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AA563

M. Tech. EXAMINATION, May 2019

(First Semester)

(B. Scheme) (Re-appear)

CE(SE)

CES507

DYNAMICS OF STRUCTURES

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. Assume any data if missing in the question paper.

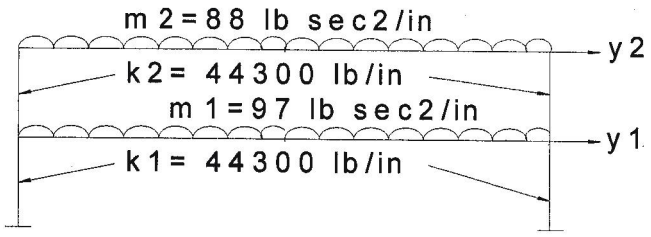
1. It is observed that the amplitude of free vibration of a certain structure modeled as a

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 numerical evaluation of Duhmel's integral-undamped system. **15**

3. Explain D'Alembert's principle. Derive the expression for the Damped and Undamped single degree of freedom with the help of the free body diagrams. **15**

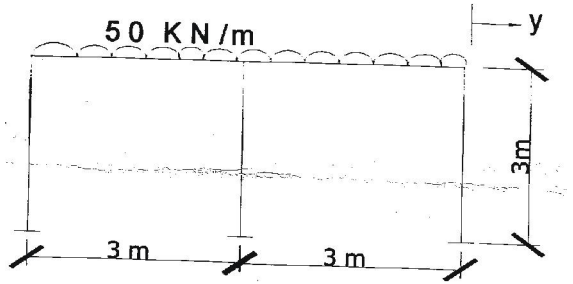
4. By Rayleigh's method, determine the natural frequence of the two storey frame shown in figure. Assume the horizontal members are very rigid compared to the columns of the frame. **15**



5. Explain Stodola's method of determining the fundamental frequency with the help of an example. **15**

6. How will you analyse the multistory frame for ballast loading ? How dynamic analysis of the building for earthquake is done according to Indian standard. **15**

7. Find out the natural frequency for horizontal motion of the steel frame in figure. Assume the horizontal girder to be infinitely rigid and neglect the mass of the columns. **15**



8. Write down the expression for solution of the differential equation of motion for a rectangular beam. **15**