

**MARKS DISTRIBUTION OF B.Sc.-B.Ed. FOUR YEARS INTEGRATED COURSE
B.Sc.-B.Ed. II SEM (CORE COURSE)**

Section	Paper	Subject	Total Marks	External Marks		Exam Pattern	Internal Marks		Marks Distribution	Remark
				Max	Min		Max	Min		
Foundation part Science part	F-1	Moral Values & Language-I	75	50	20	Written Exam by University	25	10		COLLEGE SEND THIS MARKS DIRECTLY TO UNIVERSITY
	F-2	Development of Entrepreneurship-I	75	50	20		25	10		
	S-1	Any three subject from given list	100	75	30		25	10		
	S-2		100	75	30		25	10		
	S-3		100	75	30		25	10		
		Phy.Chem., Botany, Zoology, Maths *Subject specified in the scheme by board of studies will only be considered *Note: in case of mathematics, theory.	150	125	50	25	10			
Education part	CC-3	Learning and Teaching	100	75	30	25	10	Attendance(5 marks) 1st test(5 marks) 2nd test(5marks) Assignment(10marks)		
	CC-4	Learning Curriculum and School	100	75	30	25	10	Attendance(5 marks) 1st test(5 marks) 2nd test(5marks) Assignment(10marks)		
		Total	650							

PRACTICAL

SCIENCE PART	PS-1/2/3	According to selection of subject in S-1, S-2 & S-3	50 each	Practical Exam by external Appointed by University		Practical Examiners and Internal (who teaches subject) send this marks after Practical exam with total 50 marks
		TOTAL	100/150			
		Theory total	650			
		Practical total	150			
		Total	800			

Practical
Practical Examiners
Practical Exam by external Appointed by University
Practical Examiners and Internal (who teaches subject) send this marks after Practical exam with total 50 marks
35

DEVI AHILYA VISHWAVIDYALAYA, INDORE

B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

Class	वी.एस.सी. बी.एड
Semester	II
Subject	Foundation Course (आधार पाठ्यक्रम)
Paper	I
Title of Paper	नैतिक मूल्य और भाषा (Moral Values & Language)
Compulsory/ Optional	Compulsory

Particulars

Part - A

Unit - 1	नैतिक मूल्य 1. अंतर्ज्ञान और नैतिक जीवन -- सर्वपल्ली राधाकृष्णन 2. अप्य दीपो भव. -- स्वामी श्रद्धानंद 3. बुद्ध की करुणा -- डॉ. सहा तिरस	15
Unit - 2	हिन्दी भाषा 1. भारत वन्दना (कविता) -- सूर्यकांत त्रिपाठी 'निराला' 2. पुष्प की अभिलाषा (कविता) -- माखनलाल चतुर्वेदी 3. अकाल और उसके बाद (कविता) -- नागाजुन 4. निर्मात्या (ललित निबंध) -- विद्यानिवासा मिश्र 5. मानक हिन्दी का स्वरूप (संकलित)	17
Unit - 3	हिन्दी भाषा 1. अफसर (व्यांग्य) -- शरद जोशी 2. भीलाराम का जीव (व्यांग्य) -- हरिशंकर परसाई 3. भारत का सामासिक व्यक्तित्व (चिंतनपरक) -- जवाहरलाल नेहरू 4. भारत देश और उसके निवासी (विश्लेषणपरक) -- रामधारी सिंह दिनकर 5. पल्लवन और संक्षेपण (संकलित)	18

Part - B

Unit- 4	English Language 1. William Wordsworth : The Solitary Reaper 2. A Song of Kabir- Translated by Tagore 3. Khushwant Singh : The Portrait of a Lady 4. Mahatma Gandhi : Satyagraha	17
Unit- 5	English Language Comprehension, Unseen Passages, Report- writing, Composition, Short Essay, Paragraph Writing (Based on the expansion of an idea) Basic language skills : vocabulary, synonyms, antonyms, word formation, prefixes, suffixes, confusing words, similar words with different meanings, proverbs, situational conversations like conversation at the post office, bank, market place, railway station, college etc. Basic language skills : Grammar and Usage, Tenses, Prepositions, determiners, countable/ uncountable nouns, verbs, articles and adverbs.	18

विद्यया ऽमृतमश्नुते, विद्यायाः शान्तिः, विद्यायाः शान्तिः, विद्यायाः शान्तिः

Prof. Agneholi, karkeswar, P. Sen

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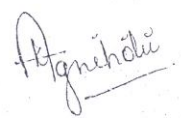
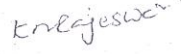
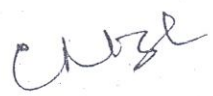
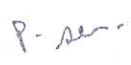
B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

Class	: बी.एस.सी. बी.एड
Paper	: II
Subject	: II
Subject	: आधार पाठ्यक्रम
Title of Paper	: उद्यमिता विकास
Compulsory/ Optional	: Compulsory

Particulars

Unit - 1	उद्यमिता का आशय, मत, उद्यमिता के गुण, सफल उद्यमी के गुण	
Unit - 2	उद्यमिता के प्रकार, महत्व और विभिन्न विद्वानों के मत लक्ष्य निर्माण, लक्ष्य कैसे प्राप्त करें। लक्ष्य प्राप्ति में समस्याएं, उनका समाधान स्वप्रेरणा, स्वप्रेरणा के तत्व और विकास विभिन्न विद्वानों के मत, आकलन, निष्कर्ष नेतृत्व समता, उसका विकास और प्रतिफलन	
Unit- 3	परियोजनाएं तथा विभिन्न संगठन (शासकीय-अशासकीय) शासकीय परियोजनाएं अशासकीय परियोजनाएं बैंकों का योगदान, उनकी सीमाएं, क्षेत्र	
Unit- 4	अच्छे उद्यमी के कौन-कौन से कार्य, गुण, प्रबंधन इत्यादि अच्छे उद्यमी के गुण आधुनिक और पूर्ववर्ती उद्यमी की प्रबंधन कला उद्यमी के प्रेरक तत्व	
Unit- 5	उद्यमी की समस्याएं, क्षेत्र पूँजी की समस्या शक्तिकरण की समस्या पूँजीवन की समस्या प्रशासनिक समस्याएं	

स्वामित्व की समस्याएं इत्यादि	
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सैद्धान्तिक परीक्षा हेतु उपरोक्तानुसार 35 अंक और आन्तरिक मूल्यांकन (सीसीई) हेतु 15 अंक निर्धारित हैं।

