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| **COURSE OUTCOMES**  **Department of Education: B.Sc.B.Ed.** | | | | |
| **S No** | **Class & Semester** | **Course & Course Code** | **COs** | **Course Outcomes** |
| 01 | B.Sc.B.Ed. Ist Year | **सामान्य हिंदी &**  BSED-001 | CO 1 | आधुनिक काव्य की विशेषताएँ आधुनिक काव्य की प्रमुख विशेषताओं का विश्लेषण करना। |
| CO2 | काव्य रचनाकारों का अध्ययन आधुनिक काव्य के प्रमुख रचनाकारों और उनकी रचनाओं का मूल्यांकन। |
| CO3 | गद्य की विभिन्न विधाएँ गद्य की प्रमुख विधाओं का अध्ययन और उनका विश्लेषण। |
| CO4 | पद्य के रचनाकारों का अध्ययन हिंदी पद्य के प्रमुख रचनाकारों और उनकी रचनाओं का मूल्यांकन। |
| CO5 | व्याकरण के नियम हिंदी व्याकरण के प्रमुख नियमों का अनुप्रयोग। |
| 02 | B.Sc.B.Ed. Ist Year | General English BSED-002 | CO 1 | Recall key themes and ideas from the text. |
| CO2 | Discuss the purpose and tone of each writing format (e.g., formal vs informal letters, descriptive vs narrative reports). |
| CO3 | Apply grammar rules correctly in both sentence transformation and writing, and correct common grammatical errors in exercises. |
| CO4 | Apply new vocabulary in written and spoken responses, demonstrating correct usage in different contexts (e.g., answering comprehension questions, writing essays). |
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| 03 | B.Sc.B.Ed. Ist Year | Relavity, Mechanics, Oscillations and Waves & BSED-101 | CO 1 | Explain the Principles of special relativity, including time dilation, length contraction and mass-energy equivalence. |
| CO2 | Evaluate the effects of relativistic motion on classical mechanics and modern physics. |
| CO3 | Utilize Kepler’s laws to describe planetary and satellite motion in circular orbits, based on the law of gravitation. |
| CO4 | Develop a deep understanding of SHM and its significance in various physical systems. |
| CO5 | Examine the behavior of mechanical waves, including transverse and longitudinal waves in different media. |
| 04 | B.Sc.B.Ed. Ist Year | Mathematical Background, Properties of matter and Electromagnetic Waves & BSED 102 | CO 1 | Define the dot product, triple product, gradient, divergence, and curl of a vector field. |
| CO2 | Describe the bending of beams, cantilever, and torsion of cylinders. |
| CO3 | Interpret the transition between streamline and turbulent flow using Reynolds’s number. |
| CO4 | Explain the principles of mutual and self-inductance and energy stored in magnetic fields. |
| CO5 | Analyze reflection, refraction, and the Faraday effect for electromagnetic waves in various media. |
| 05 | B.Sc.B.Ed. Ist Year | INORGANIC CHEMISTRY  **& BSED**-104 | CO 1 | Remember the key concepts of atomic structure, including de-Broglie waves, Heisenberg uncertainty principle, and Schrödinger's wave equation. |
| CO2 | Understand the nature of covalent bonds by explaining the Valence Bond theory, hybridization, and molecular geometry. |
| CO3 | Apply the VSEPR theory to predict the shapes of molecules like NH₃, H₂O, and SF₆. |
| CO4 | Analyze the properties and trends of s-block and p-block elements, including their hydrides and oxides. |
| CO5 | Evaluate the crystal structure of ionic solids using the concepts of lattice energy and the Born-Haber cycle. |
| 06 | B.Sc.B.Ed. Ist Year | PHYSICAL CHEMISTRY  & BSED-105 | CO 1 | Remember the fundamental concepts of logarithmic relations, differentiation, and integration for solving mathematical problems in chemistry. |
| CO2 | Understand the behavior of radioactive decay, including the concepts of half-life, disintegration constant, and nuclear reactions like fission and fusion. |
| CO3 | Apply the kinetic theory of gases and Van der Waals equation to explain deviations from ideal gas behavior and calculate properties of real gases. |
| CO4 | Analyze the properties of liquids and colloids, including the structure of liquids and the classification and properties of colloidal systems. |
| CO5 | Evaluate the principles of chemical equilibrium and phase equilibria, applying Le Chatelier’s principle and Gibbs phase rule to various systems. |
| 07 | B.Sc.B.Ed. Ist Year | BSED107 | CO 1 |  |
| CO2 |  |
| CO3 |  |
| CO4 |  |
| CO5 |  |
| 08 | B.Sc.B.Ed. Ist Year | BSED108 | CO 1 |  |
| CO2 |  |
| CO3 |  |
| CO4 |  |
| CO5 |  |
| 09 | B.Sc.B.Ed. Ist Year | Diversity of Microbes and Lower Plants  Code –BSED-110 | CO 1 | Relate the evolutionary trends in external morphology and internal structure. |
