SARVAJANIK UNIVERSITY
Sarvajanik College of Engineering and Technology
Master of Technology
Structural Engineering

M. Tech I Semester – II

Subject Name: Design of Tall Structures **Subject Code:** MTST14202

Type of course: PE-III

Prerequisite (if any): Strength of Materials, Structural Analysis, Structural Design (RC or steel), and preferably Seismic design of Structures

Rationale: The objective of this course is to make students to learn principles of stability of tall buildings, To design the tall buildings for earthquake and wind resistance. To evaluate the performance of tall structures for strength and stability

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
3	0	2	4	60	25	15	30	20	150

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests **CA2:** Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems **TEE:** Term End Examination **TEP:** Term End Practical Exam (Performance and viva on practical skills learned in course) **CA3:** Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

PE-III: Program Elective-III

Content:

Sr. No.	Content	Total Hrs	Module Weightage %
1	**Design criteria:**Design philosophy, loading, sequential loading, and materials – high performance concrete, fiber reinforced concrete, lightweight concrete, design mixes. Loading and Movement: Gravity loading: Dead and live load, methods of live load reduction, Impact, Gravity loading, Construction loads	9	21.5%
2	**Factors affecting growth:**Height and Structural form. High rise behaviour of Various structural systems – Rigid frames, braced frames, Infilled frames, shear walls, coupled shear walls, wallframes, tubular structures, cores, outrigger – braced and hybrid mega systems.	9	21.5%
3	**Chimney:**Design Factors, Stresses due to temperature, components, Platform and Safety ladders, Steel stacks, Refractory linings, Caps and foundation	8	19%
4	**Transmission line and microwave towers:**Types of loads, Tower Configuration, Analysis and Design of towers	8	19%
5	**Types of Cooling Tower**:components, design forces, analysis and design	8	19%

PE-III: Program Elective-III

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
25%	20%	25%	15%	10%	10%

Legends: R: Remembrance; **U:** Understanding; **A:** Application, **N:** Analyze and **E:** Evaluate **C:** Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

Sr no	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1.	Design of Tall Buildings	Taranath B	McGraw Hill.	1988	1st Edition
2.	Tall Chimneys: Design & Construction	S.N. Manohar	McGraw Hill.	1990	1st Edition
3.	Transmission Line Structures	Santhakumar& Murthy	McGraw Hill.	1988	1st Edition
4.	Design of Steel Structure-2	DrRamchandra and Gehlot	Scientific Publishers (INDIA)	2011	13thEdition

PE-III: Program Elective-III

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Student should have an understanding on the behavior of tall buildings subjected to lateral loading (Cognitive level- U)	**20%**
CO-2	Students should have knowledge about the fundamental principles of designing tall buildings as per the existing codes. (Cognitive level- R&U)	**20%**
CO-3	Students will be able to analyze and chose an appropriate systems for tall buildings (Cognitive level-N&U)	**20%**
CO-4	Students will be able to study the behavior of different types of tall structural systems. (Cognitive level -U&A)	**20%**
CO-5	Students should have knowledge the behavior of special types of tall structural systems. (Cognitive level- U&R)	**20%**

FOR TUTORIAL SESSION:

List of Practicals (Lab): (With analysis design and all necessary drawings)

1. Design of Tall building

2. Design of Chimney

3. Design of Microwave Tower

4. Design of Transmission Tower

5. Design of Cooling Tower

PE-III: Program Elective-III