Society and Culture **Credits: 2**

a. Institutions: Marriage (Hindu, Muslim), Kinship and Family, Religion.
b. Jajmani System: Concept and Relevance.
c. Caste: Structure, function and change.
d. Current issues: Communalism, Regionalism and Ethnocentrism.

PAPER-III: Project & Assignment **Credits: 2**

SEMESTER – III

PAPER-I: Social Movement: Concept and Theories **Credits: 2**

a. Concept of social movement and its processual relationship with social change: Ideology and Leadership.
b. Agents of social movements.
c. Theories: Relative Deprivation Theory, structural srain* theory Revitalization theory.

PAPER-II: Dynamics of Indian Society **Credits: 2**

a. Processual and Functional changes: sanskritization, modernization, secularism and digitalization.
b. Structural changes.
   - Land reforms
   - Industrialization & SEZ
   - Urbanization
   - Green revolution
   - Gender and Women Empowerment
   - Aging and Healthcare

PAPER-III: Project & Assignment **Credits: 2**

SEMESTER – IV

PAPER-I: Major Social Movements in India **Credits: 2**

a. Types of Social Movements

b. Major contemporary movements with special reference to the components, agents and factors.

(i) New Peasant movement: Bharatiya Kisan Union.

(ii) Naxalism

(iii) Environment Movement: Chipko

(iv) Feminism

PAPER-II: Constitutional safeguards and National Issues **Credits: 2**

a. Constitutional provision regarding scheduled castes and scheduled tribes socially backward classes, women and minorities.

b. Problems of Modern Nationalism: Ethnicity, Regionalism and Communalism.

c. Panchayat Raj System

PAPER-III: Assignment & Project **Credits: 2**

SEMESTER – V

PAPER-I: Indian Social Thought **Credits: 2**

a. Manu: Social Organization, State and King.
b. Kautilya: Politics with reference to duties and obligations of King, Social and Economic thoughts.
c. Raja Ram Mohan Roy: Social reform.
d. Dayanand Saraswati: Social reform.
e. Mahatma Gandhi: Trusteeship and Gram Swaraj.

PAPER-II: Introduction to Sociological Thought **Credits: 2**

a. Emergence of Sociological Thought.
b. Positivism: Comte, Durkheim
c. Social Change: Marx, Spencer Durkheim, Weber, Sorokin and Pareto.

PAPER-III: Project & Assignment **Credits: 2**

SEMESTER - VI

PAPER-I: Method of Social Research and Statistics **Credits: 2**

a. Nature of Social Phenomenon and Scientific Method.

b. Social Research: Nature and Types of Social Research. Research Design, Hypothesis.

c. Data Collection: (a) Sources of data, (b) Sampling, (c) Techniques: Observation, Questionnaire, Schedule, Interviews and case study.

PAPER-II: Sociology of Development: Concepts and Theories **Credits: 2**

a. The concept of development and underdevelopment.

b. Theories of Development: (a) Dependency Theory (b) World System theory.

c. Process and Characteristics of: (a) Capitalism (b) Imperialism.

PAPER-III: Project & Assignment **Credits: 2**

SEMESTER - VII

Innovating Teching Module relevant to School Teaching

Credits: 2

SEMESTER – VIII

PAPER-I: Sociology of Administration **Credits: 3**

a. Concept and Scope.
b. Authority and Power.
c. Concept of Bureaucracy
d. Bureaucrat-citizen Relationship.

PAPER-II: Sociology of Deviance **Credits: 3**

a. Concept of Deviance in Sociology.
b. Social organization and disorganization.
c. Theories of deviance.

PAPER-III: Modern Indian Social Thought **Credits: 3**

Modern Indian Social Thought

a. Pandita Ramabai: Women Education
b. Iqbal: Social Philosophy
c. B.R. Ambedkar: Social Justice
d. Madan Mohan Malviya: Education, Rastravad
e. Radha Kamal Mukherji: Sociology of Values.

- Tracker. Group Process in Administration.
- While, L.D. The Art of Administration.

PAPER-IV: Dissertation **Credits: 3**

PAPER-V: Project & Assignment **Credits: 4**

PHILOSOPHY

SEMESTER – I

PAPER-I: Indian Philosophy-I — Credits: 2

Unit I

Nature of Darśana, Classification of Indian Philosophy, Characteristics of Indian Philosophy,

Problems and purpose of Indian Philosophy, Distinction between Darśana and Philosophy.

Unit II

Introduction to the Vedas: Samhitā, Brāhmaṇa, Āraṇyaka and the Upanisad, Upaniṣadic view of saviśeṣa (determinate) and Nirviśeṣa (indeterminate) Brahman, Relation of Brahman and Soul. The Philosophy of Bhagavadgītā: Jňānayoga, Karmyoga and Bhakti yoga.

Unit III

Lokāyata: Metaphysics, Epistemology and Ethics

Jainism: Nature and Classification of Reality, Syādvāda, Anekāntavāda

Unit IV

Buddhism: Four noble truths, Anātmavāda (No-soul theory), Theory of Momentariness, Nirvāna.

PAPER-II: Western Philosophy-I — Credits: 2

Unit I

Origin and Nature of Greek Philosophy, chief characteristics of Western Philosophy, The ultimate principles in Ionic and Pythagorean schools, Being in Eleatic School, Heraclites' doctrine of Becoming, Empedocles' doctrine of Elements.

Unit II

Atomic theories of Leucippus and Democritus, Anaxagoras' doctrine of Nous, Main principles of Sophists, The Socratic Method, Plato's Theory of Knowledge, Doctrine of Ideas,

Unit III

Aristotle: Criticism of theory of ideas, Matter and form, causality,

Unit IV

St. **Augustine's** Theory of Knowledge, the Problem of Evil,

Thomas Aquinas's view of God, Distinction between faith and Reason.

PAPER-III: Project / Assignment — Credits: 2

SEMESTER – II

PAPER-I: Indian Philosophy-II **Credits: 2**

Unit 1

Sāmkhya Yoga: Satkāryavāda, Prakṛti, Theory of Evolution, Puruşa, Kaivalya, Eight fold path and God.

Unit II

Nyāya-Vaiśeşika: Padārthas, Atomism, Pramāṇas, Proofs for the Existence of God,

Unit III

Mīmāmsā: concept of Dharma, Apūrva,

Advaita- Vedānta: Brahman, Māyā, Mukti,

Unit IV

Viśişţādvaita: Brahman, Māyā, Mukti

Dvaita Vedanta Brahman, God Bhakti and Mukti.

PAPER-II: Western Philosophy-II **Credits: 2**

Unit I

Descartes: The Problem of Descartes Philosophy Method of doubt, Cogito Ergo sum, concept of substance, Proofs for the Existence of God, Mind- Body Problem.

Spinoza: Refutation of Descartes conception of substance, concept of substance, attribute and mode, God and Pantheism.

Unit II

Leibniz: Theory of Monads and Pre-established Harmony.

John Locke: Refutation of Innate ideas, Theory of Knowledge, Substance, Primary and Secondary Qualities.

Unit III

George Berkeley: Criticism of Materialism, Esse Est Percipi and Subjective Idealism

David Hume: Culmination of Empiricism, Refutation of Metaphysical entities and Causality, Skepticism

Unit IV

Immanual Kant's Reconciliation of Rationalism and Empiricism, Space and Time, Phenomena and Noumena.

Hegel: Dialectic Method, Absolute

PAPER-III: Project / Assignment **Credits: 2**

SEMESTER - III

PAPER-I: Ethics **Credits: 2**

Unit I

Nature, scope and method of Ethics.

Ethical concepts: Good, Right, Duty, Value, Postulates of Morality, The Nature and object of Moral Judgment

Unit II

Psychological and Ethical Hedonism, Utilitarianism of Bentham & J.S. Mill, Deontological theory

Unit III

Kant's moral Law and Good will perfectionism, theory of reward and punishment.

Unit IV

Conception of Purusārtha, Vedic Concept of Rta and Ṛṇa

PAPER-II: Logic **Credits: 2**

Unit I

Introduction: Nature of Logic, Propositions, Arguments and their forms, Deduction and Induction, Truth and Validity.

Categorical Propositions and Classes, Quality, quantity and distribution of terms, Traditional Square of Opposition, Immediate inference.

Unit II

Categorical Syllogism: Standard form of Categorical Syllogism, The Formal Nature of Syllogistic Argument,

Venn-Diagram Technique for Testing Syllogism, Rules and Fallacies.

Unit III

Propositional Logic, Basic Truth-functions of the Propositional Calculus, Testing arguments by truth table method. Relation between Truth functions.

Unit IV

Inductive Reasoning and Probability, Simple Enumeration and Analogy.

Mill's Methods of Experimental Enquiry.

PAPER-III: Project / Assignment **Credits: 2**

SEMESTER – IV

PAPER-I: Philosophy of Religion — Credits: 2

Unit I

Nature and scope of philosophy of religion, Concept of Philosophy, Concept of Religion, Relationship between Philosophy of religion and philosophy, Theology and Philosophy of Religion.

Unit II

Definition, origin and development of Religion, Ancestor Worship, Manaism, Totemism, Magic and Religion, Religion and morality, Religion and science.

