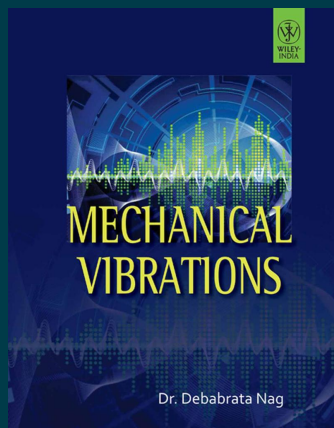


WILEY

Mechanical Vibrations

By Dr. Debabrata Nag

Paperback

ISBN: 9788126530908

Publication: [NOT PROVIDED] *publication_date*

Page Count: 672 pages

₹919.00

• Description

Mechanical Vibrations is designed as a textbook for the undergraduate students of mechanical, electrical, aeronautical, automobile and civil engineering at major universities. The text is also useful to postgraduate engineering students of mechanical vibrations. It also helps a smooth understanding of the subject like rotor dynamics, for which the knowledge of vibration is a fundamental prerequisite.

• About the Author

Dr. Debabrata Nag

Dr. Debabrata Nag is teaching at the Department of Mechanical Engineering

• Table of Contents

Introduction to Vibration

- Introduction
- Systems Undergoing Vibration
- Types of Vibration
- Importance of Vibration
- Sources of Vibration
- Mathematical Formulations of Periodic Response

Free Vibration of Undamped Single Degree of Freedom System

- Introduction
- Free Vibration of Single Degree of Freedom System
- Dynamic of Rigid Bodies-A Quick Overview
- Energy Considerations of Free Vibration

Damped Free Vibration of Single Degree of Freedom System

- Introduction
- Viscous Damping
- Coulombic Damping
- Solution of Differential Equation of Motion of a System with Coulombic Damping

Force Vibration of Single Degree of Freedom System

- Introduction

- Forced Vibration
- Forced Vibration due to General Periodic Forces/Disturbances
- Energy Dissipated due to Viscous Damping-Concept of Equivalent Viscous Damping Coefficient
- Structural/ Material Damping
- Eddy-Current Damping
- Sharpness of Resonance
- Some Useful Concluding Remark

Transient Vibration of Single Degree of Freedom Systems

- Introduction
- Response to Unit Impulse
- Response to Arbitrary Excitation
- Response to Ground Motion

Vibration of Two Degree of Freedom Systems

- Introduction
- Free Vibration, Normal Modes of Vibration
- Coordinate Systems and Coordinate Coupling
- Forced Vibration of Undamped System
- Vibration Absorbers

Vibration of Multidegree of Freedom Systems

- Introduction
- Formulation of Equations of Motion (Force Method)
- Stiffness Matrix Formulation
- Energy Principle-Lagrange's Equation
- Equation for Free Vibration (Undamped System)
- Expansion Theorem
- Modal Analysis
- Damped Free Vibration

Free Vibration of Continuous Systems

- Introduction
- Tightly-Stretched String or Wire
- Vibration of Continuous Elastic Media
- Free Vibration of a Membrane
- Free Vibration of a Plate

Forced Vibration of Continuous Systems

- Introduction
- Introduction to Virtual-Work Theorem for a Deformable Body
- Forced Vibration of Continuous Systems

Approximate Methods

- Introduction
- Estimation of Fundamental Frequency
- Estimation of Higher-Mode Frequency
- Concluding Remarks

Appendix A: Finite Element Method

Appendix B: Vibration Measurements and Control

Appendix C: Vibration and Noise

Appendix D: Special Topics in Vibration

Bibliography

Test Your Comprehension

Answers

Model Test Papers

Index

To purchase this product, please visit:
<https://wiley.indiafin.com/mechanical-vibrations.html>



Scan to buy