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

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MMMD/MMPD-205

M.E./M.Tech., II Semester

Examination, June 2017

Vibration and Noise Control

Time : Three Hours

Maximum Marks : 70

Note : i) Attempt any five questions out of eight.

ii) All questions carry equal marks.

1. a) Define the flexibility and stiffness coefficient. What is the relation between them.

   b) What is a Dynamical matrix? What is it's use?

2. Derive the equations of motion of a triple pendulum using Lagrange's equation.

3. a) How does a continuous system differ from a discrete system in the nature of it's equation of motion?

   b) A steel wire of 2 mm diameter is fixed between two points located 2 m apart. The tensile force in the wire is 250 N. Determine :

      i) the fundamental frequency of vibration.

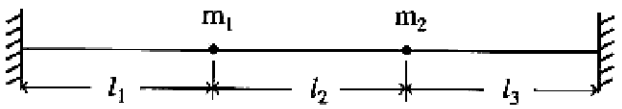
      ii) velocity of wave propagation.

4. What are various methods available for vibration control? Explain any one method of control giving it's application in real problems.

5. a) What do you mean by Random vibration? How are the mean value and variance of a random variable defined?

   b) What is the source of nonlinearity in Duffing's equation? Explain.

6. Two masses m_1 and m_2 are attached to a stretched wire as shown in figure 1. If the initial tension in the wire is P_1 derive the equations of motion for large transverse displacement of the masses.



7. a) What is Noise and Noise engineering?

   b) Explain any one method of controlling industrial noise.

8. Write short notes on any two :

   a) In-situ balancing of rotor

   b) Jump phenomenon in non-linear vibration

   c) Sound barriers

   d) Noise measurement techniques

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