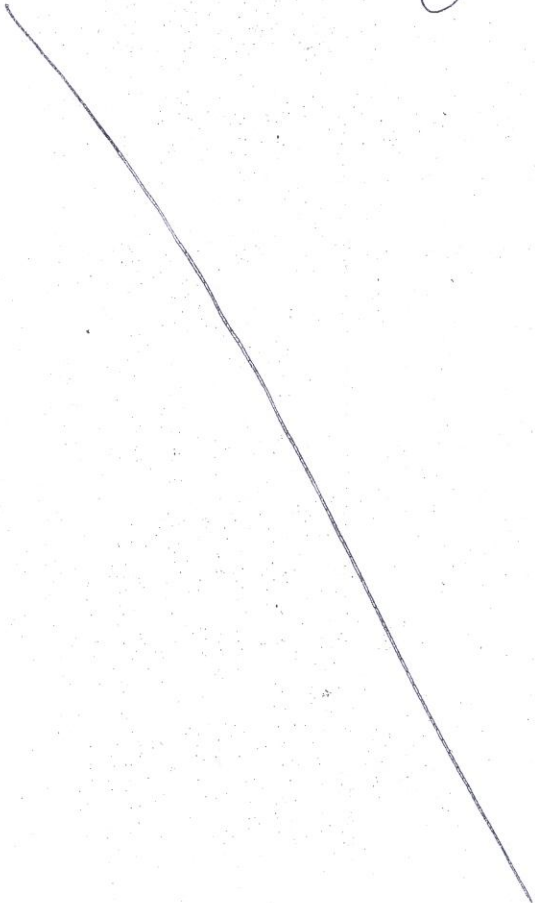
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B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

Class	बी.एस.सी. बी.एड.
Subject	Foundation Course
Paper Title	Paper II : Development of Entrepreneurship
Semester	I
Compulsory/ Optional	Compulsory

Unit I :

Entrepreneurship: Definition, Characteristics and importance, Types and functions of an entrepreneur, motivational factors of entrepreneurship.

Unit II :

(a) Motivation to achieve targets and establishment of ideas. Setting targets and facing challenges. Resolving problems and creativity.

Sequential planning and guiding capacity, Development of self confidence.

(b) Communication skills, Verbal & Non Verbal Communication, Capacity to influence, Modern Techniques of Communication.

Unit III :

(a) Project Report-

Evaluation of selected process.

Detailed project report – Preparation of main part of project report pointing out necessary and viability.

(b) Selecting the form of Organisation – Meaning and characteristics of sole Proprietorship, Partnership and cooperative committees, elements affecting selection of a form of an organisation.

(c) Economic management –

Role of banks and financial institutions banking, financial plans, working capital-evaluation and management, keeping of accounts.

Unit IV:

(a) Production management . Methods of purchase of Raw Materials.

Management of movable assets/goods. Quality management.

Employee management. Packing.

(b) Marketing Management. Sales and the art of selling.

Understanding the market and market policy. Consumer management.

Time management.

Unit V:

(a) Role of Regulatory institutions – District Industry Centre, Pollution Control Board, Food and Drug Administration, special study of Electricity Development and Municipal Corporation.

(b) Role of development organizations, Khadi & village Commission/ Board, MP Finance Corporation, scheduled banks, MP Women's Economics Development Corporation.

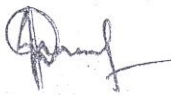
(c) Self-employment-oriented schemes, Prime Minister's Employment schemes, Golden Jubilee Urban environment scheme, Rani Durgavati Self- Employment scheme, Pt. Deendayal Self-employment scheme.

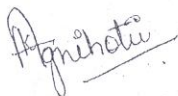
(d) Various grant schemes - Cost of Capital grant, interest grant, exemption from entry tax, project report, reimbursement grant, etc.

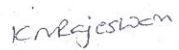
(e) Special incentives for Women Entrepreneurs, prospects & possibilities.

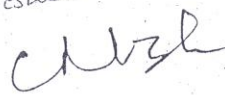
(f) Schemes of M.P. Tribal Finance Development Corporation, schemes of M.P. Antyavasai Corporation.

schemes of M.P. Backward Class and Minorities Finance Development Corporation.











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DEVI AHILYA VISHWAVIDYALAYA, INDORE

B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

Class	बी.एस.सी. बी.एड
Subject	Foundation Course
Paper Title	Paper II : Development of Entrepreneurship
Semester	II
Compulsory/ Optional	Compulsory

Unit I :

Entrepreneurship- Meaning, Concept, Characteristics of entrepreneur, Qualities of Successful Entrepreneurs

Unit II:

Types of entrepreneurship, importance and views of various thinkers (Scholars)
-Formation of goals, How to achieve goals.
-Problems in achieving targets and solution.
-Self motivation, elements of self motivation and development.
-Views of various scholars, evaluation, solutions.
Leadership capacity: Its development and results.

Unit III :

Projects and various organisations (Govt., non-Govt.), Govt. Projects, Non- Govt. projects.
Contribution of Banks, their limitations, scope.

Unit IV :

Functions, qualities, management of a good entrepreneur.
Qualities of the entrepreneur (Modern and traditional).
Management skills of the entrepreneur.
Motive factors of the entrepreneur.

Unit V:

Problems and Scope of the Entrepreneur :
-Problem of Capital
-Problem of Power
-Problem of Registration
-Administrative problems
-Problems of Ownership.

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SEMESTER - II

CC 3: LEARNING & TEACHING

Aims of the Course

- To become aware of different contexts of learning and situate schools as a special environment for learning;
- To reflect on their own implicit understanding of the nature and kinds of learning;
- Gain an understanding of different theoretical perspectives on learning with a focus on cognitive views of learning as well as social-constructivist theories;
- Explore the possibilities of an understanding of processes in human cognition and meaning-making them as basis for designing learning environments and experiences at school; and
- Appreciate the critical role of learner's based on differences and contexts in making meanings, and hence draw out implications for schools and teachers.

UNIT 1: THEORETICAL PERSPECTIVES ON LEARNING

- Implicit knowledge and beliefs about learning (demystifying misconceptions).
- Perspectives on human learning: Behaviourist (conditioning paradigm in brief), cognitivist, information-processing view, humanist, social-constructivist (drawing selectively on the ideas of Skinner, Piaget, Rogers, Vygotsky).
- Concepts and principles of each perspective and their applicability in different learning situations.

UNIT 2: ROLE OF LEARNER IN LEARNING

- Role of learner in various learning situations, as seen in different theoretical perspectives
- Role of teacher in teaching-learning situations: a) transmitter of knowledge, b) model, c) facilitator, d) negotiator, e) co-learner. (The focus is on building understanding of different psychological perspectives of learning and helping student teachers to learn to apply them in different learning situations).
- Distinctions between learning as 'construction of knowledge' and learning as 'transmission and reception of knowledge'.

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UNIT 3: LEARNING IN 'CONSTRUCTIVIST' PERSPECTIVE

- Social-constructivist perspective (also Bruner and Ausubel's perspective) and applications of Vygotsky's ideas in teaching.
- Understanding processes that facilitate 'construction of knowledge' : (i) Experiential learning and reflection (ii) Social mediation (iii) Cognitive negotiability (iv) Situated learning and cognitive apprenticeship (v) Meta-cognition.
- Creating facilitative learning environments, teachers' attitudes, expectations – enhancing motivation, positive emotions, self-efficacy, collaborative and self-regulated learning. (The focus is on learning as a constructive rather than a reproductive process. The learner- centered orientation has implications for understanding learning as contextual and self-regulated process and following suitable classroom practices).

