

14/1.30

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2025

M.Tech-Ist Semester (SE)

COURSE CODE (CREDITS): 25M11CE112 (3)

MAX. MARKS: 25

COURSE NAME: Structural Dynamics

COURSE INSTRUCTORS: Mr. Chandra Pal Gautam

MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory. Calculator is allowed.

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

Q.No	Question	CO	Marks
Q1	(i) Define damping in a system. (ii) Discuss various types of damping and its effect on time period of the structure. (iii) Differentiate between critical, under critical and over critical damping with real life example. Also draw the graph of all of them in amplitude and time.	CO-2	1+2+2 = 5
Q2	Derive the general equation of motion for a system under free damped vibration.	CO-3	5
Q3	Find the damped natural period and damping of a building whose amplitude reduces from 1m to 0.2m in 5 cycles in 10 seconds.	CO-3	4
Q4	A RCC rectangular slab having length 4m, width 4m and thickness 130mm is supported by 4 circular columns having diameter 300mm and length 4m. Assume M30 grade of concrete. Find (i) Total Mass of the system (ii) Total stiffness of the system (iii) Natural frequency and time period the system (iv) Damped natural frequency and time period if the critical damping ratio is 6%.	CO-3	1+3+3+3 = 11