| CO2 | Understand various characters occurrence classification life cycle and evolution of nostoc, anabaena, and Oscillatoria. |
| CO3 | Know about types of mycelia, structure of fungal cell, nutrition and economic importance of fungal cell. |
| CO4 | Learn about structure reproduction and life history of lower plants |
| CO5 | Students will be able to apply their knowledge to identify different species of algae, fungi, lichens, |
| 10 | B.Sc.B.Ed. Ist Year | Diversity ofCryptogams (Bryophytes &Pteridophytes) Code -BSED-111 | CO 1 | Relate the evolutionary trends in external morphology and internal structure |
| CO2 | Understand various characters occurrence classification life cycle and evolution of nostoc, anabaena, and Oscillatoria. |
| CO3 | Know about types of mycelia, structure of fungal cell, nutrition and economic importance of fungal cell. |
| CO4 | Learn about structure reproduction and life history of lower plants. |
| CO5 | Relate the evolutionary trends in external morphology and internal structure |
| 11 | B.Sc.B.Ed. Ist Year | Calculus  &  BSED-113 | CO 1 | Describe and compute derivatives of arcs in Cartesian and polar forms. |
| CO2 | Interpret the concept of tangent planes and normal to a surface. |
| CO3 | Explain the concepts of curve tracing in Cartesian, parametric, and polar forms. |
| CO4 | Compare different methods of multiple integration and their applications. |
| CO5 | Solve problems involving arc length, area, and volume calculations. |
| 12 | B.Sc.B.Ed. Ist Year | Vector Geometry & Linear Algebra &  BSED-114 | CO 1 | Define and explain the concepts of continuity, differentiability, directional derivatives, gradient, and divergence of vector functions. |
| CO2 | Illustrate and apply Green’s, Gauss’s, and Stokes’s theorems to solve problems related to vector integration. |
| CO3 | Interpret and analyze second-degree equations, conic sections, and their representations in Cartesian and polar forms. |
| CO4 | Solve linear equations using matrix methods like Gaussian elimination, Gauss-Jordan, and determinants. |
| CO5 | Examine the properties of vector spaces, basis, dimension, linear transformations, and apply eigenvalues/eigenvectors in problem-solving. |
| 13 | B.Sc.B.Ed. Ist Year | VISION OF EDUCATION IN INDIA: ISSUES AND CONCERNS  BSED-121 | CO 1 | Understand and analyse basic educational concepts, their premises and contexts that are unique to education |
| CO2 | Critically analyse various philosophical systems and teachings of philosophical thinkers of east and west and their relation with education in framing aim of education, curriculum, methods of teaching etc. |
| CO3 | Understand determinants of the purposes and processes of education |
| CO4 | Understand the role of education as an agency of social transformation. |
| CO5 | Reflect critically on concerns and issues of contemporary Indian schooling. |
| 14 | B.Sc.B.Ed. Ist Year | ENRICHING LEARNING THROUGH INFORMATION AND COMMUNICATION TECHNOLOGY  BSED-122 | CO 1 | Understand the importance of games, sports and yoga for development of holistic health. |
| CO2 | Know the status, identify health problems and be informed of remedial measures. |
| CO3 | Know about safety and first aid. |
| CO4 | Acquire the skills for physical fitness. |
| CO5 | Practice yogasanas, meditation and relaxation. |
| 15 | B.Sc.B.Ed. Ist Year | Yoga, Health and Well-being &  BSED-123 | CO 1 | Understand the meaning, importance, and scope of yoga for healthy, integrated living and socio-moral development. |
| CO2 | Learn Ashtang Yoga, characteristics of practitioners, and prerequisites for effective yoga practice. |
| CO3 | Comprehend health concepts, dimensions, and the relationship between body systems and physical well-being. |
| CO4 | Gain knowledge about disease prevention, first aid, nutrition, and managing health issues like obesity, diabetes, and cardiac disorders. |
| CO5 | Develop physical fitness, motor skills, and an understanding of the role of athletics, games, and rhythmic activities in health. |
| 17 | B.Sc.B.Ed. Ist Year | Work Experience –Agriculture (Practices) & BSED-125 | CO 1 | Understand the meaning and scope of agriculture. |
| CO2 | Understand all about seeds, imported weed, manures etc. |
| CO3 | Acquire skills to practices of seed sowing, planting materials etc. |
