

LAMPIRAN

Lampiran 1. Solusi model penelitian awal

OBJECTIVE FUNCTION VALUE

1) 7615.000

VARIABLE	VALUE	REDUCED COST
X20121	1.000000	0.000000
X20221	0.000000	0.000000
X20321	0.000000	0.000000
X20122	0.000000	0.000000
X20222	0.000000	0.000000
X20322	1.000000	0.000000
X20123	0.000000	0.000000
X20223	0.000000	0.000000
X20323	1.000000	0.000000
X20124	0.000000	0.000000
X20224	0.000000	0.000000
X20324	0.000000	0.000000
X20125	0.000000	-1998.000000
X20225	0.000000	0.000000
X20325	1.000000	999.000000
X12221	0.000000	0.000000
X12321	0.000000	0.000000
X12222	0.000000	0.000000
X12322	1.000000	0.000000
X12223	0.000000	0.000000
X12323	1.000000	0.000000
X12224	0.000000	0.000000
X12324	1.000000	0.000000
X12225	0.000000	-2997.000000
X12325	1.000000	0.000000
X22321	1.000000	0.000000
X22322	1.000000	0.000000
X22323	1.000000	0.000000
X22324	1.000000	0.000000
X22325	1.000000	0.000000
X30121	1.000000	0.000000
X30211	0.000000	0.000000
X30122	0.000000	0.000000
X30212	0.000000	0.000000
X30123	0.000000	0.000000
X30213	0.000000	0.000000
X30124	0.000000	0.000000
X30214	0.000000	0.000000
X30125	0.000000	0.000000
X30215	0.000000	0.000000
X12211	0.000000	0.000000
X12212	1.000000	0.000000
X12213	1.000000	0.000000
X12214	1.000000	0.000000
X12215	1.000000	0.000000
X10111	0.000000	0.000000
X10211	0.000000	0.000000
X10311	0.000000	0.000000

Lampiran

X10112	0.000000	0.000000
X10212	0.000000	0.000000
X10312	1.000000	0.000000
X10113	0.000000	0.000000
X10213	0.000000	0.000000
X10313	1.000000	0.000000
X10114	0.000000	0.000000
X10214	0.000000	0.000000
X10314	0.000000	0.000000
X10115	0.000000	0.000000
X10215	0.000000	0.000000
X10315	0.000000	0.000000
X11211	0.000000	0.000000
X11311	0.000000	0.000000
X11212	0.000000	0.000000
X11312	1.000000	0.000000
X11213	0.000000	0.000000
X11313	0.000000	0.000000
X11214	0.000000	0.000000
X11314	1.000000	0.000000
X11215	0.000000	0.000000
X11315	1.000000	0.000000
X21311	0.000000	0.000000
X21312	1.000000	0.000000
X21313	1.000000	0.000000
X21314	1.000000	0.000000
X21315	1.000000	0.000000
X11221	0.000000	0.000000
X11222	0.000000	0.000000
X11223	0.000000	0.000000
X11224	1.000000	0.000000
X11225	1.000000	0.000000
Q101	0.000000	0.000000
Q102	10.000000	0.000000
Q103	10.000000	0.000000
Q104	4.000000	0.000000
Q105	1.000000	10.000000
Q201	3.000000	0.000000
Q202	4.000000	0.000000
Q203	4.000000	0.000000
Q204	3.000000	0.000000
Q205	1.000000	30.000000
Q301	10.000000	0.000000
Q302	0.000000	0.000000
Q303	0.000000	0.000000
Q304	7.000000	0.000000
Q305	3.000000	5.000000
Q111	0.000000	0.000000
Q112	30.000000	0.000000
Q113	30.000000	0.000000
Q114	12.000000	0.000000
Q115	3.000000	0.000000
Q121	0.000000	0.000000
Q122	20.000000	0.000000
Q123	20.000000	0.000000

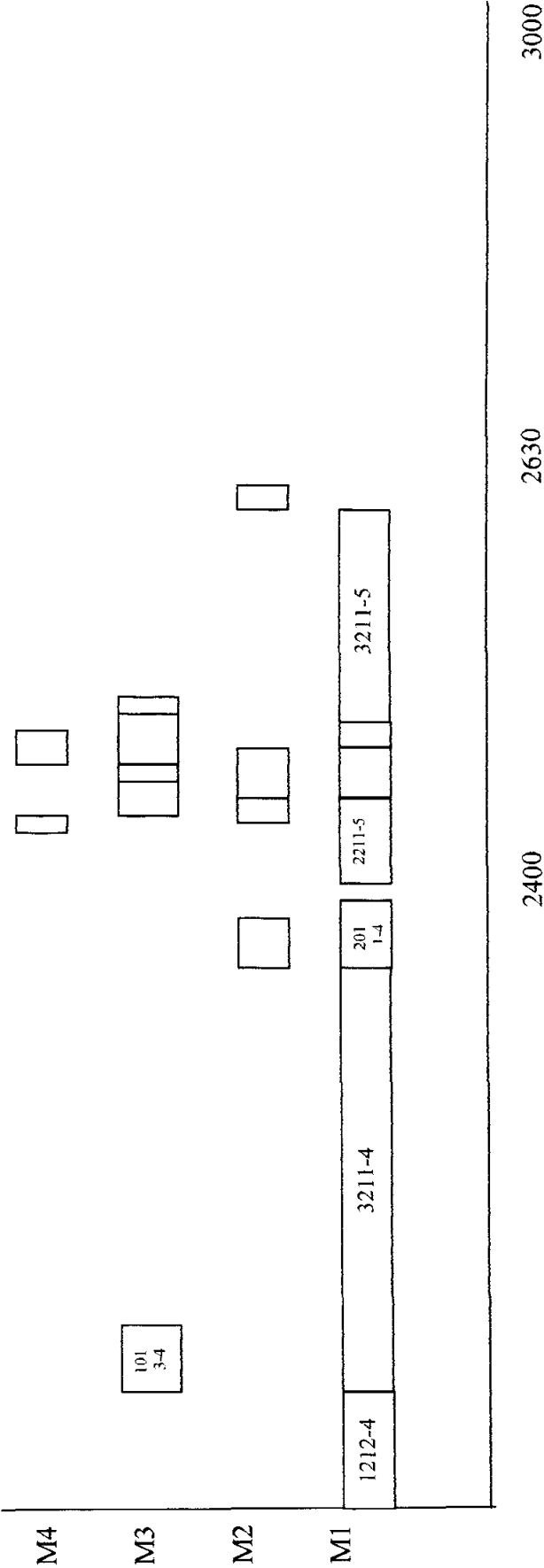
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Q124	8.000000	0.000000
Q125	2.000000	45.000000
Q211	6.000000	0.000000
Q212	8.000000	0.000000
Q213	8.000000	0.000000
Q214	6.000000	0.000000
Q215	2.000000	0.000000
Q221	3.000000	0.000000
Q222	4.000000	0.000000
Q223	4.000000	0.000000
Q224	3.000000	0.000000
Q225	1.000000	150.000000
Q311	20.000000	0.000000
Q312	0.000000	0.000000
Q313	0.000000	0.000000
Q314	14.000000	0.000000
Q315	6.000000	0.000000
Q321	40.000000	0.000000
Q322	0.000000	0.000000
Q323	0.000000	0.000000
Q324	28.000000	0.000000
Q325	12.000000	10.000000
L1	120.000000	3.000000
L2	120.000000	3.000000
L3	120.000000	3.000000
L4	115.000000	3.000000
L5	0.000000	0.000000
C10135	2490.000000	0.000000
C20115	2495.000000	0.000000
C30125	2630.000000	0.000000
S10131	600.000000	0.000000
S10132	1100.000000	0.000000
S10133	1700.000000	0.000000
S10134	2070.000000	0.000000
S10135	2480.000000	0.000000
S20111	550.000000	0.000000
S20112	1100.000000	0.000000
S20113	17000.000000	0.000000
S20114	2350.000000	0.000000
S20115	2480.000000	0.000000
S30121	550.000000	0.000000
S30122	1200.000000	0.000000
S30123	1800.000000	0.000000
S30124	2350.000000	0.000000
S30125	2615.000000	0.000000
S11141	600.000000	0.000000
S11142	920.000000	0.000000
S11143	1520.000000	0.000000
S11144	1818.000000	0.000000
S11145	2422.000000	0.000000
S12121	600.000000	0.000000
S12122	600.000000	0.000000
S12123	1200.000000	0.000000
S12124	1800.000000	0.000000
S12125	2430.000000	0.000000

