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*“If there is no
struggle, there is no
progress.”—
Frederick Douglass*

Mukesh Sharma Sir -- (Use code Y680) to get 77% off on all courses



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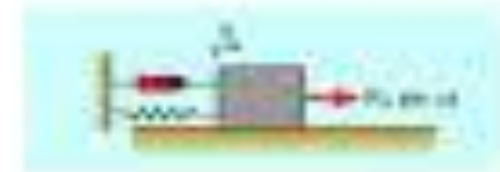
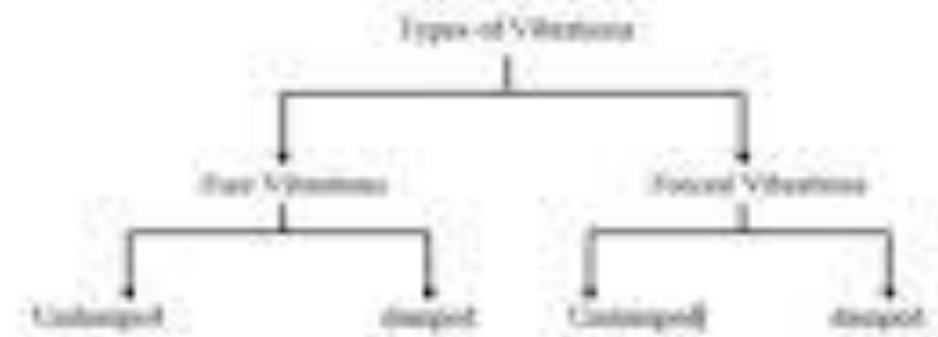
TOM – Theory of Machine

- 1) Vibration**
- 2) Force damped vibration**
- 3) isolation**
- 4) Whirling of shaft**

