List of Figures

2.1	Graphical representation of inventory system	34
2.2	Average Profit (AP_1) versus number of transfer of stocks (n) and selling-price (p) .	53
2.3	Average Profit (AP_1) versus number of transfer of stocks (n) and time (t_1)	53
2.4	Average Profit (AP_1) versus selling-price (p) and time (t_1)	54
2.5	Average Profit (AP_2) versus number of transfer of stocks (n) and time (t_1)	54
2.6	Average Profit (AP_3) versus selling-price (p) and number of transfer of stocks (n) .	55
2.7	Average Profit (AP_3) versus time (t_1) and selling-price (p)	55
2.8	Average Profit (AP_3) versus number of transfer of stocks (n) and time (t_1)	56
2.9	Average Profit (AP_4) versus number of transfer of stocks (n) and time (t_1)	56
2.10	Average Profit (AP_1) versus selling-price (p) and number of transfer of stocks (n) .	57
2.11	Average Profit (AP_1) versus time (t_1) and number of transfer of stocks (n)	58
2.12	Average Profit (AP_1) versus selling-price (p) and time (t_1)	58
2.13	Average Profit (AP_2) versus number of transfer of stocks (n) and time (t_1)	59
2.14	Average Profit (AP_3) versus selling-price (p) and number of transfer of stocks (n) .	60
2.15	Average Profit (AP_3) versus selling-price (p) and time (t_1)	60
2.16	Average Profit (AP_3) versus number of transfer of stocks (n) and time (t_1)	61
2.17	Average Profit (AP_4) versus number of transfer of stocks (n) and time (t_1)	61

3.1	Graphical illustration of inventory system while $T \geq K$	78
3.2	Graphical presentation for inventory model when $T \leq K$	78
3.3	Average profit of the system AVP_{11} versus duration of inventory cycle (T) and selling-	
	price per unit (P)	83
3.4	Average profit of the system AVP_{12} versus duration of inventory cycle (T) and selling-	
	price per unit (P)	84
3.5	Average profit of the system AVP_{13} versus duration of inventory cycle (T) and selling-	
	price per unit (P)	85
3.6	Average profit of the system AVP_{21} versus selling-price per unit (P) and duration of	
	inventory cycle (T)	85
3.7	Average profit of the system AVP_{22} versus duration of inventory cycle (T) and selling-	
	price per unit (P)	86
3.8	Average profit of the system AVP_{23} versus duration of inventory cycle (T) and selling-	
	price per unit (P)	87
3.9	Average profit of the system AVP_{11} versus duration of inventory cycle (T) and selling-	
	price per unit (P)	88
3.10	Average profit of the system AVP_{12} versus duration of inventory cycle (T) and selling-	
	price per unit (P)	89
3.11	Average profit of the system AVP_{13} versus duration of inventory cycle (T) and selling-	
	price per unit (P)	90
3.12	Average profit of the system AVP_{21} versus selling-price per unit (P) and duration of	
	inventory cycle (T)	91

3.13	Average profit of the system $AV P_{22}$ versus duration of inventory cycle (1) and sening-	
	price per unit (P)	92
3.14	Average profit of the system AVP_{23} versus duration of inventory cycle (T) and selling-	
	price per unit (P)	93
4.1	Graphical representation of the inventory system	105
4.2	Total accumulation of the interest payable in case $T_1 \geq t_{M1} \ldots \ldots \ldots$	106
4.3	Total accumulation of interest payable when $M_1 \leq T_1 \leq t_{M1}$ and $t_1 \leq N_1 \leq M_1$	107
4.4	Total interest earned in case $M_1 \leq T_1 \ldots \ldots \ldots \ldots$	108
4.5	Total interest earned in case $N_1 \leq T_1 \leq M_1 \ldots \ldots \ldots \ldots \ldots$	109
4.6	Total interest earned in case $0 < T_1 \le N_1 \dots \dots \dots$	109
4.7	Total interest earned in case $t_{M1} \leq T_1 \ldots \ldots \ldots \ldots \ldots$	112
4.8	Total interest earned in case $0 < T_1 \le M_1$	112
4.9	Annual total cost $TRC_1(T_1)$ versus time (T_1)	115
4.10	Annual total cost $TRC_2(T_1)$ versus time (T_1)	115
4.11	Annual total cost $TRC_3(T_1)$ versus time (T_1)	116
4.12	Annual total cost $TRC_4(T_1)$ versus time (T_1)	117
4.13	Annual total cost $TRC_5(T_1)$ versus time (T_1)	117
4.14	Annual total cost $TRC_6(T_1)$ versus time (T_1)	118
4.15	Annual total cost $TRC_7(T_1)$ versus time (T_1)	119
4.16	Annual total cost $TRC_1(T_1)$ versus time (T_1)	120
4.17	Annual total cost $TRC_2(T_1)$ versus time (T_1)	120
4.18	Annual total cost $TRC_3(T_1)$ versus time (T_1)	121
4.19	Annual total cost $TRC_4(T_1)$ versus time (T_1)	122