S21131	430.000000	0.000000
S21132	760.000000	0.000000
S21133	1360.000000	0.000000
S21134	1800.000000	0.000000
S21135	2440.000000	0.000000
S22111	0.000000	0.000000
S22112	600.000000	0.000000
S22113	1200.000000	0.000000
S22114	1800.000000	0.000000
S22115	2400.000000	0.000000
S31131	340.000000	0.000000
S31132	1200.000000	0.000000
S31133	1800.000000	0.000000
S31134	1890.000000	0.000000
S31135	2450.000000	0.000000
S32111	150.000000	0.000000
S32112	1200.000000	0.000000
S32113	1800.000000	0.000000
S32114	2070.000000	0.000000
S32115	2495.000000	0.000000
C11141	600.000000	0.000000
S11231	600.000000	0.000000
C11142	950.000000	0.000000
S11232	950.000000	0.000000
C11143	1550.000000	0.000000
S11233	1550.000000	0.000000
C11144	1830.000000	0.000000
S11234	1830.000000	0.000000
C11145	2425.000000	0.000000
S11235	2425.000000	0.000000
C12121	600.000000	0.000000
S12211	600.000000	0.000000
C12122	800.000000	0.000000
S12212	800.000000	0.000000
C12123	1400.000000	0.000000
S12213	1400.000000	0.000000
C12124	1880.000000	0.000000
S12214	1950.000000	0.000000
C12125	2450.000000	0.000000
S12215	2450.000000	0.000000
C21131	460.000000	0.000000
S21221	460.000000	0.000000
C21132	800.000000	0.000000
S21222	800.000000	0.000000
C21133	1400.000000	0.000000
S21223	1400.000000	0.000000
C21134	1830.000000	0.000000
S21224	1880.000000	0.000000
C21135	2450.000000	0.000000
S21225	2450.000000	0.000000
C22111	150.000000	0.000000
S22241	505.000000	0.000000
C22112	800.000000	0.000000
S22242	800.000000	0.000000
C22113	1400.000000	0.000000

S22243	1400.000000	0.000000
C22114	1950.000000	0.000000
S22244	950.000000	0.000000
C22115	2450.000000	0.000000
S22245	2450.000000	0.000000
C11231	600.000000	0.000000
C11232	1100.000000	0.000000
C11233	1700.000000	0.000000
C11234	1890.000000	0.000000
C11235	2400.000000	0.000000
C21221	550.000000	0.000000
C21222	920.000000	0.000000
C21223	1520.000000	0.000000
C21224	1970.000000	0.000000
C21225	2480.000000	0.000000
C31131	430.000000	0.000000
C31132	1200.000000	0.000000
C31133	1800.000000	0.000000
C31134	1960.000000	0.000000
C31135	2480.000000	0.000000
C12211	600.000000	0.000000
C12212	1100.000000	0.000000
C12213	1700.000000	0.000000
C12214	2070.000000	0.000000
C12215	2450.000000	0.000000
C22241	550.000000	0.000000
C22242	860.000000	0.000000
C22243	1460.000000	0.000000
C22244	1995.000000	0.000000
C22245	2465.000000	0.000000
C32111	550.000000	0.000000
C32112	1200.000000	0.000000
C32113	1800.000000	0.000000
C32114	2350.000000	0.000000
C32115	2615.000000	0.000000
C10131	600.000000	0.000000
C10132	1200.000000	0.000000
C10133	1800.000000	0.000000
C10134	2010.000000	0.000000
C20111	595.000000	0.000000
C20112	1160.000000	0.000000
C20113	1760.000000	0.000000
C20114	2395.000000	0.000000
C30121	600.000000	0.000000
C30122	1200.000000	0.000000
C30123	1800.000000	0.000000
C30124	2385.000000	0.000000

M4	222 4-1		2224-2		
M3	3113-1		2113-2		1123-2
M2	2122-1		3012-1	1212-2	2122-2
M1	2211-1	3211-1	201 1-1	2211-2	2211-2
					1000
					600
					800



Lampiran 2. Machine Gantt Chart-Penelitian Awal

Lampiran 3. Formulasi penelitian

pertama

MIN

$N11+N12+N13+N21+N22+N23+N31+N32+$

$N33$

STC

$Q101+Q102+Q103=10$

$Q201+Q202 \geq 10$

$Q201+Q202+Q203=15$

$Q301 \geq 15$

$Q301+Q302+Q303=20$

$Q111-3Q101=0$

$Q112-3Q102=0$

$Q113-3Q103=0$

$Q121-2Q101=0$

$Q122-2Q102=0$

$Q123-2Q103=0$

$Q211-2Q201=0$

$Q212-2Q202=0$

$Q213-2Q203=0$

$Q221-Q201=0$

$Q222-Q202=0$

$Q223-Q203=0$

$Q311-2Q301=0$

$Q312-2Q302=0$

$Q313-2Q303=0$

$Q321-4Q301=0$

$Q322-4Q302=0$

$Q323-4Q303=0$

$L1 \leq 120$

$L2 \leq 120$

$L3 \leq 120$

$S10131 \geq 0$

$S10132-L1-N11 \geq 480$

$S10133-L1-L2-N11-N12 \geq 960$

$S20111 \geq 0$

$S20112-L1-N21 \geq 480$

$S20113-L1-L2-N21-N22 \geq 960$

$S30121 \geq 0$

$S30122-L1-N31 \geq 480$

Lampiran 4. Solusi model penelitian

pertama

OBJECTIVE FUNCTION VALUE

1) 650.000

VARIABLE	VALUE
X20121	1.000000
X20221	0.000000
X20321	0.000000
X20122	1.000000
X20222	0.000000
X20322	1.000000
X20123	1.000000
X20223	0.000000
X20323	0.000000
X12221	0.000000
X12321	0.000000
X12222	0.000000
X12322	1.000000
X12223	0.000000
X12323	1.000000
X22321	0.000000
X22322	1.000000
X22323	1.000000
X30121	1.000000
X30211	1.000000
X30122	0.000000
X30212	0.000000
X30123	0.000000
X30213	0.000000
X12211	0.000000
X12212	0.000000
X12213	1.000000
X10111	0.000000
X10211	0.000000
X10311	0.000000
X10112	0.000000
X10212	0.000000
X10312	0.000000
X10113	0.000000
X10213	0.000000
X10313	0.000000
X11211	0.000000
X11311	0.000000
X11212	0.000000
X11312	1.000000
X11213	0.000000
X11313	0.000000
X21311	0.000000
X21312	1.000000
X21313	1.000000
X11221	0.000000
X11222	0.000000

S30123-L1-L2-N31-N32>=960	X11223	0.000000
S11141>=0	Q101	0.000000
S11142-L1-N11>=480	Q102	0.000000
S11143-L1-L2-N11-N12>=960	Q103	10.000000
S12121>=0	Q201	0.000000
S12122-L1-N11>=480	Q202	10.000000
S12123-L1-L2-N11-N12>=960	Q203	5.000000
S21131>=0	Q301	15.000000
S21132-L1-N21>=480	Q302	0.000000
S21133-L1-L2-N21-N22>=960	Q303	5.000000
S22111>=0	Q111	0.000000
S22112-L1-N21>=480	Q112	0.000000
S22113-L1-L2-N21-N22>=960	Q113	30.000000
S31131>=0	Q121	0.000000
S31132-L1-N31>=480	Q122	0.000000
S31133-L1-L2-N31-N32>=960	Q123	20.000000
S32111>=0	Q211	0.000000
S32112-L1-N31>=480	Q212	20.000000
S32113-L1-L2-N31-N32>=960	Q213	10.000000
C11141-S11231<=0	Q221	0.000000
C11142-S11232<=0	Q222	10.000000
C11143-S11233<=0	Q223	5.000000
C12121-S12211<=0	Q311	30.000000
C12122-S12212<=0	Q312	0.000000
C12123-S12213<=0	Q313	10.000000
C21131-S21221<=0	Q321	40.000000
C21132-S21222<=0	Q322	0.000000
C21133-S21223<=0	Q323	20.000000
C22111-S22241<=0	L1	120.000000
C22112-S22242<=0	L2	120.000000
C22113-S22243<=0	L3	120.000000
C11231-S10131<=0	N11	0.000000
C11232-S10132<=0	N12	0.000000
C11233-S10133<=0	N13	375.000000
C21221-S20111<=0	N21	0.000000
C21222-S20112<=0	N22	200.000000
C21223-S20113<=0	N23	0.000000
C31131-S30121<=0	N31	75.000000
C31132-S30122<=0	N32	0.000000
C31133-S30123<=0	N33	0.000000
C12211-S10131<=0	S10131	675.000000
	S10132	1475.000000
	S10133	2400.000000
	S20111	675.000000
	S20112	1325.000000
	S20113	1925.000000
	S30121	600.000000
	S30122	1475.000000
	S30123	1925.000000
	S11141	675.000000
	S11142	1475.000000
	S11143	1775.000000
	S12121	675.000000
	S12122	1475.000000
	S12123	1575.000000

C12212-S10132<=0	S21131	675.000000
C12213-S10133<=0	S21132	1475.000000
C22241-S20111<=0	S21133	1725.000000
C22242-S20112<=0	S22111	675.000000
C22243-S20113<=0	S22112	675.000000
C32111-S30121<=0	S22113	1475.000000
C32112-S30122<=0	S31131	550.000000
C32113-S30123<=0	S31132	1475.000000
C10131-L1-N11<=480	S31133	1775.000000
C10132-L1-L2-N11-N12<=960	S32111	0.000000
C10133-L1-L2-L3-N11-N12-N13<=1440	S32112	1475.000000
C20111-L1-N21<=480	S32113	1725.000000
C20112-L1-L2-N21-N22<=960	C11141	675.000000
C20113-L1-L2-L3-N21-N22-N23<=1440	S11231	675.000000
C30121-L1-N31<=480	C11142	1475.000000
C30122-L1-L2-N31-N32<=960	S11232	1475.000000
C30123-L1-L2-L3-N31-N32-N33<=1440	C11143	1830.000000
C10131-S10131-10Q101=0	S11233	1830.000000
C10132-S10132-10Q102=0	C12121	675.000000
C10133-S10133-10Q103=0	S12211	675.000000
C20111-S20111-15Q201=0	C12122	1475.000000
C20112-S20112-15Q202=0	S12212	1475.000000
C20113-S20113-15Q203=0	C12123	1525.000000
C30121-S30121-5Q301=0	S12213	2000.000000
C30122-S30122-5Q302=0	C21131	675.000000
C30123-S30123-5Q303=0	S21221	675.000000
C11141-S11141-Q111=0	C21132	1000.000000
C11142-S11142-Q112=0	S21222	1025.000000
C11143-S11143-Q113=0	C21133	1775.000000
C11231-S11231-5Q111=0	S21223	1775.000000
C11232-S11232-5Q112=0	C22111	675.000000
C11233-S11233-5Q113=0	S22241	675.000000
C12121-S12121-10Q121=0	C22112	1000.000000
C12122-S12122-10Q122=0	S22242	1475.000000
C12123-S12123-10Q123=0	C22113	1725.000000
C12211-S12211-15Q121=0	S22243	1725.000000
C12212-S12212-15Q122=0	C11231	675.000000
C12213-S12213-15Q123=0	C11232	1475.000000
C21131-S21131-5Q211=0	C11233	1980.000000
C21132-S21132-5Q212=0	C21221	675.000000
C21133-S21133-5Q213=0	C21222	1325.000000
	C21223	1925.000000
	C31131	600.000000
	C31132	1475.000000
	C31133	1825.000000
	C12211	675.000000
	C12212	1475.000000
	C12213	2300.000000
	C22241	675.000000
	C22242	1475.000000
	C22243	1830.000000
	C32111	600.000000
	C32112	1475.000000
	C32113	1925.000000
	C10131	675.000000

