

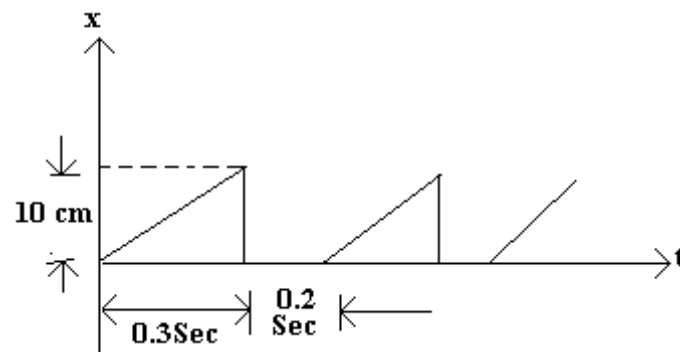
IV B.Tech I Semester Supplementary Examinations, April/May 2005
THEORY OF VIBRATIONS
(Aeronautical Engineering)

Time: 3 hours

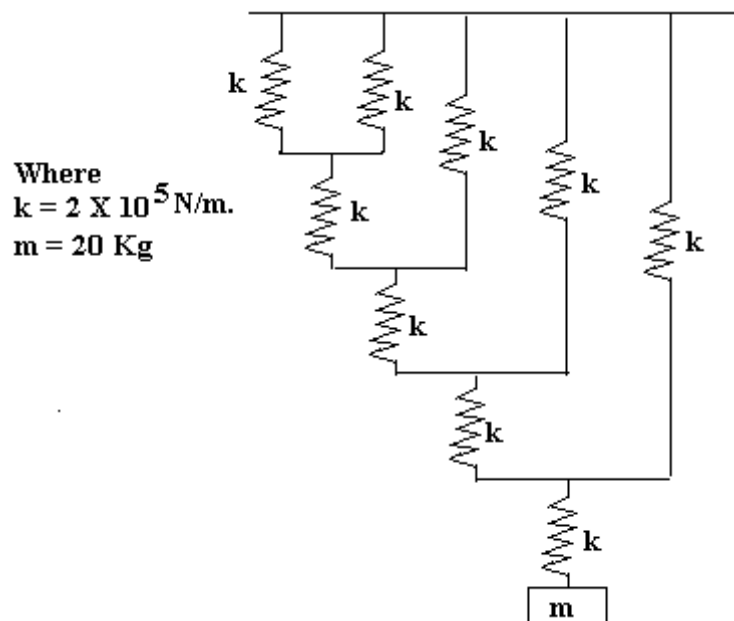
Max Marks: 80

Answer any FIVE Questions
 All Questions carry equal marks

1. Explain free and forced vibrations. Give practical examples for both damped and undamped cases.
2. Represent the periodic motion given in figure 1 below by a harmonic motion.

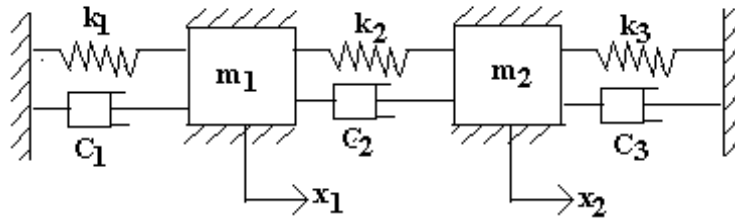


3. Find the natural frequency of the system shown in the figure below:

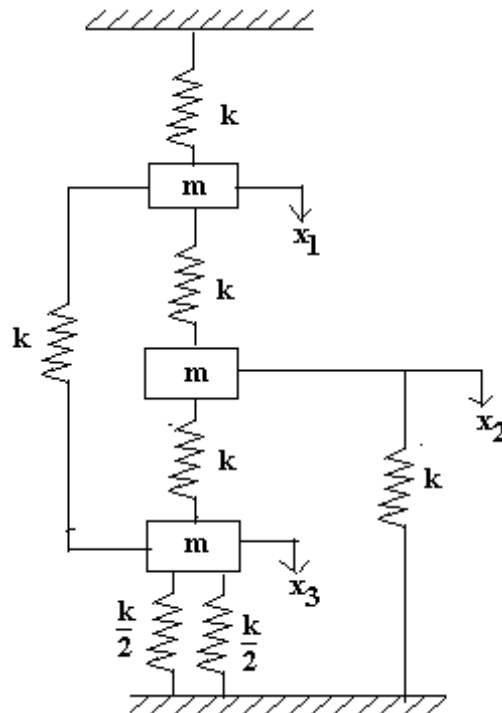


4. What are vibration absorbers? Explain briefly various types of vibration absorbers.

5. Derive the equation of motion for the system shown in the figure by using Lagrange's equation if $k_1 = k_2 = k_3 = 1$, $C_1 = C_2 = C_3 = 1$ and $m_1 = m_2 = 1$



6. Determine the natural frequencies of multi degree of freedom spring-mass system as shown in the figure below:



7. Write notes on the following
- Ailerson Reversal
 - Wing divergence
 - Collars triangle of forces
 - Vibration of elastic bodies.

8. Find critical frequencies for the system shown in the figure below 5 if $\frac{k}{I} = 4 \times 10^6 \text{ sec}^{-2}$