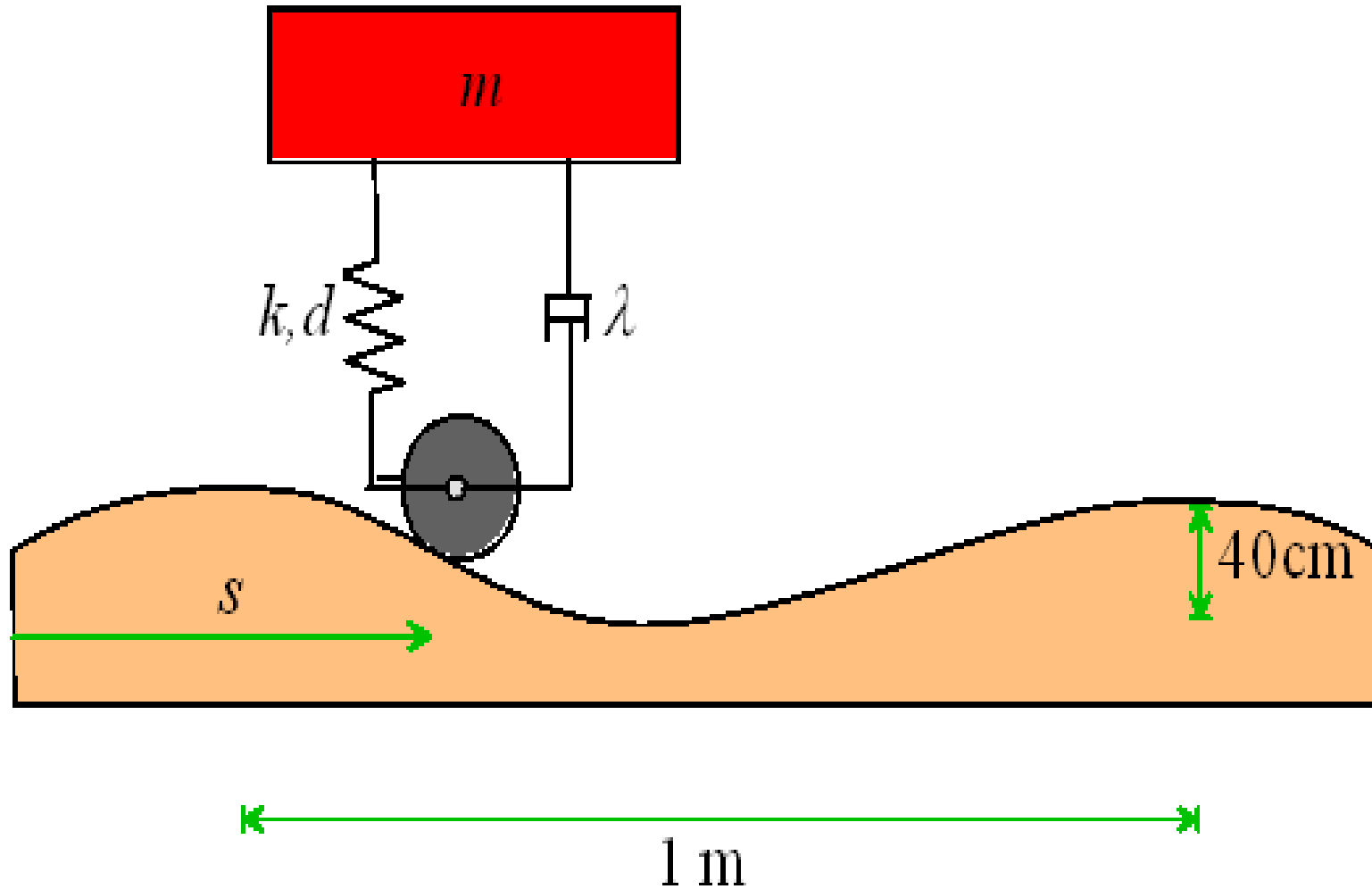
1-2 marks from these Topic

