**ME 7001**
(VIBRATION & NOISE CONTROL)


1.   (a) What is vibration?

   (b) What are the different types of vibration?

   (c) Write are the advantage of vibration?

   (d) Derive natural frequency equation for an undamped free vibration system by Rayleigh's method.?

   (e) A force Fosin ωt acts on a displacement xo sin (ωt-π/3). Taking Fo = 50 N, xo = 25mm and ω = 15 π rad\s,
      Determine the work done during –
                     1. The first second
                     2. The first 1/20 seconds

2. (a) Describe beats phenomenon?

   (b) What is harmonic analysis?

   (c) Write the effect of vibration?

   (d) Derive natural frequency equation for an damped free vibration system by Rayleigh's method

   (e) Represent the motion shown in fig by Fourier series?
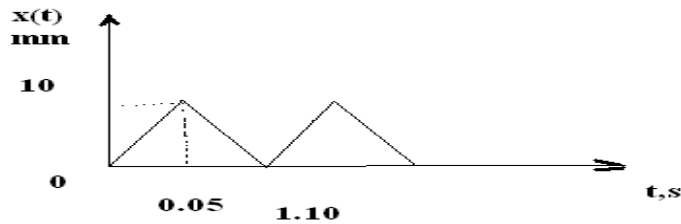
3. (a) What is logarithmic decrement?

   (b) What is natural frequency of vibration?

   (c) Explain viscous damping?

   (d) Differentiate between coulomb damping & soild damping.   [

   (e) A mass of 10 kg is kept on two slabs of isolators placed one over the other. One of the isolator is of rubber having a
      stiffness of 3 KN\m and damping coefficient of 100 N-s\m while the other isolator is felt with stiffness of 12kN\m
      and damping coefficient of 300 N-s\m . If the system is set in motion in vertical direction, determine the damped
      and undamped natural frequencies of the system.

4. (a) Derive logarithmic decrement?

   (b) Explain dry friction damping?

   (c) Differentiate between over damped and critically damped systems?

   (d) Find the equation of motion for the system shown in fig

      When ε =1.0, if the mass m is displaced by a distance of 3 cm and released.
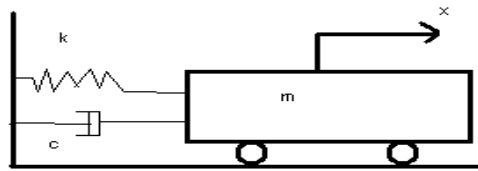
(e) Explain any three of them

1. Coefficient of damping
2. Damping ratio
3. Over damped system
4. Interfacial damping
5. structural damping