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""Chapter 7 Strain energy""; ""7.1 Strain energy""; ""7.2 Strain energy in axially loaded bars""; ""7.3 Dynamic loading""; ""7.4 Strain energy due to shear""; ""7.5 Impact torsional loading""; ""7.6 Strain energy due to bending""; ""7.7 Impact loading of beams""; ""7.8 Strain energy due to combined loading""; ""7.9 Castigliano's theorem""; ""Problems""; ""Chapter 8 Stress and strain analysis""; ""8.1 Complex stress situations""; ""8.2 Simple tension""; ""8.3 Biaxial stress system""; ""8.4 General two-dimensional stress system""; ""8.5 Mohr's stress circle""; ""8.6 Principal strains and stresses""; ""8.7 Plane strain""; ""8.8 Theories of failure""; ""8.9 Elastic constants""; ""Problems""; ""Chapter 9 Cylindrical shells""; ""9.1 Thin cylindrical shell""; ""9.2 Thin spherical shell""; ""9.3 Volume changes of shells""; ""9.4 Thick cylindrical shell""; ""9.5 Compound tube""; ""Problems""; ""Chapter 10 Linear and angular motion""; ""10.1 Linear motion""; ""10.2 Curvilinear motion""; ""10.3 Relative velocity""; ""10.4 Angular motion""; ""10.5 Torque and angular motion""; ""10.6 Balancing of rotating masses""; ""10.7 Momentum""; ""10.8 Work and energy""; ""Problems""; ""Chapter 11 Mechanisms""; ""11.1 Mechanisms""; ""11.2 Velocity diagrams""; ""11.3 Acceleration diagrams""; ""11.4 Reciprocating mechanisms""; ""Problems""; ""Chapter 12 Turning moment diagrams""; ""12.1 Crank effort diagrams""; ""12.2 Fluctuations of speed and energy""; ""12.3 Flywheels""; ""Problems""; ""Chapter 13 Power transmission""; ""13.1 Machines and some basic definitions""; ""13.2 Transmission of rotational motion""; ""13.3 Geared systems""; ""13.4 Gear trains""; ""13.5 Epicyclic gear trains""

Sommario/riassunto

This book gives comprehensive coverage of mechanical science for HNC/HND students taking mechanical engineering courses, including all topics likely to be covered in both years of such courses, as well as for first year undergraduate courses in mechanical engineering. It features 500 problems with answers and 200 worked examples. The third edition includes a new section on power transmission and an appendix on mathematics to help students with the basic notation of calculus and solution of differential equations.
