

No. of Printed Pages : 03

Roll No.

AA-563

M. Tech. EXAMINATION, Dec. 2018

(First Semester)

(B Scheme) (Re-appear Only)

CE(SE)

CES-507

DYNAMICS OF STRUCTURE

Time : 3 Hours]

[Maximum Marks : 75

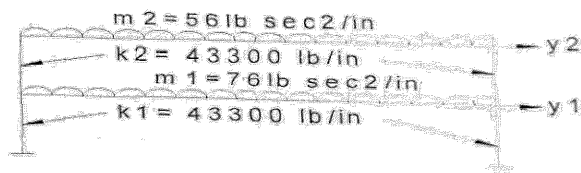
Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions. All questions carry equal marks. Assume any data if missing in the question-paper.

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P.T.O.

1. It is observed that the amplitude of free vibration of a certain structure modeled as a single degree of freedom systems, decreases from 1 to .4 in 10 cycles. What is the percentage of critical damping ? **15**
2. Derive the expression for the Damped and Undamped single degree of freedom with the help of the free body diagrams. Explain D' Alembert's principle. **15**
3. Derive the expression for the response to a loading represented by fourier series. **15**
4. By Rayleigh's method, determine the natural frequency of the two storey frame shown in figure. Assume the horizontal members are very rigid compared to the columns of the frame. **15**



5. Explain Stodola's method of determining the fundamental frequency with the help of an example. **15**
6. How you will analyze the multistory frame for ballast loading ? How dynamic analysis of the building for earthquake is done according to Indian standard ? **15**
7. The spring stiffnesses of a two-spring system are $K_1 = 55 \text{ kN/m}$ and $K_2 = 25 \text{ kN/m}$, it is subjected to tensile forces T of 30 kN. Evaluate the displacement Δ_2 , Δ_3 and internal forces T_1 , T_2 in the springs. **15**
8. Write down the expression for solution of the differential equation of motion for a frame. **15**