| CO4 | Understand practices of different ornamental and horticulture crops. |
| CO5 | Recognise different field practices like earthing, hoeing, weeding watering etc.  inculcate healthy values related to work culture |

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| **S No** | **Class & Semester** | **Course & Course Code** | **COs** | **Course Outcomes** |
| 02 | B.Sc.B.Ed. 2nd Year | Kinetic Theory and Thermodynamics & BSED 202 | CO 1 | Explain the kinetic model of gases and deduce relationships like Boyle’s law while interpreting temperature and molecular behavior. |
| CO2 | Demonstrate the ability to apply the Van der Waals equation to analyze the behavior of real gases and interpret experimental P-V curves and critical constants. |
| CO3 | Calculate mean free paths, molecular diameters, and transport coefficients, and understand the interrelationship between transport phenomena in gases. |
| CO4 | Apply blackbody radiation laws, such as Planck's law and Wien's displacement law, to explain thermal radiation phenomena and the specific heat behavior of gases at low temperatures. |
| CO5 | Analyze thermodynamic systems using the first and second laws of thermodynamics, including reversible and irreversible processes, Carnot cycles, and entropy changes. |
| 03 | B.Sc.B.Ed. 2nd Year | Optics and Lasers & BSED 203 | CO 1 | Recall and describe the fundamental concepts of optical aberrations and the functions of entrance and exit pupils in optical systems. |
| CO2 | Explain the principles of interference and diffraction and analyze their impact on  wave propagation and optical phenomena |
| CO3 | Describe the phenomenon of polarization, differentiate between various types of  polarized light, and explain the working principles of a polarimeter |
| CO4 | Understand the basic mechanisms of LASER action, the importance of population inversion, and compare the characteristics of different types of LASERs, including Ruby  and He-Ne. |
| CO5 | Describe the fundamental principles of holography, explain the process of hologram reconstruction, and apply this knowledge to explore potential applications. |
| 04 | B.Sc.B.Ed. 2nd Year | INORGANIC CHEMISTRY  & BSED-204 | CO 1 | Remember Werner's coordination theory and its experimental verification, along with the nomenclature and isomerism in coordination compounds. |
| CO2 | Understand the principles of crystal field theory and its application to octahedral, tetrahedral, and square planar complexes, including factors affecting crystal-field parameters. |
| CO3 | Apply the effective atomic number (EAN) rule to determine the structure and bonding in metallic carbonyls and nitrosyls. |
| CO4 | Analyze the chemistry of lanthanides and actinides, focusing on their electronic structure, oxidation states, and applications. |
| CO5 | Evaluate the stability of metal complexes through thermodynamic and kinetic aspects, and apply redox potential data to analyze redox cycles in metal complex stability. |
| 05 | B.Sc.B.Ed. 2nd Year | ORGANIC CHEMISTRY  & BSED-205 | CO 1 | Remember the fundamental concepts of structure and bonding in organic chemistry, including hybridization, bond angles, resonance, and hydrogen bonding. |
| CO2 | Understand the mechanisms of organic reactions, including electron movement, types of reagents, and reactive intermediates like carbocations, free radicals, and carbanions. |
| CO3 | Apply the principles of stereochemistry to classify isomerism, including optical, geometric, and conformational isomerism, using appropriate nomenclature systems. |
| CO4 | Analyze the chemical properties, reactions, and mechanisms of alkanes, alkenes, cycloalkanes, and alkynes, including key reactions such as free radical halogenation and electrophilic additions. |
| CO5 | Evaluate the mechanisms and reaction patterns in aromatic electrophilic substitution reactions, and determine the effects of activating and deactivating substituents on the reaction outcomes. |
| 06 | B.Sc.B.Ed. 2nd Year | PHYSICAL CHEMISTRY  & BSED-206 | CO 1 | Remember the fundamental thermodynamic terms, including systems, surroundings, intensive and extensive properties, state and path functions, and the First Law of Thermodynamics. |
| CO2 | Understand the principles of thermochemistry, including Hess's Law, heat of reaction, enthalpy of neutralization, and the calculation of bond dissociation energy from thermochemical data. |