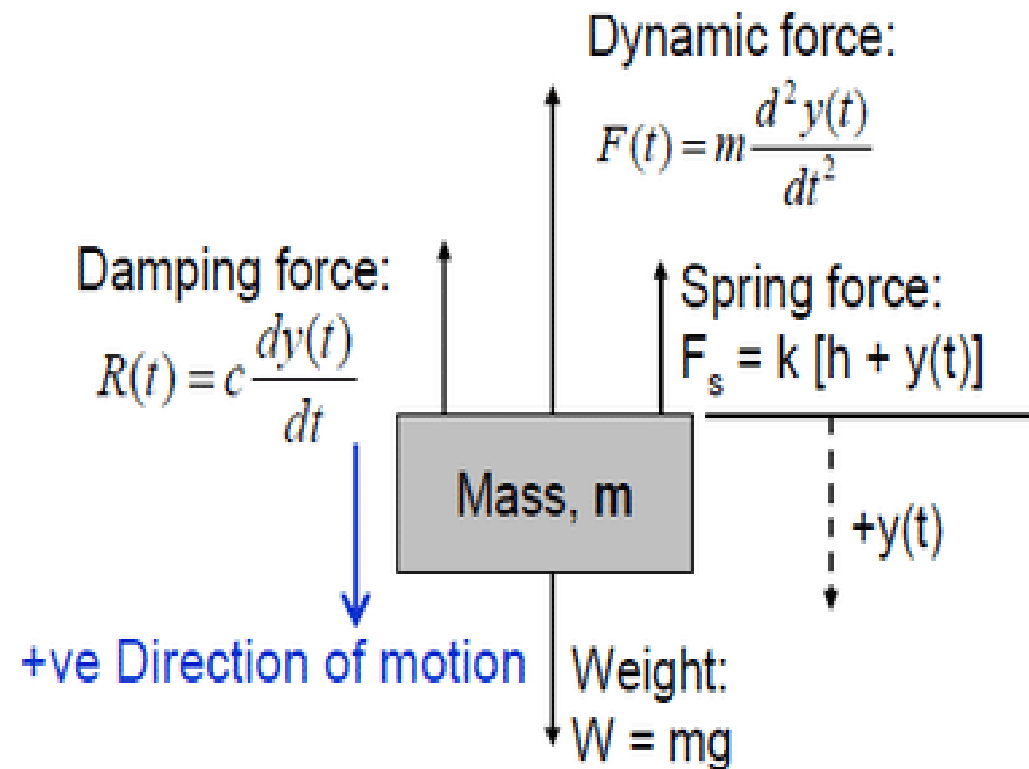
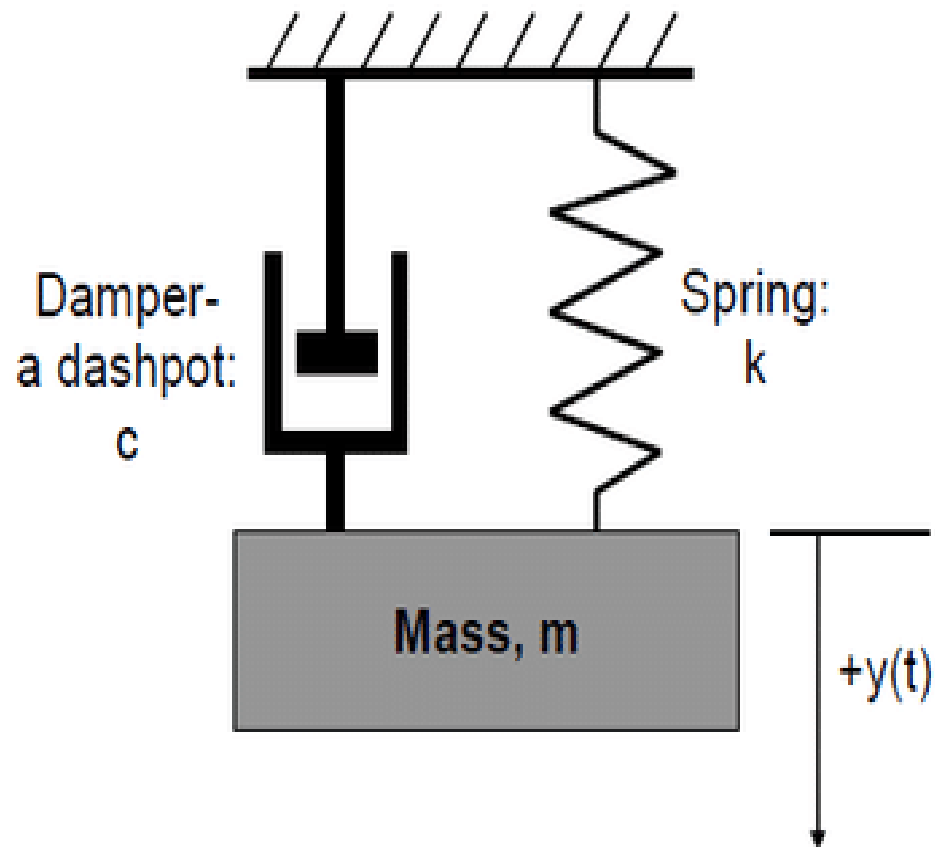
Vibrations

