K. K. Wagh Institute of Engineering Education & Research, Nashik

(An Autonomous Institute From A.Y. 2022-23)

WINTER-2025	
Exam Seat No.:	
Academic Year:2025-2026	Semester:III
Class:PG-II	Program:M.Tech
Branch Code:CIV	Pattern:2024
Name of Course:Analysis & Design of Earthquake Resistant Structures	Course Code:2404601A
Max. Marks:60	Duration:2.30 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains ___02__pages.
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome.

		Marks	CO
Question No. 1			
1a)	What is a response spectrum? Explain its importance. Mention three main parts	(6)	CO1
Question No. 2			
2a)	What are irregularities? Explain two horizontal and two vertical irregularities.	(6)	CO2
Question No. 3			
3a)	What is mode shape, modal mass, and modal participation factor?	(8)	CO3
	OR		
3b)	What is Time History Analysis? Explain use of ground motion.	(8)	CO3
3c)	Explain steps of Equivalent Static Method.	(8)	CO3
	OR		
3d)	What is Pushover Analysis? Draw capacity curve & explain performance point.	(8)	CO3
Question No. 4			
4a)	Why is ductile detailing important in RC beams and columns in earthquake-prone regions? Write any four simple points.	(8)	CO4
	OR		
4b)	Explain Strong Column–Weak Beam concept.	(8)	CO4
4c)	What is a beam–column joint? Explain reinforcement arrangement.	(8)	CO4
	OR		
4d)	State any four ductile detailing provisions given in IS 13920 for RC beams.	(8)	CO4
Question No. 5			
5a)	Explain hydrostatic & hydrodynamic effects with diagram.	(8)	CO5

OR

5b)	List different types of shear walls. Explain any three.	(8)	CO5
5c)	How is an elevated water tank analyzed using impulsive & convective modes?	(8)	CO5

OR

5d)	Explain the step-by-step design procedure of RC shear wall.	(8)	CO5

····· End of question paper·····