Unit III

Concept of God: Theism, Deism, Pantheism, Polytheism and Monotheism, God and Absolute. The arguments to prove the existence of God: Ontological, Cosmological, Teleological and Moral arguments.

Unit IV

Grounds of Religious knowledge: Faith, Intuition, Reason, Revelation and its validity. The problem of religious language: symbolic and analogical theories. The problem of evil, nature and kinds of evil, the problem of Evil and its Solution.

PAPER-II: Asian Philosophy and Religion — Credits: 2

Unit I

The importance of Asian Philosophy and Religion in the world culture, close relation between moral law and natural law, moral law as universal protector of the harmonious interests of all beings,

The whole world as a single family. Family- Ethics of India, China, Korea and Japan, suffering as unifying principle (Gotra) of the whole humanity, The doctrine of Prajňa and Mahākarunā, Bodhisattvas' families and their determination to turn hell into heaven.

Unit II

The ideal of self realization in Hinduism, The distinction between Pravrtti-Mārga and Nivṛtti-Mārga, the importance of Nivṛtti-Mārga in Jainism and Buddhism, Jaina doctrine of tri-ratna and Buddhist doctrine of four noble truths,

The path of devotion and nature of ultimate reality in Saivism, Vaisnavism and Sikhism,

Unit III

Confucianism: Classics of Confucianism, Concept of Jen, Shu, Li and Chun-tzu, characteristics of the native pon-religion of Tibbat and the native Shinto-religion of Japan

Taoism: Meaning and Nature of Tao, Relationship of Tao and Teh, Concepts of Wei-wu-wei, Hsu and Fan

Unit IV

Theravada and Mahayana schools of Buddhism, Buddhagosh contribution to Buddhism and characteristics of sheela in south-east Therāvāda Buddhism, the characteristics of Samatha and Vipasyanā in Vermeese Buddhism.

The characteristics of the Mahayana schools of China, Japan and Korea, The elements of Zen Buddhim: Satori, Koan, Emptiness and Meditation, Pure-Land tradition and worship of Amitābha in China and Japan, The cult of Avalokiteshvara in central Asia and his worship in China, chief characteristics of Buddhism in Himalayan Regions, characteristics of Tantrāyāna Buddhism practiced in Tibet.

PAPER-III: Project / Assignment **Credits: 2**

SEMESTER –V

PAPER-I: Indian Epistemology **Credits: 2**

Unit I

Nature of knowledge (Jňāna): Difference between Pramā (valid knowledge) and Apramā, main characteristics of Pramā, forms of Apramā (invalid knowledge), Theories of Truth (Prāmanyavāda): Svatahpramānyavāda (Theory of Intrinsic Validity): Sānkhya and Mimamsā, Paratahpramānyavāda (Theory of Extrinsic Validity): Nyāya and Buddhism

Unit II

Theories of error (Khyātivāda): Asatkhyātivāda, Ātmakhyātivāda and Anyathā-khyativāda. Viparītākhyātivāda, Akhyātivāda and Anirvacniyākhyātivāda

Unit III

Sources of Valid knowledge (Pramānas) Perception (Pratyakşa): The nature of perception and its different forms. Inference (Anumāna): Nature and forms of inference, grounds of inference (Vyāpti and Pakşadharmatā), Fallacies of inference (Hetvabhāsa)

Unit VI

Verbal testimony (Śabda), Comparison (Upamāna): Presumption (Arthāpatti) and Non- apprehension (anupalabdhi).

PAPER-II: Western Epistemology **Credits: 2**

Unit I

Nature of knowledge, Distinguishing 'knowing that' from 'knowing how', Definition of knowledge. The Gettier Problem, The Structure of knowledge (Foundationalism and Coherentism)

Unit II

Kinds of knowledge: a priori and a posteriori. Sources of knowledge: Sense-experience, Reason, Authority, Intuition and Revelation.

Unit III

Subject-Object Relation: Idealism (Subjective idealism), Realism (Naïve Realism,

Representative realism, Neo-realism & critical realism) Limits of knowledge: Scepticism and Agnosticism.

Unit IV

Nature of truth, Criteria of truth and Bearers of truth, Correspondence Theory of truth.

Coherence theory of truth and Pragmatic theory of truth.

PAPER-III: Project / Assignment **Credits: 2**

SEMESTER –VI

PAPER-I: Contemporary Indian Philosophy-1 **Credits: 2**

Unit I

Introduction and characteristics of Contemporary Indian Philosophy, Rammohan Roy: Brahmasamāja, Nationalism and Internationalism, unity of Religions.

Unit II

Swami Dayananda Saraswati: Ārya Samāja, Veda, Reality, Swami Vivekananad: God, Māyā, Liberation,

Unit III

Dr. Annie Besant: Concept of Philosophy, Religion and God,

Balgangadhar Tilak: Brahman, Atman, Karma, Swarāja.

Unit IV

R.N. Tagore: Reality, Soul, Humanism,

Mahamana Pt. Madan Mohan Malviaya: Sanātana Dharma, God, education,

PAPER-II: Contemporary Western Philosophy – I **Credits: 2**

Unit I

The Absolute Idealism of F. H. Bradley, Appearance: Primary and secondary qualities; substantive and adjective, relation and quality, causation appearance and Reality. Nature of reality – absolute, degrees of Truth and Reality.

Unit II:

Pragmatism: C.S. Pierce's theory of meaning, William James' Radical empiricism, Conception of Reality and theory of truth, John Dewey's Instrumentalism, Meliorism.

Unit III:

Marxism: Dialectical Materialism, Revolution and state,

Chief Characteristics of Existentialism,

Unit IV

Major concepts of Phenomenology: Noesis, Noema, Intentionality, Epoche and Reductionism,

PAPER-III: Project / Assignment **Credits: 2**

SEMESTER-VII

Innovative Teaching Module relevant to School Teaching

Credits: 2

SEMESTER-VIII

PAPER-I: Indian Metaphysics **Credits: 3**

Unit I

The nature of physical world, Materialism, Realism & Idealism. The theories of creation, Atomism, Prakrti, Māyā, Sāmkhya theory of evolution.

Unit II

Theories of causation: Svabhāvavāda, Pratityasamutpāda, Satkāryavāda, Asatkāryavāda, Vivartavāda.

Unit III

The nature of God and proofs for the existence of God according to Nyāya and Yoga Philosophy. The Nature of Absolute according to Advait and Viśiṣṭādvaita schools of Vedanta.

Unit IV

The nature of Self according to Cārvāka, Jainism and Buddhism.

The nature of self according to Sānkhya Nyāya-Vaiśeṣika and Advaita Vedanta.

PAPER-II: Western Metaphysics **Credits: 3**

Unit I

The concept of metaphysics, The nature and problems of metaphysics, The need for metaphysics, Causation: Regularity theory, Entailment theory & Activity theory.

Unit II

Universals and Particulars: Concept of universal, Concept of particular, Theories of universals; Realism, Nominalism and Conceptualism.

Unit III

Concept of Substance: Aristotle, Rationalists, Empiricists and Kant.

Unit IV

Greek Theories of Soul (Plato, Aristotle). Mind-Body problem: Interactionism, Occasionalism, Parallelism, Double aspect Theory, Epiphenomenalism, Philosophical Behaviorism, Identity theory & Person Theory.

PAPER-III: Contemporary Indian Philosophy-II **Credits: 3**

Unit I

M.K. Gandhi: Truth, Non-violence, Satyāgrah, Means and End, Dr. B.R. Ambedkar: Reality, Religion, Critique of caste-system,

Unit II

Sri Aurobindo: Absolute, Supermind, Involution, Evolution, S. Radhakrishanan: Absolute, Spirit, Intellect and Intuition,

Unit III

K.C. Bhattacharya: Self, Theoretic Consciousness, Philosophy and Science, Mohammad Iqbal: God, Self, Intuition,

Unit IV

M.N. Roy: Man, New Humanism, N.K. Devaraja; Creative Humanism and Culture,

PAPER-IV: Contemporary Western Philosophy-II **Credits: 3**

Unit I

Moore: Defence of common sense, Refutation of Idealism. Russell: Logical Atomism

Names and description, Wittgenstein: Picture theory of meaning.

Unit II

Logical Positivism, Verification principle, refutation of Metaphysics. Emotive theory, the difficulties of Logical positivism.

Unit III

Wittgenstein: Use theory of meaning, Nature of Philosophical problems, Language game, Critique of Private language.

Unit IV

Gilbert Ryle J.L Austin: Category mistake, knowing How and Knowing That, Performatives and Constantives, Speech acts-locutionary, illocutionary and perlocutionary.

