

Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

M.Tech I Year I Semester Regular Examinations November-2021

STRUCTURAL DYNAMICS

(Structural Engineering)

Time: 3 hours

Max. Marks: 60

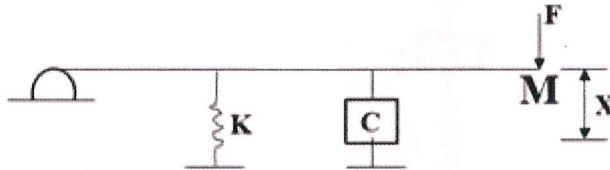
(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 a Describe various methods of discretization analysis of dynamic problem. L1 6M
 b Derive the equation of motion for damped single degree of freedom system with forced vibration. L3 6M

OR

- 2 Derive the equation of motion for the given system. L3 12M

**UNIT-II**

- 3 Derive the solution for undamped single degree of freedom system with free vibration. L1 12M

OR

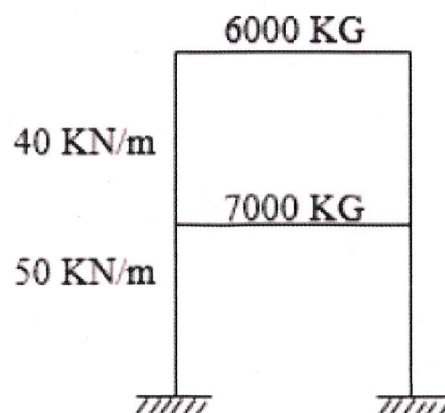
- 4 Derive an expression for Duhamel integral. L2 12M

UNIT-III

- 5 Derive the equation of motion for two degree of freedom system in matrix form and also derive the solution for the equation. L3 12M

OR

- 6 Draw the mode shapes for the given problem. L3 12M



UNIT-IV

- 7 Derive the natural frequency and mode shapes for uniform beam having with both Ends free. **L3 12M**

OR

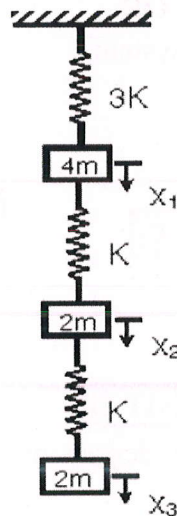
- 8 Derive the natural frequency and mode shapes for uniform beam having with one end free and other end fixed. **L3 12M**

UNIT-V

- 9 a Explain the step by step procedure of Holzer method. **L1 6M**
b Derive the fundamental natural frequencies and mode shapes. **L1 6M**

OR

- 10 Find the fundamental frequencies and mode shapes of a vibratory system shown in the figure below. **L3 12M**

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