

B. A./B. Sc. Part II Examination-2019 & onwards

21

MATHEMATICS

Teaching : 3 hours per week per theory paper

2 hours per week per batch for practical

(20 candidates in each batch)

Examination Scheme :

	Min. Pass Marks		Max. Pass Marks
Science	54		150
Arts	72		200

		Duration	Max Marks
Paper – I	Real Analysis	3 hrs	40 (Science) 53 (Arts)
Paper – II	Differential Equations	3 hrs	40 (Science) 53 (Arts)
Paper – III	Numerical Analysis and Optimization Techniques	3 hrs	40 (Science) 54 (Arts)
Practicals		2 hrs	30 (Science) 40 (Arts)

Note :-

01. Syllabus of each of the three papers is divided into FIVE units.
02. Each paper is divided into THREE sections A, B, & C.
03. Section-A : TEN short answer type questions will be set taking two questions from each unit. Each question will carry 1 mark for Science and 1.5 mark for Arts. All questions will be compulsory.
04. Section-B : TEN questions will be set taking two questions from each unit. Each question will carry 3 marks for Science and 4 marks for Arts. Student has to attempt ONE question from each unit.

Only One Session
2020-21

अकादमिक प्रभारी
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भरतपुर (राज.)

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5. Section-C : FIVE questions will be set taking one questions from each unit. Each question will carry 5 marks for Science in all three papers and 6 marks for Arts in paper I & II and 6,33marks in paper III. Student has to attempt ANY THREE Questions.
06. Common paper will set for Faculty of Science and Faculty of Social Science. Each candidate is required to appear in the practical examination to be conducted by internal and external examiners. External examiner will be appointed by the University and internal examiner will be appointed by the principal in consultation with the head, department of Mathematics in the college.
08. An internal/external examiner can conduct practical examination of not more than 100 (one hundred) candidates(20 candidates in each batch).
09. Each candidate has to pass in theory and practical examinations separately.

Paper – I Real Analysis

Teaching : 3 Hours per Week

Duration of Examination : 3 Hours

Max. Marks 40 (Science)

53 (Arts)


Note: This paper is divided into THREE Sections A, B, & C. Section-A consists TEN short answer type questions. Each question is of 1 mark for Science and 1.5 mark for Arts. All questions are compulsory. Section-B consists TEN questions taking two questions from each unit. Each question will carry 3 marks for Science and 4 marks for Arts. Student has to attempt FIVE questions selecting ONE question from each unit. Section-C consists FIVE questions taking one questions from each unit. Each question will carry 5 marks for Science and 6 marks for Arts. Student has to attempt ANY THREE questions

Unit – I : The set of real numbers as a complete ordered field, Incompleteness of \mathbb{Q} , Archimedean and dense properties of \mathbb{R} , Absolute value of real numbers, Intervals, Limit point of a set, Bolzano-Weierstrass theorem, open and closed sets,

Unit – II : Real sequences, Bounded and unbounded sequences, Monotonic sequence, Limit point and limit of a sequence, Convergence of sequences, Necessary and sufficient condition for convergence,

Continuity of a function, Cauchy's and Heine's definition of continuity, Types of discontinuity, Properties of continuous functions on closed intervals,

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Unit – III : Homogeneous linear differential equations, Differential equations reducible to homogeneous linear differential equations. Simultaneous differential equations, Differential equations of the form $dx/P = dy/Q = dz/R$: and method of solution.

Unit – IV : Linear differential equations of second order- Solution by finding a part of complimentary function, Solution by transformation into Normal form and by changing the independent variable, Factorisation of operators.

Unit – V : Partial differential equation of first order and first degree, Lagrange's linear equations. Charpit's method. Linear partial differential equations with constant coefficient,

Paper – III Numerical Analysis and Optimization Techniques

Teaching : 3 Hours per Week

Duration of Examination : 3 Hours

Max. Marks 40 (Science)

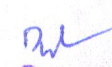
54 (Arts)

Note: This paper is divided into THREE Sections A, B, & C. Section-A consists TEN short answer type questions. Each question is of 1 mark for Science and 1.5 mark for Arts. All questions are compulsory. Section-B consists TEN questions taking two questions from each unit. Each question will carry 3 marks for Science and 4 marks for Arts. Student has to attempt FIVE questions selecting ONE question from each unit. Section-C consists FIVE questions taking one questions from each unit. Each question will carry 5 marks for Science and 6.33 marks for Arts. Student has to attempt ANY THREE questions. Students can use Non-programmable Scientific Calculator.

Unit – I : Calculus of Finite Differences- Introduction, Difference Operators, Differences of Polynomials, Factorial notation, Relation between difference and derivative, Separation of symbols. Newton-Gregory's formulae for Forward and Backward interpolation with equal intervals,

Unit – II : Central differences- Gauss's central difference interpolation formulae, Stirling and Bessel's interpolation formulae. Numerical integration – General quadrature formula, Trapezoidal rule, Simpson's one-third rule,

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