PAPER-V: Project / Assignment **Credits: 4**

POLITICAL SCIENCE

SEMESTER – I

PAPER – I : Colonialism in India **Credits : 2**

I. Imperialism and colonialism (12 Lectures)

1. Brief History: Global and Indian
2. Main Perspectives on Colonialism: i. Liberalism ii. Marxism iii. Post-colonialism

II. Foundations of Colonial Rule in India (10 Lectures)

1. Consolidation of British power: Police and Civil Administration
2. Legal Foundations of the Colonial State: Issues related to the sovereignty and relations with British Parliament and major constitutional developments

III. Economy and Society (12 Lectures)

1. Impact on Agriculture, land relations and ecology

IV. Religion and Society (12 Lectures)

1. Colonial Ideology of Indian Improvement/'civilizing mission': Orientalists and the Anglicists (Utilitarians and Missionaries)
2. Shaping Communities: Census and Enumeration
3. Colonialism and the Gender question

VI. Early Indian Responses (8 Lectures)

1. Peasant and Tribal Uprisings
2. The 1857 Rebellion

PAPER-II : Political Theory: Concepts **Credits : 2**

Core Concepts:

I. Importance of Freedom (10 Lectures)

a) Negative Freedom: Liberty

b) Positive Freedom: Freedom as Emancipation and Development

Important Issue: Freedom of belief, expression and dissent

II. Significance of Equality (12 lectures)

a) Formal Equality: Equality of opportunity

b) Political equality

c) Egalitarianism: Background inequalities and differential treatment

Important Issue: Affirmative action

III. Indispensability of Justice (12 Lectures)

a) Procedural Justice
b) Distributive Justice
c) Global Justice

Important Issue: Capital punishment

IV.**The Universality of Rights (13 Lectures)**

a) Natural Rights
b) Moral and Legal Rights
c) Three Generations of Rights
d) Rights and Obligations

Important Issue: Right of the girl child

PAPER-III: Project / Assignment **Credits : 2**

SEMESTER – II

PAPER-I : Constitutional Democracy and Government in India

Credits : 2

I. The Constituent Assembly and the Constitution (15 Lectures)

(a) The formation of the Constituent Assembly; the philosophy of the Constitution and its main features.

(b) Fundamental Rights and Directive Principles

II. Organs of Government (15 Lectures)

(a) The Legislature: Parliament

(b) The Executive: President, Prime Minister and Governor

(c) The Judiciary: The Supreme Court

III. Federalism and Decentralization (15 Lectures)

(a) Centre - state relations; constitutional provisions regarding emergency and centre-state relations; special provisions for some states and the fifth and sixth schedule areas

(b) Third tier of government: panchayati raj; urban local bodies

IV. Security Laws (15 Lectures)

(a) Preventive detention laws and constitutional exceptions

(b) Extra-ordinary laws: anti-terror laws, laws against organized crimes

PAPER-II: Nationalism in India

Credits : 2

I. Reformism and Anti-Reformism in the 19th Century

Major Social and Religious movements among Hindus and Muslims; Brahmo Samaj, Arya Samaj, Dharma Sabhas, Aligarh Movement

II. Nationalist Politics and Expansion of its Social Base

(a) Phases of Nationalist Movement and different ideological streams: Moderates and Extremists within Congress and revolutionary radicals; Formation of the Muslim League

(b) Gandhi and mass mobilisation: Khilafat, Non-cooperation and Civil Disobedience Movements

(c) Socialist alternatives: Congress socialists, Communists

(d) Communalism in Indian Politics

III. Social Movements

(a) *The Women 's Question:* participation in the national movement and its impact

(b) *The Caste Question:* anti-Brahmanical Politics

(c) *Peasant, Tribals,* and *Workers* movements

IV. Partition and Independence The two-Nation theory, negotiations over partition

- Manor, J., D. & Mehta, P.B. (2005). The Presidency, New Delhi: Oxford University Press.
- Sarkar, S. (1983). Modern India (1885-1847), New Delhi: Macmillan.
- Sinha, A. (2004). The Changing Political Economy of Federalism in India

III. Social Movements

- Bandopadhyaya, S. (2004) *From Plassey to Part ition: A History of Modern India.* New Delhi: Orient Longman, pp. 342-357; 369-381.

IV. Partition and Independence

- Bandopadhyay, S. (2004) *From Plassey to Partition: A History of Modern India.*NewDelhi: Orient Longman, pp. 405-43 8.
- Jalal, A. and Bose, S. (1997) *Modern South Asia: History, Culture, and Political Economy.* New Delhi: Oxford University Press, pp.13 5-156.

PAPER-III : Project / Assignment **Credits : 2**

SEMESTER – III

PAPER-I : Understanding Political Theory **Credits : 2**

I. Introducing Political Theory

1 What is Politics: Theorizing the 'Political'

2 Traditions of Political Theory: Liberal, Marxist, Anarchist and Conservative

3 Approaches to Political Theory: Normative, Historical and Empirical

II. Political Theory and Practice

The Grammar of Democracy

1 Democracy: The history of an idea

2 Procedural Democracy and its critique

3 Participation and Representation

PAPER-II: Introduction to Comparative Government and Politics

Credits : 2

I. Comparative Government and Politics

Nature and scope

II. Historical context of Modern Government (22 Lectures)

a. **Capitalism:** meaning and development; globalization

b. **State Socialism:** meaning, growth and development

c. **Colonialism and Decolonisation:** meaning, context, forms of colonialism; anti-colonial struggles and process of decolonization

III. Themes for Comparative Analysis (18 Lectures)

A comparative study of Constitutional Developments, Political Economy, Executive and Judiciary and Representation and Participation in the following countries: Britain, USA and China.

PAPER-III : Project / Assignment **Credits : 2**

SEMESTER – IV

PAPER-I: Theories of International Relations **Credits : 2**

I. Theoretical Perspectives

(a) Studying International Relations:

(b) Realism and Neorealism

(c) Liberalism and Neoliberalism

II. An Overview of Twentieth Century IR History

(a) World War I: Causes and Consequences

(b) Significance of the Bolshevik Revolution

(c) Rise of Fascism / Nazism

(d) World War II: Causes and Consequences

(e) Cold War: Different Phases

III. Third World and Cold War

(a) Emergence of the Third World

(b) Collapse of the USSR and the End of the Cold War

(c) Post Cold War Developments and Emergence of Other Power Centers of Power: Japan, European Union (EU) and Brazil, Russia, India, China (BRIC)

PAPER-II: Indian Political Thought- 1 **Credits : 2**

I. Ved Vyasa (Shantiparva): Rajadharma

II. Manu: Social Laws

III. Kautilya: Theory of State

IV. Aggannasutta (Digha Nikaya) : Theory of kingship [06 lectures]

PAPER-III : Project / Assignment **Credits : 2**

SEMESTER – V

PAPER-I: Indian Political Thought- 2 **Credits : 2**

I. **Rammohan Roy: Rights**
II. **PanditaRamabai: Gender**
III. **Vivekananda: Ideal Society**
IV. **Gandhi: Swaraj**
V. **Ambedkar: Social Justice**
VI. **Nehru: Secularism**
VII. **Lohia: Socialism**

PAPER-II: India's Foreign Policy **Credits : 2**

I. **Determinants and Principles of India's Foreign Policy.**
   a) Domestic and International sources of India's Foreign Policy
   b) Objectives and Principles
   c) Non-Alignment: Concepts, Policy and Relevance
II. **India and the Global Political Regimes – Main Issues**
   India at the United Nations: Security Council Reforms
III. **Changing Relations with the US and Russia from Cold War to Post Cold War**
IV. **India China Relations: Challenges and Prospects**
V. **India and Regional Organizations - European Union (EU), Association of South East Asian Nations (ASEAN) and South Asian Association of Regional Cooperation (SAARC)**

PAPER-III : Project / Assignment **Credits : 2**

SEMESTER – VI

PAPER – I: **Development Process and Social Movements in Contemporary India** **Credits : 2**

I. Perspectives on Development since Independence

(a) State and planning
(b) reforms, liberalization and the emergence of middle class.

II. Industrial development strategy and its impact on social structure

Mixed economy, privatisation, special economic zones (SEZ)

III. Agrarian development and strategies

Land reforms, Green Revolution, emergence of Naxalism

IV. Social Movements: old and new (13 Lectures)

(a) Peasants, and tribals
(b) Students, environmental and civil liberties and democratic rights movements

V. Contemporary rights-based concerns (11 Lectures)

Rights to food, work, education and information; rights of forest dwellers

PAPER- II: Global Politics **Credits : 2**

I. Globalisation: Conceptions and Perspectives (25 Lectures)

(a) Political, Cultural and Technological Dimensions
(b) Global Economy: Its Significance and Anchors
(c) Global Social Networks / Global Resistances

II. Contemporary Global Issues (35 Lectures)

(a) Ecological Issues: historical overview of international environmental agreements, climate change, global commons debate.
(b) Proliferation of Nuclear Weapons
(c) International Terrorism: non-state actors and state terrorism; war on terror.
(d) Poverty, Development and Human Security

PAPER-III: Project / Assignment **Credits : 2**

SEMESTER – VII

School Attached Programme

SEMESTER – VIII

PAPER-I : Political Institutions and Processes **Credits : 3**

I. Approaches to Studying Politics

Traditional Institutional, Political Systems, Political Culture and New Institutionalism

II. Electoral System

Definition and procedures: Types of electoral systems (First Past the Post, Proportional Representation, Mixed Representation)

III. Party System

Historical contexts of emergence of the party system and types of parties

IV. Nation-state

What is a nation-state?