UNIT 4: INDIVIDUAL DIFFERENCES AMONG LEARNERS

- Dimensions of differences in psychological attributes—cognitive abilities, interest, aptitude, creativity, personality, values.
- Understanding learners from multiple intelligences perspective with a focus on Gardner's theory of multiple intelligences. Implications for teaching-learning in the light of changing concept of intelligence, including emotional intelligence.
- Differences in learners based on predominant 'learning styles'.
- Differences in learners based on socio-cultural contexts: Impact of home languages of learners' and language of instruction, impact of differential 'cultural capital' of learners.
- Understanding differences based on a range of cognitive abilities— learning difficulties, slow learners and dyslexics, intellectual deficiency, intellectual giftedness. Implications for catering to individual variations in view of 'difference' rather than 'deficit' perspective. (The focus is on understanding the differential learning needs of the learners with regard to abilities, learning styles, language, socio-cultural differences/disadvantage, learning difficulties, and their implications for classroom practices and teaching).

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CC 4. CURRICULUM DEVELOPMENT & SCHOOL

OBJECTIVES:

- To acquaint students with the nature and types of curriculum.
- To acquaint students with the context of curriculum development and some Innovative Curriculum Models.
- To familiarize students with Designing of Curriculum.
- To give practical experience in Evaluating, Designing and, Reviewing Curriculum.

CONTENT:

UNIT I:

Curriculum – Meaning and Nature, types of Curriculum, Syllabus and Text books –their interrelationship. Issues and problems of existing Curriculum.

UNIT II:

Curriculum Construction, Curriculum Development and Curriculum Designing: Concepts and differences. Determinants and motives of Curriculum Development. Different Curriculum Models-open university, Open School, etc.

UNIT III:

Steps of Designing different Curriculum. Selection, Gradation and Organisation of Curriculum. Development and Implementation of Curriculum. Enrichment of Curriculum.

UNIT IV: PRACTICAL'S

- Evaluation of B.Ed. Curriculum
- Designing a Curriculum in a given condition Reviewing of Syllabus/Books

REFERENCES

- Ashcroft, Kate and Palacio, David: The Primary Teacher's Guide to the New National Curriculum. London: Flamer Press, 1995.
- Doll, Ronald C.: Curriculum Improvement – Decision Making and Process. London; Allyn and Bacon, 1996.
- Eccles tone, Kathryn: How to Assess the Vocational Curriculum. London: Kogan Page Ltd. 1996.

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- Hendricks, Joanne: Total Learning Developmental Curriculum for the Young Child. New York: Maxwell McMillan International, 1994.
- Hooper, R.: The Curriculum Context, Design and Development. The Chaucer Press Ltd., Great Britain, 1977.
- Kaushik, S.L.: Shikshakram Vikas. Rajasthan Granth Academy. Jaipur, 1977.
- Kelly, A.V.: The Curriculum - Theory and Practices. Harper and Row Publishers, London, 1982.
- Kerr, J.E. (Ed.): Changing the Curriculum. University of London Press Ltd., London, 1970.
- Lawton, D.: Class, Culture and the Curriculum. Routledge and Kegan Paul Ltd., London, 1975.
- Lowy, A. (Ed.): Handbook of Curriculum Evaluation. International Institute for Educational Planning, New York, 1977.
- Lowy, A.: The International Encyclopaedia of Curriculum. New York: Pergamum Press, 1991.
- Mamidi, M.R. and Ravishankar: Curriculum Development and Educational Technology, Sterling Publishers Pvt. Ltd., New De'hi, 1983.
- Nichols, S.H. and Nichols, A.: Developing Curriculum. George Allen and Unwin, Boston, London, 1976.
- Oriosky, D.E. and Smith, B.D.: Curriculum Development - Issues and Insights. Rand McNally College Publishing Company, USA, 1976.
- Prasad, Janardan & Kaushik, V.K. Advanced Curriculum Construction. New Delhi: Kanishka Publishers, 1997.
- Richmond, K.W.: The School Curriculum. Methuen and Co. Ltd., London, 1973.
- Saylor, J.G. and Alexander, W.H.: Curriculum, Planning for Modern Schools. London: Holt, Rinehart and Winston, Inc., 1966.
- Wiles, Jon, & Bondi, Joseph C.: Curriculum Development - A Guide to Practice. London: Charles E. Merrill Publishing Co., 1984.

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DEVI AHILYA VISHWAVIDYALAYA, INDORE

B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

Class/ कक्षा : बी.एस.सी. बी.एड.
Semester/ सेमेस्टर : II
Subject / विषय : Mathematics
Title / शीर्षक : Advanced Calculus, Differential Equations,
Vector Calculus

: Particulars/ विवरण :

Unit-1	Successive differentiation. Leibnitz theorem. Maclaurin and Taylor series expansions. Asymptotes. Curvature. Tests for concavity and convexity. Points of inflexion. Multiple points. Tracing of curves in Cartesian co-ordinates.
इकाई-1	उत्तरोत्तर अवकलन, लैबनीज का प्रमेय, मैकलारिन एवं टेलर श्रेणी में विस्तार, अनंत स्पर्शी, वक्रता, उल्लसता एवं अवलसता के परीक्षण, नती परिवर्तन बिन्दु, बहुबिन्दु, कार्तीय निर्देशांकों में वक्रों का अनुरेखण ।
Unit-2	Limit and continuity of functions of two variables. Introduction of Partial differentiation. Euler's Theorem on homogeneous function. Jacobians. Differentiability of real-valued functions of two variables. Taylor's theorem for functions of two variables. Double and triple integrals. Dirichlet's integrals.
इकाई-2	दो चरों के फलनों की सीमा एवं सांतत्य, आंशिक अवकलन की अवधारणा, समघात फलनों पर आयरलर का प्रमेय, जेकोबियन, दो चरों के वास्तविक मान फलनों के आंशिक अवकलज एवं

