

บรรณานุกรม

ภาษาไทย

จรัส สันทลัทธิ, สถิติวิธีวิเคราะห์และวางแผนงานวิจัย, กรุงเทพมหานคร: ไทยวัฒนาพานิช,
2523.

สุรพล อุดดีลลกุล, สถิติการวางแผนการทดลอง, กรุงเทพมหานคร: แอัสเสทการพิมพ์, 2526.

อุทุมพร ทองอุไทย, แผนวิเคราะห์ข้อมูลพฤติกรรมศาสตร์, กรุงเทพมหานคร: โรงพิมพ์เจริญผล,
2523.

ภาษาอังกฤษ

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ภาคผนวก

ตารางต่อไปนี้เป็นตารางที่แสดงถึงผลการทดสอบว่ามีความแตกต่างระหว่างอิทธิพลของทรีทเมนต์หรือไม่ โดยวิธีการวิเคราะห์ความแปรปรวนร่วม (ANCOVA) การวิเคราะห์ความแปรปรวนของการวัดซ้ำ (RPM) และการวิเคราะห์ความแปรปรวน แบบลุ่มภายในบล็อกสมบูรณ์ (RBD) ณ. ระดับนัยสำคัญ (α) 0.01 0.05 และ 0.10

ตารางที่ 1	พิจารณา	$\rho_{xy} = 0.2,$	$N = 32$	และ	$TR = 2$
2	พิจารณา	$\rho_{xy} = 0.4,$	$N = 32$	และ	$TR = 2$
3	พิจารณา	$\rho_{xy} = 0.6,$	$N = 32$	และ	$TR = 2$
4	พิจารณา	$\rho_{xy} = 0.8,$	$N = 32$	และ	$TR = 2$
5	พิจารณา	$\rho_{xy} = 0.2,$	$N = 32$	และ	$TR = 4$
6	พิจารณา	$\rho_{xy} = 0.4,$	$N = 32$	และ	$TR = 4$
7	พิจารณา	$\rho_{xy} = 0.6,$	$N = 32$	และ	$TR = 4$
8	พิจารณา	$\rho_{xy} = 0.8,$	$N = 32$	และ	$TR = 4$
9	พิจารณา	$\rho_{xy} = 0.2,$	$N = 40$	และ	$TR = 2$
10	พิจารณา	$\rho_{xy} = 0.4,$	$N = 40$	และ	$TR = 2$
11	พิจารณา	$\rho_{xy} = 0.6,$	$N = 40$	และ	$TR = 2$
12	พิจารณา	$\rho_{xy} = 0.8,$	$N = 40$	และ	$TR = 2$
13	พิจารณา	$\rho_{xy} = 0.2,$	$N = 40$	และ	$TR = 4$
14	พิจารณา	$\rho_{xy} = 0.4,$	$N = 40$	และ	$TR = 4$
15	พิจารณา	$\rho_{xy} = 0.6,$	$N = 40$	และ	$TR = 4$
16	พิจารณา	$\rho_{xy} = 0.8,$	$N = 40$	และ	$TR = 4$
17	พิจารณา	$\rho_{xy} = 0.2,$	$N = 48$	และ	$TR = 2$
18	พิจารณา	$\rho_{xy} = 0.4,$	$N = 48$	และ	$TR = 2$
19	พิจารณา	$\rho_{xy} = 0.6,$	$N = 48$	และ	$TR = 2$
20	พิจารณา	$\rho_{xy} = 0.8,$	$N = 48$	และ	$TR = 2$
21	พิจารณา	$\rho_{xy} = 0.2,$	$N = 48$	และ	$TR = 4$
22	พิจารณา	$\rho_{xy} = 0.4,$	$N = 48$	และ	$TR = 4$
23	พิจารณา	$\rho_{xy} = 0.6,$	$N = 48$	และ	$TR = 4$

ตารางที่ 24	พิจารณา	$\rho_{xy} = 0.8,$	$N = 48$	และ	$TR = 4$
25	พิจารณา	$\rho_{xy} = 0.2,$	$N = 64$	และ	$TR = 2$
26	พิจารณา	$\rho_{xy} = 0.4,$	$N = 64$	และ	$TR = 2$
27	พิจารณา	$\rho_{xy} = 0.6,$	$N = 64$	และ	$TR = 2$
28	พิจารณา	$\rho_{xy} = 0.8,$	$N = 64$	และ	$TR = 2$
29	พิจารณา	$\rho_{xy} = 0.2,$	$N = 64$	และ	$TR = 4$
30	พิจารณา	$\rho_{xy} = 0.4,$	$N = 64$	และ	$TR = 4$
31	พิจารณา	$\rho_{xy} = 0.6,$	$N = 64$	และ	$TR = 4$
32	พิจารณา	$\rho_{xy} = 0.8,$	$N = 64$	และ	$TR = 4$
33	พิจารณา	$\rho_{xy} = 0.2,$	$N = 96$	และ	$TR = 2$
34	พิจารณา	$\rho_{xy} = 0.4,$	$N = 96$	และ	$TR = 2$
35	พิจารณา	$\rho_{xy} = 0.6,$	$N = 96$	และ	$TR = 2$
36	พิจารณา	$\rho_{xy} = 0.8,$	$N = 96$	และ	$TR = 2$
37	พิจารณา	$\rho_{xy} = 0.2,$	$N = 96$	และ	$TR = 4$
38	พิจารณา	$\rho_{xy} = 0.4,$	$N = 96$	และ	$TR = 4$
39	พิจารณา	$\rho_{xy} = 0.6,$	$N = 96$	และ	$TR = 4$
40	พิจารณา	$\rho_{xy} = 0.8,$	$N = 96$	และ	$TR = 4$

ตารางที่ 1

	MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
1	171.45757	NS	S	S	232.66042	NS	NS	S	162.40705	S	S	S	7.35050	3.77701	3.19596
2	145.74379	S	S	S	195.72703	NS	S	S	146.01202	S	S	S	15.31782	6.77474	15.75203
3	264.83029	NS	NS	NS	247.85207	NS	NS	NS	263.31445	NS	NS	NS	1.21133	0.08372	0.70031
4	252.36719	NS	NS	NS	244.28125	NS	NS	NS	216.92301	NS	NS	NS	1.87086	0.00358	2.46515
5	197.53893	NS	NS	NS	171.42015	NS	NS	NS	153.27802	NS	NS	NS	0.25110	0.002	0.16282
6	107.43726	NS	NS	NS	152.97915	NS	NS	NS	104.86553	NS	NS	NS	0.92451	0.01726	0.37175
7	161.58857	NS	NS	NS	213.68207	NS	NS	NS	136.60939	NS	NS	NS	0.07762	0.00509	0.06301
8	98.54970	NS	NS	NS	120.55583	NS	NS	NS	99.40517	NS	NS	S	2.73131	0.43223	3.26190
9	168.43480	NS	S	S	227.77958	NS	NS	NS	145.70472	NS	S	S	5.41017	0.21995	6.07192
10	109.05832	NS	NS	S	190.88333	NS	NS	NS	195.20250	NS	NS	S	2.94566	0.63062	3.56333
11	107.02220	NS	NS	NS	167.20424	NS	NS	NS	102.31250	NS	NS	NS	0.75543	0.04074	0.71739
12	124.50161	NS	NS	NS	164.00833	NS	NS	S	121.92026	NS	NS	NS	0.36063	3.72428	0.33151
13	131.06187	NS	S	S	179.00203	NS	NS	NS	136.42007	NS	S	S	4.53429	1.61635	4.34178
14	124.93018	NS	NS	NS	138.28542	NS	NS	NS	123.71335	NS	NS	NS	2.69401	1.38503	2.38060
15	234.23949	NS	S	S	218.54167	NS	NS	NS	239.65611	NS	S	S	5.96710	1.28973	5.46529
16	149.84509	NS	NS	NS	155.80415	NS	NS	NS	150.29664	NS	NS	NS	0.05167	1.67239	0.00351
17	190.12715	NS	NS	NS	253.26250	NS	NS	NS	184.46706	NS	NS	NS	0.86127	0.00791	0.92775
18	80.71341	S	S	S	154.70207	NS	NS	NS	94.06630	S	S	S	9.44525	1.16158	9.65108
19	171.56694	NS	NS	NS	209.27083	NS	NS	NS	169.68318	NS	NS	NS	1.93894	1.64111	1.40404
20	114.78461	NS	NS	NS	219.32221	NS	NS	NS	93.42020	NS	NS	NS	1.17131	2.03058	1.40191
21	143.87054	NS	NS	NS	166.22083	NS	NS	NS	122.35340	NS	NS	NS	2.84758	2.76429	1.94984
22	183.93628	NS	NS	NS	216.56041	NS	NS	S	172.29100	NS	NS	NS	1.37316	2.56915	2.12078
23	183.40880	NS	S	S	236.71457	NS	NS	S	184.67671	NS	S	S	7.14409	3.74396	7.48073
24	224.10062	NS	NS	NS	257.27083	NS	NS	NS	232.23921	NS	NS	NS	0.20291	0.17059	0.02536
25	211.05280	NS	S	S	213.93333	NS	NS	NS	215.52370	NS	NS	S	4.25623	0.36372	3.46235

ตารางที่ 2

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
114.27377	NS	NS	NS	149.57500	NS	NS	NS	122.51999	NS	NS	NS	0.57820	1.03301	0.78085
150.22478	S	S	S	270.40535	NS	NS	S	139.41699	S	S	S	7.93077	3.13481	9.56676
137.49564	NS	S	S	203.63541	NS	NS	S	98.69735	NS	S	S	4.93715	3.71927	7.00137
152.25151	NS	S	S	201.20000	NS	NS	NS	154.56250	NS	S	S	5.56620	1.33729	5.77123
214.22723	NS	NS	NS	321.90537	NS	NS	NS	217.57239	NS	NS	NS	0.01267	0.00387	0.08026
171.72157	NS	S	S	241.73958	NS	NS	NS	173.75749	S	S	S	7.46985	0.99772	9.27130
151.52573	NS	NS	NS	230.2002	NS	NS	NS	127.27770	NS	NS	NS	0.09322	0.27043	0.22050
116.55261	NS	NS	NS	203.97916	NS	NS	NS	107.63249	NS	NS	NS	1.07790	0.67011	2.12020
164.80157	NS	S	S	262.18935	NS	NS	NS	179.03999	NS	NS	S	4.52794	1.39427	4.14014
95.23523	NS	NS	S	192.40416	NS	NS	NS	76.53000	NS	NS	NS	2.92261	1.70635	1.57336
104.26155	S	S	S	213.61041	NS	NS	S	76.00740	S	S	S	11.03449	3.00050	19.04709
109.22695	NS	NS	NS	194.55532	NS	S	S	110.50499	NS	NS	NS	0.59122	4.40106	0.85030
135.74045	NS	NS	NS	290.43311	NS	NS	NS	155.16499	NS	NS	NS	0.27756	0.01209	0.02416
136.73410	S	S	S	195.95033	NS	NS	NS	140.17999	S	S	S	0.09769	1.89507	7.41118
150.11987	NS	NS	NS	243.90958	NS	NS	NS	132.05249	NS	NS	NS	2.13059	1.57307	1.97174
125.58681	NS	NS	S	192.64999	NS	NS	NS	197.61740	NS	NS	NS	2.29179	2.6337	2.36731
160.54531	NS	NS	NS	251.74374	NS	NS	S	171.75000	NS	NS	NS	1.61118	0.73147	2.16255
174.47023	NS	NS	NS	322.15820	NS	NS	NS	116.63499	NS	S	S	0.55849	1.02370	5.26271
148.78340	S	S	S	280.35015	NS	S	S	150.19240	S	S	S	15.67038	5.87117	14.81486
92.42940	S	S	S	220.53749	S	S	S	63.42999	S	S	S	20.60072	12.02522	28.32631
160.43396	S	S	S	279.89365	NS	NS	S	125.13240	NS	S	S	7.69321	3.15052	6.51047
207.21034	NS	NS	NS	273.1771	NS	NS	NS	222.76250	NS	NS	NS	0.67582	1.35137	0.36298
196.28081	NS	NS	NS	293.50610	NS	NS	NS	202.05740	NS	NS	NS	0.29179	0.19632	0.07737
71.62238	NS	S	S	191.90757	NS	S	S	52.26999	NS	S	S	5.74890	7.27891	5.00108
117.57306	NS	NS	S	240.99165	S	S	S	137.85750	NS	NS	NS	3.55405	0.00690	1.74275

ตารางที่ 3

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
104.75555	NS	S	S	225.70833	NS	NS	S	37.29779	NS	NS	S	6.07765	3.49400	4.75155
107.29277	NS	NS	NS	243.52500	NS	NS	NS	81.80517	NS	NS	NS	1.47974	0.02666	2.46072
185.18439	NS	NS	NS	303.61070	NS	NS	NS	212.84558	NS	NS	NS	0.00371	0.60170	0.00423
153.71954	NS	NS	NS	360.53320	NS	NS	NS	180.69852	NS	NS	NS	0.00575	0.07520	0.00237
130.83563	S	S	S	265.63330	NS	NS	NS	113.26107	NS	NS	NS	8.70645	0.61033	13.64959
112.76476	NS	NS	S	235.23541	NS	NS	NS	129.27940	NS	NS	NS	6.46670	0.27235	2.17552
115.44646	NS	NS	NS	257.88940	NS	NS	NS	51.20587	NS	NS	NS	0.27303	0.30973	2.65525
125.15919	NS	NS	NS	247.97157	NS	NS	NS	149.54404	NS	NS	NS	2.09545	0.07284	0.64531
125.55779	NS	S	S	295.94995	NS	NS	NS	164.36765	NS	S	S	5.53463	1.14652	4.77213
71.71875	S	S	S	189.78749	NS	NS	NS	114.56323	S	S	S	9.87699	17.56239	32.31572
90.02599	NS	NS	NS	235.01666	NS	NS	NS	85.46161	NS	NS	NS	0.88268	0.40449	1.32957
91.68051	NS	NS	S	281.77070	NS	NS	NS	131.52719	NS	NS	S	3.93111	1.11313	3.25019
95.59933	NS	NS	NS	245.08747	NS	NS	NS	106.05558	NS	NS	NS	0.84633	0.48758	1.91572
110.03239	NS	S	S	275.53125	NS	NS	NS	98.35294	NS	NS	S	5.44079	1.37552	3.32433
120.74028	NS	NS	NS	303.45190	NS	NS	NS	117.69116	NS	NS	NS	0.35294	0.01277	1.00050
104.17786	S	S	S	215.90833	NS	NS	NS	65.41176	S	S	S	9.55853	1.39208	18.76714
78.43550	NS	NS	S	231.58749	NS	NS	NS	63.62132	NS	NS	NS	2.49641	0.00216	2.39839
114.37061	NS	NS	NS	278.51025	NS	NS	NS	72.02573	NS	S	S	2.86973	1.54325	4.48312
68.25253	NS	NS	S	183.61249	NS	NS	NS	72.89705	NS	NS	NS	3.31365	2.98310	2.55301
145.00768	NS	NS	NS	312.44580	NS	NS	NS	191.31616	NS	NS	NS	1.55943	0.09602	0.68212
145.95196	NS	NS	NS	330.52075	NS	NS	NS	213.26669	NS	NS	NS	0.21957	0.26740	0.02543
129.60545	NS	NS	NS	322.29735	NS	NS	NS	169.15908	NS	NS	NS	0.21216	0.03161	0.18149
158.57166	NS	NS	NS	406.37500	NS	NS	NS	135.36397	NS	NS	S	0.99295	0.90661	3.23395
94.87802	NS	NS	S	191.37703	NS	NS	NS	78.67279	NS	NS	S	2.68393	0.04637	4.08019
100.75761	NS	NS	NS	240.69791	NS	NS	NS	78.94852	NS	NS	NS	2.08258	0.10438	1.31505

ตารางที่ 4

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
45.10484	S	S	S	206.91583	NS	NS	NS	47.73529	NS	S	S	11.05794	2.34338	7.45215
85.47144	NS	S	S	327.66650	NS	NS	NS	118.72426	NS	S	S	7.34661	1.69494	5.80727
80.45253	S	S	S	303.03320	NS	NS	NS	73.11029	NS	S	S	11.75971	0.05790	6.59913
64.75183	NS	NS	NS	257.24730	NS	NS	NS	37.46690	NS	NS	NS	2.33026	0.78162	2.2676
59.82059	NS	NS	S	342.69995	NS	S	S	93.92015	S	S	S	2.14109	6.70375	27.28291
49.17500	S	S	S	206.89166	S	S	S	69.43750	S	S	S	12.78912	1.33551	8.69736
56.42102	S	S	S	294.76561	NS	NS	S	77.67647	S	S	S	0.33594	3.60183	40.05515
55.33626	S	S	S	306.43945	NS	NS	NS	33.57719	NS	NS	S	10.75845	0.00714	4.92175
77.34526	NS	S	S	399.89575	NS	NS	NS	66.33923	S	S	S	5.44932	0.04470	8.17628
44.50623	NS	NS	NS	305.36865	NS	NS	NS	37.03067	NS	NS	NS	2.63613	0.00142	1.75678
49.83281	S	S	S	221.45416	NS	NS	NS	70.01469	S	S	S	25.38713	2.72093	13.28139
63.31081	NS	NS	S	239.60958	NS	NS	NS	81.71690	S	S	S	3.96635	1.46280	31.75220
64.46696	S	S	S	289.38745	NS	NS	NS	102.40073	NS	NS	S	10.21491	2.33662	3.51246
77.31790	NS	NS	S	299.92601	NS	NS	NS	90.80882	NS	NS	NS	3.04317	1.01673	2.35956
54.83279	S	S	S	291.24365	NS	NS	NS	35.53308	NS	S	S	7.96635	1.04230	7.65482
72.28079	NS	S	S	303.86150	NS	NS	NS	77.23529	NS	NS	NS	4.98495	1.11172	2.09116
77.12216	NS	S	S	396.47070	NS	NS	NS	91.34926	NS	S	S	5.42198	0.22842	6.14759
64.80631	S	S	S	209.87700	NS	NS	NS	60.05015	NS	S	S	12.28915	0.35567	6.06764
73.17397	NS	S	S	340.15820	NS	NS	NS	81.00000	NS	S	S	7.36594	1.98676	5.90456
64.86718	S	S	S	297.92067	NS	NS	S	95.56986	NS	NS	S	10.74783	3.97316	3.24333
55.73252	NS	NS	S	320.78955	NS	NS	NS	61.84558	NS	NS	S	2.34484	1.50566	3.09304
42.77307	S	S	S	234.49582	NS	NS	S	68.53676	S	S	S	20.84756	3.56883	11.18669
63.36257	NS	S	S	340.56250	NS	NS	NS	43.86765	S	S	S	5.16314	2.35506	8.75360
53.07329	S	S	S	248.74562	NS	NS	NS	71.75000	NS	NS	NS	9.64295	0.07663	2.90174
49.14310	S	S	S	274.66115	NS	S	S	68.65008	S	S	S	10.92225	1.69361	11.02713