Historical evolution in Western Europe and postcolonial contexts

'Nation' and 'State': debates

V. Democratization

Process of democratization in postcolonial, post-authoritarian, and post communist countries

VI. Federalism

Historical contest

Federation and Confederation: debates around territorial division of power.

PAPER-II: Modern Political Philosophy **Credits : 3**

Section A:

Understanding modern political philosophy: The Enlightenment tradition

Section B:

I Hobbes
II Locke
III Rousseau
IV Mill
V Marx

PAPER-III: The United Nations, Global Conflicts and Peace Making

Credits : 3

I. The United Nations

(a) An Historical Overview of the United Nations

(b) Principles and Objectives

(c) Structures and Functions: General Assembly; Security Council, and Economic and Social Council; the International Court of Justice and the specialised agencies (International Labour Organisation [ILO], United Nations Educational, Scientific and Cultural Organisation [UNESCO], World Health Organisation [WHO], and UN programmes and funds: United Nations Children's Fund [UNICEF], United Nations Development Programme [UNDP], United Nations Environment Programme [UNEP], United Nations High Commissioner for Refugees [UNHCR])

(d) Peace Keeping, Peace Making and Enforcement, Peace Building and Responsibility to Protect

(e) Millennium Development Goals

II. Major Global Conflicts since the Second World War

(a) Korean Problem

(b) Vietnam War

(c) Afghanistan Wars

(d) Balkans: Serbia and Bosnia

PAPER-IV: Indian Government and Politics **Credits : 3**

1. Approaches to the Study of Indian Politics and Nature of the State in India: Liberal Marxist and Gandhian
2. Indian Constitution : basic features, debates on Fundamental Rights and Directive Principles
3. Institutional Functioning: Prime Minister, Parliament and Judiciary
4. Power Structure in India : Caste, class and patriarchy
5. Religion and Politics: debates on secularism and communalism
6. Parties and Party systems in India
7. Strategies of Development in India since Independence: Planned Economy and Neo-liberalism
8. Social Movements : Workers, Peasants, Environmental and Women's Movement

PAPER-V : Project / Assignments **Credits : 4**

TIBETAN HISTORY

SEMESTER – I

PAPER-I **Credits: 2**

བོད་ཀྱི་སྔོད་བཅུད་བཤད་པ་དང་། སྤྱི་ལོ་བརྒྱ་ཐག་དགུ་པ་བར་གྱི་བཅན་བོའི་དུས་སྐབས། (History of Tibet up to 9th century with brief description of Geography and People of Tibet)

བོད་ཀྱི་ཡུལ་དང་། ཕི་རིགས་ཀྱི་བྱུང་བ། ཆོས་དང་འཇིག་རྟེན་གྱི་གནའ་བོའི་གཤེས་ལུགས། བཅན་བོའི་གདུང་ རྒྱུད་དང་དེའི་སྤིད་དབང་ཚུགས་ཚུལ། བཅན་པོ་རིམ་བྱོན་དང་ལྷག་པར་སྤོང་བཅན་དུས་སྤིད་དབང་རྒྱ་བསྒྱེད་ གཅིག་ཏུར་བྱུང་བ་བཅས།

སྒོམ་ཚན་གྲོགས་དེབ།

༡། ཞྭ་སྐད་བའི་བོད་ཀྱི་སྤིད་དོན་རྒྱལ་རབས།

༢། ཆ་སྟེལ་ཆེ་བརྟན་ཟུན་ཆོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཁེད་བ།

༣། ཕྲེཌ་ཆོས་འབྱུང་།

༤། ཏུན་ཏོང་ཡིག་ཆེང་གནད་བསྡུས།

༥། བོན་ཀྱི་ལོ་རྒྱུས་བསྒྲགས་ཀ་རིན་ཆེན་གྲིང་གཞས།

PAPER-II **Credits: 2**

བོད་བཅན་བོའི་ཆབ་སྲིད་མངའ་ཐང་དང་། ཡུལ་ཁག་གཞན་དང་ཆབ་སྲིད་འབྲེལ་བ། (Tibetan Monarchy Period and Political Contacts with Foreign Powers)

སྤོང་བཅན་ནས་དང་མ་ཏྲ་དུམ་བཅན་པོ་བར་བོད་བཅན་བོའི་ཆབ་སྲིད་ཀྱི་མངའ་ཐང་། ཡུལ་ཀྱི་སྲིད་ཀྱི་འཛིན་སྐྱོང་དང་དབག་བོའི་དབུང་སྟེ་བཀོད་འདོམས་ཀྱི་ཁྲིམས་སྤོལ་ལམ་ལུགས། ཨང་དུ་རྒྱ་ནག་པོ་དང་། སྟོང་བལ་པོ་སོགས་སྤྱོགས་བཞིའི་ཡུལ་ཁག་དང་ཆབ་སྲིད་ཀྱི་འབྲེལ་བའི་སྐོར། བཅན་བོའི་སྲིད་དབང་ཉམས་རྟེན་དང་སེལ་བྱང་ཐོབ་ཚུལ།

སྒོམ་ཚན་གྲོགས་དེབ།

༡། ཞྭ་སྐད་བའི་བོད་ཀྱི་སྤིད་དོན་རྒྱལ་རབས།

༢། ཆ་སྟེལ་ཆེ་བརྟན་ཟུན་ཆོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཁེད་བ།

༣། ཕྲེཌ་ཆོས་འབྱུང་།

๔། ཆུན་ཏོང་ཡིག་ཆེང་གནད་བསྡུས།

๕། དོན་གྲུབ་རྒྱལ་སོགས་ཀྱིས་བསྒྲུབ་བའི་ཐང་ཡིག་གསར་ཆེང་ལས་བྱུང་བའི་ཐོད་ཆེན་ཡོའི་སྲིད་ལུགས།

๖། རྩོ་རིང་དང་ཏིལ་བུའི་ཁ་བྱང་།

PAPER-III **Credits: 2**

Assignment & Project

གོང་གསལ་སློབ་ཚན་དང་འབྲེལ་བའི་བརྩོད་གཞི་གང་རུང་ཐོག་ཏོམས་ཚོག་བྱེ་རྒྱུ་དང་། ཏོམས་ཚོག་དེའི་ཐོག་འཛིན་གྱང་གཏན་མཁྱད་དང་བྱེ་བའི་ལན་འདེབས།

SEMESTER - II

PAPER-I **Credits: 2**

བོད་དང་མཐའ་བཞིའི་ཡུལ་ཁག་དང་ཆོས་དང་རིག་གནས་ཀྱི་འབྲེལ་བ།དུམ་པ་དང་པོ། (Tibet's Cultural Contacts with Neighboring Countries (Part I)

སྤྱན་པ་གཡེན་རབས་མི་བོ་ཆེ་བོད་དུ་ཞེབས་ནས་བོན་དང་བ་ནས་སྔོང་བཅན་སྐམ་པོ་ཡན་ཏྲི་དུས་ཡུན་རིང་ཕྱིའི་མཁས་པ་དང་ལོ་བཏ། བཙུན་མོ་སོགས་མང་དག་བོད་དུ་ཞེབས་པ་དང་། བོད་ཀྱི་མཁས་པ་ཐོན་མི་ལ་སོགས་པ་དག་གིས་ཆོས་དང་བཅོ་དང་གསོ་བ། ཅིས་དང་ཡི་གེ་སོགས་རིག་གནས་ཐོག་ཕྱག་རྒྱ་རྩེས་རྗེ་བྱུང་། ལྷ་ཁང་དང་གཙུག་ལག་ཁང་བཞེངས་པ། ལྷ་སྐུ་རྟེན་གསུམ་བཞེངས་པ། དམ་ཆོས་བོད་དུ་བསྒྲུབ་བ།

སྒོམ་ཚན་སྒོག་དེབ།

༡། ཞྭ་སྒན་བའི་བོད་ཀྱི་སྲིད་དོན་རྒྱལ་རབས།

༢། ཆག་སྲེལ་ཆེ་བཀྲན་ཟུན་ཆོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཟེང་བ།

༣། ཕྲེཌུ་ཆོས་འབྱུང་།

༤། དཔའ་བོ་གཙུག་ལག་ཟེང་བའི་ཆོས་འབྱུང་མཁས་བའི་དགའ་སྤྱོན་ལས་ཡན་ལག་ཕྲ་ཐ།

༥། བཀའ་ཆེམས་ཀ་ཁོལ་མ།

PAPER-II **Credits: 2**

བོད་དང་མཐའ་བཞིའི་ཡུལ་ཁག་དང་ཆོས་དང་རིག་གནས་ཀྱི་འབྲེལ་བ།དུམ་པ་གཉིས་པ། (Tibet's Cultural Contacts with Neighboring Countries (Part II)