| CO3 | Apply the Second Law of Thermodynamics, including the concept of entropy, Carnot cycle efficiency, and the use of Gibbs and Helmholtz functions for determining spontaneity and equilibrium. |
| CO4 | Analyze the concepts of electrical conduction in metals and electrolytes, including the calculation of equivalent conductance, ion migration, and applications of conductometric titrations. |
| CO5 | Evaluate the mechanisms and theories of chemical kinetics, including rate laws, reaction order, the Arrhenius equation, and theories of catalysis, applying them to experimental data. |
| CO2 | Explain the properties of groups and subgroups with examples, including permutation groups, cyclic groups, and Cayley’s theorem. |
| CO3 | Analyze the homomorphic and isomorphic properties of groups and demonstrate understanding through proofs, including the fundamental theorem of group homomorphism. |
| CO4 | Describe the structures and examples of rings, residue class rings, and special types of rings like integral domains and fields. |
| CO5 | Compare prime ideals and maximal ideals, and analyze their role in the structure of rings and subrings. |
| 14 | B.Sc.B.Ed. 2nd Year | Real Analysis  &  BSED-214 | CO 1 | Recall the completeness axiom, density of rational/irrational numbers, and the least upper bound property of real numbers. |
| CO2 | Apply the chain rule, mean value theorems, and Taylor’s theorem to solve mathematical problems and interpret their geometric meanings. |
| CO3 | Analyze the behavior of real sequences and infinite series using comparison tests, ratio tests, and convergence criteria like Cauchy’s criterion. |
| CO4 | Utilize the fundamental theorem of calculus and mean value theorems to compute integrals and solve applied problems in calculus. |
| CO5 | Explain the classification of discontinuities and the properties of continuous functions, such as boundedness and uniform continuity. |
| 15 | B.Sc.B.Ed. 2nd Year | Differential Equations  &  BSED-215 | CO 1 | Define and recall fundamental concepts of linear, exact, and higher-order differential equations. |
| CO2 | Explain and interpret the solutions of differential equations using various techniques, including geometric visualization and integrating factors. |
| CO3 | Solve ordinary and partial differential equations using methods like power series, variation of parameters, and Charpit’s method. |
| CO4 | Classify and analyze linear partial differential equations based on order, homogeneity, and reducibility to equations with constant coefficients. |
| CO5 | Examine and evaluate different methods for solving differential equations, selecting the most efficient technique based on the equation’s structure. |
| 16 | B.Sc.B.Ed. 2nd Year | LEARNER LEARNING AND COGNITION INSTRUCTIONAL  BSED-221 | CO 1 | Define the individual development in the socio-cultural context of the learners |
| CO2 | Understand develop an understanding about the impact/influence of socio-cultural context in shaping human development, especially with respect to the Indian context |
| CO3 | To acquire theoretical perspectives and develop an understanding of dimensions and stages of human development with respect to behaviouristic, socio-cognitivist and constructivist approaches |
| CO4 | Analyse wide range of cognitive skills and affective process in human learning |
| CO5 | Reflect the implicit understanding of the nature and kinds of learning |
| 18 | B.Sc.B.Ed. 2nd Year | Work Experience- Agriculture (Practices ) & BSED-223 | CO 1 | Identify commonly spreading tree species and their importance for commonpeople, |
| CO2 | know the importance of traditional medicinal plants |
| CO3 | Use qualitative seeds for sowing, |
| CO4 | Identify important hedges creepers and weeds |
| CO5 | Develop a nursery |
| 19 | B.Sc.B.Ed. 2nd Year | ADDRESSING SPECIAL NEEDS IN INCLUSIVE SCHOOL  BAED-224 | CO 1 | Define the key historical and contemporary trends in the education of children with special needs. Identify the major policies and legislative frameworks such as the Salamanca Statement, UNCRPD, and the Persons with Disabilities Act. |
| CO2 | Explain the individual deficit view versus the curriculum view in defining educational difficulties. Compare the concepts of special education, integrated education, and inclusive education. |