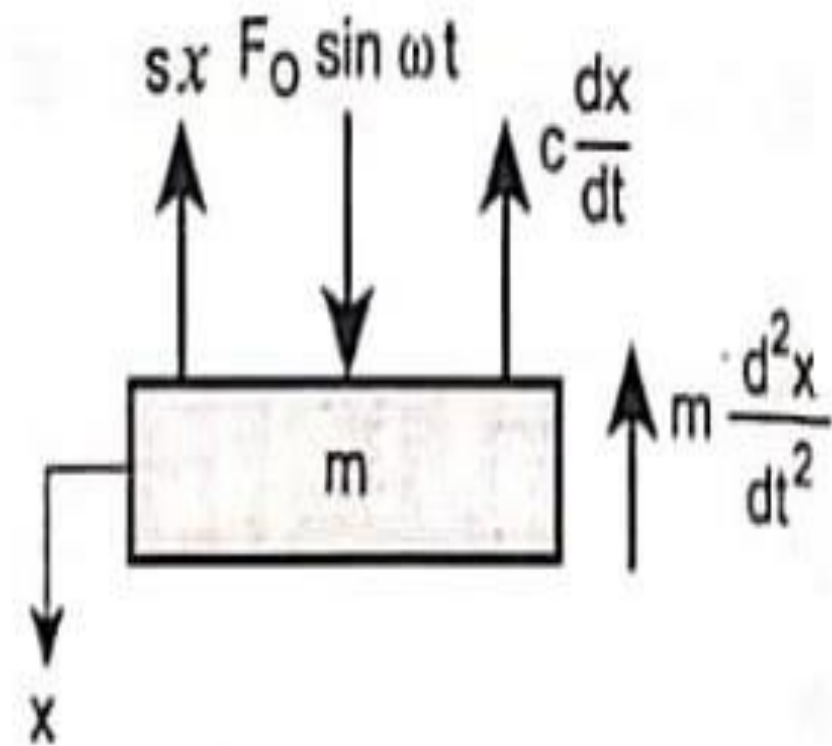
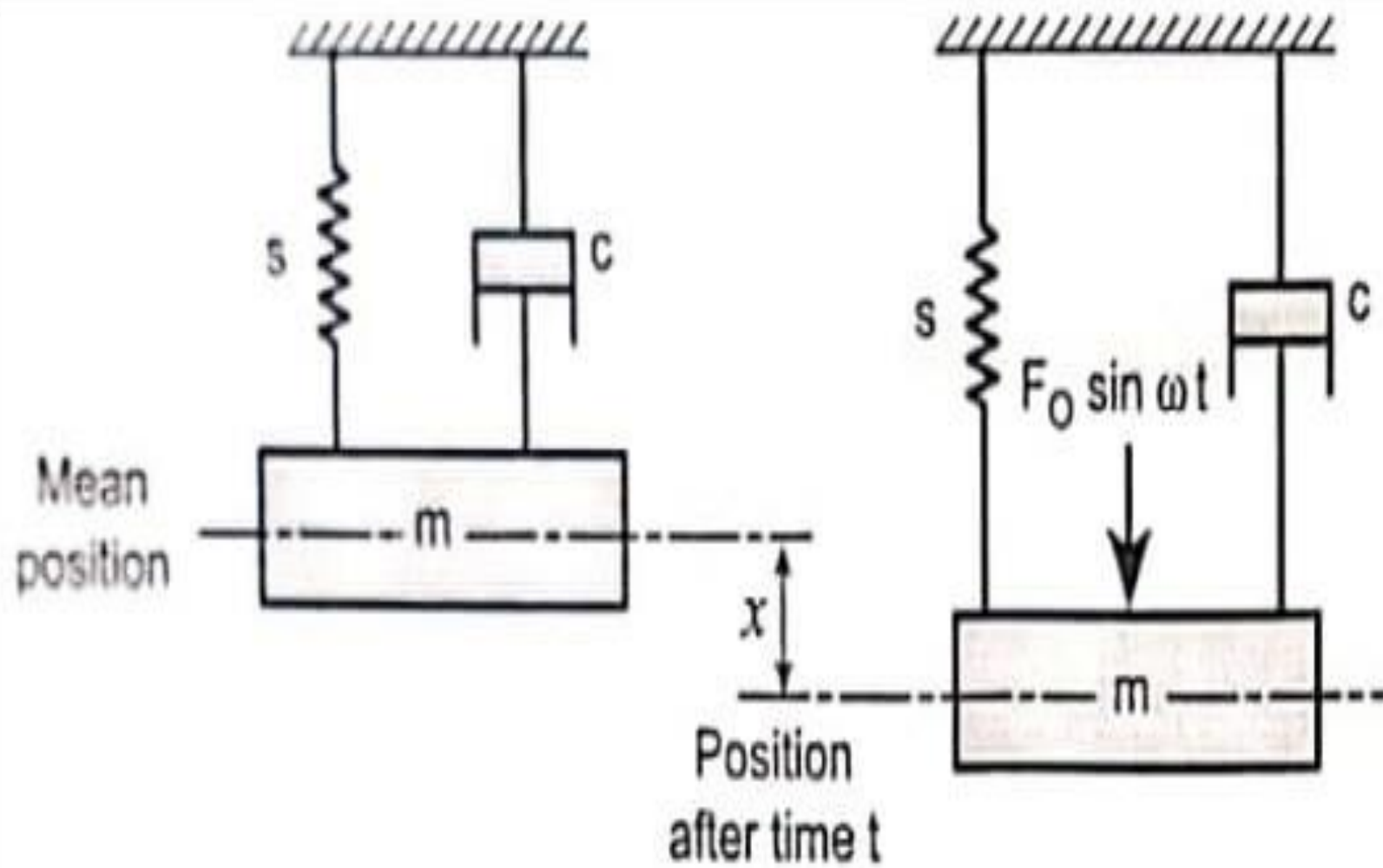
- **Free Vibrations** : Vibrations that occur in the absence of friction and external forces after initial release of body.
Eg: Simple Pendulum
- **Forced Vibrations** : When repeated force continuously acts on the system the vibrations are said to be forced vibrations.
Eg: Pendulum in a Clock