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	अवकलनीयता, दो चरों के फलनों के लिए टेलर का प्रमेय, द्वि-एवं त्रि-समाकलन, डिरिक्ले का समाकल।
Unit-3	Linear Differential equations and equations reducible to the linear form, Exact differential equation, First order and higher degree equations Solvable for x, y and p, Clairaut's form and singular solutions, Linear differential equations with constant coefficients.
इकाई-3	रैखिक अवकल समीकरण, रैखिक समीकरणों में रूपांतरणीय समीकरण, यथातथ अवकल समीकरण, x, y और p में हल होने वाले प्रथम कोटि एवं उच्चघात के समीकरण, क्लारैट फॉर्म एवं विचित्र हल, अचर गुणांकों के रैखिक अवकल समीकरण।
Unit-4	Homogenous linear ordinary differential equations, linear differential equations of second order, Transformation of the equation by changing the dependent variable and the independent variable, Method of variation of parameters, Ordinary simultaneous differential equations.
इकाई-4	समघात रैखिक अवकल समीकरण, द्विघात रैखिक अवकल समीकरण, परतंत्र एवं स्वतंत्र चरों को बदल कर समीकरण का रूपांतरण। प्राचल विचरण की विधि, साधारण युगपद अवकल समीकरण।
Unit-5	Vector differentiation, Gradient, Divergence and Curl, Vector integration, Theorem of Gauss (without proof) and problems based on it. Theorem of Green (without proof) and problems based on it. Stoke's theorem (without proof) and problems based on it.
इकाई-5	सदिश अवकलन, ग्रेडियंट, डायवर्जेंस एवं कर्ल, सदिश समाकलन, गॉस की प्रमेय (बिना उपपत्ति) एवं उस पर आधारित प्रश्न, ग्रीन का प्रमेय (बिना उपपत्ति) एवं उस पर आधारित प्रश्न, स्टोक का प्रमेय (बिना उपपत्ति) एवं उस पर आधारित प्रश्न।

Texts Books :

1. Gorakh Prasad – Differential Calculus, Pothishala pvt. Ltd. Allahabad
2. Gorakh Prasad – Integral Calculus, Pothishala pvt. Ltd. Allahabad
3. D.A. Murray : Introductory Course in Differential Equations, Orient Long man, India 1967.
4. N. Saran & S.N. Nigam – Introduction to Vector Analyss, Pothishala Pvt. Ltd., Allahabad.
5. Murray R. Spiegel, Theory & problems of Advanced Calculus, Schaum's outline series, Schaum Publishing Co. New York.

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Reference Books:

1. P.K. Jain and S. K. Kaushik. An introduction of Real Analysis, S.Chand & Co. New Delhi 2000.
2. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons 1999.
3. G. F. Simmons, Differential Equations, Tata McGraw Hill, 1972.
4. E. A. Coddington, An introduction to ordinary differential equations, Prentice Hall of India, (1961).
5. H. T. H. Poggio, Elementary Treatise on Differential equations and their applications, C.B.S. Publisher and Distributors, Delhi 1985.
6. W.E. Boyce and P.C. DiPrima, Elementary Differential equations & Boundary Value problems, John Wiley 1986.
7. Murray R. Spiegel, Vector Analysis, Schaum Publishing Co. New York.
8. Shanti Narayan, A text book of Vector Calculus, S. Chand & Co., New
9. विभिन्न विधि ग्रंथ अकादमी की पुस्तकें ।

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DEVI AHILYA VISHWAVIDYALAYA, INDORE

B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

Semester : II
Subject : Physics
Title of Paper : Thermodynamics and Statistical Physics

Unit-I: Thermodynamics-I उष्मागतिकी-I [15 Lectures]

Reversible and irreversible process, Heat engines, Definition of efficiency, Carnot's ideal heat engine, Carnot's cycle, Effective way to increase efficiency, Carnot's engines and refrigerator, Coefficient of performance, Second law of thermodynamics, Various statements of Second law of thermodynamics, Carnot's theorem, Clapeyron's latent-heat equation, Carnot's cycle and its applications

Steam engine, Otto engine, Petrol engine, Diesel engine.

उत्क्रमणीय एवं अनुक्रमणीय प्रक्रम, कार्नों का आदर्श चक्र, इसकी दक्षता बढ़ाने के प्रभावी तरीके, कार्नों का प्रयोग इंजिन व रेफ्रिजरेटर, दक्षता गुणांक, उष्मागतिकी का द्वितीय नियम व इसके विभिन्न कथन, कार्नों का प्रयोग, क्लेपेरॉन की गुप्त उष्मा समीकरण, कार्नों चक्र एवं उसके अनुप्रयोग।

उष्मीय इंजिन, ऑटो इंजिन, पेट्रोल इंजिन, डीजल इंजिन।

Unit II: Thermodynamics-II उष्मागतिकी-II [15 Lectures]

Concept of entropy, Change in entropy in adiabatic process, Change in entropy in reversible cycle, Principle of increase of entropy, Change in entropy in irreversible process.

T-S diagram, Physical significance of Entropy, Entropy of a perfect gas, Kelvin's thermodynamic scale of temperature, The size of a degree, Zero of absolute scale, Identity of a perfect gas scale and absolute scale.

Third law of thermodynamics, Zero point energy, Negative temperatures (not possible), Heat death of the universe.

Relation between thermodynamic variables (Maxwell's relations).

एन्ट्रॉपी की संकल्पना, रुद्धोष्म प्रक्रम में एन्ट्रॉपी का परिवर्तन, चक्रीय प्रक्रम में एन्ट्रॉपी का परिवर्तन, एन्ट्रॉपी के वृद्धि का सिद्धांत, उत्क्रमणीय व अनुत्क्रमणीय प्रक्रम में एन्ट्रॉपी का परिवर्तन।

T-S आरेख, एन्ट्रॉपी का भौतिक महत्व, आदर्श गैस की एन्ट्रॉपी, केल्विन का उष्मागतिक ताप पैमाना, परम पैमाने का शून्य ताप, आदर्श गैस व परम ताप पैमाने में साम्यता।

उष्मागतिकी का तृतीय नियम, शून्य बिन्दू उर्जा, ऋणात्मक तापक्रम (सम्भव नहीं), ब्रह्माण्ड की उष्मीय सम्पत्ति।

उष्मागतिकी चरों में संबंध (मेक्सवेल के समीकरण)।

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DEVI AHILYA VISHWAVIDYALAYA, INDORE

B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

Unit-III: Statistical Physics-I सांख्यिकीय भौतिकी-I

[15 Lectures]

Description of a system: Significance of statistical approach, Particle-states, System-states, Microstates and Macro-states of a system, Equilibrium states, Fluctuations, Classical & Statistical Probability, The equi-probability postulate, Statistical ensemble, Number of states accessible to a system, Phase space.

Micro Canonical Ensemble, Canonical Ensemble, Helmholtz free energy, Enthalpy, First law of thermodynamics, Gibbs free energy, Grand Canonical Ensemble.

निकाय का वर्णन सांख्यिकीय अवधारणा का महत्व, कण की अवस्थाएँ, निकाय की सूक्ष्म एवं स्थूल अवस्थाएँ, आणविक अवस्थाएँ, विचलन, चिरसम्मत व सांख्यिकी प्रायिकता, पूर्ण प्रायिकता सिद्धान्त, सांख्यिकी एन्सेम्बल विभिन्न निकाय के लिये अभिगम्य अवस्थाएँ, कला आकाश।

माइक्रो कैनोनीकल एन्सेम्बल, कैनोनीकल एन्सेम्बल, हेल्मोल्टज मुक्त उर्जा, एन्थलपी, ऊष्मागतिकी का प्रथम नियम, गिब्स मुक्त उर्जा, ग्रेंड कैनोनीकल एन्सेम्बल.

