

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2025

M.Tech-Ist Semester (SE)

COURSE CODE (CREDITS): 25M11CE112 (3)

MAX. MARKS: 35

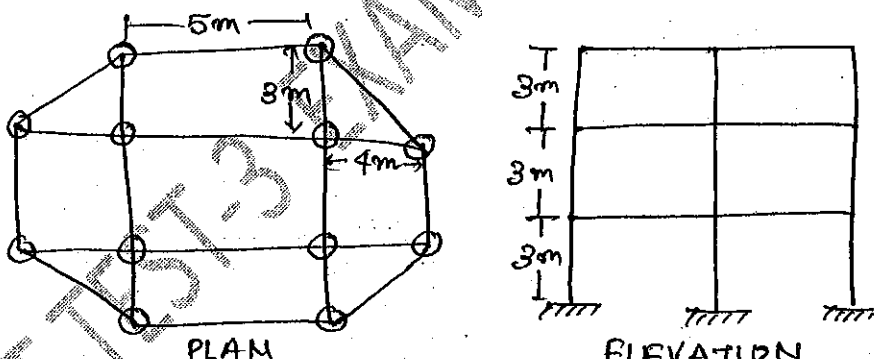
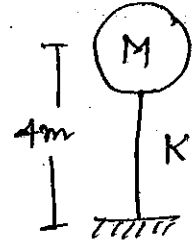
COURSE NAME: Structural Dynamics

COURSE INSTRUCTORS: Mr. Chandra Pal Gautam

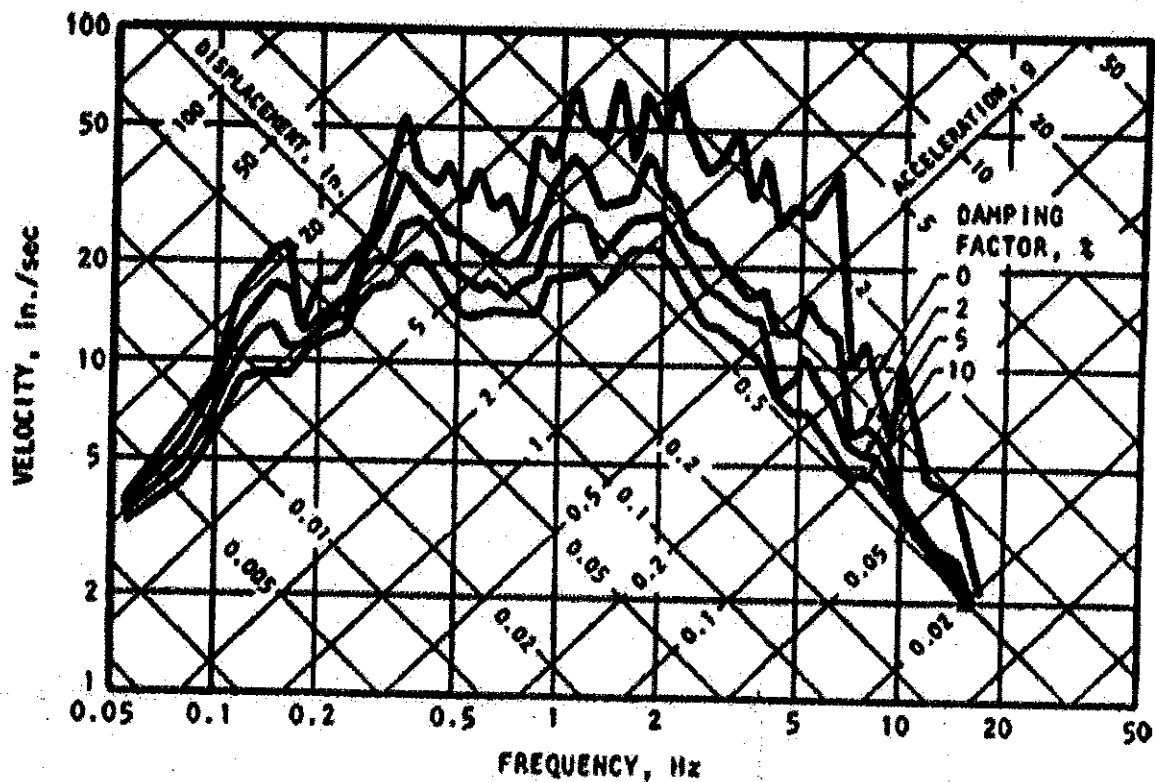
MAX. TIME: 2 Hours

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	A generator of 1.5 ton weight is attached at the free end of a cantilever concrete plank of width 1000mm, length 1m and thickness 200mm. find the static and dynamic deflection of generator running at 1500rpm. Use M25 grade of concrete.	CO-3	8
Q2	Develop the Mass Matrix for the given model of building. (i) Slab thickness = 130mm (ii) Grade of concrete = M30 (iii) Brick wall thickness (interior, exterior and parapet) = 200mm (iv) Height of parapet wall = 1m (v) Beam size = 250mm X 300mm (vi) Circular Column diameter = 400mm  PLAN ELEVATION	CO-5	10
Q3	Calculate the maximum base shear and base moment of the given SDOF body as per response spectra given in Figure - 1. Where $M = 5000\text{kg}$ and $K = 100\text{kN/m}$. 	CO-4	7

Q4	For the given data, find next 3 displacements using central difference method: (i) Mass = 5kg (ii) Damping (C) = 2% (iii) Stiffness (K) = 10N/m (iv) External force $F(t) = 20\text{KN}$ (v) Initial Displacement $u(0) = 0.5\text{m}$ (vi) Initial velocity = 0m/s (vii) time step = 0.2s	CO-5	10
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Response Spectra, El Centro Earthquake, May 18, 1940,
North-South Direction.

Figure - 1