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(a) System before applying force, $F_0 \sin \omega t$

(b) System after applying force, $F_0 \sin \omega t$

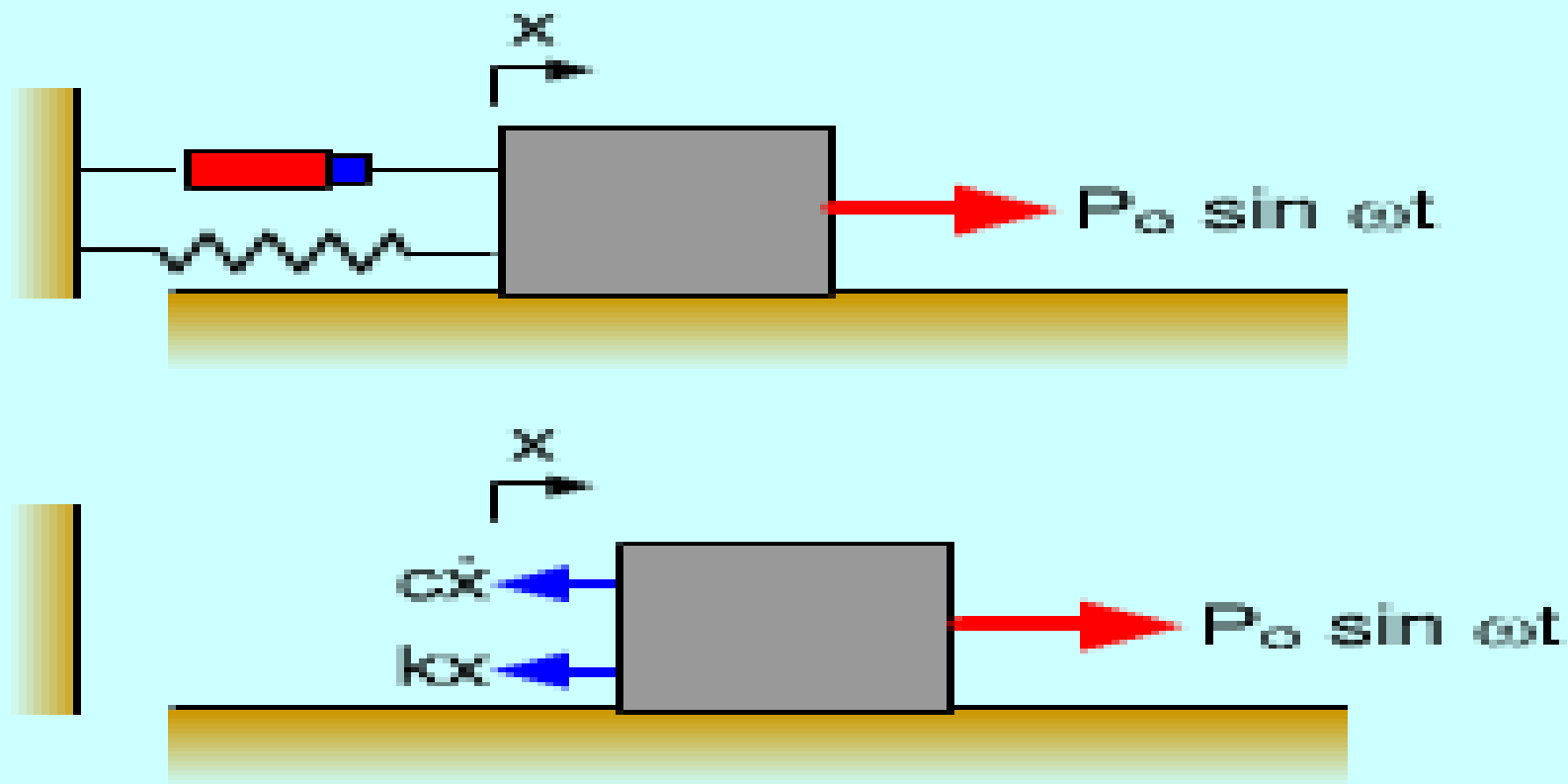
(c) F.B.D. of mass

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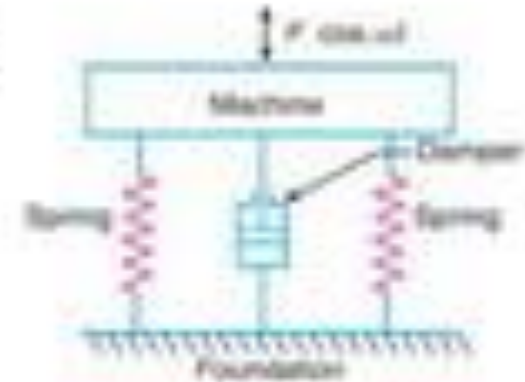




