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Nota di contenuto	Dedication; Series Preface; Preface; Contents; Chapter 1 - Noise and Its Measurement; 1.1 Plane Wave Propagation; 1.2 Spherical Wave Propagation; 1.3 Decibel Level; 1.4 Frequency Analysis; 1.5 Weighted Sound Pressure Level; 1.6 Logarithmic Addition, Subtraction and Averaging; 1.7 Directivity; 1.8 Measurement of Sound Pressure Level; 1.9 Loudness; 1.10 Noise Limits in India; 1.10.1 The noise pollution (regulation and control) rules, 2000; 1.10.2 Permissible noise exposure for industrial workers; 1.10.3 Noise limit for diesel generator sets; 1.10.4 Noise limit for portable gensets 1.10.5 Noise limit for fire crackers1.10.6 Noise limit for vehicles; 1.11 Masking; 1.12 Sound Level Meter; 1.13 Microphones; 1.14 Microphone Sensitivity; 1.15 Intensity Meter; References; Problems in Chapter 1; Chapter 2 - Vibration and Its Measurement; 2.1 Vibration of Single Degree of Freedom System; 2.1.1 Free vibration; 2.1.2 Forced response; 2.2 Vibration of a Multiple Degrees of Freedom System; 2.2.1 Free response; 2.2.2 Forced response of multi-DOF system; 2.2.3 Modal expansion; 2.3 Transmissibility; 2.4 Critical Speed; 2.5 Dynamical

Analogies; 2.6 Vibration of Beams and Plates
2.7 Vibration Measurement2.8 Measurement of Damping Measurement of Sound Pressure Level; 2.8.1 Logarithmic decrement method; 2.8.2 Half-power bandwidth method; References; Problems in Chapter 2; Chapter 3 - Vibration Control; 3.1 Vibration Control at the Source; 3.2 Vibration Isolators; 3.2.1 Bonded rubber springs; 3.2.2 Effect of compliant foundation; 3.2.3 Pneumatic suspension; 3.3 Dynamic Vibration Absorber (DVA); 3.4 Impedance Mismatch to Block Transmission of Vibration; 3.4.1 Viscoelastic interlayer; 3.4.2 Effect of blocking mass on longitudinal waves
3.4.3 Effect of blocking mass on flexural waves3.5 Damping Treatments for Plates; 3.5.1 Free layer damping (FLD) treatment; 3.5.2 Constrained layer damping (CLD) treatment; 3.6 Active Vibration Control; References; Problems in Chapter 3; Chapter 4 - Acoustics of Rooms, Partitions, Enclosures and Barriers; 4.1 Sound Field in a Room; 4.2 Acoustics of a Partition Wall; 4.3 Design of Acoustic Enclosures; 4.4 Noise Reduction of a Partition Wall and Enclosure; 4.5 Acoustics of Barriers; References; Problems in Chapter 4; Chapter 5 - Mufflers and Silencers; 5.1 Electro-Acoustic Modeling
5.2 Transfer Matrix Modeling5.3 Simple Expansion Chamber (SEC); 5.4 Extended Tube Expansion Chamber (ETEC); 5.5 Extended Concentric Tube Resonator (ECTR); 5.6 Plug Muffler; 5.7 Multiply Connected Muffler; 5.8 Absorptive Ducts and Mufflers; 5.9 Combination Mufflers; 5.10 Acoustic Source Characteristics of I.C. Engines; 5.11 Designing for Adequate Insertion Loss; 5.12 Mufflers for High Pressure Vents and Safety Valves; 5.13 Design of Muffler Shell and End Plates; 5.14 Helmholtz Resonators; 5.15 Active Noise Control in a Duct; 5.16 Pressure Drop Considerations; References; Problems in Chapter 5 Chapter 6 - Noise Control Strategies

Sommario/riassunto

Vibration and Noise are two interrelated terms in the field of mechanical engineering. Vibration is caused by unbalanced inertial forces and moments whereas noise is the result of such vibrations. Noisy machines have always been a matter of concern. Lesser vibration ensures manufacturing to closer tolerances, lesser wear and tear, and longer fatigue life. Hence, a quieter machine is more cost-effective in the long run. It is now well understood that a quieter machine is in every way a better machine.This book deals with such industrial and automotive noise and vibration, their measurement and