JAN NAYAK CHANDRA SHEKHAR UNIVERSITY (JNCU) BALLIA (U.P.)

B.El.ED. PROGRAMME

Bachelor of Elementary Education Rules, Regulation, Duration and Syllabus

B.El.Ed. Course

YEAR-II

THEORY	F2.3	Cognition and Learning	100
	F2.4	Language Acquisition	50
	F2.5	Human Relations and Communication	50
	P2.1	Language across the Curriculum	50
		Liberal Course (Optional I)*	100
	O2.1	English I	
	O2.2	Hindi I	
	O2.3	Mathematics I	
	O2.4	Physics I	
	O2.5	Chemistry I	
	O2.6	Biology I	
	O2.7	History I	
	O2.8	Political Science I	
	O2.9	Geography I	
	O2.10	Economics I	
E.P.C : 02	PR 2.3	Observing Children	75 ⎫
	PR 2.4	Self-development Workshops	50 ⎪ Total
	PR 2.5	Physical Education	25 ⎬ 200
		Colloquia	50 ⎭ Marks
		Academic Enrichment Activities	
	TOTAL :		**550 Marks**

F 2.3 COGNITION AND LEARNING

100 Marks

Unit-1 The mind at work: cognition and approaches to cognition: individual difference and its implication. Level and Stages of teaching. How children perceive: elementary cognitive processes-sensation, perception and attention.

Unit-2 How children learn and remember: basic processes, strategies, knowledge, memory; current issues, Forgetting : causes and principles. The developing mind: concepts and concept formation: Bruner. developing concepts of time, space, number, relationship etc.

Unit-3 Transfer of Learning, Motivation various techniques for motivating the child: creativity and problem solving.

Unit-4 Alternative conceptions of learning. Factors contributing to learning : personal and environmental conditions of learning. E-Learning, Role of ICT in Learning. The Child's personal and social world : cognition and emotion, Bloom's Taxonomy : Cognitive, Affective Psychomotor.

References :

➢ Dutta, N.K. : The Psychological Foundation of Education, Doaba house, Delhi, 1974.

➢ Hurlock, E.C. : Psychological development a life span approach, Tata Mc Graw Hill's 5th edition 1983.

➢ Kundu, C.L. : Educational Psychology, Sterling Publication, 1983.

➢ Misra, K.S. : Emotional Intelligence : Concept Measurement and Research, Association for Education Studies, Allahabad 2007.

➢ Pandey, K.P. : Advanced Educational Psychology, Viswavidhyalay Prakashan 2007.

➢ Sharma, N. : Understanding Adolescence, NBT, India 2003.

➢ Chauhan, S.S. Advanced Educational Psychology, Vikas Publishing House, New Delhi, 2010.

➢ Panda, P.K. : Perspectives of Educational Psychology, Agrawal Publication, Agra, 2015.

F 2.4 LANGUAGE ACQUISITION

100 Marks

Unit-1 Language and cognition: cognitive prerequisites for language acquisition; biological foundation; language and thought, annalist hypothesis; cognitive, social and linguistic development : Piagetian and Vygotskian perspectives, Language in NCF : 2005 perspectives.

Unit-2 Language development: the earliest stages and the babbling period; stages of language development: the role of motherese and caretaker speech; phonology; morphology; syntax and semantics; sociolinguistic aspects, Link between learning a languages and environment.

Unit-3 Comprehension and production: speech and speech comprehension; speech production; encoding and performance measures; the role of errors in language production. Reading comprehension and Teaching implication. Principle underlying reading comprehension exercise. Reading comprehension in classroom.

Unit-4 Reading and writing: learning to read and understand; the written process, devices in writing difference of written. Reading process charactoisties of reading, reasons for readings. Reading problems : Miscues visionless Neurological problems. Alexia and Dyslexia : Concept and causes.

References :

> Grellet, F. (1981); *Developing Reading Skills,* Cambridge University Press, Cambridge.

> Bist, Abharani : Teaching English in India, Agrawal Publication, 2014.

> Radhakrishnan Pillai, Rajeevan K. & Bhaskaran Nair, T., (1990) : *Written English* Emerald, Madras.

> Saraswathi V., (1979) : *Organized Writing,* Orient Longman, Madras.

> Haekar D. & Renshaw R., (1989) ; *Writing with a Voice,* Scott, Coresman and Illinois.

> Hedge T., (1988) : *Writing,* Oxford University Press, Oxford, EIBS.

> Raines, Ann (1983) : *Techniques in Teaching Writing,* Oxford University Press, New Yark.

> Pincas, Anita (1982) : *Teaching English Writting,* Macmillan, London.

➢ Doff, A. (1998) : *Teach English : A Training Course for Teacher's* The British Counsel & Cambridge University Press, Cambridge.

➢ Matthews, A., M. Spratt and L. Dangerfield (eds) (1985) : *At the Chalkface,* Edward Arnold, London.

➢ Nuttall, Christine (1987) : *Teaching Reading Skills in a Foreign Language,* Heinemann Educational Books Ltd., 1982; ELBS Edn., London.

F 2.5 HUMAN RELATIONS AND COMMUNICATION

50 Marks

Unit-1 Personal development: self identity and human relationships: psychoanalytic and humanistic perspectives, perspectives from women.

Unit-2 Communication: the adult child gap, assumptions and attitudes; channels of communication : the hidden curriculum. Components of communication skill. Process of communication, Barriers of communication.

Unit-3 Human relations in education: Behaviorist versus Humanistic perspectives Role of ICT in Communication process; Tips of effective communication.

Unit-4 Perspectives: Peer learning, Joyful learning constructs and dimensions: community involvement. Life skill Education meaning, need, model.