སྔོན་བཅན་མན་ཆད་ནས་དང་མ་ཏུ་དུམ་བཅན་པོ་བང་ཀྱི་དུས་ཡུན་རིང་རྒྱ་དཀར་ནག་ལ་སོགས་པའི་ལོ་བཏ་བོད་དུ་ཞེབས་པ་བདག་གིས་རབ་བྱུང་དགེ་འདུན་ཀྱི་སྡེ་བཙུགས་པ་དང་། ལྷ་ཁང་དང་གཙུག་ལག་ཁང་བཞེངས་པ། ལྷ་སྐུ་རྟེན་གསུམ་བཞེངས་པ།དམ་ཆོས་བོད་དུ་བསྒྲུབ་བ་དང་། དམ་ཆོས་བོད་སྐད་དུ་བསྒྲུབ་བ་དག་གི་འཚད་ཉན་དང་གྲུབ་པ་ལག་ལེན་ཀྱི་ཚུགས་པ། རྒྱའི་རྒྱཤད་དང་སྤྱོད་དཔོན་ཀ་ཝ་ལ་ཝཱི་ལ་བར་དང་། བན་བོན་རྩོད་པ་བཅས།

སྒོམ་ཚན་སྒོག་དེབ།

༡། ཞྭ་སྒན་བའི་བོད་ཀྱི་སྲིད་དོན་རྒྱལ་རབས།

༣། ཆབ་སྒེལ་ཆེ་བརྟན་ཟུན་ཆོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཟེང་བ།

༤། ཕྲེཌ་ཆོས་འབྲུང་།

༥། སྦ་བཞེད།

༦། བཀའ་ཆེམས་ཀ་ཁོལ་མ།

PAPER-III **Credits: 2**

Assignment & Activities

གོང་གསལ་སློབ་ཚན་དང་འབྲེལ་བའི་བརྗེད་གང་རུང་ཐོག་ཆོམ་ཡོག་བྱེ་རྒྱུ་དང་། ཆོམ་ཡོག་དེའི་ཐོག་འཛིན་གྲབ་གཏམ་བཤད་དང་བྱེ་བའི་ལག་འདེབས།

SEMESTER – III

PAPER-I **Credit: 2**

སྐྱེ་དར་དུས་སངས་རྒྱས་ཀྱི་བསྟན་སྲུང་གི་ཚུལ་ (Revival of Buddhism in 11th Century)

བོད་སིལ་བུའི་གནས་སྐབས་སྤྱི་ལོ་བརྒྱ་ཐེག་བཅུ་བའི་སྔད་ཚ་ཡས་མས་སུ་བོད་དུ་སངས་རྒྱས་ཀྱི་བསྟན་བའི་སྤྱི་ཡོངས་གནས་སྐངས། མངའ་རིས་ཆོས་རྒྱུ་རྣམས་དང་། ལོ་ཆེན་རིན་བཟང་། ཇོ་བོ་རྗེ་ལ་རྒྱུན་ལས་ཀྱི་སོགས་ཀྱི་ཐུགས་རྗེས་དང་། བཀའ་གདམས་པའི་ཆོས་བརྒྱུད་ཚུགས་ཚུལ། ཀླུ་ཆེས་སོགས་ཀྱིས་འདུལ་བའི་ལག་ལེན་སྔར་གསོས་པ་དང་དགེ་འདུན་སྡེ་ཚུགས་པ། འབྲོག་མི་ལོ་ཙྪ་བ་ཤཱཀྱ་ཡེ་ཤེས་ཀྱིས་ལམ་འབྲས་ཀྱི་གདམས་ངག་རྒྱ་ཆེར་སྤེལ་བ་དང་། གདམས་ངག་དེ་གཙོ་བོར་འཛིན་པའི་དཔལ་ལྡན་ས་སྐྱའི་ཆོས་བརྒྱུད་ཚུགས་ཚུལ། ལྷོ་ཟླག་ མར་པ་ལོ་ཙྪ་བ་ཆེན་པོ་ལས་བདེ་མཆོག་དང་གསང་འདུས་སོགས་གསང་སྔགས་ཀྱི་གདམས་ངག་ཟབ་མོ་དང་བ་དང་། གདམས་ངག་དེ་དག་གཙོ་བོར་འཛིན་པའི་བཀའ་བརྒྱུད་པའི་ཆོས་བརྒྱུད་ཚུགས་པ་དང་། རྗོག་ལོ་ཙྪ་བ་ རྒྱོ་ལྡན་ཤེས་རབ་དང་པ་ཚབ་ལོ་ཙྪ་བ་སོགས་ཀྱི་དབུ་མ། ཚད་མ། པར་ཕྱིན། བྱམས་ཆོས་སྡེ་ལྔ་སོགས་མཚན་ཉིད་ཀྱི་གཞུང་གི་འཚད་ཉན་བསྡུགས་པ་དང་སྦེལ་བ་བཅས།

སྒོམ་ཚན་རྩིགས་དེབ།

༡། འགོས་ལོའི་དེབ་ཐེར་སྡེབ་པོ།

༢། ཞྭ་སྒམ་པའི་བོད་ཀྱི་སྲིད་དོན་རྒྱལ་རབས།

༣། ཚབ་སྐེལ་ཚེ་བརྟན་ཟུན་ཆོགས་ཀྱི་བོད་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཐེར་བ།

༤། ལྷེཌུ་ཆོས་འབྱུང་།

PAPER-II **Credits: 2**

དབལ་ལྡན་ས་སྐྱ་པ་དང་པགས་མོ་གྲུ་བའི་དུས་སྐབས་ཀྱི་བོད་ཀྱི་སྲིད་དབང་། དུམ་པ་དང་པོ། (History of Medieval Tibet (Part I)

སྤྱི་ལོ་ ༡༩༦༩ ཡས་མས་སུ་བོད་སྤྱིའི་ཚབ་སྲིད་ཀྱི་གནས་སྐངས། གནས་སྐངས་དེའི་འོག་བོད་ཀྱི་ཆོས་བརྒྱུད་སྐྱབ་སྡེ་ཁག་དང་སོག་པོ་རྒྱལ་སྐས་བར་མཆོད་ཡོན་འབྲེལ་བ་ཚུགས་པ་དང་། ལྷག་བར་ས་སྐྱ་པ་དང་སོག་པོ་རྒྱལ་སྐས་བར་མཆོད་ཡོན་འབྲེལ་བ་ཚུགས་པ་དང་། འབྲེལ་བ་དེ་ལ་བརྟེན་ནས་ས་སྐྱའི་ཐྲག་ཏུ་བོད་ཀྱི་སྲིད་དབང་སོན་པ་དང་། དེ་སྐབས་འཇའ་ཚོ་དང་འཇའ་ཆེན་བཅུགས་ནས་བོད་ཀྱི་ཁྱིམ་ཉུང་གངས་གཅིག་བྱས་པ། ས་སྐྱའི་སྲིད་དབང་ཉམས་ཚུལ་དང་པགས་ཚོ་བྱུ་བའི་སྲིད་དབང་ཚུགས་ཚུལ།

སྒོམ་ཚན་གྲོགས་དེབ།

༡། ཞྭ་སྒམ་བཞི་བོད་ཀྱི་སྲིད་དོན་རྒྱལ་རབ།

༢། ཆད་སྤེལ་ཆེ་བརྟན་ཟུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཟེད་བ།

༣། ས་སྐྱའི་གདུང་རབས་རིན་ཆེན་བང་མཛོད།

༤། སྐ་གཙང་དབལ་འབྱོར་བཟང་བའི་རྒྱ་བོད་ཡིག་ཚང་ཆེན་མོ།

༥། ཀ་སི་ཏུ་བྷང་ཆུབ་རྒྱལ་མཚན་གྱི་བཀའ་ཆེམས།

༦། རྒྱངས་ཀྱི་པོ་ཏེ་བས་བྱ།

༧། བཀའ་ཆེན་བསོད་གྲགས་ཀྱི་དེབ་ཐེར་དམར་པོ་གསར་མ།

PAPER-III **Credits: 2**

Assignment & Project

གོང་གསལ་སྒོམ་ཚན་དང་འབྲེལ་བའི་བརྗོད་གཞི་གང་རུང་ཐོག་ཏོམས་ཚོག་བྱི་རྒྱུ་དང་། ཏོམས་ཚོག་དེའི་ཐོག་འཇོག་གྲངས་གཤགས་བཤད་ དང་བྲི་བའི་ལན་འདེབས།

SEMESTER – IV

PAPER-I **Credits: 2**

དཔལ་ལྡན་ས་སྐྱ་པ་དང་ཕག་མོ་གྲུ་པའི་དུས་སྐབས་ཀྱི་བོད་ཀྱི་སྲིད་དབང་། དུས་པ་གཉིས་པ་ (History of Medieval Tibet (Part II)

ཕག་གྲུའི་སྲིད་དབང་སྐབས་རིན་སྤུངས་པ། གཙང་སྟོད་སྡེ་པ། སྐྱིད་ཟོད་སྡེ་པ་སོགས་བོད་དབུས་གཙང་གི་སྡེ་དགོན་ཁག་ཚན་ཚུན་གཅིག་ཁོག་གཅིག་མི་ཚུད་པའི་འགལ་རྐྱེན་སློང་རིམ་པར་བྱུང་བ་དང་། དེས་རྒྱལ་པས་འགལ་རྐྱེན་གྱུར་བའི་སྡེ་དགོན་དེ་དག་དང་མཚོད་ཡོན་དུ་འབྲེལ་བའི་བོད་ཀྱི་ཆོས་བརྒྱུད་ཀྱི་སྤྱན་སྡེ་ཁག་ཚན་ཚུན་བར་དུའང་འགལ་བ་བྱུང་བ་དང་། འགལ་བ་རྣོ་དར་ཅན་དེའི་བརྒྱུད་རིམ་ཁོག་དགའ་ལྡན་གོ་བྱང་གི་སྲིད་དབང་ཚུགས་པ་བཅས་ཀྱི་ལོ་རྒྱུས་གནད་བསྡུས།