Unit-IV: Statistical Physics-II सांख्यिकीय भौतिकी-II

[15 Lectures]

Statistical Mechanics: Phase space. The probability of a distribution, The most probable distribution and its narrowing with increase in number of particles, Maxwell-Boltzmann statistics, Molecular speeds, Distribution and mean, r.m.s. and most probable velocity, Constraints of accessible and inaccessible states.

Quantum Statistics: Partition Function, Relation between Partition Function and Entropy, Bose-Einstein statistics, Black-body radiation, The Rayleigh-Jeans formula, The Planck radiation formula, Fermi-Dirac statistics, Comparison of results, Concept of Phase transitions.

सांख्यिकी यांत्रिकी: कला आकाश, वितरण की प्रायिकता, अधिकतम संभाव्य वितरण व इसका कणों की संख्या बढ़ने पर संकुचन, मैक्सवेल बोल्टजमैन सांख्यिकी, आणविक चाल का वितरण, औसत चाल, र्ज-माध्य-मूल चाल और अधिकतम प्रसम्भाव्य वेग, प्रतिबंध, अभिगम्य एवं अनभिगम्य अवस्थाओं के प्रतिबंध।

क्वांटम सांख्यिकी: पार्टिशन फलन, एंटापी व पार्टिशन फलन में संबंध, बोस आइन्सटीन सांख्यिकी, कृष्ण चिन्ह विकिरण, रेले जीन्स सूत्र, प्लांक विकिरण सूत्र, फर्मी-डिराक सांख्यिकी, परिणामों की तुलना, फेस संक्रमण की संकल्पना।

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DEVI AHILYA VISHWAVIDYALAYA, INDORE

B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

Unit-V: The great Contributions of Physicists (भौतिकविदों का जीवन परिचय व उनका योगदान) [15 Lectures]

S.N. Bose, M.P. Saha, Maxwell, Clausius, Boltzmann, Joule, Wien, Einstein, Planck, Bohr, Heisenberg, Fermi, Dirac, Max Born, Bardeen.

Useful links for Unit-V:

1. http://en.wikipedia.org/wiki/History_of_Physics

2. http://en.wikipedia.org/wiki/Nobel_Prizes_in_Physics

प्रसंगिक विषय: रमण साहा, मैक्सवेल, क्लासियस, बोल्टजमैन, जूल, वीन, आइन्सटीन, प्लांक, बोहर, हाइजेनबर्ग, फेर्मी, डिराक, मैक्सबॉर्न, बार्डीन।

Text and Reference Books:

1. Heat and Thermodynamics: Mark W. Zemansky, Richard H. Dittman, Seventh Edition, McGraw-Hill International Editions.
2. Thermal Physics (Heat & Thermodynamics): A.B. Gupta, H.P. Roy, Books and Allied (P) Ltd, Calcutta.
3. Heat and Thermodynamics: Brijlal and N. Subrahmanyam, S. Chand & Company Ltd, New Delhi.
4. Thermal and Statistical Physics: K.M. Jain, South Asian Publication.
5. Concept of Physics: H.C. Verma, Bharati Bhavan Publishers.

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DEVI AHILYA VISHWAVIDYALAYA, INDORE

B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

Semester II
Subject Physics

List of Practicals

For Regular Students

Practical	Sessional	Viva	Total
25	10	15	50

For Ex-Student

Practical	Sessional	Viva	Total
35	00	15	50

- To study conversion of mechanical energy into heat using Calender & Barne's method.
- To determine heating efficiency of electrical Kettle with various voltages.
- To determine heating temperature coefficient of resistance using platinum resistance thermometer.
- To determine thermo electromotive force by a thermocouple method.
- To determine heating efficiency of electrical Kettle with various voltages.
- To determine heat conductivity of bad conductors of different geometry by Lee's method.
- To verify Newton's Laws of cooling.
- To determine specific heat of Coefficient of thermal conductivity by Searl's method.
- To determine specific heat of a liquid.
- To compare Maxwell-Boltzmann, Bose Einstein and Fermi-Dirac Distribution function vs temperature using M.S. Excel / C++.
- To plot equation of state and Vander-wall equation with temperature using M.S. Excel / C++.

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DEVI AHILYA VISHWAVIDYALAYA, INDORE

B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

Class	बी.एस.सी. बी.एड	
Semester	II	
Subject	(English)	Chemistry
	(हिन्दी)	रसायन शास्त्र
Paper		

बी.एस.सी. स्नातक कक्षाओं के लिए पाठ्यक्रम
केन्द्रीय अध्ययन मंडल द्वारा अनुशंसित तथा म.प्र. के राज्यपाल द्वारा अनुमोदित
Session / सत्र - 2018-19

Unit	Syllabus	Periods
	<p>Chemical Kinetics: Chemical Kinetics and its scope, rate of a reaction, factors influencing the rate of a reaction - concentration, temperature, pressure, solvent, light and catalyst. Dependence of rate on concentration, mathematical characteristics of simple chemical reactions-zero order, first order, second and pseudo order, half life and mean life. Determination of the order of reaction-differential method, integration method, method of half life period and isolation method. Study of chemical kinetics by polarimetry and spectrophotometry.</p> <p>Theories of Chemical Kinetics: effect of temperature on rate of reaction, Arrhenius equation, concept of activation energy. Simple collision theory, transition state theory (equilibrium hypothesis).</p>	18
UNIT I	<p>रासायनिक बलगतिकी : रासायनिक बलगतिकी एवं इसका कार्यक्षेत्र, अभिक्रिया की दर, अभिक्रिया दर को प्रभावित करने वाले कारक-सान्द्रण, ताप, दाब, विलायक, प्रकाश एवं उत्प्रेरक, अभिक्रिया दर की सान्द्रण पर निर्भरता, सरल रासायनिक अभिक्रियाओं के गणितीय अभिलक्षण-शून्य कोटि, प्रथम कोटि, द्वितीय कोटि तथा उद्म कोटि अर्ध आयु काल एवं माध्य काल, अभिक्रिया की कोटि का निर्धारण अवकलन विधि, समाकलन विधि, अर्ध आयु काल विधि, विलगित विधि। रासायनिक बलगतिकी का पोलरीमापी तथा स्पेक्ट्रोफोटोमिती विधियों द्वारा अध्ययन।</p> <p>रासायनिक बलगतिकी के सिद्धांत- रासायनिक अभिक्रिया दर पर ताप का प्रभाव, आरहीनियस समीकरण, सक्रियण ऊर्जा की अवधारणा, सरल संघट्ट सिद्धांत, संक्रमण अवस्था सिद्धांत (साम्य परिकल्पना)।</p>	Lectures