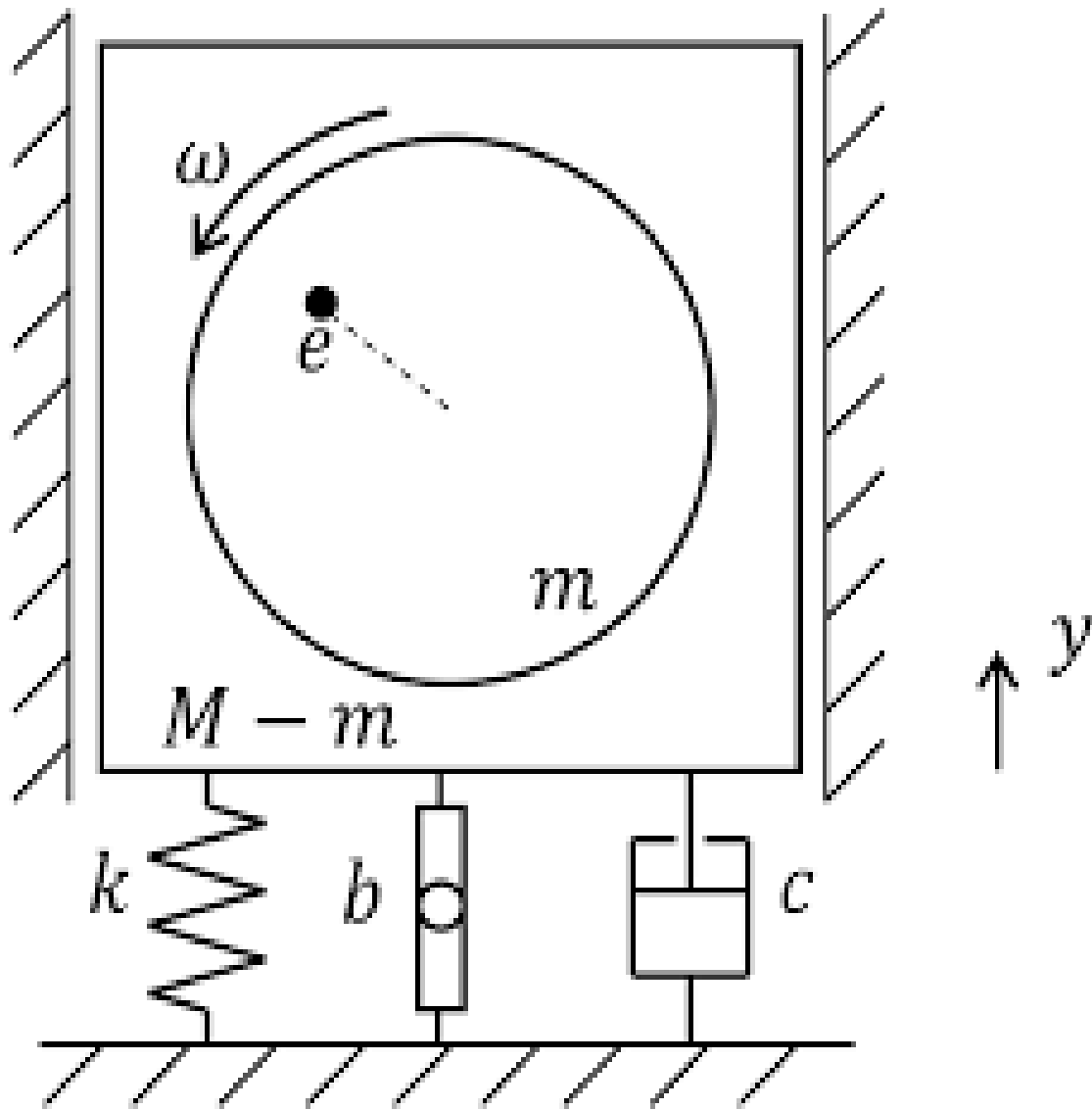
$$m\ddot{x} = -kx - c\dot{x} + P_0 \sin \omega t$$
$$m\ddot{x} + c\dot{x} + kx = P_0 \sin \omega t$$

Vibration Isolation

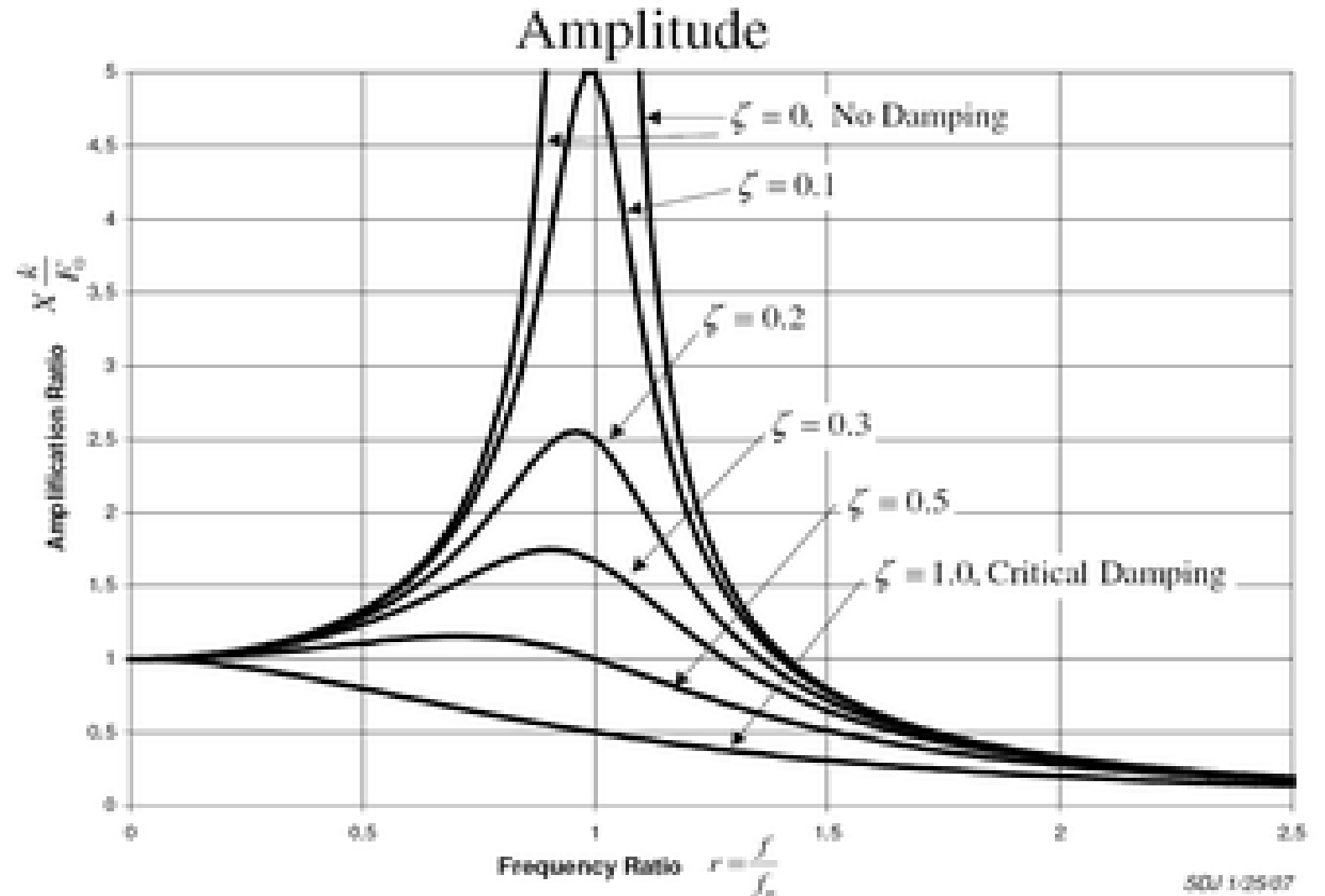
- Vibrations produced in a machine is transmitted to the foundation upon which it is mounted. These vibrations produce undesirable effects and should be avoided.
- These Vibrations should be isolated using Springs and Dampers.
- The concept of Transmissibility comes into role to determine the amount of vibrations that are transmitted to the foundation and isolate the same.



