JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2025

M.Tech-II Semester (Structural Engineering)

COURSE CODE (CREDITS): 12M1WCE213   MAX. MARKS: 25

COURSE NAME: Earthquake Resistant Design of Structures

COURSE INSTRUCTORS: Mr. Chandra Pal Gautam   MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	Marks
Q1	Discuss different types of irregularities which need to be avoided in earthquake resistance building.	5
Q2	(i) What is ductile detailing and why it is needed for earthquake resistant building. (ii) Mention the ductile detailing provisions as per IS 13920:2016 for beam and column with proper diagram.	2+6 = 8
Q3	For a 3 story building having following mass M1 = M2 = M3 = 50Kg, Stiffness - K1 = K2 = K3 = 10KN\m, (i) Write mass matrix of the building (ii) Write stiffness matrix of the building (iii) Find all Eigen values using mass and stiffness matrix (iv) Find Eigen vectors corresponding to first Eigen value.	6
Q4	From data mentioned in Q3, find the (i) Modal participation factor for mode 1. (ii) Modal contribution for first mode. (iii) Mention the procedure for finding the lateral force using above data at different level of floor of the building.	6