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<p>UNIT II</p>	<p>(English)</p>	<p>A. Thermodynamics - Definition of thermodynamic terms: System, surrounding, Types of systems, intensive and extensive properties State and path functions and their differential. Thermodynamic process, Concept of heat and work. B. Molecular Orbital Theory: homonuclear and heteronuclear (CO and NO) diatomic molecules, Multicenter bonding in electron deficient molecules, bond strength and bond energy, Calculation of percentage ionic character from dipole moment and electronegativity difference. C. Ionic Solids: semiconductors, lattice energy and Born-Haber cycle, solvation energy and solubility of ionic solids, polarizing power and polarizability of ions, Fajan's rule, Metallic bond, free electron, Valence bond and Band theories.</p>	<p>18 Lectures</p>
	<p>(हिन्दी)</p>	<p>अ. ऊष्मागतिकी - ऊष्मागतिकी में प्रयुक्त होने वाले विभिन्न पदों की परिभाषाएं, ऊष्मागतिकी तंत्र, घिराव, तंत्र के प्रकार, विस्तीर्ण एवं गहन गुण, अवस्था तथा पथ फलन एवं उनके अवकल, ऊष्मागतिकी प्रक्रम, ऊष्मा एवं कार्य की अवधारणा। ब. आणविक कक्षक सिद्धांत - समनाभिकीय और विषम नाभिकीय (CO तथा NO) द्विपरमाणवीय अणुओं के लिए, इलेक्ट्रॉन अल्प अणुओं में बहुकेन्द्रीय बंध, बंध प्रबलता और बंध ऊर्जा, द्विध्रुव आघूर्ण और विद्युत ऋणात्मकता अंतर से आयनिक गुण प्रतिशतता की गणना। स. आयनिक ढोस - अर्धचालक, जालक ऊर्जा एवं बोन - हेबर चक्र, विलायकन ऊर्जा और आयनिक ढोसों की विलेयता, आयनों की ध्रुवण क्षमता और ध्रुवणता। फजान के नियम धात्विक बंध, मुक्त इलेक्ट्रॉन, संयोजकता बंध और बैंड सिद्धांत।</p>	
<p>UNIT III</p>	<p>(English)</p>	<p>A. Acids and Bases- Arrhenius, Bronsted-Lowry, Solvent system Lewis Concepts. B. Chromatographic Techniques: Definition, classifications and principle. Separation of inorganic ions, amino acids and carbohydrates (by paper) chromatography and TLC methods).</p>	<p>18 Lectures</p>
<p>UNIT IV</p>	<p>(English)</p>	<p>Alkanes: Methods of preparation (with special reference to Wurtz, Kolbe, Corey-House reactions and decarboxylation of carboxylic acids). Physical properties and chemical reactions of alkanes. Mechanism of free radical halogenation of alkanes. Cycloalkanes : methods of preparations, chemical reactions, Baeyer's strain theory and its limitations. Ring strain in cyclopropane and cyclobutanes. Theory of strainless ring.</p>	<p>18 Lectures</p>

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	(हिंदी)	<p>एल्केन्स : बनाने की विधियाँ (विशेष संदर्भ - वुर्टज़, कोल्बे, कोरे-हाउस अभिक्रिया, कार्बोक्सिलिक अम्लों के डिकारबोक्सिलिकरण के विशेष संदर्भ में) एल्केन्स के भौतिक गुण एवं रासायनिक अभिक्रियाएँ, मुक्त मूलक हैलोजनीकरण की क्रियाविधि। साइक्लो एल्केन : बनाने की विधियाँ, रासायनिक अभिक्रियाएँ, बेयर का तनाव सिद्धांत एवं उसकी सीमाएँ, साइक्लोप्रोपेन एवं साइक्लोब्यूटेन में चक्र तनाव, तनावरहित चक्र का सिद्धांत।</p>
UNIT	(हिंदी)	<p>Dienes: Methods of formation, classification of dienes, isolated, conjugated and cumulated dienes. Butadiene: methods of formation, polymerization. Chemical reactions - 1, 2 and 1, 4 addition. Diels-Alder reaction. Alkynes: Methods of formation. Chemical reactions of alkynes. Acidity of alkynes. Mechanism of electrophilic and nucleophilic addition reactions, hydroboration, oxidation and polymerization. Alkyl Halides: Nomenclature and classification of alkyl halides, methods of formation, chemical reaction; mechanism of nucleophilic substitution reaction of alkyl halides, S_N^1 and S_N^2 reaction with energy profile diagrams.</p>
	(हिंदी)	<p>डाईन्स : बनाने की विधियाँ, डाईन्स का वर्गीकरण, आइसॉलेटेड, कॉन्जुगेटेड और क्यूमुलेटेड डाईन्स, ब्यूटाडाइन: बनाने की विधियाँ, बहुलीकरण। रासायनिक अभिक्रियाएँ-1,2 एवं 1,4 योगात्मक अभिक्रियाएँ, डील्सएल्डर अभिक्रिया। एल्काइन्स : बनाने की विधियाँ, एल्काइन्स की रासायनिक अभिक्रियाएँ, एल्काइनस की अम्लीयता, इलेक्ट्रॉन स्नेही एवं नाभिकीय स्नेही योगात्मक अभिक्रिया की क्रिया विधि, हाइड्रोबोरीकरण, ऑक्सीकरण एवं बहुलीकरण। एल्किल हैलाइड्स : एल्किल हैलाइड्स का नामकरण एवं वर्गीकरण, बनाने की विधियाँ, रासायनिक अभिक्रियाएँ, एल्किल हैलाइड्स की नाभिकीय स्नेही प्रतिस्थापन अभिक्रियाओं की क्रियाविधि। S_N^1 एवं S_N^2 अभिक्रियाएँ ऊर्जा प्रोफाइल चित्र सहित।</p>

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DEVI AHILYA VISHWAVIDYALAYA, INDORE

B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

Recommended Books	<p>Physical Chemistry-Puri, Sharma and Pathania, Vikas Publications, New Delhi</p> <p>Physical Chemistry G.M. Barrow, International Student Edition, McGraw Hill.</p> <p>The Elements of Physical Chemistry, P.W. Atkins, Oxford University Press</p> <p>Physical Chemistry, R.A. Alberty, Wiley Eastern Ltd.</p> <p>Physical Chemistry Through problems, S.K. Dogra and S. Dogra, Wiley Eastern</p> <p>Organic Chemistry, Morrison and Boyd, Prentice Hall.</p> <p>Organic Chemistry, I.G. Wade Jr, Prentice Hall</p> <p>Fundamentals of Organic Chemistry Solomons, John Wiley.</p> <p>Organic Chemistry, Vol. I, II, III, S.M. Mukherji, S.P. Singh and R.P. Kapoor.</p> <p>Organic Chemistry, E.A. Carey, McGraw-Hill Inc.</p> <p>Introduction to Organic Chemistry, Streitwieser, Heathcock and Kosover, Macmillan</p> <p> Vogel's Qualitative & quantitative Analysis Vol. 1, 2, 3, ELBS.</p> <p>Advanced Organic chemistry, I. L. Finar, ELBS.</p> <p>Basic Concepts of Analytical chemistry, S M Khopker, New Age International Publishers.</p> <p>Analytical Chemistry, R.M. Verma, CBS Publication.</p> <p>Analytical Chemistry, Skoog & West, Wiley International.</p> <p>Essentials of Physical Chemistry, B.S. Bahl, Arun Bahl & G.D. Tuli, S. Chand & Company Ltd.</p> <p>Atomic structure and Molecular spectroscopy, Manas Chandra, New Age International Publishers.</p> <p>Molecular Spectroscopy, Sukumar, MJP Publishers.</p> <p>Organic Chemistry, Mac Murrey, Pearson Education.</p> <p>Inorganic Chemistry - J.D. Lee, John Wiley</p> <p>Inorganic Chemistry - Cotton and Wilkinson, John Wiley</p> <p>Inorganic Chemistry - Huheey, Harper Collins, Pub. USA</p> <p>Inorganic Polymer - G.R. Chhatwal, Himalaya Pub. House</p> <p>51 मध्य प्रदेश हिन्दी ग्रन्थ अकादमी भोपाल द्वारा प्रकाशित रसायन विज्ञान की पाठ्यपुस्तक।</p> <p>52 मध्य प्रदेश हिन्दी ग्रन्थ अकादमी भोपाल द्वारा प्रकाशित प्रायोगिक रसायन की पाठ्यपुस्तक।</p>
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DEVI AHILYA VISHWAVIDYALAYA, INDORE