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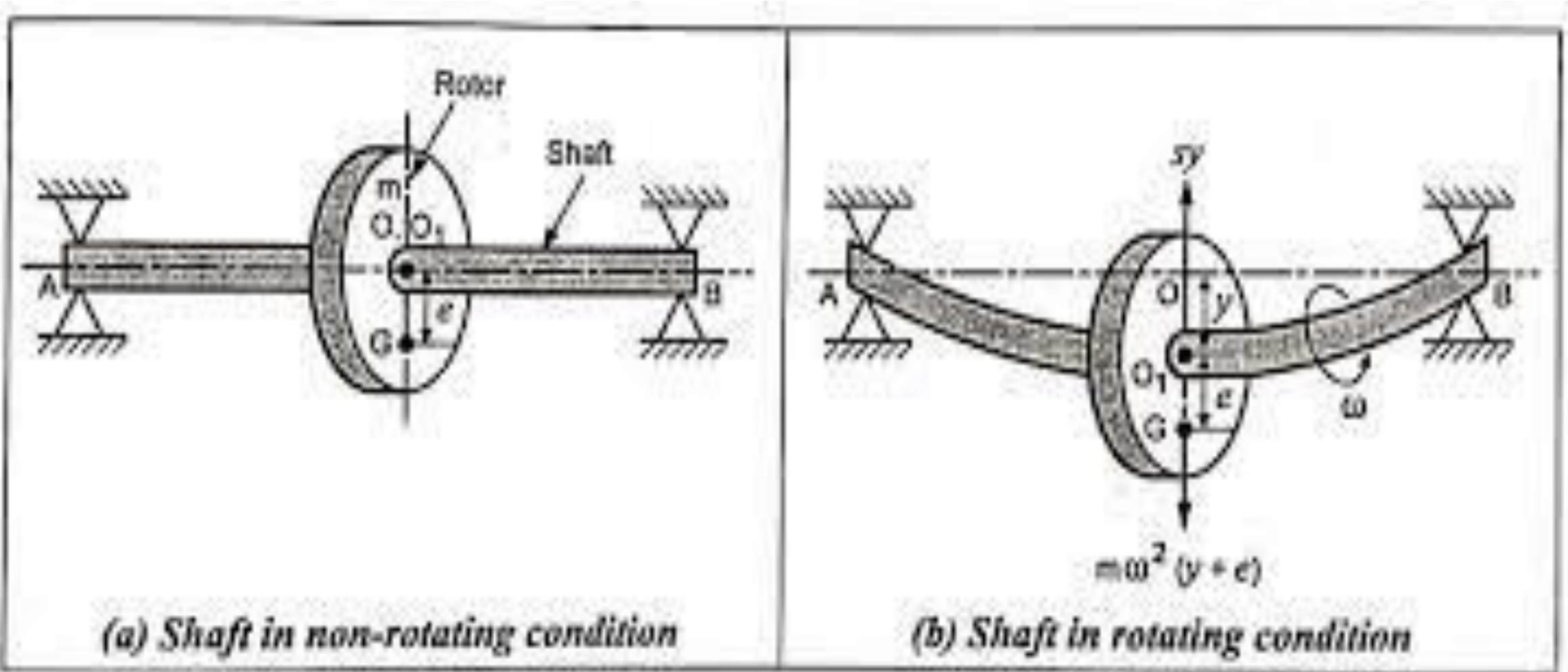


