List of Tables

Table 2.1 Decision table in MADM methods 16
Table 2.2 Random Index (RI) values 20
Table 4.1 Results of Quasi Newton Method: (Step size = 1.0) 49
Table 4.2 Randomly generated solution space (binary strings) for a population size of 20 52
Table 4.3 Evaluation of initial results 53
Table 4.4 Population after reproduction and Population after Crossover 54
Table 4.5 Population after Mutation 55
Table 4.6 Evaluation of initial results 56
Table 4.7 Population after Crossover and Mutation 57
Table 4.8 Minimum Weight for 20 generations 57
Table 4.9 Results by PSO for different no. of iterations 58
Table 4.10 Results of Exhaustive Search Method 59
Table 4.11 Comparison of results with the existing results: 60
Table 4.12 Journal bearing equations 62
Table 4.13 Input parameters 64
Table 4.14 Calculated parameters for both pinion and wheel 74
Table 4.15 Results by GA 81
Table 4.16 Results by PSO 84
Table 5.1 Materials with their properties and applications 90
Table 5.2 Data Matrix for bearing materials 92
Table 5.3 Normalized Matrix 96
Table 5.4 Performance score and corresponding order of selection of material 96
Table 5.5 Pair-wise Comparison Matrix for the attribute MLC 96
Table 5.6 Pair-wise Comparison Matrix for the attribute CONF 97
Table 5.7 Pair-wise Comparison Matrix for the attribute EMB 97
Table 5.8 Pair-wise Comparison Matrix for the attribute COR 97
Table 5.9 Pair-wise Comparison Matrix for the attribute FS 98
Table 5.10 Pair-wise Comparison Matrix for the attribute TS 98
Table 5.11 Pair-wise Comparison Matrix for the attribute MOD 98
Table 5.12 Pair-wise Comparison Matrix for the attribute LTE 99
Table 5.13 Pair-wise Comparison Matrix for the attribute DEN 99
Table 5.14 Ideal Mode and Relative Mode 99
Table 5.15 Relative Importance Matrix 100
Table 5.16 Normalized Decision Matrix 100
Table 5.17 Relative closeness of alternatives to ideal solution 100
Table 5.18 Data Matrix for Mechanical Drives (10 drives, 10 attributes) 103
Table 5.19 Normalized Matrix 106
Table 5.20 Performance score and corresponding order of selection of drive 106
Table 5.21 Pair-wise comparison matrix for the attribute CD 106
Table 5.22 Pair-wise Comparison Matrix for the attribute PTC 107
Table 5.23 Pair-wise comparison matrix for the attribute SR 107
Table 5.24 Pair-wise comparison matrix for the attribute EFF 107
Table 5.25 Pair-wise comparison matrix for the attribute LOT 108
| Table 5.26 | Pair-wise Comparison Matrix for the attribute PWR | 108 |
| Table 5.27 | Pair-wise comparison matrix for the attribute MAI | 108 |
| Table 5.28 | Pair-wise comparison matrix for the attribute VIB | 109 |
| Table 5.29 | Pair-wise comparison matrix for the attribute SLP | 109 |
| Table 5.30 | Pair-wise comparison matrix for the attribute WC | 109 |
| Table 5.31 | Ideal Mode and Relative Mode | 110 |
| Table 5.32 | Relative Importance Matrix | 110 |
| Table 5.33 | Normalized Decision Matrix | 110 |
| Table 5.34 | Relative closeness of alternatives to ideal solution | 111 |