C21221-S21221-15Q211=0	C10132	1475.000000
C21222-S21222-15Q212=0	C10133	2400.000000
C21223-S21223-15Q213=0	C20111	675.000000
C22111-S22111-50Q221=0	C20112	1475.000000
C22112-S22112-50Q222=0	C20113	2000.000000
C22113-S22113-50Q223=0	C30121	675.000000
C22241-S22241-15Q221=0	C30122	1475.000000
C22242-S22242-15Q222=0	C30123	1950.000000
C22243-S22243-15Q223=0		
C31131-S31131-5Q311=0		
C31132-S31132-5Q312=0		
C31133-S31133-5Q313=0		
C32111-S32111-10Q321=0		
C32112-S32112-10Q322=0		
C32113-S32113-10Q323=0		
C20111-C12211+999X20121-15Q201>=0		
C20111-C22111+999X20221-15Q201>=0		
C20111-C32111+999X20321-15Q201>=0		
C20112-C12212+999X20122-15Q202>=0		
C20112-C22112+999X20222-15Q202>=0		
C20112-C32112+999X20322-15Q202>=0		
C20113-C12213+999X20123-15Q203>=0		
C20113-C22113+999X20223-15Q203>=0		
C20113-C32113+999X20323-15Q203>=0		
C12211-C22111+999X12221-15Q121>=0		
C12211-C32111+999X12321-15Q121>=0		
C12212-C22112+999X12222-15Q122>=0		
C12212-C32112+999X12322-15Q122>=0		
C12213-C22113+999X12223-15Q123>=0		
C12213-C32113+999X12323-15Q123>=0		
C22111-C32111+999X22321-50Q221>=0		
C22112-C32112+999X22322-50Q222>=0		
C22113-C32113+999X22323-50Q223>=0		
C30121-C12121+999X30121-5Q301>=0		
C30121-C21221+999X30211-5Q301>=0		
C30122-C12122+999X30122-5Q302>=0		
C30122-C21222+999X30212-5Q302>=0		
C30123-C12123+999X30123-5Q303>=0		
C30123-C21223+999X30213-5Q303>=0		
C12121-C21221+999X12211-10Q121>=0		
C12122-C21222+999X12212-10Q122>=0		

C12123-C21223+999X12213-10Q123>=0	
C10131-C11231+999X10111-10Q101>=0	
C10131-C21131+999X10211-10Q101>=0	
C10131-C31131+999X10311-10Q101>=0	
C10132-C11232+999X10112-10Q102>=0	
C10132-C21132+999X10212-10Q102>=0	
C10132-C31132+999X10312-10Q102>=0	
C10133-C11233+999X10113-10Q103>=0	
C10133-C21133+999X10213-10Q103>=0	
C10133-C31133+999X10313-10Q103>=0	
C11231-C21131+999X11211-5Q111>=0	
C11231-C31131+999X11311-5Q111>=0	
C11232-C21132+999X11212-5Q112>=0	
C11232-C31132+999X11312-5Q112>=0	
C11233-C21133+999X11213-5Q113>=0	
C11233-C31133+999X11313-5Q113>=0	
C21131-C31131+999X21311-5Q211>=0	
C21132-C31132+999X21312-5Q212>=0	
C21133-C31133+999X21313-5Q213>=0	
C11141-C22241+999X11221-Q111>=0	
C11142-C22242+999X11222-Q112>=0	
C11143-C22243+999X11223-Q113>=0	
C20111-C12211+999X20121+15Q121<=999	
C20111-C22111+999X20221+50Q221<=999	
C20111-C32111+999X20321+10Q321<=999	
C20112-C12212+999X20122+15Q122<=999	
C20112-C22112+999X20222+50Q222<=999	
C20112-C32112+999X20322+10Q322<=999	
C20113-C12213+999X20123+15Q123<=999	
C20113-C22113+999X20223+50Q223<=999	
C20113-C32113+999X20323+10Q323<=999	
C12211-C22111+999X12221+50Q221<=999	
C12211-C32111+999X12321+10Q321<=999	
C12212-C22112+999X12222+50Q222<=999	
C12212-C32112+999X12322+10Q322<=999	
C12213-C22113+999X12223+50Q223<=999	
C12213-C32113+999X12323+10Q323<=999	
C22111-C32111+999X22321+10Q321<=999	
C22112-C32112+999X22322+10Q322<=999	
C22113-C32113+999X22323+10Q323<=999	
C30121-C12121+999X30121+10Q121<=999	

C30121-C21221+999X30211+15Q211<=999	
C30122-C12122+999X30122+10Q122<=999	
C30122-C21222+999X30212+15Q212<=999	
C30123-C12123+999X30123+10Q123<=999	
C30123-C21223+999X30213+15Q213<=999	
C12121-C21221+999X12211+15Q211<=999	
C12122-C21222+999X12212+15Q212<=999	
C12123-C21223+999X12213+15Q213<=999	
C10131-C11231+999X10111+5Q111<=999	
C10131-C21131+999X10211+5Q211<=999	
C10131-C31131+999X10311+5Q311<=999	
C10132-C11232+999X10112+5Q112<=999	
C10132-C21132+999X10212+5Q212<=999	
C10132-C31132+999X10312+5Q312<=999	
C10133-C11233+999X10113+5Q113<=999	
C10133-C21133+999X10213+5Q213<=999	
C10133-C31133+999X10313+5Q313<=999	
C11231-C21131+999X11211+5Q211<=999	
C11231-C31131+999X11311+5Q311<=999	
C11232-C21132+999X11212+5Q212<=999	
C11232-C31132+999X11312+5Q312<=999	
C11233-C21133+999X11213+5Q213<=999	
C11233-C31133+999X11313+5Q313<=999	
C21131-C31131+999X21311+5Q311<=999	
C21132-C31132+999X21312+5Q312<=999	
C21133-C31133+999X21313+5Q313<=999	
C11141-C22241+999X11221+15Q221<=999	
C11142-C22242+999X11222+15Q222<=999	
C11143-C22243+999X11223+15Q223<=999	
Q101>=0	
Q102>=0	
Q103>=0	
Q201>=0	
Q202>=0	
Q203>=0	
Q301>=0	
Q302>=0	
Q303>=0	
Q111>=0	
Q112>=0	
Q113>=0	