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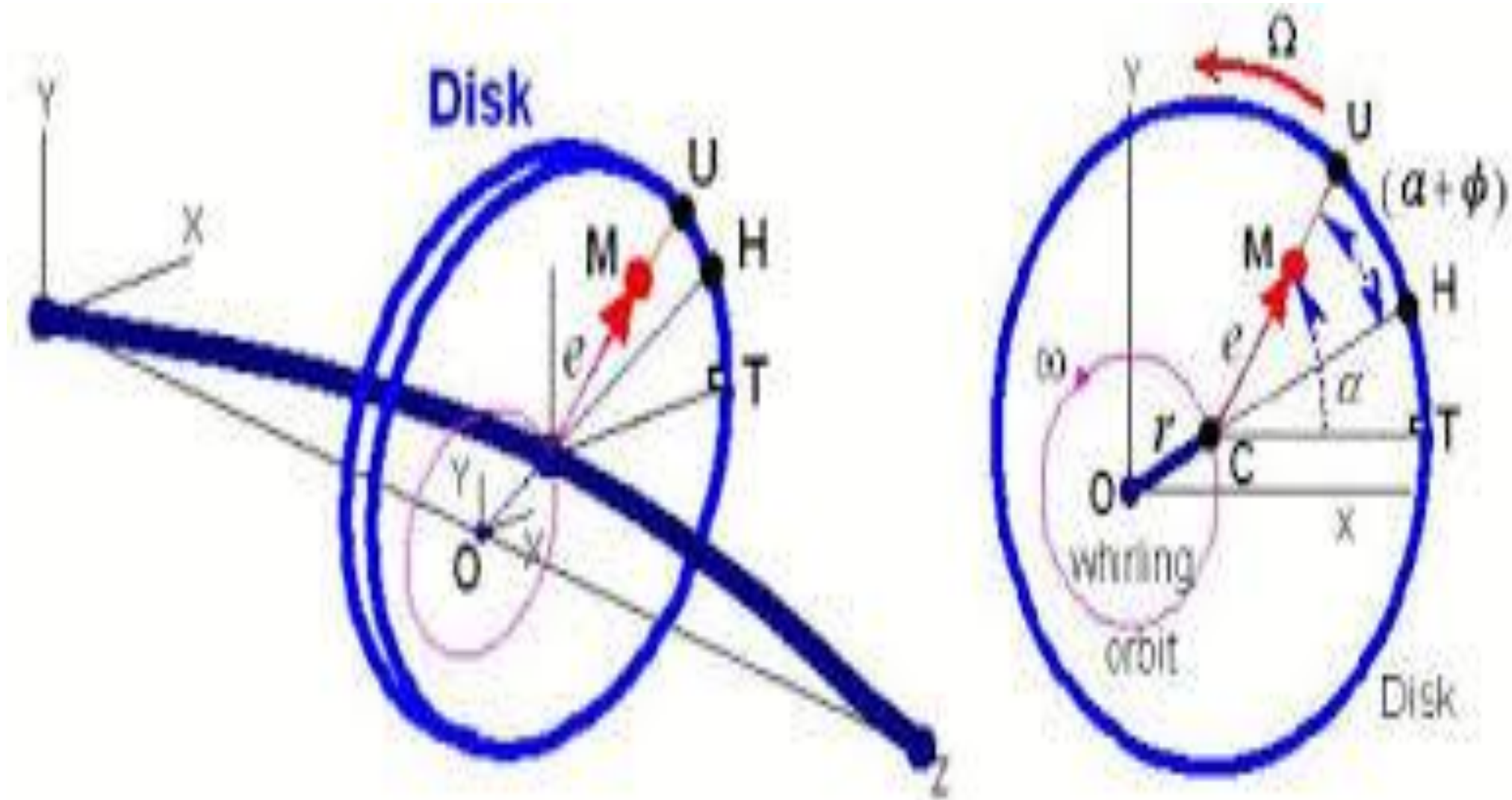




(a) Shaft in non-rotating condition

(b) Shaft in rotating condition

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