Contents

Preface .......................................................... V
Introduction ....................................................... XI
Guidelines for the Reader, Abbreviations ...................... XV

1 Introductory Material ........................................ 1
   1.1 Elements of Convex Analysis .......................... 1
   1.2 Elements of Nonconvex Nonsmooth Analysis .......... 10
   1.3 Maximal Monotone Operators and Variational Inequalities ... 19
   1.4 On the Formulation of Hemivariational Inequalities and Related Topics ......................... 26

2 Pseudo-Monotonicity and Generalized Pseudo-Monotonicity ...... 41
   2.2 Nonconvex Functions with Generalized Gradient of Pseudo- or Generalized Pseudo-Monotone Type ... 53

3 Hemivariational Inequalities for Static One-dimensional Nonconvex Superpotential Laws ................. 65
   3.1 Coercive Hemivariational Inequalities ................ 65
   3.2 Semicoercive Hemivariational Inequalities .......... 73
   3.3 The Substationarity of the Energy .................... 77
   3.4 Variational-Hemivariational Inequalities ............ 80
   3.5 Applications in Mechanics and Engineering ........... 85
       3.5.1 Contact of a Linear Elastic Body with an Adhesive Support 85
       3.5.2 Adhesively Connected Sandwich Plates .......... 86

4 Hemivariational Inequalities for Locally Lipschitz Functionals .... 95
   4.1 The Class of Locally Lipschitz Functions with Pseudo-Monotone and Quasi-Pseudo-Monotone Generalized Gradients .................... 95
   4.2 Pointwise Minima and Maxima of Functions from the Classes $QPM(V)$ and $PM(V)$ and Compositions with Linear Compact Operators ................. 102
   4.3 Hemivariational Inequalities Involving Functions from $QPM$- and $PM$-Classes .................... 115
7.5 Applications to the Plasticity Theory with Nonconvex Yield Condition ........................................ 242
7.6 Applications to the Theory of Elasticity ................................................................. 246
  7.6.1 The Signorini Problem in Nonlinear Elasticity for Star-Shaped Closed Sets ......................... 246
  7.6.2 Constrained Skin Effects in Plane Nonlinear Elasticity .............................................. 248

References ........................................................................................................... 251

Index ..................................................................................................................... 265