B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

बी.एस.सी. बी.एड. Semester II

Subject : Chemistry

Paper : Practical

Duration of practicals during the entire semester : 90 hours
Duration of practical during the semester examination : 4 hours

Inorganic Chemistry

Inorganic mixture analysis
Mixture Analysis for 2 Cations and 2 Anions 8 Marks

Separation of cations by paper chromatography. 4 Marks

Physical Chemistry (Any one) 12 Marks

1. To determine the velocity constant (specific reaction rate) of hydrolysis of methyl acetate / ethyl acetate catalyzed by hydrogen ions at room temperature.
2. To study the effect of acid strength on the hydrolysis of an ester.
3. To compare the strength of HCl and H₂SO₄ by studying the kinetics of hydrolysis of ester.
4. Kinetic studies of decomposition of iodide by H₂O₂. (study of iodine clock reaction)

Organic Chemistry : (12 marks)

1. Detection of 2 elements (N, S and halogens) in same organic compound. 6 marks
2. Identification of 2 functional groups in multifunctional organic compound 6 marks

Viva : 6 marks

Records : 8 marks

K. Rajeshwar

A. Aggarwal

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DEVI AHILYA VISHWAVIDYALAYA, INDORE

B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

बी.एस.सी. बी.एड. Semester II

Subject : रसायन शास्त्र

Paper Title : प्रायोगिक रसायन

पूर्ण सेमेस्टर हेतु प्रायोगिक कार्य अवधि कुल
सेमेस्टर परीक्षा हेतु अवधि

कुल अंक - 50
90 घंटे
4 घंटे

अकार्बनिक रसायन

मिश्रण निरीक्षण 2 ऋणात्मक एवं 2 धनात्मक मूलकों का परीक्षण

8 अंक

पेपर क्रोमोसोफो द्वारा केटायन का पृथक्करण

4 अंक

भौतिक रसायन (कोई एक)

12 अंक

1. मिथाइल इथाइल एसिटेट का हाइड्रोजन आयन उत्प्रेरण से जल अपघटन क्रिया का निर्दिष्ट किया दर कमरे के तापमान पर ज्ञात करना।
2. एस्टर को जल अपघटन पर अम्ल की अम्लीयता के प्रभाव का अध्ययन करना।
3. एस्टर को जल अपघटन गतिकी से fi fi एवं fi की सांद्रता की तुलना।
4. हायोडाइड का fi द्वारा विघटन क्रिया की क्रियादर का गतिकी से अध्ययन।
(आयोडीन क्लॉक क्रिया का अध्ययन)

कार्बनिक रसायन

12 अंक

तत्वों का परीक्षण दो तत्व (नाइट्रोजन सल्फर एवं हेलोजन) एक ही कार्बनिक यौगिक में -

6 अंक

दो क्रियात्मक समूहों का परीक्षण एक ही बहुक्रियात्मक समूहवाले कार्बनिक यौगिक में

6 अंक

मौखिकी 06 अंक
रिकार्ड 08 अंक

K. K. Jaiswal
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P. S.

FOUR YEAR INTEGRATED COURSE

Class / कक्षा	: बी.एस.सी. बी.एड.
Semester / सेमेस्टर	: II Semester
Subject / विषय	: Botany
Title of Subject Group	: DIVERSITY & SYSTEMATICS OF SEED PLANTS (Phanerogames)
विषय समूह का शीर्षक	: बीजीय पौधों की विविधता एवं वर्गीकी (फेनेरोगेम्स)

Particulars / विवरण

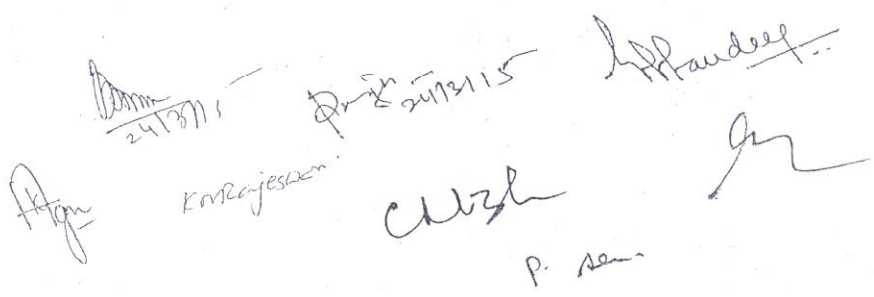
UNIT - I	<p>Gymnosperm: General characters and Classification of Gymnosperms. Heterospory and Origin of Seed Habit. Diversity of Gymnosperm: Geological Time Scale and Fossilization. Fossil Gymnosperms: <i>Lyginopteris</i> and <i>Lagenostoma</i>.</p> <p>अनावृतबीजी: अनावृतबीजियों के विशिष्ट लक्षण एवं वर्गीकरण, विषमबीजाणुकता एवं बीज स्वभाव का उद्गम, अनावृतबीजियों की विविधताएँ, भू-वैज्ञानिक समय सारणी एवं जीवाश्मीभवन, अनावृतबीजी जीवाश्म : लाइजीनोप्टेरिस एवं लेजीनोस्टोमा।</p>
UNIT - II	<p>Gymnosperm: Morphology, Anatomy Reproduction and life cycle, of <i>Cycas</i>, <i>Pinus</i> and <i>Ephedra</i>.</p> <p>अनावृतबीजी: आकारिकी, आन्तरिक संरचना, प्रजनन तथा जीवन-चक्र: साइकस, पाइनस, एवं एफिड्रा।</p>
UNIT - III	<p>Taxonomy: Origin and Evolution of Angiosperms. Terminology for plant description in semi technical language: Principles and rules of Botanical Nomenclature, Herbarium and Botanical gardens; Classification of Angiosperms: Bentham and Hooker, and Hutchinson, Modern trends in Taxonomy.</p> <p>वर्गीकी : आवृतबीजियों का उद्गम एवं विकास। पौधों के वानस्पतिक विवरण की शब्दावली वानस्पतिक नामकरण के सिद्धांत एवं नियम, हरबेरियम एवं वानस्पतिक उद्यान; आवृतबीजियों का वर्गीकरण: बेन्थम तथा हुकर एवं हचिन्सन, वर्गीकी में आधुनिक प्रवृत्तियाँ।</p>
UNIT - IV	<p>Taxonomy: Diagnostic characteristics and Economic Importance of Families - Ranunculaceae, Brassicaceae, Malvaceae, Rutaceae, Fabaceae, and Apiaceae.</p> <p>वर्गीकी : रेननकुलेसी, ब्रेसीकेसी, मालवेसी, रुटेसी, फेबेसी एवं एपिएसी कुलों के विशिष्ट लक्षण एवं आर्थिक महत्व।</p>