Q121>=0

Q122>=0

Q123>=0

Q211>=0

Q212>=0

Q213>=0

Q221>=0

Q222>=0

Q223>=0

Q311>=0

Q312>=0

Q313>=0

Q321>=0

Q322>=0

Q323>=0

L1>=0

L2>=0

L3>=0

N11>=0

N12>=0

N13>=0

N21>=0

N22>=0

N23>=0

N31>=0

N32>=0

N33>=0

END

INTEGER X20121

INTEGER X20221

INTEGER X20321

INTEGER X20122

INTEGER X20222

INTEGER X20322

INTEGER X20123

INTEGER X20223

INTEGER X20323

INTEGER X12221

INTEGER X12321

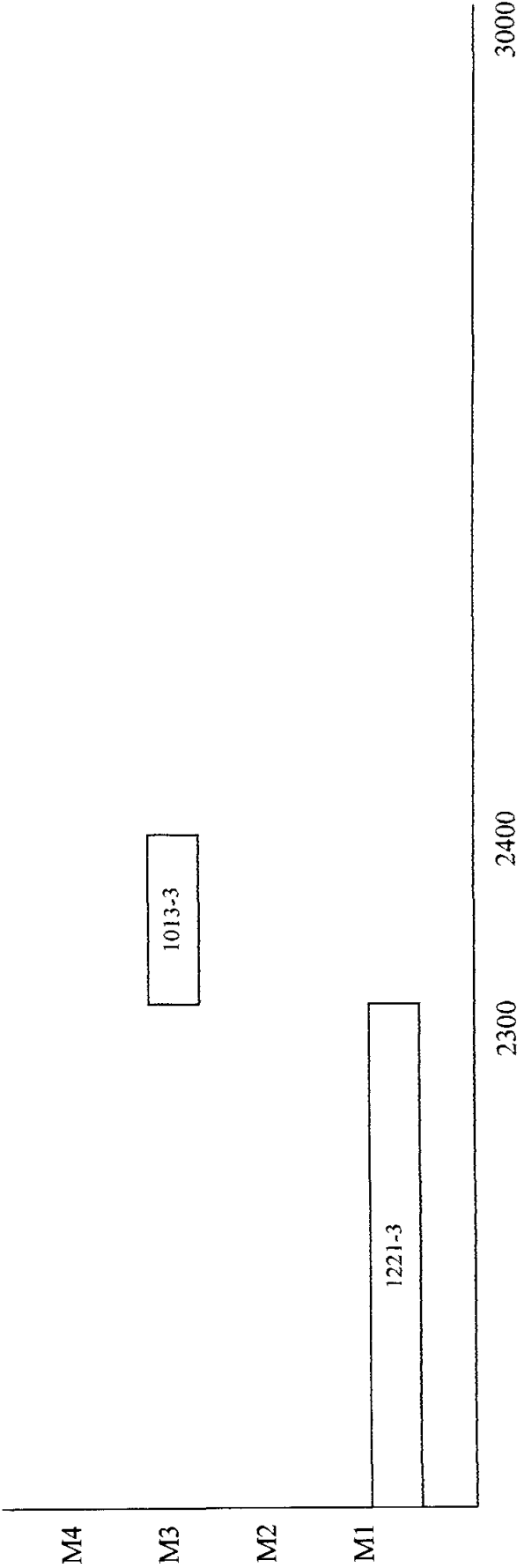
INTEGER X12222

INTEGER X12322

INTEGER X12223	
INTEGER X12323	
INTEGER X22321	
INTEGER X22322	
INTEGER X22323	
INTEGER X30121	
INTEGER X30211	
INTEGER X30122	
INTEGER X30212	
INTEGER X30123	
INTEGER X30213	
INTEGER X12211	
INTEGER X12212	
INTEGER X12213	
INTEGER X10111	
INTEGER X10211	
INTEGER X10311	
INTEGER X10112	
INTEGER X10212	
INTEGER X10312	
INTEGER X10113	
INTEGER X10213	
INTEGER X10313	
INTEGER X11211	
INTEGER X11311	
INTEGER X11212	
INTEGER X11312	
INTEGER X11213	
INTEGER X11313	
INTEGER X21311	
INTEGER X21312	
INTEGER X21313	
INTEGER X11221	
INTEGER X11222	
INTEGER X11223	
GIN Q101	
GIN Q102	
GIN Q103	
GIN Q201	
GIN Q202	
GIN Q203	

GIN Q301	
GIN Q302	
GIN Q303	
GIN Q111	
GIN Q112	
GIN Q113	
GIN Q121	
GIN Q122	
GIN Q123	
GIN Q211	
GIN Q212	
GIN Q213	
GIN Q221	
GIN Q222	
GIN Q223	
GIN Q311	
GIN Q312	
GIN Q313	
GIN Q321	
GIN Q322	
GIN Q323	
GIN L1	
GIN L2	
GIN L3	
GIN N11	
GIN N12	
GIN N13	
GIN N21	
GIN N22	
GIN N23	
GIN N31	
GIN N32	
GIN N33	

M4						
M3		3113-1	2113			
M2			3012			
M1		3211-1		2211-2		
					500	600
					675	1000



Lampiran 5. Machine Gantt Chart-Penelitian Pertama

Lampiran 6. Formulasi penelitian

kedua

MIN

$$6N11+6N12+6N13+8N21+8N22+8N23+9N31+9N32+9N33$$

STC

$$Q101+Q102+Q103=10$$

$$Q201+Q202 \geq 10$$

$$Q201+Q202+Q203=15$$

$$Q301 \geq 15$$

$$Q301+Q302+Q303=20$$

$$Q111-3Q101=0$$

$$Q112-3Q102=0$$

$$Q113-3Q103=0$$

$$Q121-2Q101=0$$

$$Q122-2Q102=0$$

$$Q123-2Q103=0$$

$$Q211-2Q201=0$$

$$Q212-2Q202=0$$

$$Q213-2Q203=0$$

$$Q221-Q201=0$$

$$Q222-Q202=0$$

$$Q223-Q203=0$$

$$Q311-2Q301=0$$

$$Q312-2Q302=0$$

$$Q313-2Q303=0$$

$$Q321-4Q301=0$$

$$Q322-4Q302=0$$

$$Q323-4Q303=0$$

$$L1 \leq 120$$

$$L2 \leq 120$$

$$L3 \leq 120$$

$$S10131 \geq 0$$

$$S10132-L1-N11 \geq 480$$

$$S10133-L1-L2-N11-N12 \geq 960$$

$$S20111 \geq 0$$

$$S20112-L1-N21 \geq 480$$

$$S20113-L1-L2-N21-N22 \geq 960$$

$$S30121 \geq 0$$

$$S30122-L1-N31 \geq 480$$

Lampiran 7. Formulasi penelitian

ketiga

$$\text{MIN } 2K1+2K2+2K3+5L1+5L2+5L3$$

STC

$$Q101+Q102+Q103=10$$

$$Q201+Q202 \geq 10$$

$$Q201+Q202+Q203=14$$

$$Q301 \geq 3$$

$$Q301+Q302+Q303=10$$

$$Q111-3Q101=0$$

$$Q112-3Q102=0$$

$$Q113-3Q103=0$$

$$Q121-2Q101=0$$

$$Q122-2Q102=0$$

$$Q123-2Q103=0$$

$$Q211-2Q201=0$$

$$Q212-2Q202=0$$

$$Q213-2Q203=0$$

$$Q221-Q201=0$$

$$Q222-Q202=0$$

$$Q223-Q203=0$$

$$Q311-2Q301=0$$

$$Q312-2Q302=0$$

$$Q313-2Q303=0$$

$$Q321-4Q301=0$$

$$Q322-4Q302=0$$

$$Q323-4Q303=0$$

$$K1 \leq 480$$

$$K2 \leq 480$$

$$K3 \leq 480$$

$$L1 \leq 120$$

$$L2 \leq 120$$

$$L3 \leq 120$$

$$S10131 \geq 0$$

$$S10132-K1-L1 \geq 0$$

$$S10133-K1-K2-L1-L2 \geq 0$$

$$S20111 \geq 0$$

$$S20112-K1-L1 \geq 0$$

$$S20113-K1-K2-L1-L2 \geq 0$$

$$S30121 \geq 0$$

S30123-L1-L2-N31-N32>=960	S30122-K1-L1>=0
S11141>=0	S30123-K1-K2-L1-L2>=0
S11142-L1-N11>=480	S11141>=0
S11143-L1-L2-N11-N12>=960	S11142-K1-L1>=0
S12121>=0	S11143-K1-K2-L1-L2>=0
S12122-L1-N11>=480	S12121>=0
S12123-L1-L2-N11-N12>=960	S12122-K1-L1>=0
S21131>=0	S12123-K1-K2-L1-L2>=0
S21132-L1-N21>=480	S21131>=0
S21133-L1-L2-N21-N22>=960	S21132-K1-L1>=0
S22111>=0	S21133-K1-K2-L1-L2>=0
S22112-L1-N21>=480	S22111>=0
S22113-L1-L2-N21-N22>=960	S22112-K1-L1>=0
S31131>=0	S22113-K1-K2-L1-L2>=0
S31132-L1-N31>=480	S31131>=0
S31133-L1-L2-N31-N32>=960	S31132-K1-L1>=0
S32111>=0	S31133-K1-K2-L1-L2>=0
S32112-L1-N31>=480	S32111>=0
S32113-L1-L2-N31-N32>=960	S32112-K1-L1>=0
C11141-S11231<=0	S32113-K1-K2-L1-L2>=0
C11142-S11232<=0	C11141-S11231<=0
C11143-S11233<=0	C11142-S11232<=0
C12121-S12211<=0	C11143-S11233<=0
C12122-S12212<=0	C12121-S12211<=0
C12123-S12213<=0	C12122-S12212<=0
C21131-S21221<=0	C12123-S12213<=0
C21132-S21222<=0	C21131-S21221<=0
C21133-S21223<=0	C21132-S21222<=0
C22111-S22241<=0	C21133-S21223<=0
C22112-S22242<=0	C22111-S22241<=0
C22113-S22243<=0	C22112-S22242<=0
C11231-S10131<=0	C22113-S22243<=0
C11232-S10132<=0	C11231-S10131<=0
C11233-S10133<=0	C11232-S10132<=0
C21221-S20111<=0	C11233-S10133<=0
C21222-S20112<=0	C21221-S20111<=0
C21223-S20113<=0	C21222-S20112<=0
C31131-S30121<=0	C21223-S20113<=0
C31132-S30122<=0	C31131-S30121<=0
C31133-S30123<=0	C31132-S30122<=0
C12211-S10131<=0	C31133-S30123<=0