References :

➢ Amidon, Edmund J. And John B. Hough (1967)- *Interaction Analysis : Theory, Research and Application,* Addison Wesley Publishing Company, Reading Massachusetts London, Ontario, 401 pp.

➢ Allen, Dwight Kevin Ryan (1969) 'Micro-teaching'. Addison-wisley publishing Company, London, Ontario, 71 pp.

➢ Amidon, Edmund J, Elizabeth Hunter (1967)- *Improving Teaching, the Analysis of Classroom Verbal Interaction.* Holt Rinehart and Winston, Inc. New York London. 221pp.

➢ Buch, M.B. and Santhanam, M.R. (1970) - *Communication in Classroom,* CASE. M.S. University, Baroda-2 165 pp.

➢ Flanders, Ned A. (1972) - *Analysing Teaching Behaviour,* Addison Wesley Pub. Co. California, London, 416 pp.

➢ Fleming C.M. (1969)- *Teaching : A Psychological Analysis.* London, Methuen. 291 pp.

➢ Gage N.L. (1965) - 'Theories of Teaching in Theories of Learning and Instruction' NSSE University press 63rd Year Book, Chicago.

➢ Sharma, R.A. and Chaturvedi, Shikha (2013) Educational Technology and CAI, R. Lal Book Depot, Meerut.

➢ Aggarwal, J.C. (2011) Educational Technology and Managements, Agrawal Publication Agra.

P 2.1 LANGUAGE ACROSS THE CURRICULUM

50 Marks

Unit-1 Meanings, nature, scope and importance of language and learning language as a means of construction of reality; language and experience; concept-formation. Aims and objectives of studying Language.

Unit-2 Language at School: distinction between language as a school subject and language as a means of learning and communication, language and society. Linguistic variability.

Unit-3 Basic Language competencies required at school: oracy, listening, reading and writing. Special study of reading: cognitive basis of reading, analysis of the tasks involved in reading, motivation to read, stages of learning to read, reading ability. Different types of writing : composition, Dialogues, Letters paragraphs, Essays, reports. Reading technique : Skimming and scanning..

Unit-4 The child's language and the school: school language and home language; language as an aspect of teacher-child relationship: language environment of school: language of textbooks in different subjects.

Suggested Projects

1. To elaborate their theoretical understanding students should undertake a project involving listening to children's reading, miscue analysis, developing a reading test and administering it.

2. Analysis of text books and other materials used in different subjects from the point of view of registers and styles used in them.

References :

➢ Bhaskaran, M.P. (1989): *Onwards English: Language Practice 1-5*, Orient Longman, Madras.

➢ Freeman, S. (1977): *Written Communication in English*, Orient Longman, Madras

➢ Radhakrishnan Pillai, G., Rajeev, K. & Bhaskaran Nair, T. (1990): *Written English for You*, Emerald, Madras.

- Pincas A. (1982): *Teaching English Writing*, The Macmillan Press Limited, London.

- Saraswathi, V. (1979): *Organised Writing*, Orient Longman, Madras.

- Tickoo, M.L. & Bhaskaran, M.P. (ed.) (1985): *Gulmohar Graded English Course: Practice Books 1-5*, Orient Longman, Madras.

- Wright, A. (1989): *Pictures for Language Learning*, Cambridge University Press, Cambridge.

- Xavier, L. and Ramani, P.N. (1987): *Written Communication I & II*, Pondicherry University, Pondicherry.

- Grellet, F. (1981): Developing Reading skills, Cambridge University Press, Cambridge.

02.1 ENGLISH I

Section : A Reading and writing skills

(Preferences for extracts are from named editions. These may vary in erent editions).

Unit-1 Panchtantra : The Monkey and the Crocodile Hans Christian Anderson : Rapunzel Stephen Leacock : From Literary Lapses : My Financial Career (Penguin 1939. Pg. 7-10)

Carl Sagan : From Cosmos (Ballantine Books) from chapter 1, pg. 1-5. "The Cosmos is all that is_to".. working out our destiny".

Unit-2 T.S.Eliot : Macavity (poem). Wole Suyinka : Telephone Conversation (poem). Anne Frank : The Diary of a Young Girl (Pocket Books. New York, 1958) Pg. 49-50. Letter dated Friday 20th Novermber, 1942. From "None of us really knows how to take it all... "to" .... about those other miseries".

Lord Byron : From Byron's letetrs and Journals Vol IV (ed Leslie Marchand) Pg. 326-327-Letter to Tom More October 31, 1815, extract from "Yesterday I dined out...."to"... the first sprightly running of others".

Unit-3 Four advertisements from the Matrimonial Page of Times of India. Philip Kodar : The Principles of Marketing (Prentice Hall. India) Pg. 159-160 from "Playboy magazine has passed ..."to"... factors that influence and motivate consumer behavior". Shakespeare : Julius Caesar-Act III Sc. 2 Ln 12-33 and Ln 74-107 (Speeches of Brutus and Mark Antony).

Charles Dickens : David Copperfield. (Penguin Classics) Pg 312-314. From "We entered a low...? to" ... Uriah's dinted nostrils."

Unit-4 Teaching English as a Second Language.

The differences between teaching English as a first language, as a second language and as a foreign language,

Common language errors which are likely to be encountered by the teachers of ESL,

Implications of teaching language through literature,

Teaching techniques and materials such as drama, audio-visual aids, puppetry etc.