| CO3 | Analyze the recommendations of key policy documents such as the National Policy on Education (1986), POA 1992, and IEDSS 2009. Apply relevant legislative frameworks (PWD Act, Rehabilitation Council of India Act) to contemporary educational practices for children with special needs. |
| CO4 | Design an inclusive curriculum that accommodates students with various disabilities like visual impairment, hearing impairment, and mental retardation. Analyze case studies to identify appropriate teaching strategies, such as peer tutoring, cooperative learning, and multisensory teaching, for diverse learners. |
| CO5 | Create an Individualized Education Plan (IEP) and develop appropriate Teaching-Learning Materials (TLM) for children with special needs. Develop lesson plans and strategies for implementing inclusive practices in the classroom, ensuring barrier-free education and community involvement. |

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| **S No** | **Class & Semester** | **Course & Course Code** | **COs** | **Course Outcomes** |
| 01 | B.Sc.B.Ed. 3rd Year | Solid State Physics, Solid State Device and Electronics &  BSED-301 | CO 1 | Explain the fundamental properties of amorphous and crystalline material, lattice translation vector and unit cell, including the application of miller indices and reciprocal lattices. |
| CO2 | Apply Bragg’s law to analyze the diffraction of X-ray by crystals, incorporating atomic and geometrical considerations. |
| CO3 | Differentiate between intrinsic and extrinsic semiconductors, analyzing the behavior of electrons holes and the significance of the Fermi level. |
| CO4 | Explain the principles of n-type and p-type semiconductors, including conductivity, mobility and the hall effect. |
| CO5 | Assess the behavior and application of metal semiconductors junction, p-n junction and semiconductors devices such as diodes (Zener, tunnel and light- emitting diodes) transistor and solar cell. |
| 03 | B.Sc.B.Ed. 3rd Year | ORGANIC CHEMISTRY  & BSED-304 | CO 1 | Remember the classification, nomenclature, and methods of formation of alcohols, phenols, ethers, and epoxides, and understand their chemical reactions and physical properties. |
| CO2 | Understand the synthesis and chemical behavior of aldehydes, ketones, carboxylic acids, and their derivatives, including various reaction mechanisms like aldol, Perkin, and Mannich reactions. |
| CO3 | Apply the concepts of nucleophilic substitution, esterification, and hydrolysis to carboxylic acid derivatives and amines, including the preparation of aryl and alkyl amines. |
| CO4 | Analyze the preparation and reactions of nitroalkanes, nitroarenes, and amines, including the effects of structural features on their basicity and reactivity in various reactions. |
| CO5 | Evaluate the UV and IR absorption spectra and apply principles like the Beer-Lambert law, conjugation effects, and functional group identification in the analysis of organic compounds. |
| 04 | B.Sc.B.Ed. 3rd Year | PHYSICAL CHEMISTRY  & BSED-305 | CO 1 | Remember key quantum concepts like Planck’s radiation law, photoelectric effect, and Bohr’s hydrogen atom model. |
| CO2 | Understand the Schrödinger wave equation, uncertainty principle, and the concept of wave functions in quantum mechanics. |
| CO3 | Apply molecular orbital theory to predict bonding, antibonding, and hybrid orbitals in molecules. |
| CO4 | Analyze rotational, vibrational, Raman, and electronic spectra to understand molecular energy transitions and selection rules. |
| CO5 | Evaluate photochemical processes and physical properties like optical activity, dipole moment, and magnetic behavior in molecular systems. |
| 07 | B.Sc.B.Ed. 3rd Year | Structure, Development and Reproduction in Flowering plants  Code –BSED-310 | CO 1 | know about morphological, anatomical and developmental patterns in the flowering plants. |
| CO2 | know about the reproductive parts their development and mechanism of reproduction and life cycle pattern. |
| CO3 | Understand the structure of root and shoot system |
| CO4 | Economic values of the lower plants |
| CO5 | understand the difference between pollen pistil interaction and fertilization. |
| 8 | B.Sc.B.Ed. 3rd Year | Plant Physiology (BSED-311) | CO 1 | Define the various physiological aspects involved in the plant development. |