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
292.19946	NS	NS	NS	391.25439	NS	NS	NS	253.72249	NS	NS	S	1.64001	0.78809	2.11278
170.96603	NS	S	S	190.37723	NS	NS	NS	166.55496	NS	S	S	3.30448	1.74194	3.17784
154.08449	NS	S	S	166.24553	S	S	S	155.71999	NS	NS	S	3.62381	3.08372	2.79236
226.55277	NS	NS	NS	225.22543	NS	NS	NS	250.07500	NS	NS	NS	1.39836	1.41839	1.45730
139.92302	NS	S	S	173.25446	NS	NS	NS	153.53240	NS	S	S	3.68668	0.97252	3.22512
155.75362	NS	S	S	211.72221	S	S	S	189.69749	S	S	S	3.50516	5.45573	4.83436
190.23766	NS	NS	NS	211.48213	NS	NS	NS	183.46750	NS	NS	NS	0.50401	0.66219	0.12753
134.65509	NS	S	S	183.20312	NS	NS	NS	144.10500	NS	S	S	4.22301	2.14277	4.22127
191.46021	NS	NS	S	133.46205	NS	NS	S	191.64000	NS	NS	NS	2.31573	2.37710	2.22490
206.75391	NS	NS	NS	278.60937	NS	NS	NS	194.12000	NS	NS	NS	1.14699	1.35691	1.29742
146.84602	NS	S	S	179.82783	NS	NS	NS	105.50749	S	S	S	2.50383	2.27083	3.04120
166.05974	NS	NS	S	203.17633	NS	NS	NS	156.76500	NS	NS	S	2.42920	2.00677	2.77552
270.39868	NS	NS	NS	323.18657	NS	NS	NS	231.30750	NS	NS	NS	1.24974	0.40587	1.74534
119.58268	S	S	S	198.48883	NS	NS	NS	127.37000	NS	S	S	5.47634	1.05902	3.75507
202.60098	NS	S	S	232.71200	NS	NS	NS	155.06199	NS	S	S	4.28047	3.51956	4.51009
181.91509	S	S	S	242.11160	NS	NS	NS	134.10750	S	S	S	4.84527	1.77561	6.29324
126.10596	S	S	S	183.70733	NS	NS	NS	129.33219	NS	S	S	6.15091	2.23246	4.34126
83.76339	S	S	S	121.07312	NS	NS	S	83.76749	S	S	S	9.16333	2.47206	7.29699
155.77734	NS	NS	NS	197.00893	NS	NS	NS	116.76956	NS	NS	NS	0.65573	0.38556	0.47144
133.02284	NS	S	S	209.21651	NS	NS	NS	133.26250	NS	NS	S	3.31564	1.44716	2.60939
110.97549	NS	NS	NS	178.84230	NS	NS	S	160.05749	NS	NS	NS	0.77429	2.43960	1.16533
161.99609	NS	S	S	219.03343	NS	NS	NS	160.68956	NS	NS	S	2.96806	0.95391	2.29252
200.97564	NS	S	S	202.58491	NS	S	S	209.57249	NS	S	S	3.15755	3.43621	3.16743
165.40739	NS	NS	S	157.68973	NS	NS	NS	144.60750	NS	NS	S	2.47745	1.08613	2.99302
171.55627	NS	NS	NS	171.62053	NS	NS	NS	188.92000	NS	NS	NS	1.65429	0.67057	1.23435

ตารางที่ 6

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
117.57027	NS	S	S	203.83037	NS	NS	NS	107.87000	NS	S	S	4.60263	1.53723	4.42674
133.74431	S	S	S	240.06918	S	S	S	125.03749	S	S	S	0.77438	4.72451	0.23574
234.83010	NS	S	S	297.0193	NS	NS	NS	243.75759	NS	NS	NS	3.32411	1.03417	2.05577
141.99894	NS	NS	S	256.84595	NS	NS	NS	162.55490	NS	NS	S	2.90567	1.28505	2.58709
149.04739	NS	NS	S	251.95753	NS	NS	NS	113.27209	NS	NS	NS	2.54500	0.10621	1.02042
152.27980	NS	S	S	198.77673	NS	NS	NS	115.14000	S	S	S	4.05670	0.51324	0.27360
172.25114	NS	NS	NS	221.71205	NS	NS	NS	171.68995	NS	NS	NS	1.97634	0.90574	1.23075
149.47130	NS	S	S	220.39953	NS	NS	NS	147.45000	NS	S	S	4.05856	1.55050	3.79727
88.35744	NS	NS	S	190.02850	NS	NS	NS	92.60700	NS	S	S	2.47266	0.66177	3.15742
157.41232	NS	NS	NS	234.38833	NS	NS	NS	157.34250	NS	NS	NS	1.51199	1.71492	0.91699
128.75059	NS	S	S	252.18525	NS	NS	NS	110.35209	NS	S	S	4.03578	0.75812	4.42577
158.02864	NS	NS	NS	217.75223	NS	NS	S	154.92490	NS	NS	NS	1.23101	2.63220	1.17032
76.26566	S	S	S	143.24562	S	S	S	78.00700	S	S	S	10.70131	1.08041	10.10703
182.19320	NS	S	S	273.83032	NS	NS	S	209.08249	NS	S	S	3.76314	2.56576	4.19576
149.97040	NS	S	S	230.17187	NS	NS	NS	145.32999	NS	S	S	4.35291	0.15195	3.22791
100.25223	NS	NS	S	183.21423	NS	NS	NS	112.36249	NS	S	S	2.34653	2.28512	3.01537
163.94212	NS	NS	NS	229.54240	NS	NS	NS	177.69749	NS	NS	NS	1.50140	0.13307	0.94707
120.09981	NS	NS	NS	255.25446	NS	NS	NS	133.44499	NS	NS	NS	2.24566	1.26130	2.20114
151.74753	NS	NS	NS	239.75663	NS	NS	NS	175.03749	NS	NS	NS	1.81857	0.89813	1.52740
93.70796	NS	S	S	159.25713	NS	NS	NS	80.89099	S	S	S	3.68191	0.57075	3.06391
172.29239	NS	NS	NS	173.52563	NS	NS	NS	188.84999	NS	NS	NS	1.06865	0.11410	1.02079
196.71514	NS	NS	NS	291.49756	NS	NS	NS	210.03249	NS	NS	NS	1.73164	0.63905	0.36753
115.92523	NS	NS	S	223.14731	NS	NS	NS	117.74750	NS	NS	S	2.34226	0.28532	2.06151
174.46918	NS	S	S	234.94419	NS	NS	NS	190.41249	NS	S	S	3.27065	2.25409	3.08678
146.76564	NS	NS	NS	210.41203	NS	NS	NS	166.85000	NS	NS	S	2.20335	1.95102	2.26728

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
173.25188	NS	NS	S	363.37036	NS	NS	NS	221.72426	NS	NS	S	2.36217	1.18612	2.47441
156.77018	NS	NS	NS	394.41064	NS	NS	NS	125.65073	NS	NS	S	1.99136	1.06065	2.56200
124.51700	S	S	S	299.75000	NS	NS	NS	148.20219	NS	NS	S	4.95150	1.07402	2.87226
79.38585	S	S	S	276.89062	NS	NS	NS	96.42647	S	S	S	6.15780	1.83654	5.44419
97.35596	NS	S	S	256.22754	NS	NS	NS	70.75266	NS	S	S	3.08224	0.54419	4.56670
139.12854	NS	NS	S	305.00430	NS	NS	NS	149.42647	NS	NS	S	2.67125	0.45491	2.66280
113.91791	S	S	S	232.56910	NS	S	S	114.38602	NS	S	S	4.65228	4.04799	4.02841
61.63116	S	S	S	164.65643	NS	NS	S	40.05147	S	S	S	7.17232	2.40269	6.25424
118.29955	NS	S	S	265.19189	NS	NS	NS	127.84190	NS	S	S	4.11787	2.22677	3.40074
90.09366	NS	S	S	201.93090	NS	NS	NS	109.46323	NS	S	S	4.55759	1.13230	2.76708
127.17932	NS	NS	NS	224.50000	NS	NS	NS	139.39337	NS	NS	NS	1.50685	1.28703	2.31585
144.40799	NS	S	S	337.12939	NS	NS	NS	162.52940	NS	NS	S	0.90021	0.75058	2.71300
133.65051	NS	NS	NS	325.51313	NS	NS	NS	159.32352	NS	NS	NS	1.29691	0.66399	0.56790
104.13633	NS	NS	NS	211.84021	NS	NS	NS	104.52573	NS	NS	NS	1.63544	1.00954	1.05919
131.22966	NS	NS	NS	356.50439	NS	NS	NS	135.06984	NS	NS	NS	1.37623	1.17524	0.99715
93.52380	NS	S	S	252.03343	NS	NS	NS	104.99532	NS	S	S	4.22960	0.53697	3.98277
127.06968	NS	NS	NS	288.30566	NS	NS	NS	142.95587	NS	NS	NS	0.87942	0.34432	1.26061
115.64410	S	S	S	293.29004	NS	NS	NS	86.22426	S	S	S	0.09014	1.88451	11.61511
100.12598	NS	NS	S	248.14062	NS	NS	NS	67.93015	NS	NS	NS	2.47051	0.57956	1.38024
113.03009	S	S	S	335.32349	NS	NS	NS	138.44116	S	S	S	0.65690	2.22068	7.29014
85.42076	S	S	S	196.37276	NS	NS	NS	105.23897	S	S	S	6.35493	1.31531	5.70435
82.54153	NS	NS	NS	204.67856	NS	NS	NS	88.56690	NS	NS	NS	1.39723	0.13782	1.94184
96.75843	S	S	S	272.12036	NS	NS	NS	79.66176	S	S	S	5.07690	1.45032	9.02690
93.57776	NS	S	S	217.04240	NS	S	S	109.29366	NS	S	S	3.59843	3.41254	3.31015
113.42067	NS	NS	NS	272.03599	NS	NS	NS	120.81610	NS	NS	NS	1.21797	0.54189	0.30591

ตารางที่ 8

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
42.84541	S	S	S	237.80333	NS	NS	NS	49.15440	NS	S	S	5.71257	0.63585	2.56161
50.56714	NS	S	S	255.57812	NS	NS	NS	70.87132	NS	NS	S	4.23782	0.85672	2.52252
75.37186	S	S	S	317.83032	NS	NS	NS	121.07719	NS	NS	NS	5.10175	1.60174	1.66981
57.01515	S	S	S	318.86816	NS	NS	NS	87.75366	S	S	S	7.95131	0.81828	6.65077
65.48267	S	S	S	366.09375	NS	NS	NS	77.23161	S	S	S	7.94821	0.81696	8.34006
56.39586	S	S	S	254.18750	NS	NS	NS	71.38234	S	S	S	12.32724	1.72862	5.50312
66.53015	S	S	S	320.62720	NS	NS	NS	76.06250	S	S	S	5.14788	0.20513	5.25511
78.51571	NS	S	S	355.93970	NS	NS	NS	128.60294	NS	NS	NS	4.13208	1.39098	1.92225
46.85929	S	S	S	220.63838	NS	NS	NS	68.04779	NS	S	S	6.70036	0.85852	4.65872
93.73712	NS	NS	NS	409.18970	NS	NS	NS	155.91176	NS	NS	NS	2.20336	0.79904	0.97668
52.23648	S	S	S	261.88066	NS	NS	S	52.41176	S	S	S	8.31251	2.75874	6.18031
64.63861	S	S	S	255.81562	NS	NS	S	65.19116	NS	S	S	5.41905	2.54585	3.27671
67.20795	S	S	S	296.37720	NS	NS	NS	82.78300	NS	S	S	4.82609	0.29220	4.48742
73.87791	S	S	S	293.51313	NS	NS	NS	92.34150	NS	S	S	4.75483	1.15432	4.72518
59.12399	NS	S	S	250.67720	NS	NS	NS	56.95587	NS	S	S	4.34664	1.23656	3.45220
43.28140	S	S	S	245.84131	NS	NS	NS	53.01837	S	S	S	7.79809	0.76675	5.88071
70.02856	NS	S	S	332.71411	NS	NS	NS	85.45955	NS	NS	S	3.19296	0.94217	2.96160
58.51187	S	S	S	307.43970	NS	NS	NS	65.81250	NS	S	S	5.99805	0.21651	4.92775
75.05449	NS	NS	S	332.38818	NS	NS	NS	65.61029	NS	S	S	2.54669	1.76864	3.68409
66.47569	NS	S	S	322.74316	NS	NS	NS	86.09190	NS	NS	NS	4.03572	0.42274	2.12572
64.14453	S	S	S	315.98193	NS	NS	NS	37.91911	S	S	S	4.97451	1.14788	7.47970
55.15300	S	S	S	286.71875	NS	NS	NS	67.92015	NS	S	S	6.86948	1.62851	4.99549
50.92346	S	S	S	369.81909	NS	NS	NS	50.88234	S	S	S	19.20296	1.96701	15.40348
86.11221	S	S	S	349.26782	NS	NS	S	74.20315	S	S	S	0.80257	2.31992	11.34232
46.04695	NS	S	S	239.67856	NS	NS	NS	41.73529	S	S	S	2.18588	0.87148	5.85904

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
89.84557	NS	NS	NS	128.14638	NS	NS	NS	73.00000	NS	NS	S	1.16206	2.49032	4.03050
176.89220	NS	NS	NS	194.71545	NS	NS	NS	140.24279	NS	NS	S	2.14927	1.62930	3.20057
182.67293	NS	NS	NS	211.57401	NS	NS	NS	181.74242	NS	NS	NS	1.30296	1.16478	2.50130
124.66707	NS	S	S	150.29440	NS	NS	S	113.34059	NS	S	S	5.40995	3.10640	5.45025
95.70673	NS	S	S	130.07236	S	S	S	97.99009	NS	S	S	0.94104	12.02212	7.19354
89.78000	NS	S	S	157.15295	NS	NS	S	84.82574	NS	S	S	5.69064	2.98752	7.29614
167.02008	NS	S	S	187.07555	NS	NS	NS	149.61921	NS	S	S	4.24045	0.91607	4.98209
111.07484	NS	NS	NS	100.27631	NS	NS	NS	109.85605	NS	NS	S	2.04103	0.41048	3.07168
150.85092	NS	S	S	177.77303	NS	S	S	163.80492	NS	S	S	4.24359	4.17454	5.66254
141.12481	NS	NS	NS	151.17508	NS	NS	NS	123.17613	NS	NS	NS	1.36015	0.63153	1.61062
104.42290	NS	NS	NS	151.51643	NS	NS	NS	96.89772	NS	NS	NS	0.49676	0.13447	0.28057
126.47890	NS	NS	NS	144.01803	NS	NS	NS	135.54166	NS	NS	NS	0.80482	0.13583	0.77467
100.83620	NS	NS	S	143.76151	NS	NS	NS	94.77840	NS	S	S	3.71698	0.34202	4.40355
121.31946	NS	NS	S	148.61513	NS	NS	NS	117.06430	NS	S	S	3.21153	0.89325	4.50214
135.95423	S	S	S	164.30423	S	S	S	139.74242	S	S	S	11.14492	20.07137	12.13047
135.57564	NS	NS	NS	151.42593	NS	NS	S	134.28824	NS	NS	NS	2.60830	3.66227	1.60920
118.02576	S	S	S	162.74935	NS	S	S	118.82574	S	S	S	8.13594	5.95782	8.46282
137.42398	S	S	S	155.70721	NS	NS	NS	95.58500	S	S	S	10.42562	1.97607	16.42760
142.05890	NS	NS	NS	175.37005	NS	NS	NS	123.31610	NS	NS	NS	1.51337	2.20070	0.96044
132.71199	NS	NS	S	171.69735	NS	NS	NS	134.62120	NS	NS	NS	3.65833	1.41965	2.54347
170.69171	NS	S	S	155.24341	NS	S	S	158.62689	S	S	S	6.45963	5.14716	6.76922
132.94120	NS	NS	NS	222.37500	NS	NS	NS	136.99242	NS	NS	NS	1.53123	0.49224	0.73764
141.75453	S	S	S	206.31743	NS	S	S	124.88624	S	S	S	8.01462	4.21256	9.29484
146.68729	NS	NS	NS	177.33223	NS	NS	NS	146.65720	NS	NS	NS	2.77733	0.56650	2.90557
125.20734	S	S	S	155.45393	S	S	S	109.17802	S	S	S	10.88613	14.51314	14.55934