སློབ་ཚན་གྲོགས་དེབ།

༡། ཞྭ་སྣག་པའི་བོད་ཀྱི་སྲིད་དོན་རྒྱལ་རབས།

༢། ཆ་སྤྲིལ་ཆེ་བརྒྱན་ཕྱུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཟེད་བ།

༣། ས་སྐྱའི་གདུང་རབས་རིན་ཆེན་བང་མཛོད།

༤། སྐྱག་ཚང་དཔལ་འབྱོར་བཟང་པའི་རྒྱ་བོད་ཡིག་ཚང་ཆེན་མོ།

༥། ཀ་སི་ཀུ་བྱང་ཆུབ་རྒྱལ་མཚན་གྱི་བཀའ་ཆེམས།

༦། རྩྭངས་ཀྱི་ཙོ་ཀེ་བས་བྱ།

༧། བཀ་ཆེན་བསོད་ནམས་ཀྱི་དེབ་ཐེར་དམར་ཙོ་གསར་མ།

༨། དུང་དཀར་ཀྱི་ཆོས་སྲིད་ཟུང་འབྲེལ་བཤད་པ།

PAPER-II **Credits: 2**

དགའ་ལྡན་ཙོ་བྱང་དུས་ཀྱི་བོད་ཀྱི་སྲིད་དབང་དང་།ཕྱི་འགྲུལ་ཁབ་དང་ཆབ་སྲིད་ཀྱི་འབྲེལ་བ།དུས་པ་དང་པོ། (History of Modern Tibet (Part I)

ཉུ་ལའི་བློ་མ་སྐུ་ཁེད་ལྡ་པ་ཆེན་པོ་དང་རྒྱ་ནག་མན་ངུ་གོང་མའི་བར་མཆོད་ཡོན་འབྲེལ་བ། ལྡ་པ་ཆེན་པོའི་དགོངས་རྫོགས་གསང་རྒྱ་དང་། དེ་རྗེས་སྡེ་སྲིད་སངས་རྒྱས་རྒྱ་མཚོ། ལྷ་བཟང་ཁན། ཨོ་རོད་རྩྭ་གང་བཅས་

དབང་འཛིན་རིམ་པའི་བར་འགལ་བའི་ཐབས་རྩོད་དང་དབང་འཛིན་འགོ་འཛུགས། ༡༧༡༥ ཡས་མས་ནས་རྒྱ་ནག་མན་རྩེའི་སྲིད་གཞུང་གི་ཞེ་འཇུས་དང་དམག་དང་དགོན་རིགས་མི་སྣ་གོད་ཏུ་འགྲོར་བ་དང་། དེའི་རྒྱབ་ཕྱོར་བྱང་ཀྱེན། དབུས་གཙང་བཀའ་བློན་ནང་འཁྲུགས་དང་། དེའི་ངན་འབྲས་ཡོ་ལྷ་བ་བུའི་དུས་སྐབས་དང་རྒྱ་ནག་མན་རྩེའི་སྲིད་གཞུང་བར་གྱི་འབྲེལ་བ། ༡༧༡༧ ལོར་རྒྱ་གོད་གཉིས་མོལ་གྱིས་གོད་ཀྱི་ལས་དོན་བྱེད་ཐོག་བསྒྲུབ་བཅོས་དོན་ཚན་༧རེ་ཁག་ལ་ཐབ་བར་ཞེབ་དབྱད། རྒྱལ་བ་སྐུ་ཞེང་བརྒྱད་པ་ནས་བཅུ་གཉིས་པ་བར་གྱི་ཡང་སྲིད་ངོས་འཛིན་དང་ཁེ་འདོན་དེ་ལྟར་བྱང་བ། རྒྱ་ཚབ་རིམ་བྱེད་གི་ཁྲི་ལོ་དང་། རྒྱལ་ཚབ་ར་སྤྲེང་དང་བཤད་སྒྲའི་བར་གྱི་དབང་འཛིན་འགོ་འཛུགས།

སྒོམ་ཚན་ཐྱོག་དེབ།

༡། ཞྭ་སྒོན་པའི་བོད་ཀྱི་སྲིད་དོན་རྒྱལ་རབས།

༢། ཆབ་སྲིལ་ཆེ་བཀྲན་ཟུན་ཆོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཞེང་བ།

L.Petech. China and Tibet in the Early Eighteenth Century.

PAPER-III **Credits: 2**

Assignment & Project

གོང་གསལ་སྒོམ་ཚན་དང་འབྲེལ་བའི་བརྗོད་གཞི་གང་རུང་ཐོག་རྩོམ་ཡོག་བྱེ་རྒྱུ་དང་། རྩོམ་ཡོག་དེའི་ཐོག་འཛིན་ཁང་གཏན་བཤད་དང་དྲི་བའི་ལན་འདེབས།

SEMESTER – V

PAPER-I **Credits: 2**

དགེ་ལྡན་པོ་བྲང་དུས་ཀྱི་བོད་ཀྱི་སྲིད་དབང་དང་།ཕྱིའི་རྒྱལ་ཁབ་དང་ཆབ་སྲིད་ཀྱི་འབྲེལ་བ།དུས་ཚ་གཉིས་པ། (History of Modern Tibet (Part II)

སྐུ་ཟེང་བཅུ་གསུམ་པ་ཆེན་པོའི་ཡང་སྲིད་ངོས་འཛིན་ཁྲི་འདོན་དང་ཆབ་སྲིད་ཐུགས་འགན་བཞེས་པ། སྲིད་རྒྱུན་ཀྱིས་ཐུ་གཏད་བྱུང་བ། བཅུ་གསུམ་པ་ཆེན་པོས་ཚོས་དང་། ཆབ་སྲིད་ཀྱི་ལམ་སྟོལ་ལེགས་བཅོས་དང་གསར་གཏོད་བཅོས་བསྒྱུར། ལྷག་བར་བོད་ངང་ས་ངང་སྐུང་ཆེད་དུག་པོའི་དམག་དབུང་རྒྱ་སྐྱེད་ལེགས་བཅོས་མཛད་པ་དང་། ལེགས་བཅོས་གསར་གཏོད་ནས་འཚར་རྣམས་ཐུགས་དགོངས་ལྷུན་ལག་བསྟར་མ་ཐུབ་པའི་ཕྱི་ནང་གི་འགོག་རྒྱེན་དང་འགལ་རྐྱེ་བྱུང་། དགེ་ལྡན་པོ་བྲང་གཞུང་དང་བཀྲིས་ལྷུན་པོ་བྲ་བྲང་བར་གྱི་འགལ་རྐྱ་དང་། དེའི་བྱུང་རྒྱུན། བཅུ་གསུམ་པ་ཆེན་པོའི་ཆུ་སྦྲེ་ཞལ་གདམས་དང་དགོངས་རྫོགས་བཅས།

སྦྱོབ་ཚན་བྱེད་དེབ།

༡། ཞྭ་སྔོན་པའི་བོད་ཀྱི་སྲིད་དོན་རྒྱལ་རབས།

༢། ཆ་སྦྱིལ་ཆེ་བརྟན་ཟུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཟེད་བ།

H.E. Richardson. Tibet & its History.

༣། ཆབ་སྲིལ་ཆེ་བརྟན་ཟུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཟེད་བ།

Melvyn C. Goldstein. A History of Modern Tibet, 1913-1951

PAPER-II **Credits: 2**

དུས་རབས་བཅུ་བདུན་པ་ཚུན་བོད་དང་ཕྱིའི་རྒྱལ་ཁབ་བར་གྱི་ཆབ་སྲིད་འབྲེལ་བ།དུས་པ་དང་པོ། (Tibet's political Contacts with Foreign Power from 17th Century (Part I)

༡༦ཀ༡ལོར་བལ་བོད་དམག་འཐུག། ༡ཅ༡༦ ནས་ ༡ཅ༤༣ བར་གོར་བོད་དམག་འཐུག་ ༡༦༧༦ ལོར་གོར་བོད་དམག་འཐུག་བཅས་ཀྱི་བྱུང་རྒྱུན་དང་། མཐའ་མའི་ཐག་ཆོད་ཆིངས་ཡིག་བཞག་པ་དང་། ༡༦༡༡ ནས་ ༡༦༡ཀ བར་ལ་དགས་དང་བོད་བར་གྱི་དམག་འཐུག་དང་ཆིངས་ཡིག་༡༡ཀ༩ལོར་ལ་སིང་དམག་འཐུག་དང་ཆིངས་ཡིག ༡ཅ༨ཀ ཡས་མས་ལ་དབྱིན་རྡི་དང་བོད་ཀྱི་བློ་ཆེན་བཀའ་ཆེན་བར་གྱི་འབྲེལ་བ། ༡༩ཅ༦ ཡས་མས་ནས་དབྱིན་བོད་ས་མཚམས་ཀྱི་ཅོད་པ་དང་ ༡༩༩ ལོར་དབྱིན་བོད་དམག་འཐུག་དང་།དབྱིན་བོད་ཀྱི་

འབྲེལ་བ་རྟེ་སྦྲག་རྟེ་ཞན་དུ་སོང་བ།

སྒོམ་ཚན་གྲོགས་དེབ།

༡། རྩོ་རིང་བསྟན་འཛིན་དབལ་འབྱོར་གྱི་རྣམ་ཐར།

༢། ཞྭ་སྣབ་བའི་བོད་ཀྱི་སྲིད་དོན་རྒྱལ་རབས།

༣། མ་ཡ་ཁལ་ཕན་པ་རགཱ་གི་བོད་ཀྱི་གནས་བབས།

H.E. Richardson. Tibet & its History.