K. Rajeshwar
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UNIT - V	<p>Taxonomy: Diagnostic characteristics & Economic Importance of Families – Asteraceae, Asclepiadaceae, Solanaceae, Lamiaceae, Euphorbiaceae, Liliaceae and Poaceae.</p> <p>वर्गीकी : ऐस्टेरेसी ऐस्कलेपिएडेसी, सोलेनेसी, लेमिएसी, यूफोरबिएसी, लिलिएसी एवं पोएसी कुलों के विशिष्ट लक्षण एवं आर्थिक महत्व</p>
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SUGGESTED READINGS:-

- Aggarwal, S.B. 2007. Unified Botany, Shivalal Agarwal & Company Indore.
- Bhatnagar, S. P. and Moitra 1996. Gymnosperms. New Age International Limited, New Delhi.
- Davis, P.H. and Heywood, V.H. 1963, Principles of Angiosperm taxonomy. Oliver and Boyd, London.
- Gangulee, H. C. & Kar, A. K. 2006. College Botany Voll.III, New Central Book Agency (P) Ltd. Kolkata, 700009.
- Heywood, V.H. and Moore, D.M. (eds) 1984. Current concepts in plant taxonomy. Academic press London.
- Jeffrey, C. 1982. An Introduction of plant taxonomy. Cambridge University Press Cambridge, London.
- Jones, S.B. Jr. and Luchsinger, A.E. 1986. Plant Systematic. Mc Graw Hill Book Co. New York.
- Kaul, M.P. 2003. Modern Textbook of Botany, Prakash Publication Muzaffar Nagar U.P.
- Mukherjee, S.K. 2006. College Botany Voll.II, New Central Book Agency (P) Ltd. Kolkata, 700009.
- Pandey, B. P. 2010. A Text book of Botany- Angiosperms, S. Chand & Company Ltd. Ramnagar, New Delhi- 110055.
- Radford, A.E. 1986. Fundamentals of Plant Systematics, Happer and Raw, New York.
- Saxena and Sarabhai. 1989. Text book of Botany. Rastogi Publication Meerut.
- Singh, G. 1999. Plant Systematics : Theory and Practice. Oxford and IBH Pvt. Ltd. New Delhi.
- Vasishtha, P.C. 2005. Botany for degree students Voll. V, Gymnosperms. S. Chand & Company Ltd. Ramnagar, New Delhi- 110055.



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Objectives

Practical

- i) To develop the skills of section cutting and double staining of vascular plants.
- ii) To familiarize the students with technical terms and methods of describing the plant.
- iii) To impart the skills for identification of plant and assigning to its family.
- iv) To provide the field experiences for identification of different plants of the families given in the syllabus.

Scheme of Practical Examination Semester II

	Marks- 50
1. General terms	10
Exercises based on Morphological and Anatomical study of <i>Cycas</i> , <i>Pinus</i> , and <i>Ephedra</i> .	10
2. Anatomical terms	10
3. Technical description of common flowering plant and its identification up to family level	5
Identification of inflorescence and flower types.	5
4. Spelling (1-5)	10
5. Viva voce	5
6. Sectional	10
Total :	50

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DEVI AHILYA VISHWAVIDYALAYA, INDORE

B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

Class / कक्षा	:	बी.एस.सी. बी.एड
Semester / समेस्टर	:	II
Subject / विषय	:	Zoology (प्राणीशास्त्र)
Title of Paper / शीर्षक	:	Vertebrates & Evolution

Unit-1

1. Origin of Chordates Classification of phylum Chordata upto orders according to Parker and Haswell (Latest edition).
2. Hemichordata - External features and affinities of Balanoglossus.
3. Cephalochordata - Type study of Herdmania.
4. Cephalochordata - Type study of Amphioxus. Affinities of Amphioxus.

Unit-2

1. Comparison between Petromyzon and Myxine.
2. Comparative account of integuments
3. Comparative account of limb bones and girdles of vertebrates (Amphibia, Reptiles, Birds and Mammalia).
4. Comparative account of digestive system.
5. Comparative account of respiratory system.

Unit-3

1. Comparative account of aortic arches and heart.
2. Comparative account of brain
3. Myelination in mammals.

Unit-4

1. Origin of life- modern concepts only.
Lamarckism, Darwinism.
2. Modern synthetic theories: Variations, Mutation, Isolation & speciation.
3. Adaptation and mimicry
4. Micro, macro evolution and mega evolution.

Unit-5

1. Fossils, methods of fossilization, determination of age of fossils.
2. Study of extinct forms: Dinosaurs and Archaeopteryx.
3. Zoogeographical distribution.
4. Evolution of man.
5. Geological time scale and Insular fauna.

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DEVI AHILYA VISHWAVIDYALAYA, INDORE

B.Sc.B.Ed.

FOUR YEAR INTEGRATED COURSE

Class / कक्षा :
Semester / समेस्टर II :
Subject / विषय :

बी.एस.सी. बी.एड
Practical
Zoology (प्राणीशास्त्र)

Practicles

1. Major and minor dissection of commercially available species of local fishes/ rat (Efforts may be done to use computer simulation technique).
2. Study of museum specimens (Vertebrates)
3. Study of specimens of evolutionary importance viz living fossils, connecting links, extinct animals, fossils: Limulus, Triloberia, Dianosaurs, Asiatic Chital, Archeopteryx, Peripatus, etc.
4. Osteology :Limb bones and girdle bones.
5. Study of Geological time scale chart.
6. Study of Histological Slides (Vertebrates).

Distribution of Marks

Time 3 Hours

Maximum Marks: 50

	Marks Allotted
1. Major dissection	08
2. Minor dissection	04
3. Spotting	16
4 Identification and comments upon bones (any two)	04
5. One spot showing evolution/ Exercise	04
5. Mounting	04
6. Viva -voce	05
7. Record	05
	Total 50

Pr. In-charge

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P. An.

Approved

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