C12212-S10132<=0	C12211-S10131<=0
C12213-S10133<=0	C12212-S10132<=0
C22241-S20111<=0	C12213-S10133<=0
C22242-S20112<=0	C22241-S20111<=0
C22243-S20113<=0	C22242-S20112<=0
C32111-S30121<=0	C22243-S20113<=0
C32112-S30122<=0	C32111-S30121<=0
C32113-S30123<=0	C32112-S30122<=0
C10131-L1-T11<=480	C32113-S30123<=0
C10132-L1-L2-T11-T12<=960	C10131-K1-L1<=0
C10133-L1-L2-L3-T11-T12-T13<=1440	C10132-K1-K2-L1-L2<=0
C20111-L1-T21<=480	C10133-K1-K2-K3-L1-L2-L3<=0
C20112-L1-L2-T21-T22<=960	C20111-K1-L1<=0
C20113-L1-L2-L3-T21-T22-T23<=1440	C20112-K1-K2-L1-L2<=0
C30121-L1-T31<=480	C20113-K1-K2-K3-L1-L2-L3<=0
C30122-L1-L2-T31-T32<=960	C30121-K1-L1<=0
C30123-L1-L2-L3-T31-T32-T33<=1440	C30122-K1-K2-L1-L2<=0
C10131-S10131-10Q101=0	C30123-K1-K2-K3-L1-L2-L3<=0
C10132-S10132-10Q102=0	C10131-S10131-10Q101=0
C10133-S10133-10Q103=0	C10132-S10132-10Q102=0
C20111-S20111-15Q201=0	C10133-S10133-10Q103=0
C20112-S20112-15Q202=0	C20111-S20111-15Q201=0
C20113-S20113-15Q203=0	C20112-S20112-15Q202=0
C30121-S30121-5Q301=0	C20113-S20113-15Q203=0
C30122-S30122-5Q302=0	C30121-S30121-5Q301=0
C30123-S30123-5Q303=0	C30122-S30122-5Q302=0
C11141-S11141-Q111=0	C30123-S30123-5Q303=0
C11142-S11142-Q112=0	C11141-S11141-Q111=0
C11143-S11143-Q113=0	C11142-S11142-Q112=0
C11231-S11231-5Q111=0	C11143-S11143-Q113=0
C11232-S11232-5Q112=0	C11231-S11231-5Q111=0
C11233-S11233-5Q113=0	C11232-S11232-5Q112=0
C12121-S12121-10Q121=0	C11233-S11233-5Q113=0
C12122-S12122-10Q122=0	C12121-S12121-10Q121=0
C12123-S12123-10Q123=0	C12122-S12122-10Q122=0
C12211-S12211-15Q121=0	C12123-S12123-10Q123=0
C12212-S12212-15Q122=0	C12211-S12211-15Q121=0
C12213-S12213-15Q123=0	C12212-S12212-15Q122=0
C21131-S21131-5Q211=0	C12213-S12213-15Q123=0
C21132-S21132-5Q212=0	C21131-S21131-5Q211=0
C21133-S21133-5Q213=0	C21132-S21132-5Q212=0

C21221-S21221-15Q211=0	C21133-S21133-5Q213=0
C21222-S21222-15Q212=0	C21221-S21221-15Q211=0
C21223-S21223-15Q213=0	C21222-S21222-15Q212=0
C22111-S22111-50Q221=0	C21223-S21223-15Q213=0
C22112-S22112-50Q222=0	C22111-S22111-50Q221=0
C22113-S22113-50Q223=0	C22112-S22112-50Q222=0
C22241-S22241-15Q221=0	C22113-S22113-50Q223=0
C22242-S22242-15Q222=0	C22241-S22241-15Q221=0
C22243-S22243-15Q223=0	C22242-S22242-15Q222=0
C31131-S31131-5Q311=0	C22243-S22243-15Q223=0
C31132-S31132-5Q312=0	C31131-S31131-5Q311=0
C31133-S31133-5Q313=0	C31132-S31132-5Q312=0
C32111-S32111-10Q321=0	C31133-S31133-5Q313=0
C32112-S32112-10Q322=0	C32111-S32111-10Q321=0
C32113-S32113-10Q323=0	C32112-S32112-10Q322=0
C20111-C12211+999X20121-15Q201>=0	C32113-S32113-10Q323=0
C20111-C22111+999X20221-15Q201>=0	C20111-C12211+999X20121-15Q201>=0
C20111-C32111+999X20321-15Q201>=0	C20111-C22111+999X20221-15Q201>=0
C20112-C12212+999X20122-15Q202>=0	C20111-C32111+999X20321-15Q201>=0
C20112-C22112+999X20222-15Q202>=0	C20112-C12212+999X20122-15Q202>=0
C20112-C32112+999X20322-15Q202>=0	C20112-C22112+999X20222-15Q202>=0
C20113-C12213+999X20123-15Q203>=0	C20112-C32112+999X20322-15Q202>=0
C20113-C22113+999X20223-15Q203>=0	C20113-C12213+999X20123-15Q203>=0
C20113-C32113+999X20323-15Q203>=0	C20113-C22113+999X20223-15Q203>=0
C12211-C22111+999X12221-15Q121>=0	C20113-C32113+999X20323-15Q203>=0
C12211-C32111+999X12321-15Q121>=0	C12211-C22111+999X12221-15Q121>=0
C12212-C22112+999X12222-15Q122>=0	C12211-C32111+999X12321-15Q121>=0
C12212-C32112+999X12322-15Q122>=0	C12212-C22112+999X12222-15Q122>=0
C12213-C22113+999X12223-15Q123>=0	C12212-C32112+999X12322-15Q122>=0
C12213-C32113+999X12323-15Q123>=0	C12213-C22113+999X12223-15Q123>=0
C22111-C32111+999X22321-50Q221>=0	C12213-C32113+999X12323-15Q123>=0
C22112-C32112+999X22322-50Q222>=0	C22111-C32111+999X22321-50Q221>=0
C22113-C32113+999X22323-50Q223>=0	C22112-C32112+999X22322-50Q222>=0
C30121-C12121+999X30121-5Q301>=0	C22113-C32113+999X22323-50Q223>=0
C30121-C21221+999X30211-5Q301>=0	C30121-C12121+999X30121-5Q301>=0
C30122-C12122+999X30122-5Q302>=0	C30121-C21221+999X30211-5Q301>=0
C30122-C21222+999X30212-5Q302>=0	C30122-C12122+999X30122-5Q302>=0
C30123-C12123+999X30123-5Q303>=0	C30122-C21222+999X30212-5Q302>=0
C30123-C21223+999X30213-5Q303>=0	C30123-C12123+999X30123-5Q303>=0
C12121-C21221+999X12211-10Q121>=0	C30123-C21223+999X30213-5Q303>=0
C12122-C21222+999X12212-10Q122>=0	C12121-C21221+999X12211-10Q121>=0

C12123-C21223+999X12213-10Q123>=0	C12122-C21222+999X12212-10Q122>=0
C10131-C11231+999X10111-10Q101>=0	C12123-C21223+999X12213-10Q123>=0
C10131-C21131+999X10211-10Q101>=0	C10131-C11231+999X10111-10Q101>=0
C10131-C31131+999X10311-10Q101>=0	C10131-C21131+999X10211-10Q101>=0
C10132-C11232+999X10112-10Q102>=0	C10131-C31131+999X10311-10Q101>=0
C10132-C21132+999X10212-10Q102>=0	C10132-C11232+999X10112-10Q102>=0
C10132-C31132+999X10312-10Q102>=0	C10132-C21132+999X10212-10Q102>=0
C10133-C11233+999X10113-10Q103>=0	C10132-C31132+999X10312-10Q102>=0
C10133-C21133+999X10213-10Q103>=0	C10133-C11233+999X10113-10Q103>=0
C10133-C31133+999X10313-10Q103>=0	C10133-C21133+999X10213-10Q103>=0
C11231-C21131+999X11211-5Q111>=0	C10133-C31133+999X10313-10Q103>=0
C11231-C31131+999X11311-5Q111>=0	C11231-C21131+999X11211-5Q111>=0
C11232-C21132+999X11212-5Q112>=0	C11231-C31131+999X11311-5Q111>=0
C11232-C31132+999X11312-5Q112>=0	C11232-C21132+999X11212-5Q112>=0
C11233-C21133+999X11213-5Q113>=0	C11232-C31132+999X11312-5Q112>=0
C11233-C31133+999X11313-5Q113>=0	C11233-C21133+999X11213-5Q113>=0
C21131-C31131+999X21311-5Q211>=0	C11233-C31133+999X11313-5Q113>=0
C21132-C31132+999X21312-5Q212>=0	C21131-C31131+999X21311-5Q211>=0
C21133-C31133+999X21313-5Q213>=0	C21132-C31132+999X21312-5Q212>=0
C11141-C22241+999X11221-Q111>=0	C21133-C31133+999X21313-5Q213>=0
C11142-C22242+999X11222-Q112>=0	C11141-C22241+999X11221-Q111>=0
C11143-C22243+999X11223-Q113>=0	C11142-C22242+999X11222-Q112>=0
C20111-C12211+999X20121+15Q121<=999	C11143-C22243+999X11223-Q113>=0
C20111-C22111+999X20221+50Q221<=999	C20111-C12211+999X20121+15Q121<=999
C20111-C32111+999X20321+10Q321<=999	C20111-C22111+999X20221+50Q221<=999
C20112-C12212+999X20122+15Q122<=999	C20111-C32111+999X20321+10Q321<=999
C20112-C22112+999X20222+50Q222<=999	C20112-C12212+999X20122+15Q122<=999
C20112-C32112+999X20322+10Q322<=999	C20112-C22112+999X20222+50Q222<=999
C20113-C12213+999X20123+15Q123<=999	C20112-C32112+999X20322+10Q322<=999
C20113-C22113+999X20223+50Q223<=999	C20113-C12213+999X20123+15Q123<=999
C20113-C32113+999X20323+10Q323<=999	C20113-C22113+999X20223+50Q223<=999
C12211-C22111+999X12221+50Q221<=999	C20113-C32113+999X20323+10Q323<=999
C12211-C32111+999X12321+10Q321<=999	C12211-C22111+999X12221+50Q221<=999
C12212-C22112+999X12222+50Q222<=999	C12211-C32111+999X12321+10Q321<=999
C12212-C32112+999X12322+10Q322<=999	C12212-C22112+999X12222+50Q222<=999
C12213-C22113+999X12223+50Q223<=999	C12212-C32112+999X12322+10Q322<=999
C12213-C32113+999X12323+10Q323<=999	C12213-C22113+999X12223+50Q223<=999
C22111-C32111+999X22321+10Q321<=999	C12213-C32113+999X12323+10Q323<=999
C22112-C32112+999X22322+10Q322<=999	C22111-C32111+999X22321+10Q321<=999
C22113-C32113+999X22323+10Q323<=999	C22112-C32112+999X22322+10Q322<=999
C30121-C12121+999X30121+10Q121<=999	C22113-C32113+999X22323+10Q323<=999

