

MTHB3102T: ANALYSIS-I

Course Outcomes:	
CO1	To have the knowledge of sequences
CO2	To have the knowledge of series
CO3	To have the knowledge of integrals
CO4	To have the knowledge of Riemann integrals
CO5	To have basic properties of improper integrals

For Regular / Centre of Distance and Online Education students

Max. Marks 50

Time allowed: 3hrs.

External Marks: 35

Internal Assessment: 15

For Regular students: 6 lectures of 45 minutes / week

For Private Students: Maximum Marks: 50 (No internal assessment)

Pass percentage: 35%

INSTRUCTIONS FOR PAPER-SETTER (Regular Students)

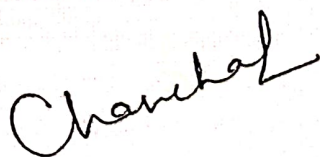
The question paper will consist of three sections A, B and C. Section A and B will have four questions each from the respective sections of the syllabus and Section C will consist of one compulsory question having eight short answer type questions covering the entire syllabus uniformly. Each question in Sections A and B will be of 6 marks and Section C will be of 16 marks.

INSTRUCTIONS FOR THE PAPER SETTER (Private Students)

The question paper will consist of three sections A, B and C. Section A and B will have four questions each from the respective sections of the syllabus and Section C will consist of one compulsory question having eight short answer type questions covering the entire syllabus uniformly. Each question in Sections A and B will be of 7.5 marks and Section C will be of 20 marks.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all selecting two questions from each of the Section A and B and compulsory question of Section C.



SECTION-A

Sequence: Definition of a sequence, Bounded and Monotonic sequences, Convergent sequence, Cauchy sequences, Cauchy's Convergence Criterion, Theorems on limits of sequences. Sub-sequence.

Infinite Series: Definition of a series, Test of convergence, Comparison test, Cauchy's integral ratio test, Raabe's test, Logarithmic test, Gauss test, Cauchy's root test, Alternating series, Leibnitz's test. Absolute convergence and conditional convergence. Weierstrass M-Test for uniform convergence of sequence of functions. Determination of Radius of convergence of power series. (All Test without proofs only applications)

SECTION-B

Riemann Integration: Partitions, Upper and lower Sums, Upper and lower integrals, Riemann integrability, Conditions of existence of Riemann integrability, Integration and differentiation, Fundamental theorem of calculus, mean value theorem of integrable calculus, integration by parts, change of variable, second mean value theorem.

Improper Integrals: Definitions, Statements of their conditions of existence. Tests for the convergence of improper integrals, Beta and Gamma functions and their convergence, Abel's and Dirichlet's tests.

BOOKS RECOMMENDED:

1. Tom.M. Apostol: *Mathematical Analysis*, Second Edition, Addison-Wesley Publishing Company, 1974.
2. W. Rudin: *Principles of Mathematical Analysis*, third edition, McGraw Hill, 2013.
3. S.C. Malik, S. Arora: *Mathematical Analysis*, New Age International Publishers. 1992.

MTHB3101T: ALGEBRA-I

Course Outcomes:	
CO1	To have the knowledge of groups and its properties
CO2	To have the knowledge of homomorphism
CO3	To have the knowledge of rings
CO4	To have the knowledge of ideals and quotient rings
CO5	To have basic properties of groups and rings

For Regular / Centre of Distance and Online Education students

Max. Marks 50

Time allowed: 3hrs.

External Marks: 35

Internal Assessment: 15

For Regular students: 6 lectures of 45 minutes / week

For Private Students: Maximum Marks: 50 (No internal assessment)

Pass percentage: 35%

INSTRUCTIONS FOR THE PAPER-SETTER

The question paper will consist of three sections A, B and C. Sections A and B will have four questions each from the respective sections of the syllabus and Section C will consist of one compulsory question having eight short answer type questions covering the entire syllabus uniformly. Each question in Sections A and B will be of 06 marks and Section C will be of 16 marks.

INSTRUCTIONS FOR THE PAPER SETTER (Private Students)

The question paper will consist of three sections A, B and C. Section A and B will have four questions each from the respective sections of the syllabus and Section C will consist of one compulsory question having eight short answer type questions covering the entire syllabus uniformly. Each question in Sections A and B will be of 7.5 marks and Section C will be of 20 marks.

INSTRUCTIONS FOR THE CANDIDATES

Candidates are required to attempt five questions in all selecting two questions from each of the Section A and B and compulsory question of Section C.

Section-A

Group: definition, examples, subgroups, counting Principle, Lagrange's theorem, Normal subgroups, Quotient groups, Homomorphisms, Fundamental theorem of homomorphism and related theorems, Cyclic Groups.

Section- B

Rings: Definition and examples of Rings, Elementary properties of Rings, Sub-rings, Homomorphism, ideals and Quotient Rings, Field of Quotient of Integral domain, division rings, Euclidean Rings, Principal ideals, examples.

Chanchal