༤། ཚབ་སྦེལ་ཆེ་བརྟན་ཟུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཟེང་བ།

PAPER-III **Credits: 2**

Project & Project

གོང་གསལ་སྒོམ་ཚན་དང་འབྲེལ་བའི་བརྩོད་གཞི་གང་རུང་ཐོག་ནས་སྐོམ་ཚོགས་ཏེ་རྒྱུ་དང་། སྐོམ་ཚོགས་དེའི་ཐོག་འཛིན་གྲང་གཏམ་བཤད་དང་དྲི་བའི་ལན་འདེབས།

SEMESTER-VI

PAPER-I **Credits: 2**

དུས་རབས་བཅུ་བདུན་པ་ཚུན་བོད་དང་ཕྱིའི་རྒྱལ་ཁབ་བར་གྱི་ཆབ་སྲིད་འབྲེལ་བ། དུམ་པ་གཤིས་པ། བོད་རྩིད་འགྲན་ཆེ་མོར་ (Great Game) ཚུད་པའི་སྐབས། (History of Modern Tibet (Part II)

༡༩༥༠ དང་ ༡༩༤༢ ལོར་རྒྱ་ནག་དང་དབྱིན་རི་བར་བོད་དོན་དང་འབྲེལ་བའི་ཆིངས་ཡིག་བོད་དང་ཕྱུ་རུ་སུའི་བར་གྱི་འབྲེལ་བ། འབྲེལ་བ་དེའི་རྒྱབ་སྟོངས་ཀྱི་བྱུང་རིམ་དང་། སྐོ་མང་མཚན་ཞབས་ཀྱིས་འབྲེལ་འཐུད་རྒྱ་ཡུན་བྱས་པ། ༡༩༥༠ ལོར་དབྱིན་དམག་ལྟ་མར་འབྱོར་བ། དེའི་བྱུང་རྒྱུན་དང་། དབྱིན་བོད་བར་ཆིངས་ཡིག་དང་པོ་བཞག་པ། ༡༩༥༧ལོར་རྒྱ་ནག་དང་དབྱིན་རི་བར་བོད་དོན་དང་འབྲེལ་བའི་ཆིངས་ཡིག་དང་། ༡༩༥༤ ལོར་ཕྱུ་རུ་ སུ་དང་དབྱིན་རི་བར་བོད་དོན་སྐོར་ཆིངས་ཡིག་བཅས་ཀྱི་རྒྱབ་སྟོངས་བྱུང་རྒྱུན་དང་ནང་དོན་དབྱུང་ཞིབ། ༡༩༥༩ ཡས་མས་ནས་རྒྱ་དམག་བོད་དུ་རིམ་བར་འབྱོར་ཚུལ་དང་། རྒྱ་བོད་འབྲེལ་བ་རི་ཞན་རི་སྤྱག་ཏུ་སོང་བས་སྐུ་ཟེང་བཅུ་གསུམ་པ་ཆེན་པོ་རྒྱ་གར་དུ་ཉེན་གཡོལ་དུ་ཞེབས་པ།

སྟོབ་ཚན་གྲོགས་དེབ།

༡། ཞྭ་སྐབ་བའི་བོད་ཀྱི་སྲིད་དོན་རྒྱལ་རབས།

༢། ཆབ་སྲིལ་ཆེ་བཀྲན་ཟུན་ཆོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཟེང་བ།

༣། བོད་ཀྱི་གནས་བབས།

H.E. Richardson. Tibet & its History.
Melvyn C. Goldstein. A History of Modern Tibet, 1913-1951.

PAPER-II **Credits: 2**

དུས་རབས་བཅུ་བདུན་པ་ཚུན་བོད་དང་ཕྱིའི་རྒྱལ་ཁབ་བར་གྱི་ཆབ་སྲིད་འབྲེལ་བ།དུམ་པ་གསུམ་པ།བོད་རྩིད་འགྲན་ཆེ་མོར་ (Great Game) ཚུད་པའི་སྐབས། (History of Modern Tibet (Part III)

རྒྱ་བོད་ཅོད་རྟོག་ལེལ་ཐབས་དང་། བོད་རྒྱལ་ཁབ་ཀྱི་སྲིད་དབང་སྐར་གསོ་དང་བོད་ས་རང་ལག་ཏུ་སོན་པའི་དབྱིན་རི། ཡུ་རུ་སུ་རྒྱ་ནག་སོགས་ཕྱིའི་རྒྱལ་ཁབ་ཁག་ལ་འབྲེལ་བ་དང་རེ་བཅོལ་རྟེ་ལྟར་མཛད་པ། ༡༩༡༢ ལོར་རྒྱ་དམག་དང་རྒྱའི་དབོན་རིགས་མི་སྡེ་བོད་དབྱུས་གཙང་ས་ཁུལ་ནས་བྱུང་བ། བོད་ཞིར་ཕྱོགས་ཁུལ་རྒྱ་བོད་དམག་འཐབ་དང་།འཐལ་ལེལ་བཙོས་ཆོད་རིམ་ས་བྱུང་བ། ༡༩༡༣ ལོར་བོད་སོག་ཆིངས་ཡིག་

༡༩༡༩ ལོར་རྒྱ་བོད་དབྱིན་གསུམ་སིམ་ལའི་བཙོས་ཚོད་དང་། བོད་དབྱིན་བར་ཚོང་འབྲེལ་བཙོས་ཚོད། བཙོས་ཚོད་དེ་དག་གི་རྒྱབ་ལྟོངས་བྱུང་རིམ་ཞིབ་དཔྱད། བོད་དང་རྒྱ་ནག་གོ་ཕིང་ཁང་སྤིད་གཞུང་བར་གྱི་འབྲེལ་རྩིད་བཅས།

སློབ་ཚན་གྲོགས་དེབ།

༡། ཞྭ་སྣབ་བའི་བོད་ཀྱི་སྤིད་དོན་རྒྱལ་རབས།

༢། ཆབ་སྲིལ་ཆེ་བརྟན་ཟུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཐེང་བ།

༣། བོད་ཀྱི་གནས་བབས།

H.E. Richardson. Tibet & its History.
Melvyn C. Goldstein. A History of Modern Tibet

PAPER-III: **Credits: 2**

Assignment & Activities

གོང་གསལ་སློབ་ཚན་དང་འབྲེལ་བའི་བརྩོད་གཞི་གང་རུང་ཐོག་ནས་ཤོག་ཡིག་རྒྱུ་དང་། ཆོས་ཤོག་དེའི་ཐོག་འཛིན་ཐུབ་གཤམ་བཤད་དང་བྱེ་བའི་ལན་འདེབས།

SEMESTER - VII

Innovative teaching module relevant to School Teaching **Credit: 2**

SEMESTER - VIII

PAPER-I **Credit: 3**

༡༤རྒྱལ་བ་སྐུ་ཕྲེང་བཅོ་བརྒྱ་པ་ཆེན་པོའི་སྐབས་དང་། དགའ་ལྡན་པོ་བྲང་གི་སྲིད་དབང་མཇུག་འཛིལ་བ། དུམ་བ་དང་པོ་ (14th Dalai Lama and End of Gaden Phodrang Rule (Part I)

སྐུ་ཕྲེང་བཅུ་བརྒྱ་པ་ཆེན་པོའི་ཡང་སྲིད་ངོས་འཛིན་ཁྲི་འདོན་དང་། རྒྱ་ཚབ་ར་སྤྲུག་སོགས་བོད་ཀྱི་དབང་འཛིན་མི་སྣ་ཆེ་ཁག་བར་ཀྱི་རྟོག་ཞིང་། ལྷང་ཤག་ཏུ་སྐྱིད་ཕྱོགས་ཀུན་འདུས་ཚོགས་པ་དང་དེའི་དམིགས་ཡུལ། ༡༩༤ ཡས་མས་ནས་དབྱིན་གཞུང་དང་། རྒྱ་གར་གཞུང་གསར་པ་དང་འབྲེལ་བ། ༡༩༤ལོའི་བོད་ཀྱི་ཚོང་འབྲེལ་སྐུ་ཚབ།

སྒོམ་ཚན་ངོག་དེབ།

༡། ཞྭ་སྣབ་པའི་བོད་ཀྱི་སྲིད་དོན་རྒྱལ་རབས།

༢། ཆབ་སྲིལ་ཆེ་བཏུན་ཟུན་ཚོགས་ཀྱི་བོད་ཀྱི་ལོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཕྲེང་བ།

H.E. Richardson. Tibet & its History.
Melvyn C. Goldstein. A History of Modern Tibet, 1913-1951.

