

CONTENTS

CHAPTER 1 : INTRODUCTION	1
CHAPTER 2 : OVERVIEW OF CONTACT ANALYSIS	
2.1 Introduction	6
2.2 Experimental Approach	7
2.3 Analytical Approach	9
2.4 Numerical Approach	11
2.4.1 Contact Analysis by Finite Elements	12
2.4.2 Contact Analysis by Boundary Elements	19
2.5 Remarks	25
CHAPTER 3 : BOUNDARY ELEMENTS FORMULATION IN ELASTOSTATICS	
3.1 Introduction	26
3.2 Governing Equations	33
3.3 Fundamental Solutions	37
3.4 Integral Equations	43
3.5 Boundary Integral Equations	46
3.6 Displacements and Stresses at Internal Points	49
3.7 Boundary Elements Discretization	51
CHAPTER 4 : TWO-DIMENSIONAL CONTACT ANALYSIS	
4.1 Introduction	61
4.2 Contact Analysis between Elastic Body and Rigid Body	63
4.2.1 Boundary Element Analysis	63
4.2.2 Contact Analysis	68
4.2.3 Numerical Applications	74
4.3 Contact Analysis between Elastic Bodies	92
4.3.1 Boundary Element Analysis	92
4.3.2 Contact Analysis	98
4.3.3 Numerical Applications	111

VI

CHAPTER 5 : AXISYMMETRIC CONTACT ANALYSIS	
5.1 Introduction	146
5.2 Boundary Element Analysis	149
5.3 Contact Analysis	154
5.4 Numerical Application	166
CHAPTER 6 : CONCLUSIONS	191
REFERENCES	194
APPENDIX I : CARTESIAN TENSOR NOTATION	212
APPENDIX II : DIRAC DELTA FUNCTION	213
APPENDIX III: HERTZ (ANALYTICAL) SOLUTIONS FOR CYLINDRICAL AND AXISYMMETRIC CONTACT PROBLEMS	214