20BSM204T					Analysis-I					
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs. / Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	1	0	4	4	25	50	25	--	--	100

COURSE OBJECTIVES

- To be able to understand the fundamental knowledge of sets, function and bounds
- To be able to understand the convergence and divergence of sequence and series
- To be able to recognize convergent, divergent, bounded, Cauchy and monotone sequences
- To be able to understand the concept of Riemann integrability and its properties

UNIT 1 THE REAL NUMBERS AND PROPERTIES **09 Hrs.**

Sets and Elements, operations on sets, functions, real valued functions, equivalence, least upper bounds.

UNIT 2 SEQUENCES **12 Hrs.**

Definition of sequence and subsequence, limit of a sequence, convergent sequences, divergent sequences, bounded sequences, monotone sequences, operations on convergent sequences, limit inferior, limit superior, Cauchy sequences.

UNIT 3 CONVERGENCE AND DIVERGENCE: SEQUENCE, INFINITE SERIES AND IMPROPER INTEGRALS **10 Hrs.**

Convergence and divergence, Series with non – negative terms, alternating series, conditional and absolute convergence, conditions for absolute convergence. Convergence and Divergence of Improper Integrals

UNIT 4 IMPROPER INTEGRALS **09 Hrs.**

Riemann integrability & integrals of bounded functions over bounded intervals, Darboux's Theorem, Equivalent definition of integrability and integrals, Conditions for integrability, Particular classes of bounded integrable functions, Properties of integrable functions, Function defined by a definite integral, Theorems of Integral Calculus (statement only)

40 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 – Identify whether the sequence and series are convergent or divergent
CO2 – Understand the properties of Riemann integrability
CO3 – Apply the acquired knowledge of convergence and divergence in practical problems
CO4 – Analyze the convergence and divergence of improper integrals
CO5 – Evaluating the problems of Riemann integration
CO6 – Develop abstract ideas in constructing rigorous mathematical proofs.

TEXT/REFERENCE BOOKS

1. W. Rudin, Principles of Mathematical Analysis, (McGraw Hill, 1976)
2. R. G. Bartle, Introduction to Real Analysis, (John Wiley and Sons, 2000)
3. T. M. Apostol, Mathematical Analysis, (Addison-Wesley Publishing Company, 1974)
4. A. J. Kosmala, Introductory Mathematical Analysis, (WCB Company , 1995)
5. W. R. Parzynski and P. W. Zipse, Introduction to Mathematical Analysis, (McGraw Hill Company, 1982)
6. H. S. Gaskill and P. P. Narayanaswami, Elements of Real Analysis, (Prentice Hall, 1988)

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100	**Exam Duration: 3 Hrs.**
Part A: 6 questions of 4 marks each	24 Marks
Part B: 6 questions of 8 marks each	48 Marks
Part C: 2 questions of 14 marks each	28 Marks