C30121-C21221+999X30211+15Q211<=999	C30121-C12121+999X30121+10Q121<=999
C30122-C12122+999X30122+10Q122<=999	C30121-C21221+999X30211+15Q211<=999
C30122-C21222+999X30212+15Q212<=999	C30122-C12122+999X30122+10Q122<=999
C30123-C12123+999X30123+10Q123<=999	C30122-C21222+999X30212+15Q212<=999
C30123-C21223+999X30213+15Q213<=999	C30123-C12123+999X30123+10Q123<=999
C12121-C21221+999X12211+15Q211<=999	C30123-C21223+999X30213+15Q213<=999
C12122-C21222+999X12212+15Q212<=999	C12121-C21221+999X12211+15Q211<=999
C12123-C21223+999X12213+15Q213<=999	C12122-C21222+999X12212+15Q212<=999
C10131-C11231+999X10111+5Q111<=999	C12123-C21223+999X12213+15Q213<=999
C10131-C21131+999X10211+5Q211<=999	C10131-C11231+999X10111+5Q111<=999
C10131-C31131+999X10311+5Q311<=999	C10131-C21131+999X10211+5Q211<=999
C10132-C11232+999X10112+5Q112<=999	C10131-C31131+999X10311+5Q311<=999
C10132-C21132+999X10212+5Q212<=999	C10132-C11232+999X10112+5Q112<=999
C10132-C31132+999X10312+5Q312<=999	C10132-C21132+999X10212+5Q212<=999
C10133-C11233+999X10113+5Q113<=999	C10132-C31132+999X10312+5Q312<=999
C10133-C21133+999X10213+5Q213<=999	C10133-C11233+999X10113+5Q113<=999
C10133-C31133+999X10313+5Q313<=999	C10133-C21133+999X10213+5Q213<=999
C11231-C21131+999X11211+5Q211<=999	C10133-C31133+999X10313+5Q313<=999
C11231-C31131+999X11311+5Q311<=999	C11231-C21131+999X11211+5Q211<=999
C11232-C21132+999X11212+5Q212<=999	C11231-C31131+999X11311+5Q311<=999
C11232-C31132+999X11312+5Q312<=999	C11232-C21132+999X11212+5Q212<=999
C11233-C21133+999X11213+5Q213<=999	C11232-C31132+999X11312+5Q312<=999
C11233-C31133+999X11313+5Q313<=999	C11233-C21133+999X11213+5Q213<=999
C21131-C31131+999X21311+5Q311<=999	C11233-C31133+999X11313+5Q313<=999
C21132-C31132+999X21312+5Q312<=999	C21131-C31131+999X21311+5Q311<=999
C21133-C31133+999X21313+5Q313<=999	C21132-C31132+999X21312+5Q312<=999
C11141-C22241+999X11221+15Q221<=999	C21133-C31133+999X21313+5Q313<=999
C11142-C22242+999X11222+15Q222<=999	C11141-C22241+999X11221+15Q221<=999
C11143-C22243+999X11223+15Q223<=999	C11142-C22242+999X11222+15Q222<=999
Q101>=0	C11143-C22243+999X11223+15Q223<=999
Q102>=0	Q101>=0
Q103>=0	Q102>=0
Q201>=0	Q103>=0
Q202>=0	Q201>=0
Q203>=0	Q202>=0
Q301>=0	Q203>=0
Q302>=0	Q301>=0
Q303>=0	Q302>=0
Q111>=0	Q303>=0
Q112>=0	Q111>=0
Q113>=0	Q112>=0

Q121>=0	Q113>=0
Q122>=0	Q121>=0
Q123>=0	Q122>=0
Q211>=0	Q123>=0
Q212>=0	Q211>=0
Q213>=0	Q212>=0
Q221>=0	Q213>=0
Q222>=0	Q221>=0
Q223>=0	Q222>=0
Q311>=0	Q223>=0
Q312>=0	Q311>=0
Q313>=0	Q312>=0
Q321>=0	Q313>=0
Q322>=0	Q321>=0
Q323>=0	Q322>=0
L1>=0	Q323>=0
L2>=0	K1>=0
L3>=0	K2>=0
N11>=0	K3>=0
N12>=0	L1>=0
N13>=0	L2>=0
N21>=0	L3>=0
N22>=0	END
N23>=0	INTEGER X20121
N31>=0	INTEGER X20221
N32>=0	INTEGER X20321
N33>=0	INTEGER X20122
END	INTEGER X20222
INTEGER X20121	INTEGER X20322
INTEGER X20221	INTEGER X20123
INTEGER X20321	INTEGER X20223
INTEGER X20122	INTEGER X20323
INTEGER X20222	INTEGER X12221
INTEGER X20322	INTEGER X12321
INTEGER X20123	INTEGER X12222
INTEGER X20223	INTEGER X12322
INTEGER X20323	INTEGER X12223
INTEGER X12221	INTEGER X12323
INTEGER X12321	INTEGER X22321
INTEGER X12222	INTEGER X22322
INTEGER X12322	INTEGER X22323

INTEGER X12223	INTEGER X30121
INTEGER X12323	INTEGER X30211
INTEGER X22321	INTEGER X30122
INTEGER X22322	INTEGER X30212
INTEGER X22323	INTEGER X30123
INTEGER X30121	INTEGER X30213
INTEGER X30211	INTEGER X12211
INTEGER X30122	INTEGER X12212
INTEGER X30212	INTEGER X12213
INTEGER X30123	INTEGER X10111
INTEGER X30213	INTEGER X10211
INTEGER X12211	INTEGER X10311
INTEGER X12212	INTEGER X10112
INTEGER X12213	INTEGER X10212
INTEGER X10111	INTEGER X10312
INTEGER X10211	INTEGER X10113
INTEGER X10311	INTEGER X10213
INTEGER X10112	INTEGER X10313
INTEGER X10212	INTEGER X11211
INTEGER X10312	INTEGER X11311
INTEGER X10113	INTEGER X11212
INTEGER X10213	INTEGER X11312
INTEGER X10313	INTEGER X11213
INTEGER X11211	INTEGER X11313
INTEGER X11311	INTEGER X21311
INTEGER X11212	INTEGER X21312
INTEGER X11312	INTEGER X21313
INTEGER X11213	INTEGER X11221
INTEGER X11313	INTEGER X11222
INTEGER X21311	INTEGER X11223
INTEGER X21312	GIN Q101
INTEGER X21313	GIN Q102
INTEGER X11221	GIN Q103
INTEGER X11222	GIN Q201
INTEGER X11223	GIN Q202
GIN Q101	GIN Q203
GIN Q102	GIN Q301
GIN Q103	GIN Q302
GIN Q201	GIN Q303
GIN Q202	GIN Q111
GIN Q203	GIN Q112

GIN Q301	GIN Q113
GIN Q302	GIN Q121
GIN Q303	GIN Q122
GIN Q111	GIN Q123
GIN Q112	GIN Q211
GIN Q113	GIN Q212
GIN Q121	GIN Q213
GIN Q122	GIN Q221
GIN Q123	GIN Q222
GIN Q211	GIN Q223
GIN Q212	GIN Q311
GIN Q213	GIN Q312
GIN Q221	GIN Q313
GIN Q222	GIN Q321
GIN Q223	GIN Q322
GIN Q311	GIN Q323
GIN Q312	GIN K1
GIN Q313	GIN K2
GIN Q321	GIN K3
GIN Q322	GIN L1
GIN Q323	GIN L2
GIN L1	GIN L3
GIN L2	
GIN L3	
GIN N11	
GIN N12	
GIN N13	
GIN N21	
GIN N22	
GIN N23	
GIN N31	
GIN N32	
GIN N33	

Lampiran 8. Solusi model penelitian

kedua

OBJECTIVE FUNCTION VALUE

1) 4525.000

VARIABLE	VALUE
X20121	1.000000
X20221	0.000000
X20321	0.000000
X20122	1.000000
X20222	0.000000
X20322	1.000000
X20123	1.000000
X20223	0.000000
X20323	0.000000
X12221	0.000000
X12321	0.000000
X12222	0.000000
X12322	1.000000
X12223	0.000000
X12323	1.000000
X22321	0.000000
X22322	1.000000
X22323	1.000000
X30121	1.000000
X30211	1.000000
X30122	0.000000
X30212	0.000000
X30123	0.000000
X30213	0.000000
X12211	0.000000
X12212	0.000000
X12213	1.000000
X10111	0.000000
X10211	0.000000
X10311	0.000000
X10112	0.000000
X10212	0.000000
X10312	0.000000
X10113	0.000000
X10213	0.000000
X10313	0.000000
X11211	0.000000
X11311	0.000000
X11212	0.000000
X11312	1.000000
X11213	0.000000
X11313	0.000000
X21311	0.000000
X21312	1.000000
X21313	1.000000
X11221	0.000000
X11222	0.000000