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
148.87740	NS	S	S	137.29111	NS	NS	NS	124.70566	NS	NS	NS	7.90300	0.20236	1.89356
155.83339	NS	NS	NS	244.04768	NS	NS	NS	145.31356	NS	NS	NS	2.12389	1.09379	2.23647
109.10423	NS	S	S	175.91775	NS	NS	NS	99.85686	NS	S	S	6.06507	2.75235	5.34517
83.75647	S	S	S	155.85230	S	S	S	99.41129	S	S	S	7.72357	12.82990	6.26354
161.37700	NS	NS	NS	232.56821	NS	NS	NS	165.30241	S	S	S	1.77898	-0.00198	0.78721
91.44438	S	S	S	167.59375	NS	NS	S	100.04233	S	S	S	8.90826	3.43275	7.55768
131.89039	NS	S	S	205.29605	NS	NS	S	118.21370	S	S	S	6.87766	3.71398	8.03972
110.56992	NS	NS	NS	165.70723	NS	NS	NS	109.55846	NS	NS	NS	1.17034	0.11956	1.25998
113.64198	NS	NS	S	189.88033	NS	NS	S	109.33167	NS	S	S	4.07853	3.67621	3.96359
114.27554	NS	S	S	213.57565	NS	NS	NS	121.02419	S	S	S	6.09669	1.57790	6.89162
116.29254	NS	S	S	201.12901	NS	NS	NS	103.61693	NS	S	S	4.58663	1.97704	3.19915
106.16045	NS	NS	S	172.85361	NS	NS	NS	91.98589	S	S	S	3.72693	0.72605	5.02242
104.22153	S	S	S	162.00193	NS	NS	NS	107.79339	NS	S	S	7.49162	1.17425	4.04255
108.57056	NS	NS	NS	195.59210	NS	NS	NS	110.10423	S	S	S	2.55650	0.77505	4.33729
118.95596	S	S	S	190.27531	S	S	S	134.72923	S	S	S	11.95653	19.48730	13.66866
118.63576	NS	NS	S	173.31907	NS	NS	S	129.11401	NS	NS	NS	3.04220	3.69506	0.77030
78.71162	NS	NS	NS	151.11513	NS	NS	NS	31.58467	NS	NS	NS	0.30170	0.17660	0.40892
95.83334	NS	S	S	206.74173	S	S	S	92.24396	S	S	S	6.07935	7.07239	4.35034
129.24640	S	S	S	178.27133	NS	NS	NS	37.97177	S	S	S	11.27743	1.29893	14.22817
124.29982	NS	NS	NS	206.06901	NS	NS	NS	101.54233	NS	NS	S	1.84084	2.24927	2.11221
116.12436	NS	S	S	202.15788	NS	S	S	124.05286	S	S	S	4.17945	1.20790	4.34773
105.79956	S	S	S	226.20803	S	S	S	106.27419	S	S	S	7.33363	9.53612	6.08879
96.65419	NS	S	S	162.10196	NS	S	S	81.54636	S	S	S	6.82365	4.34680	11.06131
119.69257	NS	NS	NS	213.12663	NS	NS	NS	129.20564	NS	NS	NS	0.45579	0.00017	0.57292
79.51666	S	S	S	143.77631	S	S	S	79.72580	S	S	S	8.78193	3.93050	8.35452

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
132.67651	NS	NS	NS	266.33057	NS	NS	NS	115.17000	NS	NS	NS	2.07696	0.35479	1.55595
110.53442	NS	S	S	270.54272	NS	S	S	105.72249	NS	S	S	6.60770	5.65160	4.94162
68.03972	S	S	S	219.74013	NS	NS	NS	75.90999	NS	S	S	9.20536	0.82910	4.40997
121.77576	NS	NS	NS	307.56073	NS	S	S	130.95250	NS	NS	NS	1.40820	4.27619	2.13-30
131.04063	NS	NS	NS	278.41260	NS	NS	S	159.84749	NS	NS	NS	0.81317	3.49740	0.76456
75.70284	S	S	S	139.60526	NS	NS	NS	74.55249	NS	S	S	7.57992	0.51323	4.04302
72.57390	S	S	S	274.90112	NS	NS	NS	93.87500	S	S	S	19.01309	1.54851	17.73511
99.89974	NS	NS	NS	251.90673	NS	NS	NS	96.55750	NS	NS	NS	1.16431	0.90222	1.29911
65.05741	S	S	S	200.97363	NS	NS	NS	105.77249	NS	NS	S	9.05214	1.04522	3.32910
83.51121	NS	NS	S	245.10913	NS	NS	NS	87.67749	NS	NS	NS	3.27154	0.02512	2.74797
107.11617	NS	S	S	224.46053	NS	NS	NS	116.90250	NS	NS	S	4.53383	0.05541	3.14542
122.69984	NS	NS	NS	284.25145	NS	NS	NS	144.42000	NS	NS	NS	0.57916	0.03320	0.13018
90.18446	NS	S	S	211.27366	NS	NS	NS	91.47749	NS	S	S	4.99617	2.65235	6.90067
91.53787	NS	NS	S	230.35033	NS	NS	NS	77.19249	NS	NS	S	3.41194	1.59593	3.33381
100.89919	NS	NS	S	209.17105	NS	NS	NS	92.90250	NS	S	S	3.92799	1.95943	4.11327
106.19940	NS	NS	NS	201.85690	NS	S	S	120.63750	NS	NS	NS	1.57169	4.72333	0.11181
67.26144	S	S	S	173.85526	NS	NS	NS	61.87000	S	S	S	9.02751	0.40350	15.54498
88.35348	NS	NS	NS	239.20889	NS	NS	NS	93.65719	NS	NS	NS	1.78957	1.07176	1.59037
105.94466	S	S	S	263.04272	NS	NS	NS	114.41249	NS	S	S	0.33004	0.05037	5.72664
117.77649	S	S	S	279.62503	NS	NS	NS	100.98499	NS	S	S	9.18218	0.47228	4.10650
115.33774	NS	NS	S	232.13980	NS	NS	NS	120.97249	NS	NS	NS	3.79114	1.00020	1.14359
96.94758	NS	NS	S	245.10690	NS	S	S	89.03749	NS	NS	S	3.16812	4.34708	3.92317
130.72318	NS	NS	S	279.75305	NS	NS	NS	130.21750	NS	NS	NS	2.94802	0.02949	1.50415
74.36485	NS	S	S	222.12335	NS	NS	NS	61.59599	NS	NS	NS	5.52256	0.72623	14.7375
111.63745	NS	S	S	261.37993	NS	NS	NS	122.05499	S	S	S	0.04051	1.64216	0.98395

ตารางที่ 12

MSEANCOVA	.01	.05	.10	MSERP	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
													MSERP	
53.70602	S	S	S	284.00483	NS	NS	S	37.41666	S	S	S	11.59031	2.99357	12.93151
43.54637	S	S	S	212.07236	NS	NS	NS	35.02380	S	S	S	8.47310	0.26937	9.52923
36.92497	S	S	S	175.48026	NS	NS	NS	34.58928	S	S	S	10.69375	1.35147	15.53524
56.43877	S	S	S	258.47631	NS	NS	NS	84.88690	NS	S	S	15.62461	1.47039	7.41844
61.43242	NS	NS	NS	291.57749	NS	NS	NS	64.72516	NS	S	S	1.68789	1.17180	4.41029
50.98755	S	S	S	261.20874	NS	NS	NS	51.67261	S	S	S	11.54972	0.34862	12.24050
40.19327	S	S	S	211.86183	NS	NS	NS	47.33030	S	S	S	17.96608	0.65347	10.03007
34.53949	S	S	S	200.91940	NS	NS	NS	37.90772	S	S	S	15.75918	1.51491	13.56912
56.19582	NS	NS	S	284.28271	NS	NS	NS	43.04166	NS	S	S	0.29303	0.01099	6.09305
59.09693	NS	S	S	274.45487	NS	NS	NS	50.32440	S	S	S	6.36741	0.713616	0.72537
54.93089	S	S	S	237.31908	NS	NS	S	65.68451	NS	S	S	7.43665	3.25406	7.07037
47.86562	S	S	S	219.47360	NS	NS	NS	53.65178	NS	S	S	14.43962	0.76432	7.32049
60.25398	S	S	S	236.54933	NS	NS	NS	66.32035	NS	NS	S	7.95466	0.13184	3.28061
71.74451	NS	NS	S	350.02271	NS	NS	NS	64.32730	NS	NS	S	0.75028	0.31836	3.72767
51.49107	NS	S	S	266.02125	NS	NS	NS	55.63095	NS	NS	S	6.84121	1.63022	4.01642
56.75432	NS	S	S	216.19736	NS	NS	NS	66.43750	NS	S	S	7.23305	2.07276	6.05777
50.24280	S	S	S	230.20558	NS	S	S	49.55951	S	S	S	12.21110	6.78956	16.31679
47.22629	NS	S	S	224.40460	NS	NS	NS	60.13393	NS	NS	NS	6.52493	2.10223	2.64541
37.83577	S	S	S	207.40131	NS	NS	NS	37.27380	S	S	S	15.18824	0.22390	18.78105
49.69106	NS	S	S	276.41772	NS	NS	NS	75.21420	NS	NS	S	6.47880	1.25851	3.97044
52.91021	NS	S	S	293.61011	NS	S	S	70.19773	S	S	S	7.18170	4.34161	9.18216
54.47153	NS	S	S	277.45046	NS	S	S	42.10416	S	S	S	6.25857	4.64114	10.02721
39.08936	S	S	S	190.70393	NS	NS	NS	33.47916	S	S	S	12.59300	0.01835	17.14685
46.81754	NS	S	S	237.90131	NS	NS	NS	30.83333	S	S	S	7.05313	0.20754	8.42300
53.07448	S	S	S	264.44897	NS	NS	NS	65.17856	NS	S	S	10.59652	2.75455	7.44109

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
108.77814	S	S	S	148.77693	NS	S	S	118.00189	NS	S	S	5.09443	3.89932	4.37977
94.78038	S	S	S	152.46975	NS	S	S	94.89014	S	S	S	10.45553	3.99973	11.39424
154.59285	NS	NS	NS	156.84375	NS	NS	S	142.75568	NS	NS	NS	1.14039	2.69139	0.99165
94.51236	NS	S	S	147.92014	NS	S	S	92.78409	S	S	S	3.85770	3.24592	5.39134
169.61685	NS	NS	S	160.36979	NS	S	S	174.71211	NS	NS	NS	2.51001	3.47699	1.76976
126.31506	NS	S	S	151.85764	NS	NS	NS	116.15150	NS	S	S	3.71445	0.65249	3.45520
113.53701	NS	NS	S	125.92709	NS	NS	NS	105.07385	NS	S	S	2.69370	1.17231	3.18717
126.97845	NS	NS	NS	158.63194	NS	NS	NS	106.99242	NS	S	S	2.19293	1.10410	2.97880
112.45596	S	S	S	168.31076	NS	S	S	106.45074	S	S	S	8.52999	3.17899	7.10286
162.62778	NS	NS	NS	160.87841	NS	NS	NS	169.33144	NS	NS	NS	1.71334	0.62495	1.47291
145.31506	NS	NS	NS	136.68228	NS	NS	NS	141.93939	NS	NS	NS	0.95712	0.61213	0.75701
93.42016	NS	NS	NS	106.68228	S	S	S	72.74809	NS	S	S	1.68174	6.30162	3.50384
141.46997	NS	NS	S	149.47567	NS	NS	S	152.32007	NS	NS	S	2.87459	2.72383	2.86252
79.65022	NS	S	S	123.08679	NS	NS	NS	82.08900	NS	S	S	4.30291	1.16906	4.33825
129.59527	S	S	S	158.37152	NS	S	S	122.58522	S	S	S	10.73624	3.14503	8.61076
154.38504	NS	NS	NS	146.19955	NS	NS	NS	144.61552	NS	NS	NS	0.67789	1.46646	0.36067
84.97179	S	S	S	111.73264	NS	NS	NS	62.20644	S	S	S	4.77456	1.21023	9.25762
169.19151	NS	NS	NS	189.77257	NS	NS	NS	174.46211	NS	NS	NS	1.91390	0.29564	1.77279
102.70737	NS	NS	NS	147.37672	NS	NS	NS	96.07574	NS	NS	NS	1.56256	1.59457	1.74325
167.22623	NS	NS	NS	162.48958	NS	NS	NS	175.45833	NS	NS	NS	1.17044	0.37977	0.62399
102.18393	S	S	S	109.61458	S	S	S	97.38257	S	S	S	5.22872	5.51440	6.35506
112.16093	NS	NS	S	141.05902	NS	NS	NS	121.48485	NS	NS	NS	2.59797	1.70525	1.67069
126.30679	S	S	S	128.57812	NS	S	S	121.38824	S	S	S	6.09690	3.96452	5.93368
146.77409	NS	NS	NS	173.93750	NS	NS	NS	150.14394	NS	NS	NS	0.97728	0.05439	1.26057
130.81975	S	S	S	113.34895	NS	S	S	126.17235	S	S	S	9.37915	3.42471	7.36666

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
116.84363	NS	S	S	170.73437	NS	NS	NS	119.24279	S	S	S	4.26839	2.10390	4.64907
95.76277	S	S	S	117.42228	S	S	S	80.39583	S	S	S	8.31004	7.33771	8.06017
78.13591	S	S	S	173.42032	NS	NS	NS	81.26363	NS	S	S	4.78058	1.10876	3.67240
112.91820	NS	NS	S	156.70312	NS	NS	NS	118.71779	NS	NS	NS	2.39492	0.83544	2.20366
104.66341	NS	S	S	169.06596	NS	NS	S	107.50189	NS	S	S	3.77808	2.39973	3.93632
131.62679	NS	NS	S	157.18223	NS	NS	NS	147.40720	NS	NS	S	2.86190	1.02628	2.78764
147.92020	NS	S	S	226.90451	NS	NS	NS	177.36742	NS	NS	S	3.59287	1.28165	2.56759
98.40364	S	S	S	164.41666	NS	NS	NS	87.33900	S	S	S	4.38742	0.79359	5.61904
102.20001	NS	S	S	199.35409	NS	NS	NS	116.33522	NS	S	S	3.82464	1.80516	2.97060
123.61852	NS	S	S	220.73736	NS	NS	NS	141.02093	NS	NS	S	3.25543	0.84555	2.47084
92.12082	S	S	S	153.80209	NS	S	S	93.99620	S	S	S	8.75541	3.01415	8.24048
115.05862	S	S	S	180.80703	NS	NS	NS	109.78976	NS	S	S	4.70444	1.98282	4.12386
74.59263	S	S	S	161.23090	NS	S	S	71.72348	S	S	S	5.56385	3.03343	5.97852
148.17438	NS	S	S	179.90103	NS	NS	NS	144.89014	NS	NS	S	2.91907	1.11902	2.40925
115.13989	NS	S	S	171.06770	NS	S	S	129.80681	NS	S	S	3.22391	3.69105	3.11466
148.06126	S	S	S	175.72047	S	S	S	161.72537	S	S	S	8.63017	8.03762	9.06955
76.74500	S	S	S	141.59721	NS	S	S	71.71211	S	S	S	5.31396	3.05203	4.97454
108.95299	NS	NS	NS	205.69270	NS	NS	NS	108.41287	NS	NS	NS	2.20163	0.68954	2.04055
79.10274	S	S	S	112.19096	NS	NS	NS	90.75568	S	S	S	9.50432	1.59735	9.46048
108.67191	S	S	S	169.56595	NS	NS	S	109.33522	S	S	S	7.87991	2.34021	6.29325
118.40625	NS	NS	S	215.73610	NS	NS	NS	100.66666	NS	S	S	2.54549	2.09192	3.65250
106.77345	S	S	S	165.57117	NS	NS	S	115.29924	S	S	S	6.83713	2.39222	7.60237
131.49062	NS	S	S	220.02429	NS	NS	NS	148.21022	NS	NS	NS	3.65109	0.37297	1.84274
84.91109	NS	S	S	151.56076	NS	NS	NS	91.41666	NS	NS	S	2.99219	0.73994	2.96709
133.37578	NS	S	S	235.23734	NS	NS	NS	149.32760	NS	S	S	4.22781	1.94360	3.83351

