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| | Nota di contenuto | I Mathematical Foundations -- 1.1 Tensors and continuum mechanics -- 1.2 Scalars and vectors -- 1.3 Indicial notation -- 1.4 Algebra of Cartesian tensors -- 1.5 Matrices and determinants -- 1.6 Linear equations and Eigenvalue problem -- 1.7 Theorems on tensor fields -- 1.8 Differential geometry -- 1.9 Dirac-delta and Heaviside step functions -- 1.10 Bessel functions -- 1.11 Laplace transforms -- 1.12 Inverse Laplace transforms -- 1.13 One-to-one mappings -- 1.14 Curvilinear coordinates -- 1.15 Derivatives with respect to curvilinear coordinates -- 1.16 Exercise problems -- II Stress and Strain Tensors -- 2.1 Introduction -- 2.2 Force distribution and stresses -- 2.3 Stress vector and equations of mation -- 2.4 Euler's laws of motion -- 2.5 Stress tensor -- 2.6 Stationary shear stresses -- 2.7 Octahedral shear stress and stress deviator -- 2.8 Strain tensor -- 2.9 Compatibility conditions -- 2.10 Cylindrical and spherical coordinates -- 2.11 Problems -- 2.12 Exercise problems -- III Linear Elasticity -- 3.1 Strain energy function -- 3.2 Orthotopic and isotropic elastic solids -- 3.3 Young's moduli and Poisson's ratios for orthotropic elastic solids -- 3.4 Solution schemes -- 3.5 Field equations in tenns of displacements -- 3.6 Problems -- IV Elastostatic Plane Problems -- 4.1 Plane problems |

| Sommario/riassunto | This book has been written with two purposes, as a textbook for engineering courses and as a reference book for engineers and scientists. The book is an outcome of several lecture courses. These include lectures given to graduate students at the Asian Institute of Technology for several years, a course on elasticity for University of Tokyo graduate students in the spring of 1979, and courses on |

elasticity, viscoelasticity and ftnite deformation at the National University of Singapore from May to November 1985. In preparing this book, I kept three objectives in mind: ftrst, to provide sound fundamental knowledge of solid mechanics in the simplest language possible; second, to introduce effective analytical and numerical solution methods; and third, to impress on readers that the subject is beautiful, and is accessible to those with only a standard mathematical background. In order to meet those objectives, the ftrst chapter of the book is a review of mathematical foundations intended for anyone whose background is an elementary knowledge of differential calculus, scalars and vectors, and Newton's laws of motion. Cartesian tensors are introduced carefully. From then on, only Cartesian tensors in the indicial notation, with subscript as indices, are used to derive and represent all theories.