| CO2 | Explain different types of enzymes and its mechanisms. |
| CO3 | Understand the concept of respiration and transport mechanism. |
| CO4 | Understand the mechanism of photosynthesis, respiration, nitrogen and lipid metabolism. |
| CO5 | Isolate starch, pectin and various nutritive product from the plants. |
| 9 | B.Sc.B.Ed. 3rd Year | Complex Analysis  &  BSED-313 | CO 1 | Identify analytic functions and describe their characteristics in Cartesian and polar forms. |
| CO2 | Explain the concepts of harmonic functions and their relationship to analytic functions, as well as the properties of elementary mappings. |
| CO3 | Illustrate complex integration techniques and related theorems, such as Cauchy’s integral theorem, and describe their significance in analysis. |
| CO4 | Apply Morera’s theorem, Taylor and Laurent series, and residue techniques to compute integrals and analyze the behavior of functions near singularities. |
| CO5 | Analyze the role of singularities, residues, and branch points in evaluating definite integrals and solving complex problems. |
| 10 | B.Sc.B.Ed. 3rd Year | Mechanics  &  BSED-314 | CO 1 | Recall fundamental concepts of equilibrium, forces, and virtual work in mechanical systems. |
| CO2 | Explain the stability conditions of equilibrium and the concepts of wrenches, null lines, and planes in three-dimensional force systems. |
| CO3 | Solve problems related to motion in radial, transverse, tangential, and normal directions, including simple harmonic motion and rectilinear motion. |
| CO4 | Apply concepts of resisting medium, Hooke’s law, and constrained motion to solve practical problems involving elastic strings and cycloidal motion. |
| CO5 | Analyze impact problems, derive central orbits, and interpret Kepler’s laws to understand planetary motion and orbital mechanics. |
| 11 | B.Sc.B.Ed. 3rd Year | SCHOOLING, SOCIALIZATION AND GENDER CONCERNS  BSED-321 | CO 1 | Understand the nature & process of socialization, parenting style & its impact. |
| CO2 | Understand the interface between home, community and school. the process and determinants of identity formation. |
| CO3 | Understand the influence of peer group, media, technology and globalization on identity formation. |
| CO4 | Understand how the school helps in the process of identity formation. Know the role of school in developing national, secular and humanistic identities. |
| CO5 | Reflect on one’s aspirations & possibilities in order to develop a growing sense of agency as a “teacher”, “professional” as well as “human being”. |
| 12 | B.Sc.B.Ed. 3rd Year | STRENGTHENING PROGESSIONAL DEVELOPMENT  BSED-322 | CO 1 | Demonstrate proficiency in navigating and utilizing library resources by understanding library management systems, automation tools, and effectively searching for relevant materials for personal and professional development. |
| CO2 | Identify and categorize various types of library documents and materials, including books, journals, and other resources, and apply these skills to locate reference materials efficiently for academic and professional needs. |
| CO3 | Integrate library resources with professional development goals by utilizing newspapers, magazines, websites, and other media to stay informed and enhance skills relevant to one’s professional growth. |
| CO4 | Enhance research skills by employing advanced search techniques to locate, evaluate, and utilize valuable reference materials, supporting the development of expertise in specific areas of interest. |
| CO5 | Develop a network of learning resources and professional contacts by engaging with local community members, resource persons, and online platforms, fostering opportunities for continuous learning and career advancement. |

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| **S No** | **Class & Semester** | **Course & Course Code** | **COs** | **Course Outcomes** |
| 01 | B.Sc.B.Ed. 4th Year | Atomic, Molecular and Nuclear Physics & BSED-401 | CO 1 | Recall and describe the fundamental concepts in atomic, molecular, and nuclear physics. |
| CO2 | Explain the principles underlying key atomic physics experiments, such as Frank-Hertz, Stern-Gerlach, and the Zeeman Effect (Normal and Anomalous), and describe their implications on spectral line splitting. |
| CO3 | Interpret and apply the concepts of spectroscopic techniques to analyze rotational and vibrational spectra in molecular systems. |