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
49.57903	S	S	S	184.80554	NS	NS	NS	50.21500	S	S	S	9.70630	0.73737	10.63586
64.43620	S	S	S	177.53471	NS	NS	NS	77.46750	NS	NS	S	5.09178	0.59167	2.44102
101.76818	NS	NS	NS	243.10242	NS	NS	NS	99.09250	NS	NS	NS	1.85022	0.44443	1.70503
74.08777	S	S	S	169.34201	NS	NS	NS	74.62250	S	S	S	7.05899	1.05652	5.25536
70.73270	NS	S	S	141.06076	NS	NS	NS	69.78499	NS	NS	S	4.37358	1.08109	4.65103
96.34047	S	S	S	222.82465	NS	NS	NS	73.51500	NS	NS	S	4.64213	1.92977	3.68979
83.19893	S	S	S	168.20312	NS	NS	NS	94.70000	NS	NS	S	5.80210	1.64756	3.85365
56.62589	S	S	S	200.85242	NS	NS	NS	49.72749	S	S	S	6.43056	0.69475	5.04765
76.26228	NS	NS	NS	213.02777	NS	NS	NS	100.22750	NS	NS	NS	0.78112	0.19051	0.54996
77.05421	S	S	S	196.43228	NS	NS	S	101.48999	S	S	S	9.65348	2.69198	7.73558
80.58980	S	S	S	191.89715	NS	NS	S	31.24750	S	S	S	6.23149	2.49658	6.69185
107.77610	S	S	S	241.14757	NS	NS	S	103.37000	S	S	S	9.05334	2.82382	7.13431
83.23563	S	S	S	182.71179	NS	NS	NS	94.76749	NS	NS	S	4.86085	0.82917	2.47554
76.52750	S	S	S	198.38880	NS	NS	NS	90.35999	NS	NS	S	7.18698	1.13466	4.17195
77.98601	S	S	S	196.47915	NS	NS	NS	69.21000	S	S	S	4.73412	1.69210	5.80292
73.40909	S	S	S	187.86804	NS	NS	NS	66.03000	S	S	S	5.33456	1.66240	5.72605
76.31381	S	S	S	186.81422	NS	S	S	71.85500	S	S	S	9.52350	3.39341	9.31682
57.03157	S	S	S	179.14400	NS	NS	S	42.84000	S	S	S	16.33438	2.75860	12.00669
68.47451	S	S	S	193.93228	NS	NS	NS	77.41750	NS	NS	S	5.46980	1.28024	4.61524
79.55635	NS	NS	S	183.22560	NS	NS	NS	106.78999	NS	NS	S	2.50124	1.79639	2.59026
112.19330	NS	S	S	249.55721	NS	NS	NS	60.71249	S	S	S	4.15036	0.24697	6.35932
65.46947	S	S	S	186.13194	NS	NS	NS	71.19249	S	S	S	6.47997	2.05052	5.07956
60.42632	NS	S	S	175.00346	NS	NS	NS	78.03749	NS	NS	NS	3.07788	1.27140	1.85333
112.14020	NS	S	S	230.01735	NS	NS	NS	126.46999	NS	NS	S	3.68730	0.82068	3.12232
94.53027	NS	S	S	241.92534	NS	NS	NS	80.20250	S	S	S	4.17832	1.27695	5.69030



ตารางที่ 16

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
39.99898	S	S	S	196.32985	NS	NS	NS	34.44249	S	S	S	7.05275	2.02508	7.71464
48.46071	S	S	S	219.44270	NS	NS	NS	50.60500	NS	NS	S	6.47309	0.26279	4.50089
39.86533	S	S	S	200.63194	NS	NS	NS	74.78000	NS	NS	S	7.50203	0.80918	2.80877
40.32915	S	S	S	232.57985	NS	NS	NS	54.40250	S	S	S	6.46862	1.61038	5.21594
41.45358	S	S	S	199.62326	NS	NS	NS	51.15999	S	S	S	11.37636	1.40775	5.55381
38.56099	S	S	S	209.30554	NS	NS	NS	53.84000	S	S	S	14.62357	1.01427	8.16245
36.42348	S	S	S	172.75172	NS	S	S	29.50000	S	S	S	13.86448	3.89227	17.43581
40.73124	S	S	S	211.12500	NS	NS	NS	44.11499	S	S	S	15.98970	1.36244	12.95466
60.42657	S	S	S	272.48603	NS	NS	NS	69.70000	S	S	S	5.41855	1.23217	5.69492
61.97679	NS	S	S	264.44263	NS	NS	NS	51.99249	NS	NS	S	6.05190	1.79308	4.05217
46.60501	S	S	S	241.55554	NS	NS	NS	52.32999	S	S	S	11.10013	2.23775	6.90702
37.53720	S	S	S	224.76389	NS	NS	NS	43.63750	S	S	S	8.65629	0.76006	6.24742
36.57368	S	S	S	190.37900	NS	NS	NS	37.55249	S	S	S	7.62257	0.41333	5.08398
42.00485	NS	S	S	208.28471	NS	NS	NS	29.38249	NS	NS	S	4.11610	0.44810	2.59934
39.25175	S	S	S	193.54340	NS	NS	NS	41.62000	S	S	S	20.76294	1.00914	13.09227
43.17763	S	S	S	232.99132	NS	NS	NS	50.80249	NS	NS	S	8.56247	0.29168	4.15971
45.63589	S	S	S	221.92709	NS	S	S	42.32750	S	S	S	7.26319	2.89491	10.70976
43.32979	S	S	S	222.15971	NS	NS	S	58.41249	S	S	S	16.56787	2.41371	7.77264
30.40532	S	S	S	185.66145	NS	NS	NS	23.03499	S	S	S	10.04906	0.46702	8.79628
36.86815	NS	S	S	177.59721	NS	NS	NS	41.82249	NS	NS	S	3.56921	1.17282	2.57318
54.04123	S	S	S	285.72729	NS	NS	NS	37.51500	S	S	S	7.28152	0.37186	9.47466
49.83203	S	S	S	244.92429	NS	NS	NS	58.02750	S	S	S	11.36796	0.59114	7.73678
31.71788	S	S	S	206.78471	S	S	S	27.32750	S	S	S	18.01938	4.84129	25.21086
42.20467	S	S	S	193.75172	NS	NS	NS	47.68750	S	S	S	11.15006	1.21225	5.23372
61.51382	S	S	S	275.21250	NS	NS	NS	95.53499	NS	NS	S	8.97133	0.64427	3.54501

ตารางที่ 17

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
114.72430	S	S	S	164.20787	NS	NS	S	139.13719	S	S	S	11.54700	3.17800	12.00700
101.52994	S	S	S	115.47282	NS	S	S	107.66766	S	S	S	14.09056	5.25665	12.60002
93.47612	NS	NS	NS	133.05231	NS	NS	NS	84.14175	NS	NS	NS	0.04756	0.01342	0.00765
140.34166	NS	NS	S	130.39944	NS	NS	NS	147.30945	NS	S	S	2.96273	1.39591	4.24005
116.00381	NS	NS	NS	145.24043	NS	NS	NS	113.33231	NS	NS	NS	0.57723	1.33313	1.52732
147.04330	NS	S	S	130.08315	NS	NS	NS	137.00182	NS	S	S	4.95791	0.83472	5.25756
150.52916	NS	S	S	156.01038	NS	S	S	153.22712	NS	S	S	4.01045	1.1210	3.63319
104.32422	NS	S	S	135.69886	NS	S	S	107.62042	NS	S	S	4.41671	4.23487	4.24758
128.01900	S	S	S	157.00900	S	S	S	122.64000	S	S	S	10.25943	7.37364	10.30053
87.93504	S	S	S	123.02852	S	S	S	92.31700	S	S	S	12.10023	11.96342	14.13015
104.84470	NS	S	S	153.37300	NS	NS	S	64.53688	NS	S	S	4.23058	2.91254	4.50753
113.54626	NS	S	S	145.70787	NS	NS	NS	112.71100	NS	NS	S	5.43762	1.53475	3.14132
144.51093	NS	S	S	190.27103	NS	NS	NS	135.24602	NS	S	S	6.66564	0.97097	5.70155
125.54175	NS	NS	S	157.83694	NS	NS	NS	133.14756	NS	NS	NS	2.70749	6.02217	2.51610
119.93298	NS	NS	S	137.91576	NS	NS	NS	120.38109	NS	NS	NS	2.05486	2.79745	2.14522
147.20867	NS	NS	NS	157.44636	NS	NS	NS	109.21109	NS	NS	NS	1.04932	0.30102	0.26067
71.30297	S	S	S	129.26276	NS	NS	NS	65.97102	S	S	S	12.78447	2.63451	13.53001
57.81944	NS	NS	NS	147.77309	NS	NS	NS	100.01210	NS	NS	NS	0.67903	0.42001	1.06005
100.34270	S	S	S	129.54311	S	S	S	107.63567	S	S	S	18.63828	11.89575	17.67038
130.35236	S	S	S	152.69565	S	S	S	128.14328	S	S	S	10.30911	7.80027	17.63004
99.47621	S	S	S	124.53662	NS	NS	NS	90.00600	S	S	S	16.73895	2.53941	12.75918
85.12772	NS	S	S	116.50397	NS	S	S	80.24901	NS	NS	S	5.43442	1.1206	3.00201
101.56032	S	S	S	155.09918	S	S	S	109.31700	NS	S	S	7.60166	2.45531	7.69063
126.69365	S	S	S	100.73233	NS	S	S	127.75101	S	S	S	10.95765	5.39104	11.60639
139.45312	S	S	S	139.10226	NS	NS	S	147.70122	S	S	S	11.28572	2.35004	10.25981

ตารางที่ 18

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
122.79210	NS	S	S	211.57335	NS	NS	NS	135.82773	NS	NS	S	4.53918	1.16744	3.00700
101.49947	NS	NS	NS	170.34233	NS	NS	NS	99.3523	NS	NS	NS	0.81951	1.30712	0.99 57
112.71986	S	S	S	199.08151	NS	S	S	109.85970	S	S	S	11.20504	6.57677	8.11270
95.32716	NS	S	S	155.95727	NS	NS	NS	99.56210	NS	NS	NS	4.33875	0.27230	2.17717
92.10925	NS	S	S	136.29519	S	S	S	106.57094	NS	S	S	5.90605	1.49975	6.32537
109.85216	NS	S	S	138.11003	NS	NS	NS	124.0709	NS	S	S	7.29104	0.00000	4.16184
104.23645	NS	NS	S	158.75272	NS	NS	NS	90.89576	NS	NS	S	3.61048	2.74203	3.21750
128.89174	NS	NS	NS	231.75347	NS	NS	NS	98.99492	NS	NS	NS	1.33857	0.22037	0.54553
87.72955	S	S	S	152.15031	S	S	S	96.23640	S	S	S	20.03966	10.31101	14.10407
87.53998	S	S	S	118.89972	NS	NS	NS	101.51520	S	S	S	10.08994	1.53374	12.50149
74.49386	NS	S	S	140.15215	NS	S	S	68.87500	NS	NS	NS	6.23893	5.13900	1.10767
110.87126	S	S	S	160.40875	NS	S	S	111.43074	S	S	S	11.85634	5.71968	10.26791
93.26128	NS	NS	NS	130.25272	NS	NS	NS	99.76857	NS	NS	NS	2.68275	1.43930	2.18170
85.04984	NS	S	S	133.58017	NS	S	S	75.11324	NS	NS	S	5.50075	4.36910	2.05435
113.36745	NS	NS	NS	179.22413	NS	NS	NS	117.59090	NS	NS	NS	2.43969	2.82358	2.70032
103.26466	NS	NS	S	165.12435	NS	NS	NS	91.15207	NS	NS	S	2.37615	0.00024	3.01204
120.83254	NS	S	S	199.75951	NS	NS	NS	110.84120	NS	S	S	7.00238	0.00131	1.17610
103.02151	S	S	S	158.53660	NS	NS	NS	111.89064	S	S	S	8.85559	0.01527	8.06147
99.29721	NS	S	S	152.93081	NS	S	S	95.62037	NS	NS	S	4.57323	2.26813	3.19179
92.51848	S	S	S	162.05162	NS	S	S	103.23640	S	S	S	11.49217	6.60150	9.27522
115.81944	NS	NS	S	191.42353	NS	NS	NS	127.2032	NS	NS	S	2.48647	0.03970	3.33088
77.84550	NS	NS	S	150.81250	NS	NS	NS	82.03200	NS	S	S	2.97203	1.26034	4.02350
98.49987	S	S	S	166.46602	NS	NS	NS	105.21293	NS	S	S	7.88195	0.30948	4.78644
124.05469	NS	NS	NS	190.15403	NS	NS	S	125.43581	NS	NS	NS	2.17907	2.17132	2.73220
85.76126	NS	NS	S	176.68750	NS	NS	NS	77.12141	NS	S	S	2.83705	0.77000	5.37730

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
52.33989	NS	NS	NS	213.70244	NS	NS	NS	82.60605	NS	NS	NS	0.91324	1.66751	0.14312
53.55998	NS	S	S	242.93386	NS	NS	NS	76.66476	NS	S	S	5.98501	1.00643	4.17806
76.93964	S	S	S	206.29809	NS	NS	NS	93.72726	S	S	S	12.86227	0.96724	10.06916
77.33337	NS	NS	NS	195.79211	NS	NS	NS	87.49631	NS	NS	NS	1.57236	1.79607	1.75632
70.52673	NS	NS	S	177.0332	NS	NS	NS	73.00000	NS	NS	NS	3.38021	0.06201	1.21599
85.88632	S	S	S	231.93341	NS	S	S	96.44696	S	S	S	17.53349	5.82495	13.03742
70.11238	NS	NS	NS	170.99003	NS	NS	NS	72.09276	NS	NS	NS	0.93139	0.10072	0.51752
70.18320	S	S	S	150.43205	S	S	S	67.03131	NS	S	S	7.76329	7.65213	7.74350
75.77058	S	S	S	193.70623	NS	NS	NS	67.76131	S	S	S	9.05277	0.68957	10.46305
83.70959	NS	S	S	215.26086	NS	NS	NS	105.76324	NS	NS	S	5.74085	0.33107	3.03325
79.95416	NS	S	S	178.82065	NS	NS	NS	80.89014	NS	NS	NS	5.02597	2.77476	2.34259
66.99247	S	S	S	174.97147	S	S	S	85.07190	S	S	S	23.56812	3.52391	19.93738
85.89879	S	S	S	199.72861	NS	S	S	75.33174	S	S	S	23.71690	4.80900	13.74625
66.31714	S	S	S	160.52309	NS	NS	NS	68.57150	S	S	S	21.33141	0.7312	10.1336
85.36819	NS	NS	S	207.02201	NS	NS	NS	96.78405	NS	NS	S	2.87066	1.53016	3.51979
87.27856	NS	NS	NS	165.69809	NS	S	S	107.45454	NS	NS	NS	3.64280	0.33107	2.9228
74.87315	NS	NS	S	213.28397	NS	NS	NS	75.85410	S	NS	S	3.91065	1.44320	3.72319
82.46767	NS	NS	NS	214.91440	NS	NS	NS	69.52018	NS	S	S	2.56471	0.10169	6.30789
64.79726	S	S	S	152.30041	NS	S	S	60.31256	S	S	S	7.42592	4.31362	7.52583
86.39135	NS	NS	S	202.37021	NS	NS	S	110.79731	NS	NS	NS	3.57720	2.59110	2.1299
51.70190	NS	NS	NS	200.66711	NS	NS	NS	95.42992	NS	NS	S	2.40355	2.73400	3.13731
90.55541	NS	S	S	19.77907	S	S	S	57.91355	S	S	S	6.68401	9.05899	11.63022
78.66815	NS	S	S	187.94701	NS	NS	NS	83.20644	NS	NS	S	4.74752	0.04323	4.13356
63.99970	NS	NS	NS	169.92173	NS	NS	NS	61.23085	NS	NS	NS	2.69400	1.11257	2.04641
91.91936	S	S	S	229.20300	NS	NS	NS	84.76324	NS	S	S	0.74510	0.03406	5.09232

ตารางที่ 20

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
51.91669	NS	NS	S	235.37091	NS	NS	NS	42.56699	NS	NS	NS	2.13507	2.2340	0.28189
55.44409	S	S	S	273.41699	NS	NS	NS	73.34250	S	S	S	13.69054	2.33463	17.06764
44.21417	S	S	S	229.39809	NS	S	S	45.48250	S	S	S	22.19378	1.8992	15.04137
40.53167	NS	S	S	173.62500	NS	NS	NS	71.73499	NS	NS	S	6.84766	0.09355	3.17936
39.57903	S	S	S	203.14673	NS	NS	NS	37.71500	NS	S	S	7.82463	1.07005	5.10142
39.11771	S	S	S	208.39130	NS	NS	S	45.63249	S	S	S	12.85327	4.03148	14.26050
33.57000	S	S	S	179.44157	NS	S	S	20.01749	S	S	S	20.09928	0.37396	23.70142
37.52491	S	S	S	197.92934	S	S	S	38.13750	S	S	S	34.03725	7.39269	28.52647
49.46776	S	S	S	236.44429	NS	NS	NS	35.37000	S	S	S	8.61611	0.38512	8.04208
43.58107	S	S	S	224.27938	NS	NS	S	41.07749	S	S	S	7.57520	3.32251	8.10499
34.42717	S	S	S	212.48369	NS	NS	NS	33.07249	S	S	S	11.32226	0.81112	7.99330
39.85583	NS	NS	S	196.60461	NS	NS	NS	20.72499	NS	NS	NS	2.95012	2.09269	0.17004
49.12778	S	S	S	230.32065	NS	NS	S	52.28750	S	S	S	21.06782	2.95675	10.78514
46.36255	S	S	S	235.68069	NS	NS	NS	40.16500	S	S	S	1.84258	0.44774	8.74745
45.49916	S	S	S	214.42525	NS	NS	NS	32.52750	S	S	S	14.37013	1.64444	12.88042
39.64952	S	S	S	212.45651	NS	S	S	59.09250	S	S	S	22.14552	5.22460	41.25237
35.81934	S	S	S	174.56589	NS	NS	S	38.67999	S	S	S	40.19515	3.13000	20.60457
36.57747	S	S	S	217.97826	NS	NS	NS	41.81749	NS	S	S	10.04095	1.00325	5.06014
47.19693	S	S	S	197.23233	NS	NS	NS	44.95999	S	S	S	15.41699	0.47320	5.78869
57.78255	S	S	S	266.88574	NS	NS	NS	45.34749	NS	S	S	9.12608	1.26201	6.42420
32.83167	S	S	S	137.20651	NS	NS	NS	34.09999	S	S	S	20.11284	0.87064	22.42001
55.00928	S	S	S	291.55691	NS	NS	NS	64.03750	NS	S	S	5.93930	0.70604	5.77002
39.94402	S	S	S	236.99319	NS	NS	NS	61.26250	NS	NS	S	9.48542	1.13716	3.95604
40.13214	S	S	S	232.85733	NS	NS	NS	44.58749	S	S	S	20.99626	1.18100	14.42371
40.21266	S	S	S	223.34192	NS	S	S	41.29500	S	S	S	12.31022	4.19220	13.23464