Lampiran 9. Solusi model penelitian

ketiga

OBJECTIVE FUNCTION VALUE

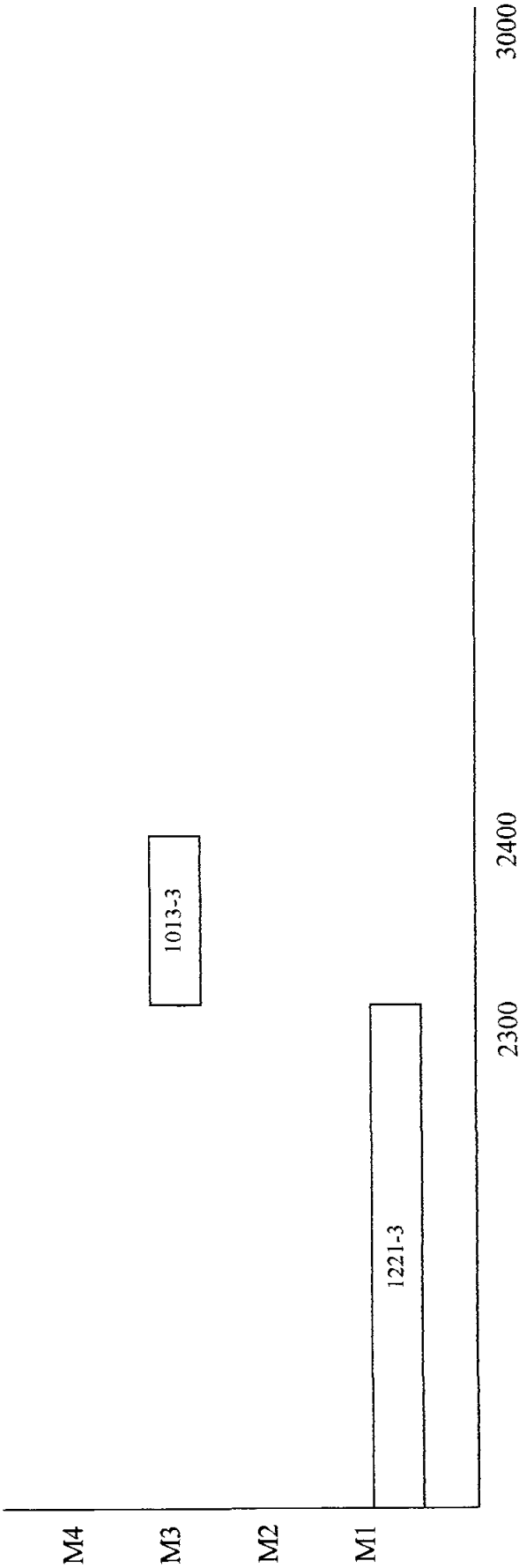
1) 3730.000

VARIABLE	VALUE
X20121	0.000000
X20221	0.000000
X20321	0.000000
X20122	0.000000
X20222	0.000000
X20322	0.000000
X20123	0.000000
X20223	0.000000
X20323	0.000000
X12221	0.000000
X12321	0.000000
X12222	0.000000
X12322	0.000000
X12223	0.000000
X12323	0.000000
X22321	1.000000
X22322	1.000000
X22323	1.000000
X30121	0.000000
X30211	0.000000
X30122	0.000000
X30212	0.000000
X30123	0.000000
X30213	0.000000
X12211	1.000000
X12212	1.000000
X12213	1.000000
X10111	0.000000
X10211	0.000000
X10311	0.000000
X10112	0.000000
X10212	0.000000
X10312	0.000000
X10113	0.000000
X10213	0.000000
X10313	0.000000
X11211	0.000000
X11311	1.000000
X11212	0.000000
X11312	1.000000
X11213	0.000000
X11313	1.000000
X21311	1.000000
X21312	1.000000
X21313	1.000000
X11221	1.000000
X11222	1.000000

X11223	0.000000	X11223	1.000000
Q101	0.000000	Q101	3.000000
Q102	0.000000	Q102	5.000000
Q103	10.000000	Q103	2.000000
Q201	0.000000	Q201	6.000000
Q202	10.000000	Q202	4.000000
Q203	5.000000	Q203	4.000000
Q301	15.000000	Q301	3.000000
Q302	0.000000	Q302	3.000000
Q303	5.000000	Q303	4.000000
Q111	0.000000	Q111	9.000000
Q112	0.000000	Q112	15.000000
Q113	30.000000	Q113	6.000000
Q121	0.000000	Q121	6.000000
Q122	0.000000	Q122	10.000000
Q123	20.000000	Q123	4.000000
Q211	0.000000	Q211	12.000000
Q212	20.000000	Q212	8.000000
Q213	10.000000	Q213	8.000000
Q221	0.000000	Q221	6.000000
Q222	10.000000	Q222	4.000000
Q223	5.000000	Q223	4.000000
Q311	30.000000	Q311	6.000000
Q312	0.000000	Q312	8.000000
Q313	10.000000	Q313	8.000000
Q321	40.000000	Q321	12.000000
Q322	0.000000	Q322	12.000000
Q323	20.000000	Q323	16.000000
L1	120.000000	K1	480.000000
L2	120.000000	K2	480.000000
L3	120.000000	K3	480.000000
N11	0.000000	L1	120.000000
N12	0.000000	L2	50.000000
N13	375.000000	L3	0.000000
N21	0.000000	S10131	390.000000
N22	200.000000	S10132	950.000000
N23	0.000000	S10133	1450.000000
N31	75.000000	S20111	510.000000
N32	0.000000	S20112	1070.000000
N33	0.000000	S20113	1620.000000
S10131	675.000000	S30121	510.000000
S10132	1475.000000	S30122	1070.000000
S10133	2400.000000	S30123	1620.000000
S20111	675.000000	S11141	306.000000
S20112	1325.000000	S11142	830.000000
S20113	1925.000000	S11143	1374.000000
S30121	600.000000	S12121	240.000000
S30122	1475.000000	S12122	750.000000
S30123	1925.000000	S12123	1360.000000
S11141	675.000000	S21131	240.000000
S11142	1475.000000	S21132	760.000000
S11143	1775.000000	S21133	1340.000000
S12121	675.000000	S22111	0.000000
S12122	1475.000000	S22112	600.000000
S12123	1575.000000	S22113	1200.000000
S21131	675.000000	S31131	360.000000
S21132	1475.000000		

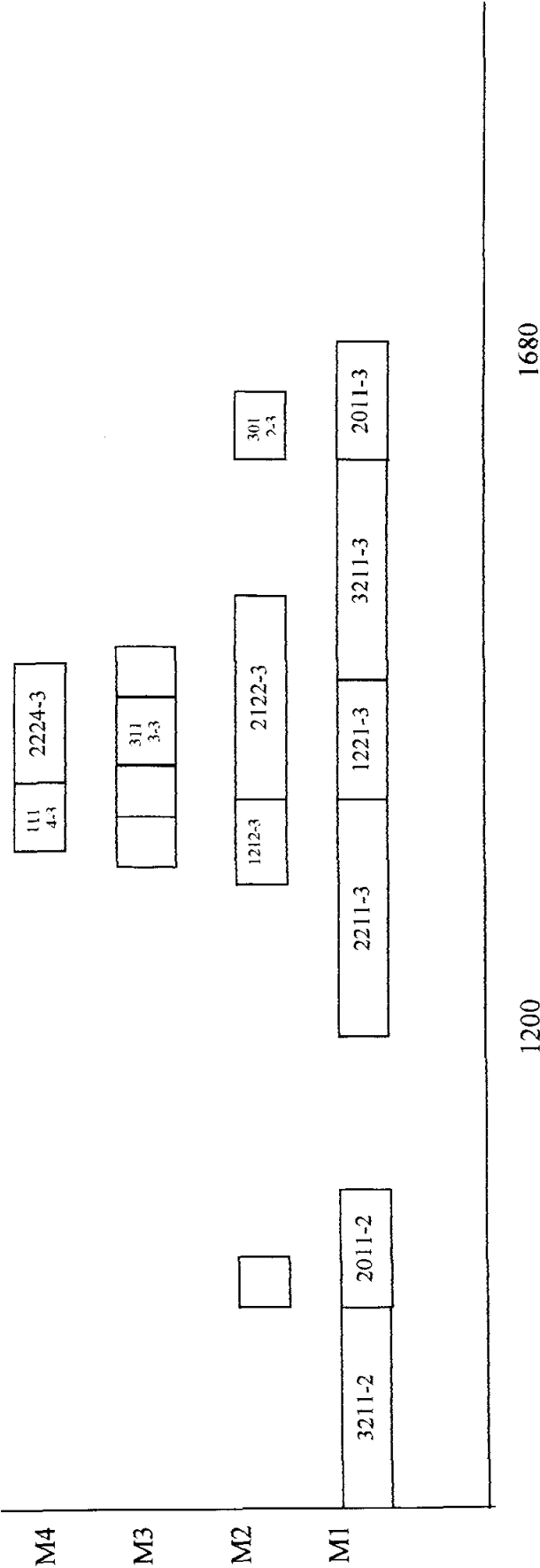
UNITED STATES OF AMERICA
SHERIFFS ASSOCIATION

M4					
M3		3113-1	2113		
M2			3012		
M1		3211-1	2211-2		
				5006006751000	



Lampiran 10. Machine Gantt Chart-Penelitian Kedua

M4	2224-1		2224-2			
M3	2113-1	1123-1			1123-2	101 2-2
M2	1212-1	2122-1		1212-2	2122-2	
M1	2211-1	1221-1	3211-1	2011-1	2211-2	
					600	800
					1000	