READINGS

1. Allen, II. and Cambell, R (ed.) *Teaching English to a Second Language,* McGraw Hill : New York, 1972.

2. Brumfit, C.J. and Johnson (ed.). *The Communicative Approach to Language.* Oxford University Press : 1979.

3. Kachru, Braj B. *Non-Native Literatures in English as a Resource for Language Teaching',* in Brumfit, C.J. and Carter, B.R. (ed), Language and Literature Teaching, Oxford University Press : Oxford 1980.

02.2 हिन्दी I

इकाई–I (A) भाषा विज्ञान : परिभाषा एवं क्षेत्र, भाषा विज्ञान का इतिहास, भाषाओं का वर्गीकरण
      (B) वाक्य एवं पद – विज्ञान, ध्वनि–विज्ञान, ध्वनि परिवर्तन एवं उसके कारण।

इकाई–II (A) अर्थ विज्ञान : अर्थ, परिभाषा एवं अर्थ विज्ञान का विषय, अर्थ परिवर्तन के कारण।
      (B) लिपि का विकास भारतीय लिपियां, नागरी लिपि नाम एवं विशेषतायें

इकाई–III (A) हिन्दी नाटक :
       ध्रुवस्वामिनी – जयशंकर प्रसाद
       आधेअधूरे – मोहन राकेश
      (B) कहानियाँ तथा निबन्ध
       पुत्र–प्रेम – प्रेमचन्द
       शरणागत – वृन्दावन लाल वर्मा
       दासी – जयशंकर प्रसाद
       संस्कृति क्या है? – रामधारी सिंह दिनकर

इकाई–IV (A) हिन्दी रंगमंच का सामान्य परिचय आधुनिक हिन्दी नाटक एवं रंगमंच
      (B) एकांकी :
       सीमा रेखा – विष्णु प्रभाकर
       सूखी डाली – उपेन्द्र नाथ अश्क
       औरंगजेब की आखिरी रात – डॉ0 राम कुमार वर्मा

संदर्भ ग्रन्थ/सहायक पुस्तकें

1. सिंह, राजकिशोर (1987) : संस्कृत भाषा विज्ञान, विनोद पुस्तक मन्दिर, आगरा।
2. सिंह, बच्चन : हिन्दी नाटक, राधाकृष्ण प्रकाशन, दिल्ली।
3. लाल, लक्ष्मीनारायण : आधुनिक हिन्दी नाटक एवं रंगमंच, साहित्य भवन, इलाहाबाद।
4. महेन्द्र, रामचरण : एकांकी व एकांकीकार
5. ओझा, दशरथ : हिन्दी नाटक
6. तिवारी, डॉ0 भोलानाथ : भाषा विज्ञान
7. सिंह, कर्ण : भाषा विज्ञान
8. पाण्डेय, त्रिलोचन : भाषा विज्ञान व हिन्दी साहित्य की भूमिका।

02.3 MATHEMATICS I

MM:100

Course Content:

Part I : SYMBOLIC LOGIC AND SET THEORY

Unit-1 Statements: negation, conjunction, disjunction, implication, converse : and contra positive, necessary and sufficient conditions; types of proofs, mathematical induction and deduction, truth table switching circuits.

Sets, operations on sets, distributive laws, De Morgan's laws, power set, Cartesian Product.

Relations: equivalence relations and equivalence classes, partitions of a set; partial order relations (in particular divisibility and set inclusion) chains and lattices.

Mappings, injective, surjective and bijective mappings; inverse of a mapping, composite of mapping.

Denumerable and non-denumerable sets,

Permutations and combinations.

Part II : ELEMENTARY ALGEBRA

Unit-2 Various representations of complex numbers, Algebra of complex numbers, De Moivre's theorem and its applications.

Theory of polynomial equations: relations between the roots and coefficients.

Definition and operations on matrices over R and C, special types of matrices; determinant of square matrix, properties of determination; adjoint and inverse of a square matrix, rank of a matrix.

Systems of linear equations; characteristic equation, characteristic roots, Cayley Hamilton theorem.

Part III : VECTORS AND ANALYTIC GEOMETRY

Unit-3 Vectors, scalar and vector products; triple products, position vector and applications of vectors to geometry, gradient, divergence and curl.

Straight lines in two dimensions, pair of straight lines; circles and system of circles.

Conics, parabola, ellipse and hyperbola in standard forms, elementary properties.

Sketching of conics.

Planes and straight lines in three dimensions-direction ratios and direction cosines, equations of planes, straight lines and spheres—Cartesian and vector representations. Basic properties of spheres.

Cones, reciprocal cones; right circular cones; cylinders and right circular cylinders.

Topological structure of R, neighbourhoods, open and closed sets, limit points, bounded sets.

Sequences and their convergence, monotonic sequences; the number e. Infinite series of positive terms, comparison and ratio tests for covergence of an infinite series.

Limits, continuity and derivability of functions; mean value theorems and Taylors expansions: power series expansions of elementary functions. Indeterminate forms and L, Hospital rule.

Part V : DIFFERENTIAL CALCULUS

Unit-4 Successive differentiation and Leibnitz rule; partial derivatives and Euler's theorem on homogeneous functions.

Monotone functions and inequalities, convexity and concavity of functions; maxima, minima with applications to mensuration, dynamics and economics.

Tangents and normal's, curvature, asymptotes and singular points; curve sketching.

