

B.Sc. B.Ed. First Year Integrated Course

Academic Session 2024-25

TEACHING AND EXAMINATION SCHEME

Subject/Paper	Period/Week		Exam. Hours	Theory Paper	Summative Test
	L	P			
MATHEMATICS					
Paper I	3	-	3	60	15
Paper II	3	-	3	60	15



Professor & Head
Department of Mathematics & Statistics
JNV University, Jodhpur

B.Sc. B.Ed. Part I Examination 2025
Mathematics

Paper I : Algebra and Co-ordinate Geometry of Two Dimensions.
Paper II : Calculus

Exam. Hours: 03:00

Max. Marks: 60

Paper I
Algebra and Co-ordinate Geometry of Two Dimensions

Note: Each theory paper is divided in three parts i.e., Section – A, Section – B and Section – C

Section A will consist of 10 compulsory questions. There will be two questions from each unit and answer (30 words). Each question carries 1 mark.

Section B will consist of 10 questions. Two questions from each unit and the examinee will answer (250 words) one question from each Unit. Each question carries 4 marks.

Section C will consist of 5 questions, one from each unit. The examinee will answer any 03 questions (with answer limit of 500 words). Each question carries 10 marks.

Unit1: Unit1: The characteristic equation of a matrix, Eigen values and Eigen vectors, Cayley-Hamilton theorem and its usage in finding the inverse of a matrix. **Rank of Matrix**, Inequalities. Continued fractions.

Unit 2: Relations between the roots and coefficients of general polynomial equations in one variable, Symmetric functions of roots, Transformation of equations. Descarte's rule of signs. Solution of cubic equations (Cardon's method). Biquadratic equations (Ferrari's Method).

Unit 3: Infinite series. Convergent series, tests for convergence of a series, comparison test, D'Alembert's Ratio test, Cauchy's root test, Logarithmic Ratio Test. Raabe's test, De Morgen and Bertrand's test, Cauchy's condensation test, Gauss's test. Alternating series, Leibnitz test (Derivation of above tests not required).

Unit 4 : Polar equation of a conic, polar equations of tangent, normal, asymptotes, chord of contact, auxiliary circle, director circle of a conic and related problems.

Unit 5 : General equation of second degree. Tracing of conics (Cartesian coordinates).

SUGGESTED BOOKS

M. Ray : A Text Book of Higher Algebra, S.Chand & Co., New Delhi
Bansal, Bhargva, Agarwal : Algebra (Hindi Ed.), Jaipur Publishing House, Jaipur.
Bansal, Bhargava : 2-D Coordinate Geometry (HindiEd) Jaipur Publishing House, Jaipur.
Sharma, Varshney : Coordinate Geometry, Pragati Prakashan, Meerut.
Gokhroo, Saini, Oza : 2-D Geometry (Hindi Ed.), Navkar Publication, Ajmer.



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Paper – II
Calculus

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Section C will consist of 5 questions, one from each unit. The examinee will answer any 03 questions (with answer limit of 500 words). Each question carries 10 marks.

Unit 1: Polar Co-ordinates. Angle between radius vector and the tangent. Angle between curves in polar form. Length of polar subtangent and polar subnormal, Pedal equation of a curve, Derivatives of an arc, curvature, various formulae, Centre of curvature and chord of curvature and related problems.

Unit 2: Partial differentiation, Euler's theorem on homogeneous functions, chain rule of partial differentiation, Maxima and Minima of functions of two independent variables and of three variables connected by a relation, Lagrange's Method of undetermined multipliers.

Unit 3: Asymptotes, double points, curve tracing, Envelopes and evolutes.

Unit 4: Theory of Beta and Gamma functions. Rectification. Volume and Surfaces of solids of revolution. Differentiation and integration under the sign of integration.

Unit 5: Evaluation of double and triple integrals and their applications in finding areas and volumes. Dirichlet's integral. Change of order of integration and changing into polar co-ordinates.

SUGGESTED BOOKS

Gorakh Prasad: A Text Book of Differential Calculus; Pothishala Pvt.Ltd.Allahabad

Bansal, Bhargava and Agarwal : A Text Book of Differential Calculus II (Hindi Ed.) and Integral Calculus, Vol. II (Hindi Ed.); Jaipur Publishing House, Jaipur

Gokharoo, Saini : Differential Calculus (Hindi Ed.); Navkar Prakashan, Ajmer.

Tandon, O.P. and Sharma, K.C. : Integral Calculus; Jaipur Publishing House, Jaipur

Gupta, Juneja and Tandon : Differential Calculus (English Ed.); Ramesh Book Depot, Jaipur.

Gorakh Prasad : Integral Calculus; Pothishala Pvt.Ltd.Allahabad



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