| CO4 | Describe the phenomena of particle accelerators and detectors and summarize their significance in validating theoretical physics concepts. |
| CO5 | Understand the processes of nuclear fission, fusion, and the neutron cycle, and analyze the classification of elementary particles using the quark model. |
| 02 | B.Sc.B.Ed. 4th Year | Advance Chemistry & BSED-404 | CO 1 | Recall fundamental principles of electronic transitions, magnetic behavior, and spectroscopic properties of transition metal complexes. |
| CO2 | Explain the spectrochemical series, Orgel diagrams, and the role of L-S coupling in  determining the electronic and magnetic properties of 3d metal complexes. |
| CO3 | Apply the knowledge of magnetic susceptibility, spin-only formulas, and Aromaticity  concepts to solve problems related to magnetic moments and heterocyclic compounds. |
| CO4 | Analyze the structure, reactivity, and substitution mechanisms of heterocycles like  pyrrole, pyridine, and furan, and interpret spectroscopic data (UV, IR, NMR) to  elucidate the structure of simple organic molecules. |
| CO5 | Evaluate the application of green chemistry principles and nano-chemistry techniques  in sustainable synthesis and advanced material design, including the use of  spectroscopic methods for characterization. |
| 04 | B.Sc.B.Ed. 4th Year | Molecular Biology, Ecology & Economic Botany(BSED-410) | CO 1 | Understand the concept of tools and techniques of plant tissue culture. |
| CO2 | Apply the aspects of updated concepts of cell biology and genetics. |
| CO3 | Explain the underpinnings of the mechanism of DNA replication and repair. |
| CO4 | Have a deeper understanding of DNA repair mechanisms, including mismatch repair, base excision, and nucleotide excision repair mechanisms and the repair of double stranded DNA. |
| CO5 | Understand the concept of biological spectrum and ecological succession. |
| 05 | B.Sc.B.Ed. 4th Year | Numerical Analysis  &  BSED-413 | CO 1 | Define and classify different types of numerical errors, their sources, and their propagation in computations. |
| CO2 | Explain and compare various numerical methods used for solving linear and nonlinear equations. |
| CO3 | Apply interpolation techniques to estimate values and analyze the error associated with interpolation formulas. |
| CO4 | Evaluate numerical integration and differentiation techniques and determine their accuracy in solving problems. |
| CO5 | Analyze and implement numerical techniques for solving first and second-order differential equations in real-world applications. |
| 06 | B.Sc.B.Ed. 4th Year | Discrete Mathematics  &  BSED-414 | CO 1 | Define and recall fundamental concepts of sets, relations, functions, and lattices. |
| CO2 | Explain and interpret the principles of combinatorics, discrete probability, and formal languages. |
| CO3 | Apply graph theory techniques to solve problems related to paths, circuits, and planar graphs. |
| CO4 | Analyze finite state machines and their equivalence in recognizing languages and performing computations. |
| CO5 | Evaluate Boolean functions and algebraic structures to design logic-based solutions in computing. |
| 07 | B.Sc.B.Ed. 4th Year | CURRICULUM AND SCHOOL  BSED-421 | CO 1 | Understand the meaning & nature of curriculum, importance of curriculum in school. |
| CO2 | Differentiate between Curriculum Framework, Curriculum and Syllabus. |
| CO3 | Understand the meaning & concern of hidden Curriculum., socio political aspiration in Educational Policies |
| CO4 | Understand various foundation of Curriculum Planning., relevance & specificity of educational objectives. |
| CO5 | Reflect on various trends in Curriculum development. Process of curriculum making. |
| 08 | B.Sc.B.Ed. 4th Year | ASSESSMENT FOR LEARNING  BSED-422 | CO 1 | Gain a critical understanding of issues in assessment and evaluation |
| CO2 | Become cognizant of key concepts such as test, measurement, examination,formative and summative assessment, and evaluation |
| CO3 | Understand different kinds and forms of assessment that aid student learning |
| CO4 | Use a wide range of assessment tools, learn to select and construct themappropriately |
| CO5 | Evolve realistic, comprehensive, and dynamic assessment procedures that areable to keep the whole student in view |