Lampiran 11. Machine Gantt Chart-Penelitian Ketiga

Lampiran 12. Solusi model penelitian keempat

OBJECTIVE FUNCTION VALUE

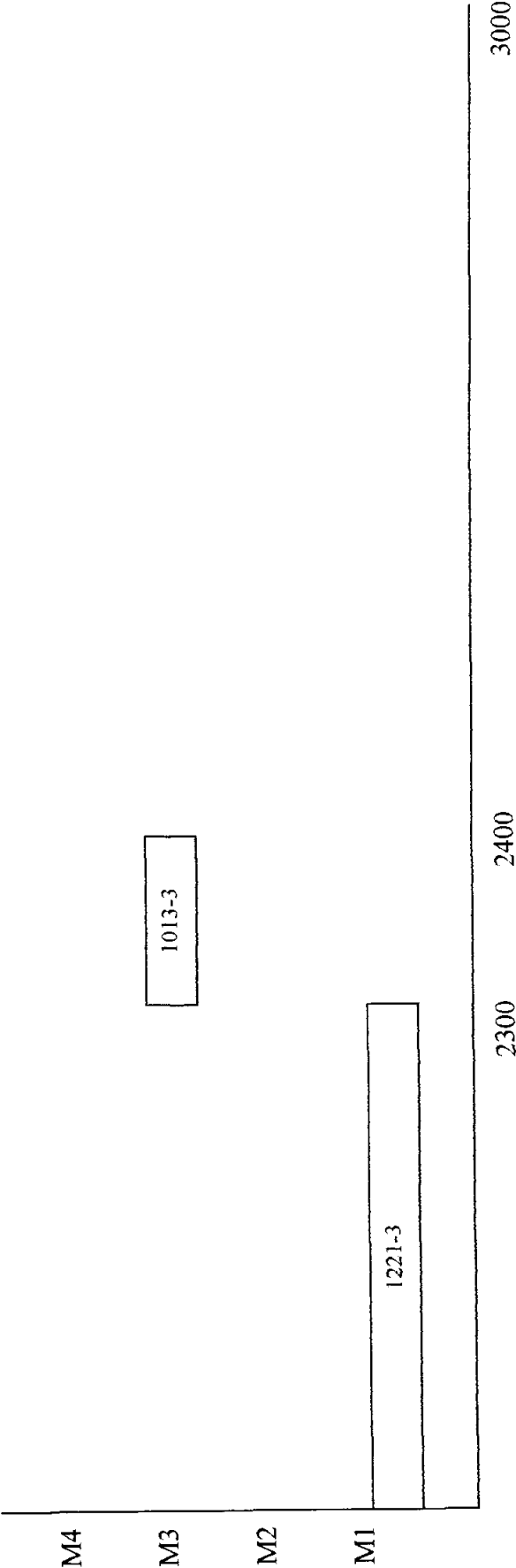
1) 9205.000

VARIABLE	VALUE	REDUCED COST
X20121	1.000000	0.000000
X20221	0.000000	0.000000
X20321	0.000000	0.000000
X20122	1.000000	0.000000
X20222	0.000000	0.000000
X20322	1.000000	0.000000
X20123	1.000000	0.000000
X20223	0.000000	0.000000
X20323	0.000000	0.000000
X12221	0.000000	0.000000
X12321	0.000000	0.000000
X12222	0.000000	0.000000
X12322	1.000000	0.000000
X12223	0.000000	0.000000
X12323	1.000000	0.000000
X22321	0.000000	0.000000
X22322	1.000000	999.000000
X22323	1.000000	0.000000
X30121	1.000000	0.000000
X30211	1.000000	0.000000
X30122	0.000000	0.000000
X30212	0.000000	0.000000
X30123	0.000000	0.000000
X30213	0.000000	0.000000
X12211	0.000000	0.000000
X12212	0.000000	0.000000
X12213	1.000000	0.000000
X10111	0.000000	0.000000
X10211	0.000000	0.000000
X10311	0.000000	0.000000
X10112	0.000000	0.000000
X10212	0.000000	0.000000
X10312	0.000000	0.000000
X10113	0.000000	0.000000
X10213	0.000000	0.000000
X10313	0.000000	0.000000
X11211	0.000000	0.000000
X11311	0.000000	0.000000
X11212	0.000000	0.000000
X11312	1.000000	0.000000
X11213	0.000000	999.000000
X11313	0.000000	0.000000
X21311	0.000000	0.000000
X21312	1.000000	0.000000
X21313	1.000000	0.000000
X11221	0.000000	0.000000
X11222	0.000000	0.000000
X11223	0.000000	0.000000
Q101	0.000000	0.000000
Q102	0.000000	0.000000
Q103	10.000000	0.000000
Q201	0.000000	0.000000
Q202	10.000000	0.000000
Q203	5.000000	0.000000

Q301	15.000000	0.000000
Q302	0.000000	0.000000
Q303	5.000000	0.000000
Q111	0.000000	0.000000
Q112	0.000000	0.000000
Q113	30.000000	0.000000
Q121	0.000000	0.000000
Q122	0.000000	0.000000
Q123	20.000000	0.000000
Q211	0.000000	0.000000
Q212	20.000000	0.000000
Q213	10.000000	0.000000
Q221	0.000000	0.000000
Q222	10.000000	0.000000
Q223	5.000000	0.000000
Q311	30.000000	0.000000
Q312	0.000000	0.000000
Q313	10.000000	0.000000
Q321	40.000000	0.000000
Q322	0.000000	0.000000
Q323	20.000000	0.000000
K1	480.000000	0.000000
K2	480.000000	0.000000
K3	480.000000	0.000000
L1	120.000000	3.000000
L2	120.000000	3.000000
L3	120.000000	3.000000
N11	0.000000	0.000000
N12	0.000000	0.000000
N13	375.000000	0.000000
N21	0.000000	0.000000
N22	200.000000	0.000000
N23	0.000000	0.000000
N31	75.000000	0.000000
N32	0.000000	0.000000
N33	0.000000	0.000000
S10131	675.000000	0.000000
S10132	1475.000000	0.000000
S10133	2400.000000	0.000000
S20111	675.000000	0.000000
S20112	1325.000000	0.000000
S20113	1925.000000	0.000000
S30121	600.000000	0.000000
S30122	1475.000000	0.000000
S30123	1925.000000	0.000000
S11141	675.000000	0.000000
S11142	1475.000000	0.000000
S11143	1775.000000	0.000000
S12121	675.000000	0.000000
S12122	1475.000000	0.000000
S12123	1575.000000	0.000000
S21131	675.000000	0.000000
S21132	1475.000000	0.000000
S21133	1725.000000	0.000000
S22111	675.000000	0.000000
S22112	675.000000	0.000000
S22113	1475.000000	0.000000
S31131	550.000000	0.000000
S31132	1475.000000	0.000000
S31133	1775.000000	0.000000

S32111	0.000000	0.000000
S32112	1475.000000	0.000000
S32113	1725.000000	0.000000
C11141	675.000000	0.000000
S11231	675.000000	0.000000
C11142	1475.000000	0.000000
S11232	1475.000000	0.000000
C11143	1830.000000	0.000000
S11233	1830.000000	0.000000
C12121	675.000000	0.000000
S12211	675.000000	0.000000
C12122	1475.000000	0.000000
S12212	1475.000000	0.000000
C12123	1525.000000	0.000000
S12213	2000.000000	0.000000
C21131	675.000000	0.000000
S21221	675.000000	0.000000
C21132	1000.000000	0.000000
S21222	1025.000000	0.000000
C21133	1775.000000	0.000000
S21223	1775.000000	0.000000
C22111	675.000000	0.000000
S22241	675.000000	0.000000
C22112	1000.000000	0.000000
S22242	1475.000000	0.000000
C22113	1725.000000	0.000000
S22243	1725.000000	0.000000
C11231	675.000000	0.000000
C11232	1475.000000	0.000000
C11233	1980.000000	0.000000
C21221	675.000000	0.000000
C21222	1325.000000	0.000000
C21223	1925.000000	0.000000
C31131	600.000000	0.000000
C31132	1475.000000	0.000000
C31133	1825.000000	0.000000
C12211	675.000000	0.000000
C12212	1475.000000	0.000000
C12213	2300.000000	0.000000
C22241	675.000000	0.000000
C22242	1475.000000	0.000000
C22243	1830.000000	0.000000
C32111	600.000000	0.000000
C32112	1475.000000	0.000000
C32113	1925.000000	0.000000
C10131	675.000000	0.000000
C10132	1475.000000	0.000000
C10133	2400.000000	0.000000
C20111	675.000000	0.000000
C20112	1475.000000	0.000000
C20113	2000.000000	0.000000
C30121	675.000000	0.000000
C30122	1475.000000	0.000000
C30123	1950.000000	0.000000

M4						
M3		3113-1	2113			
M2			3012			
M1		3211-1	2211-2			
				500	600	675
						1000



Lampiran 13. Machine Gantt Chart-Penelitian Keempat

Universitas Widyadarmas
KARASAYA

LAMPIRAN