

CORE PAPER – XI - REAL ANALYSIS II

Semester	Subject Code	Category	Lecture		Theory		Practical	Credits
VI	21CM A6A	Core Paper – XI	Hrs/week	Hrs/Sem	Hrs/week	Hrs/Sem	0	4
			5	75	5	75		

COURSE OBJECTIVES:

The students will be able to

- Develop the understanding of point wise and uniform convergence of sequence and series of functions.
- Enhance the mathematical maturity and to work comfortably with concepts.

COURSE OUTCOMES:

On the successful completion of the course, the students will be able to

CO Number	CO Statement	Knowledge Level (K1-K4)
CO1	Acquire the comprehensive knowledge about Connected and Bounded sets	K2
CO2	Understand the terms Complete metric space and Compactness	K2
CO3	Prove standard theorems in Riemann integral	K3
CO4	Apply the concept of Rolle's theorem in real life	K3
CO5	Analyze the Taylor's formula with different forms of remainder	K4

Knowledge Level: K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze

MAPPING WITH PROGRAMME OUTCOMES:

Cos	PO1	PO2	PO3	PO4	PO5	PO6
CO1	S	S	S	S	S	M
CO2	M	S	S	M	S	S
CO3	S	S	S	M	S	M
CO4	S	M	S	M	M	S
CO5	S	S	S	S	M	S

S- Strong; M- Medium; L- Low

UNIT- I - CONNECTEDNESS**15 Hours**

Connected sets – Bounded sets and Totally Bounded sets.

(Chapter 6 : Section 6.1 – 6.3)

UNIT- II - COMPLETE METRIC SPACES AND COMPACTNESS**15 Hours**

Complete metric spaces - Compact metric spaces – Continuous functions on compact metric spaces – Continuity of Inverse Functions – Uniform Continuity.

(Chapter 6 : Section 6.4 – 6.8)

UNIT- III- RIEMANN INTEGRATION**15 Hours**

The Sets of measure zero - Definition of the Riemann Integral - Properties of the Riemann integral – Derivatives.

(Chapter 7 : Section 7.1 – 7.5 [omit section 7.3])

UNIT - IV– RIEMANN INTEGRATION (contd.)**15 Hours**

Rolle's Theorem and the law of the Mean – Fundamental theorem of calculus – Improper Integrals

(Chapter 7 : Section 7.6 – 7.9)

UNIT- V- SEQUENCES AND SERIES OF FUNCTIONS**15 Hours**

Taylor's Theorem: Taylor's Formula with Different Forms of Remainder – The Binomial Theorem – L'Hospital Rule.

(Chapter 8: Section 8.5 – 8.7 [omit section 8.1 – 8.4])

DISTRIBUTION OF MARKS: THEORY 80% AND PROBLEMS 20%**TEXT BOOK**

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	R .Goldberg	Methods of Real Analysis	Oxford and IBH Publishing Co, New Delhi	1970

REFERENCE BOOKS

S.NO	AUTHORS	TITLE	PUBLISHERS	YEAR OF PUBLICATION
1.	Tom M. Apostol	Mathematical Analysis	Addison-Wesley, New York	1974
2.	Bartle, R.G. and Shebert	Real Analysis	John Willey &sons Inc., New York	1976
3.	S.C.Malik and Savita Arora.	Mathematical analysis	WilleyEasternLimited,NewDelhi	1991
4.	Sanjay Arora and Bansilal	Introduction to Real Analysis	SatyaPrakasam,New Delhi	1991

WEB RESOURCES

1. <https://blogs.scientificamerican.com/roots-of-unity/what-does-compactness-really-mean/>
2. <https://mathworld.wolfram.com/Analysis.html>

TEACHING METHODOLOGY

1. Class room Teaching
2. Assignments
3. Seminars
4. Discussions
- 5 .PPT Presentations

SYLLABUS DESIGNER

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