## LIST OF TABLES

	Page	No.
2.1	Material properties for pure copper sheet	31
2.2	Material Properties for Stainless Steel (SS-304)	36
2.3	Material properties of Natural Rubber	41
2.4	Comparative material properties for Rubber	43
3.1	Variation of Load and Hydraulic Pressure	<b>7</b> 5
4.1	Hardness measured using ECHO TIP for Stainless Steel (SS-304)	93
4.2	Hardness measured using ECHOTIP for Pure Copper	99
4.3	Thickness and percentage thinning in X-section	110
4.4	Thickness and percentage thinning in Y-section	111
4.5	Theoretical strain values of copper From Hill's-Swift model	116
4.6	The strain values - without rubber and with rubber	121
4.7	Comparative thickness variation in X and Y section	124
4.8	Comparative percentage thickness variation in X and Y section	124
5.1	Mesh details	139

## LIST OF FIGURES

	Page	: <i>No</i> .
1.1	Classifications of Sheet Metal Forming operations	1
1.2	Rubber Based Sheet Hydroforming Set-up [6]	2
1.3	Symmetric and Non-symmetric drawn components	3
1.4	Stages in deep drawing process [7]	4
1.5	Three sections $x, y, z[8]$	5
1.6	Workpiece stresses during deep drawing	5
1.7	Flow of material during deep drawing [9]	7
1.8	Effect of Blank Holding force on wrinkles and tearing [9]	7
1.9	Common defects in deep drawn parts [7]	8
1.10	A schematic plot of forming limit diagram [11]	10
1.11	Forming limit diagram showing different failure zones [11]	11
1.12	Forming limit diagram and other failure limits [11]	12
1.13	Sheet hydroforming: (a) blank setting (b) blank holding; (c) drawing and (d) finishing [15]	5 13
1.14	Hydro mechanical deep drawing [15]	14
1.15	Hydroforming using a membrane diaphragm [15]	15
1.16	Schematic Representation of Rubber Based Sheet Forming [7]	15
1.17	Set up for rubber forming by Guerin Process [6]	16
1.18	Marform Process [18]	17