Total No. of Questions : 8] *[Total No. of Printed Pages : 2*

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MVSE-201

M.E./M.Tech. II Semester

Examination, December 2017

Structural Dynamics

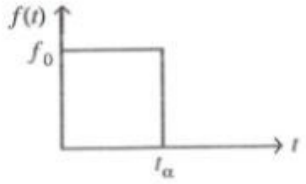
Time : Three Hours

Maximum Marks : 70

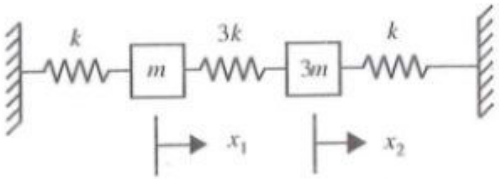
Note: i) Answer any five questions.
ii) All questions carry equal marks.
iii) Missing data, if any, may be suitably assumed.

1. a) Explain D'Alembert's principle and its applications.
   b) Describe the principle of vibration isolation.

2. An undamped system is subjected to the rectangular pulse as shown in figure. Using Duhamel's integral obtain expression for displacement response.



3. Determine the natural frequencies for the system shown in figure.



4. Obtain an expression for the general solution of displacement response of the longitudinal vibration of a slender straight elastic bar prismatic in cross section.

5. Discuss Newmark's method for numerical evaluation of dynamic response of single degree of freedom system.

6. Explain the Rayleigh's method of estimating fundamental frequency of continuous system and explain modifications made in Rayleigh Ritz approach.

7. Discuss the following:
   a) Forced vibration by model analysis
   b) Principle of un-damped vibration absorbers
   c) Vibro-meter and accelerometer
   d) Coulomb Damper

8. Write short notes on any four of the following:
   a) Matrix formulation
   b) Steady state vibration
   c) Eigen value problem
   d) Dynamic magnification factor
   e) Free torsional vibrations of shaft
   f) Critical damping

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