Functions of two variables; partial derivatives; maxima and minima of two variables: Lagrange's method for constrained optimization (Lagrange's method of indeterminate multiplier)

READINGS

1. Ballabh, Ram, *A Textbook of Coordinate Geometry*, Prakashan Kendra : Delhi, 13th Edition.

2. Narayan, Shanti, *Differential Calculus*, S. Chand and Co.: New Delhi, 13th Edition.

3. Narayan, Shanti *Analytic Solid Geometry*, S. Chand and Co : New Delhi, 15th Edition.

4. Singal, M.K. and Asha Rani Singal, *Topics in Analysis-I*, R. Chand & Co. : New Delhi, 2000, 6th Edition.

5. Singal, M.K. and Asha Rani Singal, *Algebra*, R. Chand & Co. : New Delhi, 2000, 22th Edition.

6. Malhotra, O.P., Gupta, S.K. and Gangal, A. ISC Mathematics Book II, S. Chand and Co : New Delhi, 1965.

02.4 PHYSICS I

MM:100 Marks

Unit-1 Mechanics : scalars & vectors. Addition of vectors, Newton's laws of motion, forces and pseudo-forces, work-energy theorem, conservative forces. Conservation of energy, conservation of linear momentum, centre of mass, particle collisions (in 2 dimensions). Rotational motion, torque and angular momentum. Conservation of angular momentum. Law of gravitation, intertidal and gravitational masses, motion of planets and satellites. Kepler's laws.

Unit-2 Oscillations: free oscillations with one degree of freedom, damped oscillations, forced oscillation, resonance and Q factor, combination of two harmonic motions.

Wave optics: wave equation, travelling and standing waves, superposition of waves, phase and group velocity. Coherent sources and interference. Young's double slit experiment, interference in thin films. Description of diffraction by a single slit, double slit and diffraction grating. Polarized and unpolarised light, linear and circular polarization; polarization by reflection.

Unit-3 Electricity, magnetism and electromagnetic theory: review of laws of electricity and magnetism—conservation of charge, Coulomb's/Gauss, Law. Non-existence of magnetic monopoles, Ampere's law, Faraday s law. Displacement current, Maxwell's equations (in integral form). Electromagnetic waves. Light as an electromagnetic phenomenon. Transmission lines. Optical fibres.

Unit-4 Equilibrium statistical mechanics; review of laws of Thermodynamics. Classical statistics: Maxwell—Boltzmann distribution. Quantum statistics: Fermi—Dirac and Bose—Einstein distributions and their properties.

PRACTICAL At least two from each group:

GROUP I MECHANICS

1. Study of damped harmonic oscillator— Q factor.

2. Coupled pendulums.

3. Moment of inertia of irregular bodies.

4. Experiments with a loaded vertical spring.

GROUP II OPTICS

1. Wavelength of sodium light by Newton's rings.

2. Use of spectrometer—determination of \i of glass prism.

3. Diffraction grating—determination of \i of sodium light.

4. Polari meter—specific rotation of cane sugar solution.

GROUP in ELECTRICITY AND MAGNETISM

(A) 1. Study of LCR circuit

2. Determination of resistance and its variation with temperature of Carey Foster's bridge.

3. Determination of L by Anderson's bridge.

4. Determination of high resistance by leakage method.

READINGS

1. Herbert Goldstein, Classical Mechanics, Fearson publication, New Delhi.

2. Quantum mechanics, by Alastair I.M. Rae, fifth Edition.

3. David Morin, Electricity & Magnetism Cambridge Uni Press.

4. Satya Prakash, Electricity & Magnetism, Pragati Edition.

5. W. Saslow, Electricity, Magnetism and light, academic press, 2002.

6. Electricity & Magnetism, P.F. Killy CBC, Press, 2015.

7. M. Ghosh, B. Bhattacharya, A. textbook & oscillations, waves and Acoustics, S. Chand 2016.

8. Satya Prakash, Vinay Dua, oscillation, and waves, Pragati Prakashan.

9. P.K. Mittal, Oscillation, Waves and Acoustics, J.K. International Publishing House Pvt. Ltd., 2010.

10. Kumar Mittal, Nageen Prakashan Pvt. Ltd., 19th Edution, 2020-21.

11. D.P. Khandelwal; "Optics and Atomic Physics" Himalay, Publishing House Bombay, 1988.

12. S.K. Agrawal and B.K. Agrawal "Thermal physics".

02.5 CHEMISTRY I

MM:100 Marks

PART I : INORGANIC

1. Multi electron system: Pauli's exclusion principle, Hund's rule of maximum multiplicity. Aufbau principle and its limitations; energy level diagrams.

2. Periodic Table: modern periodic table, periodicity in properties of elements, atomic, ionic and covalent radii, ionization energy, electron affinity, screening effect, electro negativity, metallic and non-metallic character.

3. Chemical bonds and molecules: shapes of simple molecules, bond energy, and bond length, types of bonding, lattice energy, Born-Haber cycle, Fajan's rule, dipole moment, metallic bond, hydrogen bond, resonance and hybridization.

PART II : ORGANIC

The following topics are to be dealt with keeping in mind the introduction to the basic principles as applied to carbon compounds, illustrated with suitable examples.

(a) Criteria of purity and purification of organic compounds:

(i) melting point and boiling point.

(ii) Crystallisation, sublimation, distillation (simple, steam, fractional, under reduced pressure)

(iii) Chromatography-paper and thin layer.

(b) Tetrahedral Concept: Catenation, hybridisation—sp, sp^ and sp-3, nomenclature (IUPAC notation).

Concepts in organic reaction mechanism:

(a) Covalent bond, homolysis, heterolysis, free radicals, ionic species, carbanion. Carbocation, electrophile and nucleophile.

(b) Inductive, electromeric and mesomeric (resonance effect).

(c) Aromatic character- Huckel's rule applied to the hydrocarbons (e.g.: Benzene, polynuclear and heterocyclic compounds).

Isomerism

(a) Structural Isomerism (chain, positional & functional).

17

(b) Stereoisomerism (i) geometrical (cis and trans) (ii) optical (symmetric and asymmetric carbon atom), optical activity, racemic mixture and resolution.