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
103.25017	S	S	S	140.65193	NS	NS	S	112.47500	S	S	S	7.91138	2.60972	6.52448
125.91296	NS	S	S	150.10085	NS	NS	NS	129.80029	NS	NS	S	3.01375	1.49996	2.72274
94.85352	S	S	S	151.79544	S	NS	S	92.67224	S	S	S	15.34272	4.35235	12.50405
128.86292	S	S	S	166.25000	NS	NS	S	128.31250	S	S	S	6.36570	3.08170	4.99807
131.63589	NS	NS	NS	188.93750	NS	NS	NS	133.76828	NS	NS	NS	1.19805	0.84761	0.31957
110.90479	S	S	S	126.34375	S	S	S	113.91615	S	S	S	5.54537	5.06975	6.47346
121.51889	NS	S	S	151.39630	NS	NS	S	111.44817	NS	S	S	3.38417	3.81394	3.70728
120.64961	S	S	S	141.07669	S	S	S	109.01067	S	S	S	15.13229	10.84886	19.17422
135.07939	NS	NS	NS	139.08238	NS	NS	NS	141.63292	NS	NS	NS	1.49970	1.58314	1.25930
123.36200	NS	S	S	171.55232	NS	NS	NS	123.67529	NS	S	S	3.66916	1.37037	3.52033
115.84056	S	S	S	150.38635	NS	NS	S	117.60670	NS	S	S	4.55948	3.00337	3.64627
95.02078	NS	NS	NS	128.72725	NS	NS	NS	82.85852	NS	NS	S	1.93027	1.04762	2.31395
114.37327	S	S	S	136.23721	NS	NS	S	108.54115	S	S	S	8.19134	3.84745	9.65764
137.69003	S	S	S	156.29544	NS	NS	S	129.19054	S	S	S	4.32604	2.23082	5.28760
160.52542	NS	S	S	185.45454	NS	NS	S	163.31097	NS	S	S	3.32133	2.53251	3.15111
118.09674	S	S	S	144.04544	NS	NS	S	110.16920	S	S	S	10.89467	4.23477	11.99398
87.24104	S	S	S	109.06818	NS	NS	NS	93.62956	S	S	S	5.24805	1.03605	4.54499
95.23642	S	S	S	149.55397	NS	NS	S	97.39766	S	S	S	5.87535	3.69042	5.92392
133.73897	NS	NS	S	134.60794	NS	NS	S	137.93140	NS	S	S	2.57939	2.75569	3.00925
119.04851	S	S	S	131.25000	NS	NS	S	103.84146	S	S	S	5.42348	3.15429	5.03544
112.26761	S	S	S	134.38635	S	NS	S	115.55182	S	S	S	8.15393	4.75247	8.31964
126.29572	S	S	S	146.27414	NS	NS	S	119.46646	S	S	S	6.58836	3.85435	7.17118
137.53317	S	S	S	150.57527	NS	NS	NS	140.78963	NS	S	S	4.37731	2.17859	4.06782
104.88498	S	S	S	134.58152	NS	NS	S	100.85518	S	S	S	10.09042	3.11864	9.65290
112.69665	S	S	S	144.15909	NS	NS	NS	110.69359	S	S	S	4.83978	0.55263	5.75997

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
90.62354	S	S	S	134.24005	NS	S	S	96.53598	S	S	S	0.75043	2.96453	7.27609
125.22765	NS	NS	S	191.25284	NS	NS	S	113.56250	NS	S	S	2.40876	2.35334	3.02326
132.87354	S	S	S	211.70596	NS	NS	NS	139.04355	S	S	S	5.87397	1.81098	5.13616
106.16605	NS	S	S	170.16601	NS	S	S	83.15720	NS	NS	NS	3.51588	3.78697	2.11868
125.51505	S	S	S	208.31392	NS	NS	NS	132.51704	NS	S	S	5.75956	1.76416	3.31435
134.38644	NS	NS	S	244.62357	NS	NS	NS	83.15150	NS	NS	NS	2.56246	0.75950	1.99445
90.45982	S	S	S	149.17613	NS	NS	NS	75.82522	S	S	S	10.72639	1.32115	8.33944
106.74591	S	S	S	177.68750	NS	S	S	120.75735	S	S	S	6.53933	3.40696	6.09284
107.91740	NS	S	S	169.00000	NS	NS	NS	115.00000	NS	S	S	2.86944	0.79982	3.96692
110.58004	S	S	S	153.81250	NS	NS	NS	119.21628	S	S	S	7.06828	2.19003	5.58997
107.68794	NS	S	S	179.43607	NS	NS	NS	104.59650	NS	S	S	2.95564	1.58634	3.20584
100.46002	NS	S	S	179.43039	NS	NS	S	87.93939	NS	S	S	6.19644	2.27955	3.97451
102.00063	S	S	S	163.29544	NS	S	S	102.31439	S	S	S	4.30693	3.50489	5.31136
79.32526	S	S	S	198.82669	NS	NS	NS	75.00378	S	S	S	4.36076	0.72167	4.94995
121.01797	NS	S	S	193.86647	NS	NS	NS	132.38068	NS	S	S	2.32090	0.89194	3.74052
86.23207	S	S	S	142.54971	NS	S	S	20.42424	S	S	S	9.71395	4.10573	9.17530
131.25745	NS	S	S	200.60226	NS	S	S	116.79735	NS	S	S	2.91143	4.08790	3.56101
103.00035	S	S	S	155.93181	S	S	S	120.55870	S	S	S	0.23954	5.89078	6.24477
99.84964	NS	S	S	167.15492	NS	S	S	69.40909	S	S	S	2.03226	2.89278	4.56430
109.72519	S	S	S	204.64772	NS	S	S	115.00000	NS	S	S	6.07110	4.27279	3.89884
110.31813	S	S	S	164.88777	NS	NS	NS	125.80392	NS	S	S	5.54395	1.06840	3.04194
113.35147	NS	S	S	159.94034	NS	NS	NS	114.87500	S	S	S	4.27006	1.42742	4.66007
105.12144	S	S	S	217.54544	NS	NS	NS	97.04735	S	S	S	6.14227	1.74475	0.57708
90.16821	NS	NS	S	125.89000	NS	NS	NS	66.36176	NS	S	S	2.26715	2.09348	3.60911
115.49782	S	S	S	167.45454	S	S	S	94.43370	S	S	S	6.35391	6.01357	10.11710

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
74.82600	S	S	S	178.06813	NS	NS	NS	78.39396	S	S	S	4.93411	1.27854	6.07328
75.89507	S	S	S	171.07527	NS	NS	NS	81.53029	S	S	S	5.59910	1.87344	4.47739
57.79415	S	S	S	140.54544	NS	NS	NS	57.49620	S	S	S	12.87525	2.15114	12.08733
101.92150	S	S	S	226.19743	NS	NS	NS	107.23485	NS	S	S	5.37749	1.01405	3.59326
74.79819	S	S	S	196.70454	NS	S	S	89.71779	S	S	S	8.77997	2.91130	8.10956
71.49921	S	S	S	191.74715	NS	NS	NS	72.93559	S	S	S	12.54243	2.00994	8.79170
72.43016	S	S	S	161.35510	NS	S	S	55.05681	S	S	S	6.63325	2.85653	9.51021
69.46710	S	S	S	169.02272	NS	NS	NS	92.59090	S	S	S	6.42810	1.95624	4.49082
72.74960	S	S	S	205.36263	NS	S	S	70.39961	S	S	S	10.10515	2.89243	6.99753
67.64363	S	S	S	210.29402	NS	NS	NS	68.22916	S	S	S	6.89922	1.64908	11.39399
83.33501	S	S	S	200.34005	NS	NS	S	90.79924	S	S	S	6.94299	2.77563	8.48769
90.70291	S	S	S	182.02414	S	S	S	83.04735	S	S	S	6.28950	5.23248	4.52252
81.40038	NS	S	S	172.86647	NS	NS	NS	85.45264	NS	S	S	2.88144	0.94256	3.42048
66.93864	S	S	S	178.11079	NS	S	S	73.98485	S	S	S	8.93678	3.21336	7.58673
80.63493	NS	S	S	168.56392	NS	NS	NS	65.28409	NS	S	S	3.54358	0.77060	3.21918
78.58984	S	S	S	188.06818	NS	NS	NS	87.59470	NS	S	S	10.52101	1.35412	3.70766
89.69975	S	S	S	216.38210	S	S	S	86.66666	S	S	S	10.64374	5.15947	12.16845
69.47762	S	S	S	164.45454	NS	S	S	71.09848	S	S	S	11.83722	3.21669	6.99249
72.55245	S	S	S	175.43181	NS	S	S	61.97916	S	S	S	10.11431	4.09476	10.84707
67.61993	S	S	S	170.12357	NS	NS	NS	57.47159	S	S	S	9.15818	1.48311	7.30889
81.56189	NS	S	S	224.92755	NS	NS	NS	91.47348	NS	S	S	3.30646	0.91965	3.78791
92.40007	S	S	S	204.21975	NS	S	S	82.67044	S	S	S	9.61183	2.83448	8.83470
99.33461	S	S	S	209.97017	NS	NS	S	107.37689	S	S	S	7.51736	2.46037	5.21609
70.10553	S	S	S	178.21818	NS	NS	NS	82.93559	NS	S	S	6.47116	0.79137	4.39364
88.05295	S	S	S	198.95454	NS	NS	NS	74.82385	S	S	S	7.33680	0.27162	4.94495

ตารางที่ 24

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
44.12224	S	S	S	239.25000	NS	NS	S	39.76999	S	S	S	14.66078	2.45211	15.58074
40.13463	S	S	S	169.47726	NS	NS	NS	54.55249	S	S	S	9.10458	1.11716	6.53602
35.11018	S	S	S	179.08943	NS	S	S	34.12749	S	S	S	15.76725	3.71916	12.82060
43.31313	S	S	S	230.56818	NS	NS	NS	57.61999	S	S	S	9.03218	0.88477	6.14132
40.91298	S	S	S	181.11647	NS	NS	NS	39.60500	S	S	S	5.91155	2.00653	5.00498
43.45216	S	S	S	211.64062	NS	NS	S	46.81999	S	S	S	15.99170	2.53811	12.02805
53.13417	S	S	S	251.40625	NS	NS	NS	60.27499	NS	NS	S	5.04964	1.71610	2.78329
46.20479	S	S	S	214.63635	NS	NS	NS	59.65250	S	S	S	9.47304	0.68643	6.34502
42.46436	S	S	S	192.09375	NS	NS	NS	50.26500	S	S	S	21.81483	1.34461	14.91765
36.72342	S	S	S	222.21676	NS	NS	NS	42.17249	S	S	S	8.67954	0.87697	5.77596
51.28316	S	S	S	266.98291	NS	NS	S	37.37500	S	S	S	8.60258	2.77835	8.96879
60.09683	S	S	S	271.16604	NS	NS	NS	67.09499	S	S	S	8.43188	1.66393	9.56372
41.23782	S	S	S	245.76277	NS	NS	NS	53.03249	S	S	S	10.79875	1.32190	7.09557
41.07574	S	S	S	247.06107	NS	NS	NS	55.17499	S	S	S	7.46335	0.66646	6.13131
50.50754	S	S	S	239.70454	NS	NS	NS	63.91249	S	S	S	10.72307	0.43248	7.00311
48.89789	S	S	S	185.26221	NS	S	S	69.32750	S	S	S	15.18161	2.66121	5.14877
40.90953	S	S	S	240.31813	NS	NS	S	55.45250	S	S	S	16.35374	2.43011	9.08508
43.65118	S	S	S	214.50000	NS	NS	NS	43.05499	S	S	S	12.72764	0.83139	9.40391
46.06548	S	S	S	223.26562	NS	NS	S	51.51250	S	S	S	13.81743	2.59602	10.45632
40.64348	S	S	S	163.65482	NS	NS	NS	44.86749	S	S	S	9.07260	1.28904	5.49791
36.73950	S	S	S	196.53976	NS	NS	S	26.59999	S	S	S	16.45793	2.35322	14.28195
55.98700	S	S	S	277.76541	NS	NS	NS	51.87000	S	S	S	11.29910	0.06155	10.32371
41.76276	S	S	S	214.76267	NS	NS	NS	39.14999	S	S	S	14.20276	0.88345	15.91330
41.62375	S	S	S	197.80090	NS	NS	NS	49.87500	S	S	S	13.75329	1.25859	7.15001
42.27316	S	S	S	223.97726	NS	NS	NS	37.35249	S	S	S	16.52658	0.66467	15.03882

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
103.41092	S	S	S	128.62903	S	S	S	102.06140	S	S	S	12.42237	8.97154	14.01421
117.51257	S	S	S	153.74193	NS	S	S	97.26425	S	S	S	10.24513	4.05225	13.58934
74.75145	S	S	S	106.96386	S	S	S	72.24890	S	S	S	21.39878	7.59229	19.24494
143.02074	S	S	S	157.27096	S	S	S	139.00108	S	S	S	28.74670	17.15661	30.90134
127.19492	NS	NS	S	154.53226	NS	NS	NS	128.59978	NS	NS	S	3.03060	0.80989	3.52557
122.20577	NS	S	S	145.56451	NS	NS	S	123.15570	NS	NS	S	4.67685	3.55856	3.20695
99.25257	NS	S	S	120.66129	NS	NS	NS	95.41646	NS	S	S	5.43375	2.34541	4.55209
108.98614	NS	S	S	150.09677	NS	S	S	105.57340	NS	S	S	6.10256	4.65033	5.70371
98.95699	NS	S	S	122.92547	NS	NS	NS	97.93858	NS	S	S	5.53500	2.44030	6.51731
93.14363	S	S	S	125.30644	S	S	S	90.66995	S	S	S	10.97859	12.69369	10.69303
75.39612	NS	S	S	95.14516	NS	NS	NS	74.98269	NS	S	S	4.48226	1.65011	4.68464
95.25641	NS	S	S	114.08064	NS	NS	NS	99.55551	NS	NS	S	4.30192	0.01753	2.83622
115.21785	S	S	S	134.85433	NS	S	S	110.46020	S	S	S	16.59454	6.28224	14.39937
96.53700	S	S	S	127.12903	NS	NS	NS	93.16995	S	S	S	9.36570	2.52499	7.89941
98.07500	NS	NS	NS	124.24192	NS	NS	NS	102.30481	NS	NS	NS	1.69078	0.06435	1.18609
119.58440	NS	NS	S	143.24193	NS	NS	NS	124.81578	NS	NS	S	3.32914	0.02792	3.17189
109.75255	NS	S	S	119.35482	NS	NS	S	112.54495	NS	NS	S	4.69284	3.22569	3.94213
121.19844	NS	NS	NS	152.72590	NS	NS	NS	134.96450	NS	NS	NS	2.05774	0.07156	0.25972
102.63255	S	S	S	149.37096	NS	NS	NS	96.04056	S	S	S	14.68672	2.62434	15.97951
116.24039	NS	NS	S	127.98336	NS	NS	NS	106.69955	NS	S	S	3.65749	0.69540	6.69384
123.00069	NS	NS	S	130.20967	NS	NS	NS	113.47140	NS	S	S	2.91442	0.44544	4.49261
121.06172	S	S	S	153.12903	NS	NS	S	120.53398	S	S	S	10.81460	3.13461	11.39074
94.66501	NS	NS	NS	118.50000	NS	NS	NS	91.54955	NS	NS	NS	1.66845	0.06751	1.39056
99.95229	NS	NS	NS	143.85433	NS	NS	NS	95.80273	NS	NS	NS	2.44808	0.89674	2.38949
107.52350	NS	NS	NS	139.40321	NS	NS	NS	114.81469	NS	NS	NS	2.04399	0.34432	1.55108

