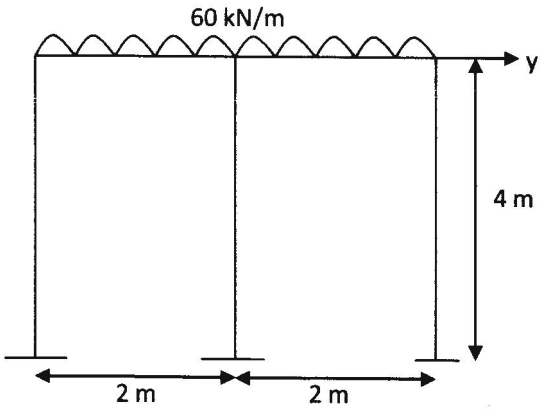
Unit IV

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



8. Derive the expression for solution of the differential equation of motion for square beams. **15**

AA-563

M. Tech. EXAMINATION, May 2017

(First Semester)

(B. Scheme) (Re-appear Only)

CE(SE)

CES-507

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 *Five* questions in all, selecting at least *one* question from each Unit. Assume any data if missing.

Unit I

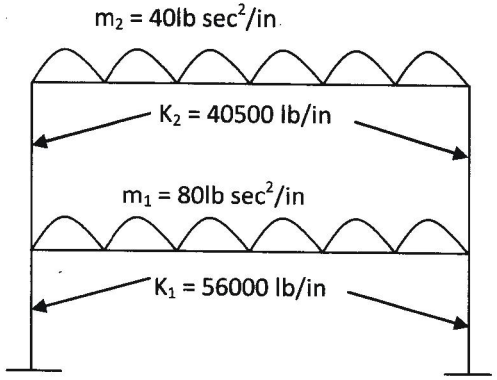
1. What do you understand by elements of vibratory system ? Explain in detail. Also calculate simple harmonic motion of SDOF with the help of free body diagram. **15**

2. 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**

Unit II

3. Derive the expression for numerical evaluation of Duhamel's integration-damped system. **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**



Unit III

5. Explain Holzer method of determining the fundamental frequence with the help of an example. **15**

6. What are the impacts of blast loading on multi-storeyed frames ? Discuss. Also explain, how dynamic analysis of the building for earthquake is done according to Indian standard ? **15**