PART-III: PHYSICAL

Unit 4 (a) Gases: characteristics of gases, ideal gases, gas laws, deviation from ideal Behaviour, Van der Waal's equation (no derivation but explanation regarding a & b), critical phenomenon (no derivation) and liquefaction of gases.

(b) Liquids: difference between gases and liquids on the basis of their molecular, structure, vapour pressure of liquids, relationship between vapour pressure and boiling point, surface tension, viscosity, their experimental determination and applications.

(c) Chemical kinetics and Chemical equilibrium: rate of a reaction, law of mass action, effect of temperature, concentration and catalyst (qualitative treatment). What is chemical equilibrium, equilibrium law and factors influencing equilibrium states?

(d) Photochemistry: absorption of light, Lambert-Beer's law, laws of photochemistry. photochemistry, phosphorescence and fluorescence.

Ionic equilibria and conductance: Ostwald's Dilution law, ionic product of water, pH value, theory of acidbase indicators, buffer solutions, buffer range and capacity, equivalent and molar conductance, kohlrausch' s law of independent migration of ions, variation of conductance with concentration for weak and strong electrolytes. Hydrolysis of salts (only qualitative treatment). Applications of conductance for determining solubility product of water etc. conductometric titrations.

PRACTICAL- 1

(A) PROJECT WORK:

Each student shall prepare a project which innovative & application oriented as approved by the teacher.

(B) LABORATORY WORK:

(a) Integrated experiments involving the following aspects such as laboratory techniques, qualitative and quantitative analysis; (b) some physical experiments; using simple compounds such as benzoic acid, copper sulphate and salicylic acid (any 2 of them) and subjecting them to varous processes, e.g.

18

(a) Integrated Experiments:

(i) Benzoic acid: isolating benzoic acid by hydrolysis of sodium benzoate, purifying it by hot water, crystallization, testing its criteria of purity by melting point determination. Finally studying solubility curve and determining VH.

(ii) Copper Sulphate: preparation of cuprammonium sulphate, studying paper chromatography of both the initial & the final product using colonmetry of various concentrations of copper sulphate to verify Lambert-Beer's Law.

(iii) Salicylic Acid: purification by sublimation, preparation of aspirin (by acetylation), melting point determination, paper chromatography of both salicylic acid & aspirin respectively, complex formation with iron namely (Fe salicylate complex). Using colorimetry to verify Lambert-Beer's Law.

(b) Physical Experiments:

(i) Determination of surface tension of (i) Pure liquids (ii) Binary mixtures of liquids by Stalagmometer.

(ii) Measurement of Viscosities of (i) Pure liquids (ii) Binary mixtures of liquids by O. viscometer.

(iii) Measurement of pH by pH papers/pH meter of buffer solutions (acid & alkaline).

(iv) To study the kinetics of the reaction between $Na_2S_2O_3$ and HCL using initial rate method.

READINGS

Inorganic Chemistry

1. Cotton, F.A. and Wilkinson, G. *Advance Organic Chemistry,* John Wiley and Sons: Sussex, 1988 Fifth Edition.

2. Day, M. and J. Selbin, *Theoretical Inorganic Chemistry,* East West Press: Delhi, 1972.

3. James E. Huhey, et.al. *Inorganic Chemistry,* Harper Collins: London, 1993.

4. Lee, J.D. *A New Concise Inorganic Chemistry*, English Language Book Society, Van Nostrand Reinhold International : London, Fifth Edition, 1996.

5. Liptrot, G.F. *Modern Inorganic Chemistry*, ELBS, Bell & Harper Collins Educational : London, 1983.

6. Madan, R.D. and Satya Prakash, *Modern Inorganic Chemistry*, S. Chand and Co.: New Delhi, 1990.

7. Mohan, Bruce H. *Inorganic Chemistry*, Narosa Publishing: New Delhi, 1990.

Organic Chemistry

1. Bahl, R.S. and Srun Bahl, *Advanced Organic Chemistry*, S. Chand and Co.: New Delhi, 1990.

2. Bhutani, S.P. *Selected Topics in Organic Chemistry*, Vol. I, Vishal Publications: Delhi 1986.

3. Finar, I.L., *Organic Chemistry*, Vol.-I, The Fundamental Principles, Longman Group: Essex, 1973.

4. Finar, I.L., *Organic Chemistry*, Vol.-II, Stereochemistry and the Chemistry of Natural Products, 1975, Longman: Harlow, 1975.

5. March, Jerry, *Advanced Organic Chemistry: Reactions, Mechanisms and Structure*, Fourth Edition, Wiley Eastern Ltd.: New Delhi, 1992.

6. Morrison, R.N. and Boyd, R.N. *Organic Chemistry*, Prentice Hall India: New Delhi, 1996, Sixth Edition.

7. Norman, R.O.C. and Waddingtion D.J., *Modern Organic Chemistry*, Collms Educational, Bell & Hyman: London, 1983.

8. Sykes, Peter, *A Guide Book to Mechanism in Organic Chemistry*, Orient Longman: Bombay, 1971.

9. Srivastava, H.C., ISC Chemistry, Nageen Prakashan, 14th Edition, 20-21.

10. Kapoor, K.L., A textbook of Physical Chemistry, Thermodynamics and chemical Equilibrum-Vol. 2, Mcgraw Hill Education 2019.

