JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

M.Tech-I Semester (CE)

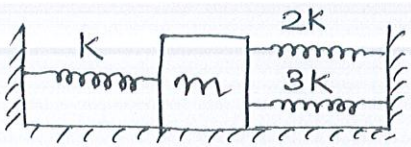
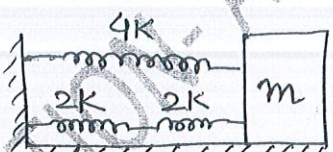
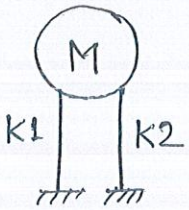
COURSE CODE (CREDITS): 25M11CE112 (3) MAX. MARKS: 15

COURSE NAME: Structural Dynamics

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	CO	Marks
Q1	(i) Find the time period of the given spring mass system.  (i)  (ii) (ii) Write the equation of displacement and velocity as a function of time for simple harmonic motion, if the particle starts from left extreme. Assume amplitude, A = 5cm and time period = 10s.	CO-1	2+2 = 4
Q2	Derive the equation of displacement, velocity and acceleration for simple harmonic motion with respect to displacement and draw the force, acceleration and velocity graph with respect to x.	CO-1	3
Q3.	(i) Find the frequency and time period of the given system where K1 = 40kN/m, K2 = 30kN/m and M = 1000kg.  (ii) Derive the general differential equation for structure under dynamic loading by using D' Alembert principle.	CO-2	2+2 = 4
Q4.	Derive the general solution for displacement equation from the differential equation of Single Degree Freedom system which is free and undamped.	CO-2	4