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
86.45766	NS	S	S	157.70967	NS	NS	NS	92.79337	NS	S	S	5.93428	2.2143E	5.92322
110.05872	S	S	S	151.03226	NS	NS	S	86.23213	S	S	S	27.49827	3.85343	25.32486
98.56096	S	S	S	141.17741	NS	NS	NS	82.71428	S	S	S	10.44872	2.65623	10.57059
107.03976	S	S	S	146.69354	S	S	S	95.16337	S	S	S	11.44460	10.72985	11.65717
104.75230	NS	S	S	134.40321	NS	NS	NS	93.69234	NS	S	S	5.59274	2.38600	5.37034
110.19031	S	S	S	176.17741	S	S	S	117.30739	S	S	S	17.32007	9.74018	15.98389
95.89497	NS	NS	NS	161.92347	NS	NS	NS	97.46300	NS	NS	NS	2.09267	0.59203	2.39793
66.00107	S	S	S	127.17741	NS	NS	S	73.74489	NS	S	S	11.90465	2.20025	6.03155
89.56512	S	S	S	143.04839	NS	S	S	95.31377	S	S	S	17.61327	6.61715	17.10629
69.10629	NS	NS	S	130.22580	NS	NS	NS	63.06224	NS	NS	S	3.91494	1.59652	3.36818
60.42546	S	S	S	117.25433	NS	NS	NS	54.55612	NS	S	S	0.95007	1.00550	6.64037
78.17378	NS	NS	S	147.87096	NS	NS	NS	71.10320	NS	S	S	2.30748	0.10144	4.16686
89.06665	S	S	S	143.93547	NS	NS	NS	81.25510	S	S	S	15.23398	2.61923	12.05006
93.33145	S	S	S	175.80664	NS	S	S	105.55867	S	S	S	13.35148	5.54624	7.84644
77.27190	S	S	S	155.40321	NS	NS	S	69.95280	S	S	S	9.18135	2.94074	12.54495
90.81198	NS	S	S	177.37096	NS	NS	NS	94.60239	NS	S	S	4.66004	2.08039	4.97624
101.42751	S	S	S	156.12903	S	S	S	107.42474	S	S	S	15.46949	10.49773	16.20140
105.74115	S	S	S	160.01613	S	S	S	97.10204	S	S	S	11.49180	11.28011	15.55104
93.96100	NS	NS	S	136.16129	NS	NS	NS	92.22704	NS	S	S	2.85096	0.16157	4.23572
118.70388	NS	S	S	172.58064	NS	S	S	123.04000	NS	S	S	5.50148	5.85512	4.57332
120.35493	NS	S	S	162.41934	NS	S	S	110.43519	NS	S	S	4.91924	4.95015	5.67034
56.80143	NS	NS	S	162.82870	NS	NS	NS	91.79974	NS	S	S	2.53421	1.56597	4.33187
74.52500	S	S	S	140.09677	NS	NS	NS	74.62474	S	S	S	12.00215	2.73332	14.05572
90.43205	S	S	S	152.74193	NS	NS	NS	75.37755	S	S	S	13.99948	2.24402	13.66201
92.43199	S	S	S	120.50644	NS	S	S	99.56173	NS	S	S	0.81652	4.93351	6.92489

ตารางที่ 27

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
85.50031	NS	NS	S	202.41934	NS	NS	NS	75.14157	NS	NS	NS	2.13369	0.29147	2.51031
108.54636	NS	NS	NS	224.20967	NS	NS	NS	87.32000	NS	NS	NS	0.52198	0.03122	0.63498
75.74672	NS	S	S	160.12923	NS	NS	NS	69.64540	S	S	S	7.05517	0.70566	8.55012
84.23386	S	S	S	182.77419	NS	NS	NS	77.59972	S	S	S	7.91175	0.95747	9.94777
56.57237	S	S	S	145.50000	S	S	S	53.71172	S	S	S	20.85371	7.51950	22.76358
72.73596	S	S	S	180.14122	S	S	S	78.79954	S	S	S	27.75600	14.25945	30.23952
77.27352	S	S	S	177.35483	NS	NS	S	87.32142	S	S	S	12.74329	3.54656	11.25487
69.12109	NS	S	S	159.91934	NS	NS	NS	74.50011	NS	NS	NS	5.11551	1.51952	1.93309
69.59029	NS	NS	NS	175.72500	NS	NS	NS	80.98979	NS	NS	NS	1.53241	0.71134	0.96528
71.27074	NS	S	S	191.93547	NS	NS	NS	72.34566	S	S	S	4.32119	1.35993	8.39253
68.57095	S	S	S	141.98395	NS	NS	NS	75.08035	NS	S	S	10.66073	0.06339	4.95367
60.18723	NS	S	S	152.50321	NS	NS	NS	54.51147	S	S	S	5.99857	0.46793	10.24271
74.27903	S	S	S	162.32257	NS	NS	S	73.50764	S	S	S	7.70095	3.21208	9.99770
60.97792	S	S	S	180.46773	NS	S	S	61.80136	S	S	S	22.24034	6.82116	17.87741
76.91762	NS	S	S	192.20967	NS	NS	NS	84.04974	NS	S	S	4.42216	0.55270	4.69701
71.51194	S	S	S	180.38703	NS	NS	S	77.88397	NS	S	S	8.57610	3.95283	7.08732
74.39620	S	S	S	210.41934	NS	NS	NS	64.40942	S	S	S	16.26062	0.76036	19.37169
61.28174	NS	S	S	157.12500	NS	NS	NS	65.65543	NS	S	S	5.94771	1.56105	4.09452
79.16733	S	S	S	178.09677	NS	NS	S	69.22321	S	S	S	9.24555	2.99152	9.11659
57.73041	S	S	S	175.58357	NS	NS	NS	59.40979	S	S	S	15.45362	2.01047	10.78638
73.12212	S	S	S	195.58064	NS	NS	NS	75.43750	S	S	S	14.92179	0.14828	15.95295
60.96735	NS	S	S	161.06451	NS	NS	NS	55.36096	NS	S	S	4.20832	0.21654	5.74154
74.51404	S	S	S	175.70967	NS	NS	NS	76.67346	S	S	S	16.02203	0.09106	13.78794
58.16549	S	S	S	151.17741	NS	NS	NS	61.55994	S	S	S	10.06217	0.42324	9.04669
61.77978	NS	NS	NS	164.69354	NS	NS	NS	61.65942	NS	NS	NS	0.39341	2.34375	0.35092

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
41.34547	S	S	S	203.90321	NS	NS	NS	31.32766	S	S	S	18.50976	0.27285	15.21797
50.59137	S	S	S	208.98709	NS	NS	NS	62.48674	S	S	S	22.81826	1.47927	12.06050
32.72868	S	S	S	174.70967	NS	S	S	38.76242	S	S	S	17.06963	6.07293	14.25964
40.50441	S	S	S	201.56451	NS	NS	NS	36.56287	S	S	S	24.32103	0.02200	22.32114
40.30088	S	S	S	194.27090	NS	S	S	33.47159	S	S	S	17.39783	4.27417	15.18118
41.52570	S	S	S	209.43547	NS	NS	NS	41.34470	S	S	S	8.63469	0.91648	10.55882
38.76158	S	S	S	202.50000	NS	NS	NS	30.35206	S	S	S	27.91466	1.07454	26.31472
48.10738	S	S	S	229.61290	NS	NS	NS	45.87500	NS	S	S	7.63699	0.35743	6.25986
33.51475	S	S	S	192.64515	NS	S	S	38.56250	S	S	S	12.31993	5.13898	13.39356
48.17763	S	S	S	228.64516	NS	S	S	51.64772	S	S	S	35.01134	4.89220	29.83229
34.53102	S	S	S	179.08064	NS	NS	NS	33.55492	S	S	S	12.14983	1.23158	13.08562
37.81471	S	S	S	185.46773	NS	S	S	44.78598	S	S	S	32.04497	5.72067	23.08263
34.29579	S	S	S	105.55160	NS	NS	NS	27.82257	S	S	S	10.49069	0.40223	15.20150
33.76007	S	S	S	165.85793	NS	S	S	26.21211	S	S	S	14.32187	9.03968	17.77541
42.59009	S	S	S	184.85490	NS	NS	NS	45.52272	S	S	S	18.39850	1.87715	17.79786
42.15319	S	S	S	179.72590	NS	NS	NS	40.52012	S	S	S	25.49138	0.67294	19.53250
49.73796	S	S	S	217.87096	NS	NS	NS	51.87120	S	S	S	15.03421	1.32138	11.51100
37.06122	S	S	S	227.93370	NS	S	S	47.15150	S	S	S	37.99045	5.66190	33.05052
49.47098	S	S	S	245.82257	NS	NS	NS	63.73204	S	S	S	16.42534	0.02034	13.52510
46.50870	S	S	S	229.12003	NS	S	S	53.86174	S	S	S	12.21905	4.67525	0.04750
37.77549	S	S	S	189.19254	NS	NS	NS	40.00378	S	S	S	24.75937	2.56351	27.07242
41.75260	S	S	S	153.25031	NS	S	S	45.12616	S	S	S	24.32919	4.56533	21.10600
44.92264	S	S	S	222.55677	NS	NS	NS	40.73863	S	S	S	32.42963	2.39729	20.84578
53.11855	S	S	S	235.09677	NS	NS	NS	55.14394	S	S	S	26.22217	1.22502	25.24663
33.47983	S	S	S	183.00000	NS	NS	NS	41.08332	S	S	S	10.23495	2.51366	12.33222

ตารางที่ 29

MSEANCOVA	.01	.05	.10	MSERP	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
105.34813	S	S	S	121.66666	S	S	S	107.96381	S	S	S	9.56826	4.72152	8.01947
120.55939	S	S	S	156.41765	NS	NS	S	118.05868	S	S	S	7.60574	2.63825	7.99758
145.18439	S	S	S	158.06667	S	S	S	143.78178	S	S	S	14.00362	7.71826	13.97191
130.30719	S	S	S	157.03223	NS	NS	NS	135.87350	NS	S	S	4.22737	1.44342	3.72091
127.20531	NS	S	S	139.56667	S	S	S	133.54166	S	S	S	3.67071	5.23754	4.60757
93.23894	S	S	S	137.16666	NS	NS	S	93.29518	S	S	S	12.43071	2.69016	13.37249
101.55826	S	S	S	122.00000	NS	NS	NS	101.23003	NS	S	S	4.59924	1.81147	4.15342
110.31361	S	S	S	145.45000	NS	S	S	94.37828	S	S	S	4.52337	3.85241	5.71982
101.06093	S	S	S	125.92333	NS	S	S	95.95613	S	S	S	6.47458	2.95099	6.58415
115.21140	S	S	S	137.22332	S	S	S	123.16446	S	S	S	11.87466	4.96964	10.89454
100.41266	S	S	S	124.66697	NS	NS	S	105.21381	S	S	S	4.69582	2.55958	4.67092
122.53395	S	S	S	147.58333	NS	NS	S	123.40740	S	S	S	4.85563	2.55289	4.52038
100.54167	S	S	S	123.78333	NS	S	S	101.26622	S	S	S	8.76454	3.82927	8.67109
127.30005	S	S	S	119.14977	NS	NS	NS	113.43420	NS	S	S	4.56599	0.65742	4.08872
119.18419	S	S	S	129.14999	NS	NS	S	122.52960	S	S	S	4.97559	2.74616	4.80424
124.74297	S	S	S	130.03333	NS	S	S	123.49013	S	S	S	5.15757	2.89055	4.92775
122.79117	S	S	S	117.02333	NS	S	S	118.75518	S	S	S	6.55509	2.88686	7.13468
96.43395	S	S	S	120.18332	NS	NS	NS	96.48903	NS	S	S	4.97509	1.90265	4.00232
102.08354	S	S	S	139.98332	NS	NS	NS	105.28728	NS	S	S	4.32632	1.11204	3.63355
91.24502	S	S	S	115.41666	S	S	S	85.27631	S	S	S	4.37523	4.29170	4.65565
131.59831	S	S	S	150.29999	NS	NS	NS	133.24578	NS	S	S	5.74374	1.05940	4.13545
110.26063	S	S	S	151.59999	NS	S	S	90.24123	S	S	S	9.26275	3.88302	10.98551
117.20358	S	S	S	150.29999	NS	S	S	110.49123	S	S	S	10.15184	4.02492	10.28788
112.81335	S	S	S	144.04997	S	S	S	117.10635	S	S	S	12.18392	4.60408	11.00636
117.61267	S	S	S	125.04999	S	S	S	112.71271	S	S	S	9.50819	4.89937	7.81626

ตารางที่ 30

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERPM	.01	.05	.10	FANCOVA	FRPM	FRBD
73.00145	S	S	S	123.13333	NS	NS	NS	69.34566	S	S	S	12.00468	2.00595	10.44522
95.78621	S	S	S	171.93332	S	S	S	99.64030	S	S	S	6.53594	5.50989	5.02134
98.72974	S	S	S	157.79999	NS	S	S	93.56277	S	S	S	5.31095	3.59739	5.02521
104.55150	S	S	S	188.00000	NS	NS	NS	119.85058	NS	S	S	4.51648	1.67908	3.57485
124.94123	S	S	S	109.66665	S	S	S	94.12372	S	S	S	9.45481	6.74692	11.18017
93.45629	S	S	S	149.88333	S	S	S	89.51402	S	S	S	15.03837	7.34571	11.25466
97.25907	NS	S	S	164.06667	NS	NS	NS	104.58928	NS	S	S	3.52153	1.13369	3.10458
87.27780	S	S	S	143.71665	S	S	S	92.07524	S	S	S	15.56305	5.61585	14.89465
56.25111	S	S	S	127.71665	S	S	S	73.56896	S	S	S	10.78897	4.20723	8.71649
59.55262	S	S	S	117.36667	NS	NS	NS	55.62244	S	S	S	7.72914	1.27805	7.28980
91.38059	S	S	S	144.86665	NS	S	S	89.09311	S	S	S	9.95498	3.72066	11.16443
108.71284	S	S	S	159.06667	S	S	S	103.43877	S	S	S	10.56504	5.72097	7.91382
95.13657	NS	S	S	139.78333	NS	NS	NS	96.34439	NS	S	S	3.38013	1.11363	3.00608
121.89162	S	S	S	172.86665	NS	S	S	121.03699	NS	NS	NS	5.93230	3.66371	1.43931
88.33079	S	S	S	155.71666	NS	NS	NS	71.56760	S	S	S	8.80445	1.87306	10.05183
114.06839	NS	NS	S	102.43332	NS	NS	NS	93.16580	NS	S	S	2.34928	1.05609	3.11003
97.52463	S	S	S	162.08333	S	S	S	96.13264	S	S	S	12.51703	7.32956	13.03755
93.27390	S	S	S	171.31667	NS	S	S	104.86224	NS	S	S	4.91298	2.95943	3.74273
79.78329	S	S	S	135.26665	NS	NS	NS	73.10450	S	S	S	6.38581	1.48349	5.89312
96.15240	S	S	S	146.09999	S	S	S	99.38393	S	S	S	7.76557	4.25279	4.83745
53.10759	S	S	S	141.01666	S	S	S	73.05994	S	S	S	20.60495	6.10093	15.88405
55.71976	S	S	S	142.73332	NS	S	S	71.94005	S	S	S	11.07004	3.27184	9.62132
100.55948	S	S	S	183.63333	NS	NS	NS	91.80356	S	S	S	9.50988	1.73534	6.41371
109.75377	S	S	S	175.86665	S	S	S	106.82014	S	S	S	6.37318	4.47698	5.85495
92.39163	S	S	S	160.46666	S	S	S	103.11096	S	S	S	15.09728	8.62277	12.18978

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
58.22012	S	S	S	164.11665	NS	S	S	81.71173	S	S	S	15.17614	3.55032	12.54320
79.00956	S	S	S	180.89999	NS	S	S	89.23468	S	S	S	10.83983	3.20988	7.73540
55.14088	S	S	S	169.00000	NS	NS	NS	59.85587	S	S	S	10.71030	2.20118	7.92661
60.39722	S	S	S	161.91666	NS	NS	S	69.39923	S	S	S	8.61252	2.42100	6.57046
59.39777	S	S	S	150.43332	NS	NS	S	60.61224	S	S	S	11.58052	2.30224	7.06577
47.79340	S	S	S	115.62333	NS	NS	NS	51.14412	S	S	S	13.15041	1.60565	7.43808
82.74760	S	S	S	199.91666	NS	S	S	75.27169	S	S	S	13.31063	3.14464	15.58115
77.58054	S	S	S	172.26666	NS	NS	NS	70.43750	S	S	S	7.72620	1.91370	8.35751
80.23206	S	S	S	171.46332	S	S	S	84.92984	S	S	S	15.05529	5.44271	14.54269
76.92743	S	S	S	168.96666	NS	NS	NS	95.35075	S	S	S	10.22808	1.17775	8.91160
85.55290	S	S	S	200.68332	NS	NS	S	127.70535	S	S	S	9.46513	2.36691	6.61258
56.56461	S	S	S	164.18332	NS	NS	S	53.67601	S	S	S	12.17574	2.66978	7.78013
83.78558	S	S	S	177.70000	S	S	S	88.58673	S	S	S	7.34970	5.25042	7.33360
74.35600	S	S	S	177.95000	S	S	S	80.61606	S	S	S	12.73176	4.52749	8.26758
69.55767	S	S	S	200.43332	NS	S	S	69.24617	S	S	S	13.00317	4.07782	16.12035
50.78696	S	S	S	149.23332	NS	S	S	55.93494	S	S	S	18.17935	3.55819	14.99818
54.23945	S	S	S	150.63333	NS	NS	S	81.25510	S	S	S	17.93462	2.50940	9.91757
55.33681	S	S	S	191.26666	NS	S	S	76.48851	S	S	S	14.76995	3.09864	7.56205
65.27753	S	S	S	157.83333	NS	NS	NS	68.39540	S	S	S	12.68159	0.55755	12.34911
90.55724	S	S	S	202.66666	NS	NS	NS	94.92601	S	S	S	7.99397	1.51316	8.16106
65.42354	S	S	S	181.45000	NS	NS	S	62.03571	S	S	S	16.60077	2.40103	12.20535
57.57570	S	S	S	201.41666	NS	S	S	82.37755	S	S	S	13.78372	3.11129	11.91707
59.59589	S	S	S	160.81667	S	S	S	63.25255	S	S	S	17.59945	5.09276	11.66638
59.79009	S	S	S	157.68332	NS	S	S	66.48087	S	S	S	12.20468	3.69306	12.48487
46.12575	S	S	S	127.19332	S	S	S	51.29591	S	S	S	19.42838	8.59389	12.53077