02.6 BIOLOGY I

MM:100 Marks

Unit-1 Diversity of life

1. Five kingdoms of life: basis of classification: Monera, Protista, Fungi, Plantae and Animalae.

2. Virus: structure, reproduction and its relation to man.

3. Monera: structure, reproduction and its relation to man. e.g. Bacteria and Cyanobacteria.

4. Protista: structure, reproduction and its relation to man, e.g. Clamydomonas, Paramoecium.

5. Fungi: structure, reproduction and its relation to man, e.g. Aspergillus, mushroom.

Unit-2   Plantae

a) Structure and reproduction in Algae (e.g. Sargassum), Bryophyta (e.g. Tliccia & Moss) and Pteridophyta (e.g. Pinus).

b) Angiosperm: Structure and reproduction, modifications (stems, roots and leaves).

Unit-3   Animalae

a. Non Chordata

1. Porifera: Structure and reproduction, e.g. Sycon

2. Cnidaria: morphology and reproduction, e.g. Coral

3. Platy helminthes: morphology, reproduction and its relation to man, e.g. tapeworm.

4. Aschelminthes: morphology and reproduction, e.g. Ascaris.

5. Annelid: morphology and reproduction, e.g. earthworm.

6. Arthropoda: morphology and reproduction, e.g. cockroach.

7. Echinodermata: morphology and reproduction, e.g. starfish.

b. Chordata

1. Pisces: Generalised account of fish

2. Amphibia: e.g. Frog

3. Reptilia: e.g. Lizard

4. Aves: a general account of birds

5. Mammalia: e.g. rabbit, rat and man

Unit-4 Origin of Life

Brief history, chemical evolution of first cell, Heterotrophs and Autotrophs, advent of oxygen.

Evolution

Modern theory of evolution, examples of Natural Selection e.g. colouration, mimicry, industrial melanism, insecticidal resistance, mineral tolerance, human evolution, species and modes of speciation.

Practicals

1. Specimens study

   Paramoeciu, Ascaris, Pila, Sea Urchin, Sargassum (alga)

2. Study photographs

   (e.m.) T-phagc, TMV (Tobacco Mosaic Virus)

   (e.m.) bacteria

3. Temporary mounts

   Sponge: Gemmules and spicules

   Cockroach: mouth parts, trachea

   Earthworm: Septal and Pharyngeal nephridia

4. Slides of bacteria from pond water and curd.

5. Structure and movement of Euglena from pond water and Chamydomonas from rain water puddles.

6. Mushroom: Section cutting, study coloured photographs, grow Aspergillus and examine microscopically.

7. Riccia and moss: study details

8. Fern: Section cutting (true and false indusium)

9. Pinus: Section cutting

10. Any two families: Solanaceae, Graminae (Arecaceae)

11. Study of any angiosperm, slides of T.S. another and L.S. ovule.

READINGS

1. Adhikari, S. and Sinha, A.K. *Fundamentals of Biology of Animals,* Vol. 3, New Central Book Agency: Calcutta.

2. Alexander, R. McNeill, *Animals* Cambridge University Press: Cambridge, 1990.

3. Audersirk, G. and Audersirk, T. *Biology-Life on Earth,* MacMillan: New York, 1992.

4. Ayyer, Ekambaranatha, M. *A Manual of Zoology Part I and II,* S. Viswanathan: II Mc Nichols Road, Chetput, Madras, 1966.

5. Cleveland, P. Hickman, *Integrated Principles of Zoology,* The C.V. Mosby Co.: London 1970.

6. Dhami and Dhami, *Invertebrates,* R. Chand & Co.: New Delhi. 1985.

7. Dhami and Dhami, *Vertebrates,* R. Chand & Co.: New Delhi. 1972.

8. Easton, T.A. and Rischer, C.E. *Bioscorpe,* Charles E. Merill Pub. Co. : Ohio, 1995.

9. Goodnight, C.J., Goodnight M.C. and Grey, P. *General Zoology,* Oxford: New Delhi 1964.

10. Raven, P.H. and Johnson, G.B. *Biology,* Brown Publishers, London, 1996.

11. Robinson, M.A. and Wiggins, J.F. *Animal Types (Invertebrates),* Hutuchinson Education.

12. Weisz, Paul B. *Science of Biology,* McGraw Hill: New York, 1967.

13. Baveja, C.P. (2017), Text Book of Microbiology, Arya Publications, New Delhi.

02.7 HISTORY I

02.7 HISTORY I

TRANSFORMATIONS IN HISTORY

MM:100 Marks

Unit-1 1. Understanding History: the conceptual basis of history as a discipline, the question of historical objectivity and truth.

2. Interpreting Sources: the nature of historical source (archaeological, numismatics, epigraphic, literary, written/oral), problems of interpretation.

3. Hunting Gathering: paleolithic, mesolithic, neolithic.

   Domestication of Plants and Animals: pastoralism, shifting cultivation, settled agriculture.

Unit-2 1. Emergence of States: monarchies, republics. A case study of Ganasanghas/ Magadha/Pallavas/Stavahanas.

2. The concept of Empire: a case study of Magadha.

3. Feudalism: the debate on feudalism; the European case and the Indian experience.

4. The Medieval State: the absolutist state in Rurope; the Mughal State in India: regional state forms in the eighteenth century.

Unit-3 1. Renaissance and the process of secularization: transformation of religion and the emergence of the ideals of rationality and reason.

2. Industrialization and Imperialism: industrialization and the transformation of the economy; the specificities of imperialism in the industrial age.

Unit-4 1. The Democratic Revolutions: the French case, end of the ancient regime; the nature and the legacy of the revolution.