PAPER-II **Credits: 3**

༡༤རྒྱལ་བ་སྐུ་ཕྲེང་བཅོ་བརྒྱ་པ་ཆེན་པོའི་སྐབས་དང་། དགའ་ལྡན་པོ་བྲང་གི་སྲིད་དབང་མཇུག་འཛིལ་བ། དུམ་བ་གཉིས་པ། (14th Dalai Lama and End of Gaden Phodrang Rule (Part II)

༡༩༥༠ ལོར་རྒྱ་ནག་གྱང་བན་ཉང་གི་དམག་བོད་དུ་འབྱོར་བ་དང་། སྐུ་ཕྲེང་བཅུ་བཞི་པའི་ལུགས་གཉིས་ཐུགས་འགན་བཞེས་པ། ༡༩༥༠ ལོར་མཉམ་འབྲེལ་རྒྱལ་ཚོགས་སུ་བོད་དོན་སྤྲུན་ཞུ། ༡༩༥༡ ལོར་རྒྱ་བོད་བསྟོས་མོལ་དོན་ཚན་བཅུ་བདུན་བཞག་པ། ༡༩༥༩རྒྱ་དཀར་ནག་བར་གྱི་ཆིངས་ཡིག་རྒྱ་དམག་དང་དབོན་རིགས་མི་སྣ་ལྟ་སར་འབྱོར་དང་བསྡུན་བོད་ཀྱི་སྲིད་དབང་རྒྱ་ལག་ཏུ་ཤོར་བ། ༡༩༥༩ ལོའི་རྒྱབ་ལང་དང་༢གོང་ས་མཆོག་གིས་གཅོས་བོད་མི་རྒྱ་གར་དུ་བཅན་བྱོལ་དུ་འབྱོར་བ།

སྒོམ་ཚན་ངོག་དེབ།

༡། ཞྭ་སྣབ་པའི་བོད་ཀྱི་སྲིད་དོན་རྒྱལ་རབས།

༣། ཚབ་སྤེལ་ཚེ་བརྟན་ཐུན་ཚོགས་ཀྱི་བོད་ཀྱི་འོ་རྒྱུས་རགས་རིམ་གཡུ་ཡི་ཐེང་བ།

H.E. Richardson. Tibet & its History.

Melvyn C. Goldstein. A History of Modern Tibet, 1913-1951.

Freedom in Exile: The autobiography of the Dalai Lama of Tibet.

PAPER-III **Credits: 3**

༡༤རྒྱལ་བ་སྐུ་ཕྲེང་བཅོ་བཞི་པ་ཆེན་པོའི་སྐབས་དང་།དགའ་ལྡན་ཕོ་བྲང་གི་སྡིད་དབང་མཇུག་འཛིལ་བ། དུས་པ་གསུམ་པ། (14th Dalai Lama and End of Gaden Phodrang Rule (Part III)

བཅོན་ཟོལ་གཞུང་ལས་ཁུངས་མ་ལག་དང་བཅས་པ་ཚུགས། བཅོན་ཟོལ་བོད་ཕིའི་སྤྱི་སྣང་གཞིས་ཆགས་དང་། སློབ་ཐ་གས་ད་འཛུགས་བསྒྲུབས་པ། བོད་མི་མང་སྤྱི་འཐུས་འཕེལ་འདེམས། བོད་མི་མང་མངའ་གཙོའི་རྒྱལས་གཏན་འབེབས་བྱུང་བ། ༡༩༥༡ནས་བཅོན་ཟོལ་བོད་ཕིའི་བཅའ་ཁྲིམས་གཏན་འབེབས་ལག་བསྟར་བྱུང་བ། མི་མངས་ཀྱིས་འོས་འདེམས་བྱས་པའི་བཀའ་ཁྲིས་སྲིད་དབང་ཐུགས་འཁྱུར་བཞེས་པ། ༨༠༡༡ལོར་དགའ་ལྡན་ཕོ་བྲང་གི་སྲིད་དབང་མཇུག་འཛིལ་ནས་མི་མངས་ཀྱིས་འོས་འདེམས་བྱས་པའི་བཀའ་ཁྲིའི་ཐྲག་ལ་བོད་ཀྱི་སྲིད་དབང་འགོས་པ་བཅས།

སྒོམ་ཚན་སྒྲིག་དེབ།

༡། ཞྭ་སྐད་པའི་བོད་ཀྱི་སྲིད་དོན་རྒྱལ་རབས།

Tibetans in Exile (1959-1980) compiled and published by Information Office of the H.H.The Dalai Lama.

Freedom in Exile: The autobiography of the Dalai Lama of Tibet.

༡༩༥༠ ཚུན་ཀྱི་བོད་མི་མང་སྤྱི་འཐུས་ཐོག་ཆོགས་ལས་རིམ་གསར་ཤོག་ཁག་དང་། སྤྱི་འཐུས་ཆོགས་གཙོའི་གསུང་ བཤད་ཐྲོག་གས་བསྟོམས་ཁག་ལ་གཟིགས།

བོད་གཞུང་ཤེས་རིག་ལས་ཁུངས་མ་ལག་དང་བཅས་པའི་ཚོ་རྒྱུས། ཤེས་རིག་ལས་ཁུངས་ནས་བར་བསྒྲུན་བྱས།

PAPER-IV **Credits: 3**

༡༤ཏྲུལ་བ་སྐུ་ཟེང་བཅོ་བཞི་པ་ཆེན་པོའི་སྐབས་དང་།དགའ་ལྡན་ཕོ་བྲང་གི་སྲིད་དབང་མཇུག་འཛིལ་བ། དུས་པ་བཞི་པ། བོད་རྒྱ་ཞི་མོལ། (14th Dalai Lama and End of Gaden Phodrang Rule (Part IV)

༡༩༨༩ ཡན་མས་ནས་ལེ་ཅིང་གྱང་བྲན་ཏང་སྲིད་གཞུང་དང་༡གོང་ས་མཆོག་བར་བོད་རྒྱ་ཞི་མོལ་འབྲེལ་བ་ཚུགས་ནས་ལམ་དབུ་མའི་སྲིད་འཇུས་ལག་བསྟར་གྱིས་ ༢༠༡༡ ལོ་བར་བོད་རྒྱ་ཞི་མོལ་གྱི་འབྲེལ་བའི་བརྒྱུད་རིམ་སྤྱི་ཀུན་ལ་བསྒྲུར་མིག་དྲན་གསོ་དང་། ཞི་མོལ་སྐབས་ཟྭོགས་གཞིས་མ་མཐུན་པའི་དོན་གནད་གཙོ་ཆེ་རྣེ་ཡིན་སྐོར།

སྒོམ་ཚན་ཁྲིགས་དེབ།

1. Dharamsala and Beijing: Initiatives and Correspondences (1981-1993)
2. Freedom in Exile: The autobiography of the Dalai Lama of Tibet.
3. Collected Statements, Articles and Interviews of H.H. the 14th Dalai Lama of Tibet.
4. Information Office of H.H.The Dalai Lama.
5. Nobel Prize for Peace, Collected Speeches, Dalai Lama of Tibet.

༡༩༥༠ ཚུན་ཀྱི་བོད་མི་མང་སྤྱི་འཐུས་སྡོས་ཚོགས་ལས་རིམ་གསར་ཤོག་ཁག་དང་། སྤྱི་འཐུས་ཚོགས་གཙོའི་གསུང་བཤད་ཟློགས་བསྡོམས་ཁག་ལ་གཟིགས།

PAPER-V **Credits: 2**

(A) Assignment & Project

རྒྱུ་དམར་གྱིས་བོད་ལ་བཙན་འཛུལ་རྒྱ་ཡུར་བྱས་པའི་སྐོར། བོད་ཀྱི་དུས་འགྱུར་ཞེས་པའི་སྒོག་བརྟན་དེ་གཟེགས་ནས་དེའི་ནང་དོན་རྩོགས་ཞིབ་དང་འབྲེལ་སོ་སོའི་བསམ་འཆར་སྦྱངས་བྱེས།

Credits: 2

(B) Assignment & Project

མང་མོས་འོས་འདེམས་བྱས་པའི་བཀའ་སྒོན་ཐྲེ་ཚ་བསྐོ་འདེམས་དང་། ཥགོང་ས་མཆོག་གིས་བོད་ཀྱི་ཆབ་སྲིད་ཀྱི་ཐུགས་འཁོན་མཚམས་འཇོག་གནང་རྒྱུའི་ཐད་མང་ཚོགས་ནང་བགྲོས་བསྡུད་དང་། མང་མོས་ཐག་གཅོད་འོས་བསྡུ་བྱས་པ་བཅས་ཀྱི་སྐོར་སྐབས་དེའི་གསར་ཤོག་དང་། དུས་དེབ་ཁག་ནང་འགོད་གནས་ཚུལ་བསྒྲུངས་ཟིན་ཐོ་ཤོག་ལྟེ་བཅུ་ཙམ་བྱེས།