JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

M.Tech- II[nd] Semester (Structural Engineering)

COURSE CODE (CREDITS): 12M1WCE213 (03) MAX. MARKS: 15

COURSE NAME: Earthquake Resistant Design of Structures

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

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 Plate tectonic theory and its application to justify formation of different landforms.	**3**
Q2.	Define different types of waves in an earthquake and their order to reach the desired location.	**3**
Q3.	(i) Define different earthquake terminology with neat diagram. (ii) Differentiate between Earthquake Intensity and Earthquake Magnitude.	**3**
Q4.	Find the value of base shear and lateral force at each floor having following details: 1. Building Type – 5 story RCC Frame Structure (Commercial Building) 2. Height between floor is 3m 3. Dead load and imposed load lumped at Floor : 450 Kg Roof : 300 Kg 4. Building Location: Seismic Zone – V 5. Soil below foundation : Soft Soil Consider Bare RCC frame without infill walls. $\frac{S_a}{g} = \begin{cases} \text{For rocky or hard soil sites} \begin{cases} 2.5 & 0 < T < 0.40 \text{ s} \\ \frac{1}{T} & 0.40 \text{ s} < T < 4.00 \text{ s} \\ 0.25 & T > 4.00 \text{ s} \end{cases} \\ \text{For medium stiff soil sites} \begin{cases} 2.5 & 0 < T < 0.55 \text{ s} \\ \frac{1.36}{T} & 0.55 \text{ s} < T < 4.00 \text{ s} \\ 0.34 & T > 4.00 \text{ s} \end{cases} \\ \text{For soft soil sites} \begin{cases} 2.5 & 0 < T < 0.67 \text{ s} \\ \frac{1.67}{T} & 0.67 \text{ s} < T < 4.00 \text{ s} \\ 0.42 & T > 4.00 \text{ s} \end{cases} \end{cases}$	**6**