2. The Socialist Revolutions: the Russian case: the ideals of socialism and the nature of the revolution.

3. Nationalism and the Nation State.

24

READINGS :

1. Allchin, B. and Allchin, R. *Civilization in India and Pakistan*, Select Book Service Syndicate: New Delhi, 1988.

2. Basham, A.L. *The Wonder That was India*, Sidgwick & Jackson: London, 1954.

3. Childe, V. Gordon, *What happened in History*, Penguin : Harmondsworth, 1954.

4. Childe, V. Gordon, *Social Evolution*, Fontana: London, 1961.

5. Sahlins, M. *Stone Age Economics*, Tavistock Pub. : London, 1978, Chapter 1, 2 & 3.

6. Sahlins, M. *Tribesman*, Prentice Hall: Englewood Gliffs, 1968.

7. Dreckmeir, *Kingship and Community in Early India*, Stanford University Press: Stanford, 1962.

8. Sharms, R.S. *Aspects of Political Ideas and Institutions in Ancient India*, Motilal Banarsidas: Delhi, 1968.

9. Anderson, Perry, *Lineages of the Absolutist State*, Verso: London, 1979, pp. 15-59, 195-238, 397-431.

10. Anderson, Perry, *Passages from Antiquity to Feudalism*, NLB : London, 1974.

11. IGNOU, *India from Mid 18th to Mid 19th Century*, EHI-05, Block-1, IGNOU : New Delhi, 1993.

02.8 POLITICAL SCIENCE I

MM:100 Marks

POLITICAL STUDIES: CONCEPTS IN THEORY AND PRACTICE

Unit-1 Introduction to the study of Politics.

1. Perspectives on:

a. Power relations, conflicts and conflict resolution;

b. Social change and Social movements.

2. Methods of the study of politics:

a. Ethics and philosophy-Aristotle and Hegel;

b. Institutions and legality-Mill;

c. Materialist inter prolusion of history-Marx and Mao;

d. Behaviouralism,

e. Comparative politics-Almond, Frank & Wallerstein.

3. Important theoretical concepts Rights, liberty, equality and justice- in the light of the following:

a. conflict between nature and law in ancient and modern thought

b. human rights;

c. the feminist critique of theories of justice and rights.

Unit-2 Society, community and politics

a. polis and the nature of the state in Greek antiquity;

b. monarchy and changing notions of the state;

c. civil society and the modern nation-state;

d. the state in post-colonial societies.

Unit-3 Nationalism

1. In Europe:

a. emerging identities in the nineteenth century;

b. the rise of fascism in the 1920s and 1930s;

c. the debates of the second International on the right of nationalities to self-determination;

26

d. 'new trends in nationalism in the 1980s and 1990s.

2. In the colonies, emerging from different anticolonial struggles:

a. Peaceful transfer of power-India, Nigeria;

b. Violent revolutionary struggles-Angola, Algeria;

c. Political visions-Gandhi, Jai Prakash Narayana, Chandrashekhar, Pt. Deen Dayal Upadhyay, Fanon, Cabral, examples from South-East Asia.

Unit-4 Imperialism

a. the industrial revolution and imperialism;

b. the new world economic order in the age of Bretton Woods and Comecon; the imperialism of aid and development;

c. its character after the 1950'-sLatin America., Vietnam and South Africa.

READINGS :

1. Birch, Anthony H. The Concept and Theories of Modern Democracy, Routledge and Kegan Paul : London, 1993.

2. Gamble, A. An Introduction to Modern Social and Political Thought, MacMillan: London 1981.

3. Flatman, R. (ed.) Concept in Social and Political Philosophy, MacMillan: London, 1993.

4. Manning, D.J., Liberalism, Open University Press: Milton, Keynes, 1976.

5. Mendus, S. Losing the Faith: Feminism and Democracy, in J. Dunn, (ed.) Democracy: The Unfinished Journey 508 B.C. to A.D., Oxford University Press : Oxford, 1967.

6. Quanton, A (ed.), Political Philosophy, Oxford University Press: Oxford, 1967.

7. Keane, J. Democracy and Civil Society, Routledge: New York, 1988.

8. Parrar, C. Ancient Greek Political Theory as a Response to Democracy, in J. Dunn, (ed.) Democracy: The Unfinished Journey 508 B.C. to A.D., Oxford University Press: Oxford, 1993.

9. Barrington, Moore, S. Jr. Social Origins of Distatorship and Democracy, Lord and Peasant in the making of the Modern World Penguin: London, 1966.

10. Birch, Anthony H. The Concepts and Theories of Modern Democracy, Routledge and Kegan Paul: London, 1993. Chapter-2.

02.9 GEOGRAPHY I

PHYSICAL GEOGRAPHY

MM:100 Marks

Unit-1 Understanding basic concepts: location, area, flows/network, space and environment; scope of physical geography.

Lithosphere: geological time scale; internal structure of earth; rocks and their types; folds and faults; earth quakes and volcanoes; plate tectonics-isostacy, theory of plate tectonics, movement of major plates and their consequences; development of landforms and role of different agencies.

Unit-2 Atmosphere: structure and composition of atmosphere; insolationfactors and spatial distribution; pressure-factors and spatial distribution; general circulation of atmosphere-world wind belts, monsoons and cyclones: classification of climate-Koppen's classification.

Unit-3 Hydrosphere: temperature, salinity and density of ocean waterfactors influencing their spatial variation in oceans; movements in ocean waters-waves, currents and tides; major ocean currents.

Unit-4 Soils and vegetation: soil-formation, classification and general distribution of major soil types; vegetation-factors, classification of vegetation and general distribution of major vegetation types; interrelationship of climate, soils and vegetation m(a) semiarid, (b) temperate and (c) equatorial region.