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
39.50397	S	S	S	196.01666	NS	S	S	51.80302	S	S	S	21.76797	3.23952	13.87665
43.57613	S	S	S	196.56667	NS	NS	S	26.42181	S	S	S	24.53796	2.66441	28.11006
56.86743	S	S	S	247.31667	NS	NS	NS	47.32574	S	S	S	8.95919	1.57558	8.83366
49.05508	S	S	S	224.91666	NS	NS	S	72.21970	S	S	S	15.33522	2.68544	7.98980
33.69258	S	S	S	189.06667	NS	NS	S	45.84090	S	S	S	9.73522	2.70099	7.05336
45.33308	S	S	S	220.76666	NS	S	S	59.36174	S	S	S	16.62640	3.07112	12.06044
40.31474	S	S	S	179.45000	NS	S	S	43.18750	S	S	S	14.00454	3.16337	11.60233
44.55057	S	S	S	228.53333	NS	NS	NS	32.87120	S	S	S	13.23589	0.87515	16.54842
28.77933	S	S	S	190.26666	NS	NS	S	27.20074	S	S	S	23.72710	2.41541	19.81064
37.05393	S	S	S	186.95000	NS	NS	S	37.78409	S	S	S	15.96365	2.30008	16.73418
49.55441	S	S	S	228.56666	NS	NS	S	62.66363	S	S	S	17.17737	2.30595	9.38513
29.84262	S	S	S	151.38333	NS	NS	NS	28.22537	S	S	S	18.91267	1.24697	15.63417
34.50694	S	S	S	154.26666	S	S	S	40.03598	S	S	S	24.27184	7.57247	24.93808
38.16869	S	S	S	203.56667	S	S	S	41.71590	S	S	S	24.53633	5.26434	18.52029
37.63618	S	S	S	178.11666	NS	S	S	44.67044	S	S	S	17.87446	3.29272	11.94958
42.29083	S	S	S	208.18332	NS	NS	NS	46.92002	S	S	S	22.92862	1.48747	16.33696
43.81480	S	S	S	214.45000	NS	NS	NS	40.34470	S	S	S	12.49619	0.45232	10.92055
34.49608	S	S	S	161.86666	NS	NS	NS	28.93559	S	S	S	15.56849	1.41062	12.80072
37.06123	S	S	S	194.20000	S	S	S	51.31059	S	S	S	21.15947	5.00415	17.30046
43.08858	S	S	S	202.21666	NS	NS	NS	50.10037	S	S	S	12.68484	1.23355	10.06779
47.93621	S	S	S	203.00000	NS	NS	NS	53.50757	S	S	S	13.86525	1.21835	10.25435
43.67321	S	S	S	191.89999	NS	NS	NS	51.83787	S	S	S	13.23004	1.80597	11.95435
38.79397	S	S	S	190.21666	S	S	S	51.45431	S	S	S	13.25945	5.54280	12.08260
40.93444	S	S	S	212.53333	NS	NS	NS	45.14204	S	S	S	14.32994	0.39522	8.19466
36.09183	S	S	S	179.71666	S	S	S	42.28257	S	S	S	23.76526	6.66790	18.57382

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
65.73366	S	S	S	86.87871	NS	NS	NS	54.03603	S	S	S	15.44805	0.51558	12.57425
91.26604	S	S	S	113.92552	S	S	S	80.76926	S	S	S	17.56540	12.36773	20.31898
55.53111	S	S	S	91.05213	S	S	S	62.61176	S	S	S	16.71199	10.71901	18.58063
92.29064	S	S	S	102.01064	S	S	S	84.97646	S	S	S	15.82576	16.09636	15.30784
83.52726	S	S	S	106.90425	NS	NS	NS	86.86558	S	S	S	10.87583	1.59956	10.63444
94.52394	S	S	S	116.68956	S	S	S	95.25292	S	S	S	11.25356	13.99800	12.08987
73.65922	S	S	S	90.10437	NS	NS	NS	63.87057	NS	S	S	7.50669	1.51995	6.55435
84.93313	S	S	S	98.35106	NS	S	S	81.45779	S	S	S	15.52524	6.47680	14.41318
81.99777	S	S	S	116.92615	S	S	S	87.02573	S	S	S	30.06950	7.60244	27.16989
104.02023	NS	S	S	129.62766	NS	NS	NS	99.09953	S	S	S	5.95460	2.11463	7.35675
54.33257	S	S	S	107.10637	S	S	S	101.08749	S	S	S	11.34306	8.18812	11.05704
88.99027	S	S	S	107.84042	NS	NS	NS	80.36690	S	S	S	7.18249	2.71698	7.54662
95.43954	S	S	S	109.23404	S	S	S	94.23456	S	S	S	10.78331	7.85460	15.07870
77.97278	NS	NS	NS	94.63829	NS	NS	NS	78.14337	NS	NS	S	2.43249	1.94424	2.06202
85.35932	S	S	S	114.71275	NS	S	S	88.14495	S	S	S	10.42109	4.05360	7.65707
108.92135	NS	S	S	131.99362	NS	S	S	85.25082	NS	S	S	5.99704	4.07146	5.38063
89.57001	NS	S	S	105.48935	NS	NS	NS	89.63823	NS	S	S	6.66234	2.00968	4.59274
121.53473	NS	S	S	136.48935	NS	NS	S	107.89043	NS	S	S	4.04646	3.80309	5.72726
70.47513	S	S	S	103.25787	NS	NS	NS	73.02308	S	S	S	13.01490	1.01998	12.65645
117.71561	NS	S	S	123.76897	NS	NS	NS	114.07426	NS	S	S	4.85553	0.34743	6.34106
90.40880	NS	S	S	99.86169	NS	NS	S	94.38823	NS	S	S	4.68501	3.84532	4.18106
77.51750	S	S	S	67.25531	S	S	S	81.02459	S	S	S	10.59065	0.93524	10.36436
132.87814	NS	NS	NS	125.62766	NS	NS	NS	122.51176	NS	NS	NS	0.91031	1.64421	0.20420
105.38692	S	S	S	125.12829	NS	S	S	93.69778	S	S	S	9.60215	6.64864	8.92731
83.44475	S	S	S	113.72340	S	S	S	81.53856	S	S	S	9.41523	10.31450	7.49445



MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
75.58530	S	S	S	127.17021	NS	NS	NS	84.39554	NS	S	S	11.67648	0.55044	5.66746
89.15637	NS	S	S	145.66639	NS	NS	NS	71.88184	NS	S	S	5.07933	2.67586	5.74365
72.99667	NS	S	S	115.92552	NS	NS	NS	64.53424	NS	S	S	5.45416	2.02716	5.95250
82.38293	S	S	S	132.94381	NS	NS	NS	89.84930	S	S	S	11.39738	0.00000	9.47084
78.51794	S	S	S	128.54254	NS	NS	NS	77.36732	S	S	S	11.45069	1.52479	8.30572
96.75746	S	S	S	116.92552	NS	S	S	95.94263	S	S	S	12.16000	5.57620	14.05521
73.99214	S	S	S	130.76595	NS	S	S	75.91780	S	S	S	9.01358	5.17719	8.60192
66.73004	S	S	S	106.63829	NS	NS	NS	74.23801	S	S	S	15.17998	1.55990	10.36964
89.62675	S	S	S	146.87233	S	S	S	85.42636	S	S	S	11.80892	11.35690	8.20400
65.11390	S	S	S	109.24467	NS	S	S	57.52995	S	S	S	27.86795	5.19018	24.63750
74.25712	S	S	S	122.05310	S	S	S	61.27500	S	S	S	22.53996	9.76623	18.08774
65.41418	S	S	S	125.97871	NS	NS	S	62.04280	S	S	S	21.96323	3.68316	23.63130
70.97341	S	S	S	136.74437	S	S	S	60.33732	S	S	S	27.05861	9.26544	30.07605
79.89091	NS	S	S	137.58510	NS	NS	NS	84.94691	NS	NS	S	6.91998	0.24712	3.50545
63.91990	S	S	S	133.46637	NS	NS	NS	49.19348	S	S	S	13.62479	2.00822	13.75002
86.74911	S	S	S	127.53191	NS	NS	NS	84.57704	S	S	S	10.57448	2.41508	16.23178
74.34290	S	S	S	124.95744	NS	S	S	70.71574	S	S	S	15.88417	5.14575	11.55344
88.89052	S	S	S	135.86169	NS	S	S	92.67122	S	S	S	12.74362	4.16600	9.51797
84.55704	NS	S	S	144.09573	NS	NS	NS	82.43578	NS	NS	NS	5.32495	0.91606	2.27270
67.16653	S	S	S	107.15556	S	S	S	62.67465	S	S	S	51.30583	33.28690	47.33240
78.58031	S	S	S	145.73404	NS	NS	NS	73.28510	S	S	S	0.42480	0.48719	7.88118
83.24651	S	S	S	118.44631	S	S	S	71.65753	S	S	S	36.21149	8.15556	30.06450
63.64902	S	S	S	105.40425	NS	NS	S	60.56630	S	S	S	20.05011	2.87221	17.30555
74.60190	S	S	S	121.30000	S	S	S	79.42892	S	S	S	13.24876	7.55062	12.53025
73.59207	S	S	S	127.85136	NS	S	S	79.52054	S	S	S	21.78845	6.03820	15.09537

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
41.11157	S	S	S	112.06383	S	S	S	43.53595	S	S	S	52.26083	7.49459	42.78018
55.37135	NS	S	S	146.58910	NS	NS	S	58.12328	NS	NS	S	5.71152	3.82713	2.81508
53.48521	S	S	S	136.35106	NS	NS	NS	59.53091	S	S	S	24.37654	1.93618	16.37791
64.73255	S	S	S	176.52352	NS	NS	NS	64.17551	S	S	S	9.37437	2.00025	9.56002
53.54905	S	S	S	134.72340	S	S	S	57.67676	S	S	S	27.96726	9.49147	22.94200
59.11810	S	S	S	157.57465	NS	NS	S	59.02739	NS	S	S	10.07453	2.81137	6.27632
52.75109	S	S	S	122.25531	NS	NS	NS	42.50524	S	S	S	23.65439	7.20449	22.17637
63.28595	S	S	S	155.69148	NS	S	S	60.42209	S	S	S	17.17213	5.13827	16.60152
49.44122	S	S	S	134.86169	NS	NS	NS	52.35189	S	S	S	25.39038	7.78919	17.91344
59.51932	S	S	S	139.14893	NS	NS	NS	57.99315	S	S	S	20.60367	7.79174	18.90648
54.91817	S	S	S	143.34042	NS	S	S	51.43835	S	S	S	12.07549	2.99050	19.05149
63.05859	S	S	S	157.40425	NS	S	S	63.36986	S	S	S	14.49817	4.98716	75.33518
64.87550	S	S	S	149.20212	NS	NS	NS	69.21918	S	S	S	9.99211	0.86978	9.12364
53.02040	S	S	S	126.73404	NS	S	S	46.09760	S	S	S	26.97037	5.12085	25.37012
49.73723	S	S	S	115.68075	NS	NS	NS	52.45201	S	S	S	26.39098	1.50839	10.26276
64.55778	S	S	S	157.01054	S	S	S	76.08218	S	S	S	26.06175	7.25702	15.55385
54.27107	S	S	S	132.40425	NS	NS	S	52.54766	S	S	S	20.34750	3.33226	15.22567
61.52061	S	S	S	147.55573	S	S	S	70.60274	S	S	S	24.93802	19.19677	16.21965
57.52708	S	S	S	127.11702	S	S	S	57.67122	S	S	S	16.67828	5.55904	16.43138
55.40651	S	S	S	137.95106	NS	S	S	57.52054	S	S	S	37.81425	6.64485	43.20074
64.88432	S	S	S	169.23404	NS	NS	S	65.25598	S	S	S	24.24260	3.09698	17.62515
67.76851	S	S	S	146.46298	NS	NS	NS	66.71233	S	S	S	11.52401	2.20521	9.52766
60.95382	S	S	S	139.21275	NS	S	S	64.70712	S	S	S	24.57233	6.14994	12.38392
59.16515	S	S	S	142.11702	S	S	S	60.26627	S	S	S	29.20462	8.80260	20.16797
63.21164	S	S	S	151.22340	NS	S	S	53.26027	S	S	S	27.87849	4.98020	26.92961

ตารางที่ 36

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
29.52049	S	S	S	134.00000	S	S	S	26.86153	S	S	S	32.36800	7.55224	29.19736
32.42264	S	S	S	164.64893	NS	NS	NS	38.68652	S	S	S	29.88020	0.20042	19.70496
34.74543	S	S	S	195.86167	NS	NS	S	37.58461	S	S	S	19.15900	2.12557	11.42662
28.87550	S	S	S	146.20212	NS	NS	S	24.87692	S	S	S	32.74399	3.43360	37.98112
33.53943	S	S	S	171.26141	NS	NS	NS	33.98460	S	S	S	31.13126	0.65233	26.03876
26.94081	S	S	S	129.97871	NS	NS	S	21.07384	S	S	S	56.35533	3.77754	70.43510
33.87218	S	S	S	159.39362	NS	NS	S	40.80557	S	S	S	31.45625	2.23727	22.49004
37.11598	S	S	S	181.22841	NS	NS	NS	37.70769	S	S	S	24.34464	1.27012	23.63302
30.07837	S	S	S	182.39362	NS	NS	S	34.72980	S	S	S	42.17393	1.42394	32.10500
31.71297	S	S	S	144.02127	NS	NS	NS	33.50769	S	S	S	19.86592	2.57601	14.31177
25.56158	S	S	S	134.96808	S	S	S	26.83557	S	S	S	64.01944	16.25560	58.93277
35.73723	S	S	S	172.23494	S	S	S	29.49326	S	S	S	30.16330	7.55429	30.21650
35.50142	S	S	S	170.95106	NS	NS	NS	40.09422	S	S	S	29.16161	0.15977	16.03250
33.66792	S	S	S	163.51064	NS	NS	NS	27.89615	S	S	S	29.26524	1.03569	27.78395
32.70515	S	S	S	169.02127	NS	S	S	30.62114	S	S	S	21.73567	4.22422	23.69468
30.13612	S	S	S	178.36042	S	S	S	35.96922	S	S	S	52.77252	11.92662	39.75633
27.23680	S	S	S	135.80859	NS	S	S	29.18076	S	S	S	69.46246	4.83033	55.41139
29.41321	S	S	S	150.60437	NS	S	S	34.16730	S	S	S	46.01143	6.36696	32.54974
34.23696	S	S	S	167.40425	NS	S	S	33.96922	S	S	S	25.10657	5.31050	98.83109
29.59702	S	S	S	136.92552	NS	NS	NS	32.55479	S	S	S	37.10559	1.16952	27.07620
33.44539	S	S	S	180.87233	NS	S	S	30.38461	S	S	S	40.39990	5.15332	40.00542
27.83513	S	S	S	134.31914	NS	NS	S	33.67651	S	S	S	25.63812	3.07477	21.97505
37.98495	S	S	S	191.20212	S	S	S	37.60768	S	S	S	20.33955	11.24988	19.03352
27.90839	S	S	S	144.26595	NS	NS	NS	24.51340	S	S	S	56.34381	2.73107	50.94025
33.47978	S	S	S	154.12766	NS	NS	NS	39.42114	S	S	S	36.03456	0.45417	28.67276

ตารางที่ 37

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
86.59529	S	S	S	110.58694	NS	S	S	87.00000	S	S	S	10.74372	2.81227	9.28636
94.56217	S	S	S	114.48912	NS	S	S	91.83949	S	S	S	9.53559	3.27231	7.74033
91.75192	S	S	S	98.33694	S	S	S	89.24680	S	S	S	17.34726	7.64920	16.08295
96.56390	S	S	S	110.42390	S	S	S	90.15753	S	S	S	13.03716	4.29023	12.45302
93.14456	S	S	S	112.73912	S	S	S	87.60493	S	S	S	8.90698	5.68272	10.96945
60.83447	S	S	S	83.81522	NS	S	S	55.50125	S	S	S	10.89261	2.87438	13.20921
98.15462	S	S	S	127.20651	S	S	S	107.33333	S	S	S	11.66415	7.05676	9.23577
73.25819	S	S	S	94.02261	S	S	S	71.35302	S	S	S	16.60240	6.62917	15.79358
79.92124	S	S	S	110.55651	NS	S	S	83.34567	S	S	S	10.16556	3.82132	9.56152
98.34503	S	S	S	116.47823	S	S	S	92.16049	S	S	S	11.41178	5.21926	11.97069
86.08618	S	S	S	105.66304	S	S	S	90.66420	S	S	S	13.45296	7.89617	14.26729
75.89847	S	S	S	106.78231	S	S	S	74.03703	S	S	S	15.62384	4.12476	17.09212
91.15204	S	S	S	119.30434	NS	NS	NS	97.34567	S	S	S	5.82813	1.43850	5.23400
66.95663	S	S	S	99.23912	S	S	S	62.02465	S	S	S	16.53209	5.09879	13.68302
99.82584	S	S	S	112.80431	NS	S	S	101.30866	S	S	S	10.81705	3.66913	8.88194
121.74011	S	S	S	135.09782	NS	NS	S	123.56025	S	S	S	7.74238	2.54137	5.63577
121.92737	S	S	S	135.46733	S	S	S	112.91357	S	S	S	8.99310	5.71601	9.18679
99.96165	S	S	S	106.77173	NS	S	S	101.98766	S	S	S	10.96283	3.16251	10.60265
77.90324	S	S	S	93.48912	S	S	S	75.87650	S	S	S	26.33941	18.34433	25.62184
74.59243	S	S	S	106.85869	S	S	S	75.27159	S	S	S	13.32442	4.92883	12.33043
73.67456	S	S	S	90.32607	S	S	S	82.03703	S	S	S	14.85750	5.57060	16.89588
83.07086	S	S	S	119.76086	NS	NS	NS	75.77777	S	S	S	11.29250	2.02626	10.94907
65.76999	S	S	S	105.83369	S	S	S	86.46913	S	S	S	19.79134	6.61710	17.53577
74.83112	S	S	S	101.19565	S	S	S	76.40739	S	S	S	10.09529	7.42785	14.44507
105.12564	S	S	S	120.46731	S	S	S	106.45679	S	S	S	8.78054	5.11895	6.44278

