

MVSE - 201
M.E./M.Tech., II Semester
 Examination, December 2015
Structural Dynamics

Time : Three Hours

Maximum Marks : 70

- Note :** i) Attempt any five questions.
 ii) Each question carry equal marks.
 iii) Assume missing data suitably.

1. a) Discuss vibration isolation and transmissibility.
 b) A radio set of 15kg mass must be isolated from a machine vibrating with an amplitude of 0.05mm at 500cpm. The set is mounted on four isolators, each having a spring scale of 31400N/m and damping factor of 392N-sec/m.
 i) What is the amplitude of vibration of the radio?
 ii) What is the dynamic load on each isolator due to vibration?
2. a) Explain the Coulomb-Damped free vibration with derivation. Also discuss practical applications of Coulomb-Damped free vibration.
 b) Write note on viscous dampers.
3. a) What is Laplace transformation and its application?

- b) Find the Laplace transform of a pulse of height A and duration τ in figure 1. Deduce the Laplace transform of unit impulse.

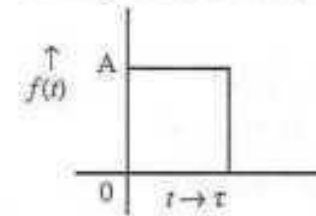


Figure 1

4. Determine the two natural frequency and the modes of vibration of the system shown in figure 2. The two equal masses of mass m are under tension T wheel is large.

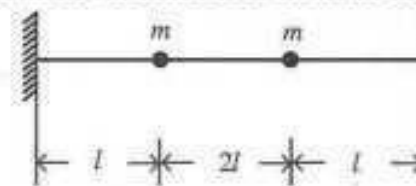


Figure 2

5. Obtain the frequency equation for the lateral vibration of a cantilever of uniform section having length ' l '.
6. Discuss Newmark's method for numerical evaluation of dynamic response of single degree of freedom system.
7. Explain the Rayleigh's method of estimating fundamental frequency of continuous system and explain modifications made in Rayleigh Ritz approach.
8. Write notes on any two of the following:
 - a) Eigen value problem
 - b) Duhamel's integral
 - c) Critical damping
