20BSM409T					Topology					
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 understand the difference of metric Space in Real Analysis and in terms of topology.
- To impart knowledge on the conceptual understanding of connectedness and compactness in topological aspects.
- To provide sufficient knowledge of the subject which can be used by student for in their respective domains of interest.
- To enhance the knowledge of "Ti" axioms to build strong fundamentals in order to understand advanced topological results.

UNIT 1 TOPOLOGICAL SPACES **10 Hrs.**

Topological spaces, Basis and sub-basis for a topology, Discrete topology, Product topology, Subspace topology, Quotient topology, comparison of topologies.

UNIT 2 TOPOLOGY IN REAL LINE **10 Hrs.**

Neighbourhood, Cluster points, Closure and interior points of a set, Definition and examples of a door space and dense set, Continuity in a topological space and homeomorphism.

UNIT 3 CONNECTEDNESS **10 Hrs.**

Definition and examples of connected and disconnected spaces, Connectedness in R, Relative topology, Connected subspaces, Open cover.

UNIT 4 COMPACTNESS **10 Hrs.**

Compactness in R1; R2 and metric space, Properties of compact spaces, Definition and examples of T0; T1; T2 - space, Hausdorff property of a metric space.

40 Hrs.

COURSE OUTCOMES

On completion of the course, student will be able to

CO1 – Identify the necessity of studying topological problems and to explore its importance with geometry as well
CO2 – Explain the structure of different topological spaces.
CO3 – Demonstrate the use of applications of set theory in terms of topological terminologies.
CO4 – Analyze mathematical notions geometrically.
CO5 – Appraise general topological structures by using the reasoning capability and logical thinking.
CO6 – Develop an appreciation of mathematical abstraction and generalization.

TEXT/REFERENCE BOOKS

1. G.F. Simmons, Introduction to Topology and Modern Analysis, 1st edition, McGraw Hill, 1963.
2. J.R. Munkres, Topology, 2nd edition, Prentice Hall, 1999.
3. K.D. Joshi, Introduction to General Topology, 2nd edition, New Age Publications, 1999.
4. S. Naimpally and J. Peters, Topology with Applications: Topological Spaces via Near and Far, World Scientific, 2013.

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