4.20	Annual total cost $TRC_5(T_1)$ versus time (T_1)	122
4.21	Annual total cost $TRC_6(T_1)$ versus time (T_1)	123
4.22	Annual total cost $TRC_7(T_1)$ versus time (T_1)	124
5.1	Graphical representation of the inventory model	142
5.2	Total interest payable while $T \geq t_{M2}$	144
5.3	Total interest payable while $M_2 \leq T \leq t_{M_2}$ and $t_1 \leq N_2 \leq M_2$	145
5.4	Total interest earned while $M_2 \leq T$	145
5.5	Total interest earned while $N_2 \leq T \leq M_2 \ldots \ldots \ldots \ldots \ldots$	146
5.6	Total interest earned while $0 < T \le N_2$	147
5.7	Total interest earned while $t_{M2} \leq T$	149
5.8	Total interest earned while $0 < T \le M_2 \ldots \ldots \ldots \ldots$	150
5.9	Annual total cost $TRC_1(T)$ versus time (T)	152
5.10	Annual total cost $TRC_2(T)$ versus time (T)	153
5.11	Annual total cost $TRC_3(T)$ versus time (T)	154
5.12	Annual total cost $TRC_4(T)$ versus time (T)	154
5.13	Annual total cost $TRC_5(T)$ versus time (T)	155
5.14	Annual total cost $TRC_6(T)$ versus time (T)	156
5.15	Annual total cost $TRC_7(T)$ versus time (T)	156
5.16	Annual total cost $TRC_1(T)$ versus time (T)	158
5.17	Annual total cost $TRC_2(T)$ versus time (T)	158
5.18	Annual total cost $TRC_3(T)$ versus time (T)	159
5.19	Annual total cost $TRC_4(T)$ versus time (T)	160
5.20	Annual total cost $TRC_5(T)$ versus time (T)	160

5.21	Annual total cost $TRC_6(T)$ versus time (T)	161
5.22	Annual total cost $TRC_7(T)$ versus time (T)	162
6.1	Graphical representation of inventory system when $X \geq t$	188
6.2	Graphical representation of inventory system when $ut < X < t$	188
6.3	Graphical representation of inventory system when $0 \le X \le t$	189
6.4	Expected total cost $C(t, u)$ versus non-inspected fraction in a batch (u) and production-	
	run length (t)	193
6.5	Expected total cost $C(t, u)$ versus non-inspected fraction in a batch (u) and production-	
	run length (t)	194
6.6	Expected total cost $C(t, u)$ versus production-run length (t) and non-inspected frac-	
	tion in a batch (u)	195
6.7	Expected total cost $C(t, u)$ versus non-inspected fraction in a batch (u) and production-	
	run length (t)	196
6.8	Expected total cost $C(t, u)$ versus non-inspected fraction in a batch (u) and production-	
	run length (t)	197
6.9	Expected total cost $C(t, u)$ versus production-run length (t) and non-inspected frac-	
	tion in a batch (u)	198
7.1	Buyers mathematical model	214
7.2	Joint total cost for vendor-buyer system (JTC) versus increasing rate of shipment	
	lot-size (λ) and vendor's setup cost (A_1)	224
7.3	Joint total cost for vendor-buyer system (JTC) versus increasing rate of shipment	
	lot size (λ) and first delivery lot-size (q)	225

225 ch 226 ad
226
ıd
226
nd
227
nt
228
nt
229
ch
229
ch
230
nd
230
nd
. 231
. 247
ts
254

8.3	Vendor-buyer system's joint total cost (JTC_{vb}) versus rate of increasing delivery lots	
	(δ) and first shipment lot-size per batch throughout the production (Q)	255
8.4	Vendor-buyer system's joint total cost (JTC_{vb}) versus number of delivery lots of each	
	batch per production (n) and investment for setup cost reduction per production run	
	(I)	255
8.5	Vendor-buyer system's joint total cost (JTC_{vb}) versus number of delivery lots of each	
	batch per production (n) and rate of increasing delivery lots (δ)	256
8.6	Vendor-buyer system's joint total cost (JTC_{vb}) versus number of delivery lots of	
	each batch per production (n) and first shipment lot-size per batch throughout the	
	production (Q)	256
8.7	Vendor-buyer system's joint total cost (JTC_{vb}) versus first shipment lot-size per batch	
	throughout the production (Q) investment for setup cost reduction per production	
	run (I)	257
8.8	Vendor-buyer system's joint total cost (JTC_{vb}) versus rate of increasing delivery lots	
	(δ) and investment for setup cost reduction per production run (I)	265
8.9	Vendor-buyer system's joint total cost (JTC_{vb}) versus rate of increasing delivery lots	
	(δ) and first shipment lot-size per batch throughout the production (Q)	266
8.10	Vendor-buyer system's joint total cost (JTC_{vb}) versus number of delivery lots of each	
	batch per production (n) and investment for setup cost reduction per production run	
	(I)	266
8.11	Vendor-buyer system's joint total cost (JTC_{vb}) versus number of delivery lots of each	
	batch per production (n) and rate of increasing delivery lots (δ)	267

8.12	Vendor-buyer system's joint total cost (JTC_{vb}) versus number of delivery lots of	
	each batch per production (n) and first shipment lot-size per batch throughout the	
	production (Q)	267
8.13	Vendor-buyer system's joint total cost (JTC_{vb}) versus first shipment lot-size per batch	
	throughout the production (Q) investment for setup cost reduction per production	
	run (I)	268