Practical

Understanding Maps and Diagrams (Practical): (a) scales; (b) cardinal points; reading and measuring; and (c) projection-properties and types; topographical maps: identification numbers and interpretation of physical features: weather maps; conventional symbols and interpretation of weather maps; instruments used to measure temperature, pressure, humidity and precipitation; identification of rocks.

Project work

Project work; techniques of report writing; a report on geographic study of any region-mountain, desert, coastal or plain.

READINGS :

1. Barry, R.G. and R.J. Chorley, Atmosphere, Weather and Climate, Methuen, London, 1976.

2. Chorley, R.J. and P. Hagget. (ed.) The Changing Nature of Geography, Methuen, London, 1973.

3. King, C.A.M. Introduction to physical and Biological Geography, English Langage Book Society: London, 1975.

4. Monkhouse, F.J. and H.R. Wilkison: Maps and Diagrams: Their Compilation and Constuction, Methuen: London, 1971.

5. Sharma, R.C. and M. Vatal, Oceanography for Geographers, Chaitanaya: Allahabad, 1980.

6. Strahler, A.N. A Modern Physical Geograhpy, Wiley: New York, 1983.

7. Tikkha, R.N. Bhautik Bhugaol, Kedar Nath Ram Nath: Meerut, 1989.

8. Singh, Savindra : Physical Geography (Eng/Hindi)

9. Singh, J. and Singh, K.N. : Bhautik Bhoogol (Hindi)

10. Tiwari, A.K.- Jalwayu Vigyan Ke Mool Tatwa, 2000.

02.10 ECONOMICS I

MM:100 Marks

Unit-1 Role of price mechanism: market demand & market supply.

Law of demand, Demand curve: Marshallian utility analysis and indifference curve approach. Elasticity of demand, Revenue curves-TR, MR, AR.

Unit-2 Production: factors of production & their combinations: law of returns: economics & diseconomies of scale: cost curves. Constituents of cost, wages, rent, profits, interest, and concept of opportunity cost.

Objectives of a firm-profit maximization, sales maximization, cost minimization, other non profit objectives. Market equilibrium conditions under perfect competition and imperfect competition (details of monopoly, oligopoly, monopolistic competition not required) objectives of non profit organization.

Unit-3 International trade: principle of comparative advantage, terms of trade.

National product: structure and concept, circular nature of income flows; methods of estimation; income, product and expenditure; problems of estimation.

Unit-4 National income estimation in India: composition of GDP; significance of various aggregates and their interrelationships.

Difference between microeconomics and macroeconomics. Determination of aggregate demand and aggregate supply to the resultant equilibrium income and employment. The concept of multiplier.

READINGS :

1. Becherman, W. An introduction to National Income Analysis, University Book Store: Seattle, 1984, Chapter-2.

2. CSO, National Accounts Statistics, Government of India, CSO: New Delhi, Latest Issue.

3. CSO, National Accounts Statistics, Source and Methods, Government of India, CSO: New Delhi, Latest Issue.

4. Lipsey, R.G. An Introduction to Positive Economics, English Language Book Society: London, 1995.

5. Ray, N.C. An Introduction to Micro Economics, Macmillan : Delhi, 1975.

6. Samuelson, Paul A. and William D. Nordhaus, Economics, McGraw Hill: New York, 1989, Chapters : 4, 5, 7, 8, 12 and 38.

Books Recommonded:

1. एस.एन. लाल और एस.के. लाल–व्यष्टि अर्थशास्त्र

2. एम.एल. झिंगन–व्यष्टि आर्थिक सिद्धान्त

3. वी.सी. सिन्हा, पुष्पा सिन्हा–व्यष्टि अर्थशास्त्र

4. एस.एन. लाल और एस.के. लाल– समष्टि अर्थशास्त्र

5. एम.एल. सेठ=मौद्रिक अर्थव्यवस्था।

B: PRACTICAL ACTIVITIES SECOND YEAR:

Total : 200 Marks)

A: Observing Children : MM:75

To acquire and understanding of children's development in different socio-cultural, political, economic, familial and personal contexts, establish links between developmental constructs and principles and psycho-social realities of growing children and to develop skills in observing interviewing children, recording and reflective analysis. Students are required to observe a minimum of 4-5 children in each of the age-groups of 3-5 years and 6-8 years. Children can be observed in naturalistic settings such as a paly-ground or park in the neighbourhood. Observations time would be for about one hour, adding up to a total of 10 hours for each age-group. Students are required to keep detailed records of their observation. Students must learn to discuss the difference between raw data and the observations and interpretations thereof. It is expected that discussions amongst peer group and with faculty supervisors during the time allotted for this, would enable students to evolve frameworks of analyzing the observational data. Supervisors will facilitate the process of analysis and interpretation and help establish links with theory.

B. Self-development Workshops MM: 50

To explore the self for greater awareness, personal growth, reflective thinking and to develop insight in to various dimensions of the self-perception and assumptions about the attitude towards people, children in particular and social issues, in the institution a series of workshops on following themes, should be conducted over the year under the guidance and supervision of trained professionals:

- Exploring the self
- Understanding our own childhood
- Understanding the gap in perception between child and adult.
- Competition and cooperation

Each student will attend 5 full day workshop and will prepare the report of the workshops.

32

C: Sports and Physical Education : MM: 25

Students will participate regularly in sports activities and will prepare reports of two sports activities on the basis of actual field situations. They would be also provided inputs on psychological interaction and first-aid for actual situations on the field.

D: Academic Enrichment Activities: Story Telling and Children's

Literature: MM: 50

Students will do the following activities:

- Examine and develop a criteria of evaluating children's literature including picture books, folk tales, activity books fiction and nonfiction.

- Develop story-telling skills and creative use of children literature

- write children's stories and develop children's literature.