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
75.78950	S	S	S	129.43477	NS	NS	S	79.68492	S	S	S	12.27157	2.30469	10.07632
97.01918	S	S	S	142.88043	NS	S	S	108.95889	S	S	S	2.00721	3.20542	4.54366
83.07567	S	S	S	132.66304	NS	S	S	95.38356	S	S	S	10.80722	3.12822	7.04250
76.17325	S	S	S	130.34782	NS	S	S	71.60274	S	S	S	14.54200	2.9879	10.64401
81.52588	S	S	S	131.00000	S	S	S	79.12328	S	S	S	10.25463	5.32570	10.39000
56.85474	S	S	S	106.77409	S	S	S	85.49315	S	S	S	22.44839	7.44625	14.68637
75.32950	S	S	S	123.61955	S	S	S	70.23286	S	S	S	15.13667	7.15097	12.00354
66.41307	S	S	S	126.47390	NS	S	S	68.91780	S	S	S	17.61642	3.20034	15.49296
71.39735	S	S	S	135.20651	S	S	S	65.94510	S	S	S	17.86070	5.74130	10.73282
79.74359	S	S	S	140.81307	NS	NS	NS	97.76712	S	S	S	6.93074	1.25344	5.53404
87.33623	S	S	S	128.79347	NS	S	S	85.16438	S	S	S	12.22757	2.94578	11.77091
106.53055	S	S	S	153.70651	NS	NS	NS	105.52054	S	S	S	0.80642	2.14812	6.11473
65.41684	S	S	S	128.66304	S	S	S	65.49315	S	S	S	15.17786	4.17368	13.70035
79.93066	S	S	S	143.00722	NS	NS	S	77.64333	S	S	S	2.43271	2.22424	5.57771
84.94913	S	S	S	120.83694	S	S	S	90.35616	S	S	S	21.56397	5.54130	14.71678
64.66664	S	S	S	103.67300	S	S	S	71.32877	S	S	S	16.94240	5.24570	13.29066
71.32060	S	S	S	129.72826	NS	S	S	71.21918	S	S	S	14.19713	3.95666	11.13994
60.44380	S	S	S	126.68477	S	S	S	66.84930	S	S	S	15.53011	6.06755	12.92725
74.61349	S	S	S	123.57601	S	S	S	74.35616	S	S	S	20.83305	5.38209	17.60861
59.31987	S	S	S	121.66304	NS	S	S	75.58904	S	S	S	19.40450	3.77819	13.07051
65.46965	S	S	S	120.27173	S	S	S	72.04104	S	S	S	21.31476	6.49036	13.02302
90.04167	S	S	S	115.23912	S	S	S	96.73972	S	S	S	6.14869	2.52801	4.14610
85.57164	S	S	S	156.57826	NS	NS	S	31.67122	S	S	S	15.51004	2.52901	10.92201
80.68265	S	S	S	153.33694	NS	S	S	73.09589	S	S	S	11.94093	3.60774	13.15232
57.95474	S	S	S	90.82600	NS	NS	NS	54.58904	S	S	S	16.56967	1.89972	13.56150

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
57.75021	S	S	S	143.35859	NS	NS	NS	55.21530	S	S	S	16.11560	1.96371	17.10520
57.55765	S	S	S	149.66304	NS	S	S	62.44615	S	S	S	14.04058	3.20275	10.90747
62.07846	S	S	S	149.02172	S	S	S	64.78461	S	S	S	12.73415	5.12452	10.72364
59.51736	S	S	S	155.22826	S	S	S	54.47591	S	S	S	22.13824	4.81371	22.06632
49.96175	S	S	S	123.26095	NS	NS	S	59.69231	S	S	S	12.45320	2.42575	9.07122
62.22746	S	S	S	138.70651	S	S	S	67.35384	S	S	S	19.12784	3.32059	12.32062
57.33873	S	S	S	141.81522	S	S	S	52.78461	S	S	S	19.50819	6.58828	20.17896
46.13533	S	S	S	121.27173	S	S	S	49.04614	S	S	S	30.75927	6.94234	26.43207
60.74459	S	S	S	161.82600	NS	NS	NS	70.00000	S	S	S	6.83005	1.19676	6.01402
55.08656	S	S	S	127.43477	NS	S	S	52.56923	S	S	S	14.77182	3.85557	11.59444
53.43500	S	S	S	116.65216	S	S	S	66.64615	S	S	S	16.93544	4.46055	10.36112
59.88268	S	S	S	140.55624	NS	S	S	57.49229	S	S	S	14.20082	2.18212	13.24665
61.57301	S	S	S	141.55434	NS	NS	NS	59.96922	S	S	S	11.27347	2.02745	9.05060
64.87495	S	S	S	141.69477	NS	NS	S	66.86153	S	S	S	10.83954	2.32911	8.93235
60.33255	S	S	S	175.17399	NS	NS	NS	71.50760	S	S	S	11.66952	2.06271	7.16519
45.90263	S	S	S	126.66304	NS	S	S	47.36922	S	S	S	20.30086	2.94642	13.40540
75.85207	S	S	S	168.60867	S	S	S	86.75385	S	S	S	10.59656	4.97009	8.25421
56.05117	S	S	S	141.32608	S	S	S	62.86615	S	S	S	25.91864	6.34928	17.75381
61.04669	S	S	S	157.42399	NS	S	S	55.73845	S	S	S	15.76984	3.67373	17.83162
57.52474	S	S	S	115.92693	S	S	S	51.86153	S	S	S	16.30466	8.34872	16.29365
48.97295	S	S	S	140.10869	S	S	S	45.76923	S	S	S	32.99123	5.53618	32.79695
54.27759	S	S	S	139.95651	S	S	S	60.33846	S	S	S	22.86180	4.23706	23.33086
57.75600	S	S	S	144.36955	S	S	S	52.16922	S	S	S	23.33189	6.60572	22.21034
55.21783	S	S	S	146.50522	NS	S	S	56.64615	S	S	S	20.33597	3.72440	13.74360
64.08554	S	S	S	140.90738	S	S	S	62.90769	S	S	S	27.36888	6.20209	21.00188

MSEANCOVA	.01	.05	.10	MSERPM	.01	.05	.10	MSERBD	.01	.05	.10	FANCOVA	FRPM	FRBD
34.53246	S	S	S	154.56522	S	S	S	40.12306	S	S	S	35.97324	6.90970	27.37694
28.65253	S	S	S	156.50000	S	S	S	25.78461	S	S	S	39.90381	5.90620	26.25624
33.21032	S	S	S	155.60969	NS	NS	NS	37.10768	S	S	S	27.95349	1.88935	17.50075
26.96913	S	S	S	156.31555	NS	NS	NS	33.03076	S	S	S	33.61650	1.33010	24.24100
29.70900	S	S	S	142.58912	S	S	S	29.55383	S	S	S	40.19147	5.75034	28.10709
31.51700	S	S	S	168.20651	NS	NS	S	32.76923	S	S	S	37.10925	2.44541	27.86235
30.09534	S	S	S	144.23912	S	S	S	21.96922	S	S	S	30.18388	7.19407	29.50882
24.94142	S	S	S	129.01036	NS	S	S	32.43076	S	S	S	44.22012	2.25037	27.17360
30.10065	S	S	S	147.18477	NS	NS	NS	34.85230	S	S	S	32.17328	0.93307	23.83302
28.07697	S	S	S	156.05434	NS	NS	NS	26.06157	S	S	S	35.20255	1.78570	40.79172
34.59861	S	S	S	193.59702	NS	NS	NS	39.67691	S	S	S	28.47334	1.04395	19.29359
34.59734	S	S	S	170.58694	S	S	S	40.89230	S	S	S	25.63878	8.42366	10.65083
34.28564	S	S	S	189.95651	NS	S	S	30.79999	S	S	S	23.40184	2.85012	21.03055
32.72074	S	S	S	151.70651	NS	NS	S	37.53345	S	S	S	36.42862	2.20162	29.65027
38.55031	S	S	S	166.99130	S	S	S	42.76923	S	S	S	26.14876	4.80352	18.79316
34.74137	S	S	S	192.72826	NS	NS	NS	33.21538	S	S	S	19.72285	1.26084	17.82808
35.49255	S	S	S	169.21733	NS	NS	NS	46.30769	S	S	S	26.50960	1.87332	16.11795
30.69045	S	S	S	153.36955	S	S	S	30.41537	S	S	S	29.40569	5.98771	17.86830
25.75748	S	S	S	136.27173	NS	NS	S	27.47691	S	S	S	20.40242	2.42162	19.60519
34.79219	S	S	S	169.50000	NS	S	S	34.27692	S	S	S	46.86317	3.95477	39.76515
35.91153	S	S	S	176.31522	NS	NS	NS	37.78461	S	S	S	36.42821	1.73175	29.49986
27.70036	S	S	S	131.17390	NS	NS	NS	32.33846	S	S	S	31.27426	1.15622	26.05707
36.03424	S	S	S	166.91522	NS	NS	S	44.30769	S	S	S	22.00475	2.17806	14.48623
24.64409	S	S	S	123.46738	S	S	S	26.95384	S	S	S	35.06551	7.07059	29.09045
37.34930	S	S	S	188.83694	S	S	S	25.87692	S	S	S	32.57175	5.14552	24.69553

โปรแกรมที่ใช้ในการวิจัย

A COMPARISON OF EFFICIENCY OF ANALYSIS OF COVARIANCE, ANALYSIS OF VARIANCE ON REPEATED MEASUREMENT AND ANALYSIS OF VARIANCE ON RANDOMIZED BLOCK EMPLOYING A CONCOMITANT VARIABLE

SET DIMENSION FOR GENERATE BIVARIATE NORMAL DISTRIBUTION

DIMENSION X1(15),X2(15),X3(15),X4(15),Y1(15),Y2(15),Y3(15),Y4(15)
*,W1(15),W2(15),W3(15),W4(15)

SET DIMENSION MEAN AND VARIANCE OF X AND Y

DIMENSION DX1(15),DX2(15),DX3(15),DX4(15),VARX(5),DY1(15),DY2(15)
*,DY3(15),DY4(15),VARY(5),DEVX1(15),DEVX2(15),DEVX3(15),DEVX4(15)
*,DEVY1(15),DEVY2(15),DEVY3(15),DEVY4(15),DEVXY1(15),DEVXY2(15)
*,DEVXY3(15),DEVXY4(15)

SET DIMENSION FOR HOMOSCEDASTICITY TEST

DIMENSION SSXA(15),SSXBA(15),SSYBA(15),SXYA(15),SSXYA(15),DA(15)
*,CA(15),SSXR(15),SSXBR(15),SSYBR(15),SXYR(15),SSXYR(15),DR(15)
*,CR(15),SSXA(15),SSXBAT(15),SSYBAT(15),SXYAT(15),SSXYAT(15)
*,DAT(15),CAT(15),SSXRT(15),SSXBRT(15),SSYBRT(15),SXYRT(15)
*,SSXYRT(15),DRT(15),CRT(15),SSXB(15),SSXBB(15),SSYBB(15),SXYB(15)
*,SSXYB(15),DB(15),CB(15),SSXQ(15),SSXBQ(15),SSYBQ(15),SXYQ(15)
*,SSXYQ(15),DQ(15),CQ(15),SSXBO(15),SSXBQO(15),SSYBQO(15),SXYBO(15)
*,SSXYBO(15),DBO(15),CBO(15),SSXQO(15),SSXBQO(15),SSYBQO(15)
*,SXYQO(15),SSXYQO(15),DQO(15),CQO(15)

SET DIMENSION FOR RANDOMIZED BLOCK DESIGN

DIMENSION TJ(15),TI(15),XBARI(15),SI(15),SJ(15),AMS2(5),F2(5)
*,XX9(16,16,16),TIJ(16,16),XBARIJ(16,16),SIJ(16,16)
*,IDF2(5),SS5(5),XBARIJ(16),SIJK(16,16,16),TII(10),TJI(10)
*,STJ(10,10),A4(20),C4(20),E4(20),D4(20),JJ7(32),AC4(16,16)
*,ED(16,16),ET(16,16),D3(20),E3(20),ATIJ(16,16),SAC4(10,10)
*,VAR(3),MEAN(3),C(15),C1(15)

SET DIMENSION FOR ANALYSIS OF COVARIANCE

DIMENSION XX3(15,15),YY3(15,15),XYZ(45),XYZ1(45),XSQ3(15,15)
*,YSQ(15,15),SXY(15,15),SXY1(15),SBX(15),XY1(15),EYSC(15),BXSQ(15)

SET DIMENSION FOR REPEATED MEASUREMENT DESIGN

DIMENSION SUMT(15,15),SUMO(16,16),X(15,15,15),SUMX(15,15)
*,XSQ(15,15,15),IDF(5),SS(5),AMS(5),F(5),A2(15,15),A2(5),B2(5)

SET DIMENSION FOR TEST SIGNIFICANT OF F

```

DIMENSION MARK(9,2),ICODE(9)
DATA MARK/9*'S',9*'NS'/
DATA VAR/4.,8.,13./,MEAN/3*100/

```

```

WRITE HEAD FOR DATA

```

```

WRITE(6,1)
1  FORMAT(1H1,10X,'X1(I)',5X,'Y1(I)',5X,'X2(I)',5X,'Y2(I)',5X,
='X3(I)',5X,'Y3(I)',5X,'X4(I)',5X,'Y4(I)')

```

```

CHANGE VALUE OF COEFFICIENT OF VARIATION

```

```

DO 706 N9=1,3
IX=65539

```

```

SET CORRELATION COEFFICIENT BETWEEN X AND Y

```

```

DO 701 IRHO = 2,4,2
RHO = 0.1*IRHO
K55=0
AMST1=0.
AMS2T=0.
AMST=0.
ERRORB=0.
ERRDRR=C.

```

```

NOTATION
X=CONCOMITANT VARIABLE
Y=DEPENDENT VARIABLE

```

```

GENEATE T BIVARIATE NORMAL DISTRIBUTION WITH EQUAL VARIANCES
AND X LINEAR RELATED TO Y AND THE POPULATION MEAN AND VARIANCE
OF X AND THE POPULATION VALUE OF THE CORRELATION COEFFICIENT(RHO)
BETWEEN X AND Y ARE ASSUME EQUAL FOR ALL T TREATMENT POPULATION

```

```

777 AM = 0.0
S = 1.0
DO 20 K1 = 1,8
CALL GAUSS(IX,S,AM,X1(K1))
CALL GAUSS(IX,S,AM,W1(K1))
Y1(K1) = W1(K1)*SQRT(1.0-RHO**2)+X1(K1)*RHO
X1(K1)=X1(K1)*VAR(N9)+MEAN(N9)
Y1(K1)=Y1(K1)*VAR(N9)+MEAN(N9)

```

```

20 CONTINUE

```

```

AM = 0.0
S = 1.0
DO 25 K2 = 1,8
CALL GAUSS(IX,S,AM,X2(K2))
CALL GAUSS(IX,S,AM,W2(K2))
Y2(K2) = W2(K2)*SQRT(1.0-RHO**2)+X2(K2)*RHO
X2(K2)=X2(K2)*VAR(N9)+MEAN(N9)
Y2(K2)=Y2(K2)*VAR(N9)+105

```

```

25 CONTINUE

```

```

AM = 0.0
S = 1.0
DO 920 K3 = 1,8

```

```

CALL GALSS(IX,S,AM,X3(K3))
CALL GAUSS(IX,S,AM,W3(K3))
Y3(K3) = W3(K3)*SQRT(1.0-RHO**2)+X3(K3)*RHO
X3(K3)=X3(K3)*VAR(N9)+MEAN(N9)
Y3(K3)=Y3(K3)*VAR(N9)+110
920 CONTINUE
AM =0.0
S =1.0
DO 925 K4 = 1,8
CALL GAUSS(IX,S,AM,X4(K4))
CALL GAUSS(IX,S,AM,W4(K4))
Y4(K4) = W4(K4)*SQRT(1.0-RHO**2)+X4(K4)*RHO
X4(K4)=X4(K4)*VAR(N9)+MEAN(N9)
Y4(K4)=Y4(K4)*VAR(N9)+115
925 CONTINUE
C
C TEST MEAN AND VARIANCE OF X AND Y
C
SUMY1=0.
SUMY2=0.
SUMY3=0.
SUMY4=0.
SUMX1=0.
SUMX2=0.
SUMX3=0.
SUMX4=0.
DO 921 I=1,8
SUMY1=SUMY1+Y1(I)
SUMY2=SUMY2+Y2(I)
SUMY3=SUMY3+Y3(I)
SUMY4=SUMY4+Y4(I)
SUMX1=SUMX1+X1(I)
SUMX2=SUMX2+X2(I)
SUMX3=SUMX3+X3(I)
SUMX4=SUMX4+X4(I)
921 CONTINUE
C
C COMPUTE MEAN OF Y
C
Y1B=SUMY1/8
Y2B=SUMY2/8
Y3B=SUMY3/8
Y4B=SUMY4/8
C
C COMPUTE MEAN OF X
C
X1B=SUMX1/8
X2B=SUMX2/8
X3B=SUMX3/8
X4B=SUMX4/8
DO 922 I=1,8
DY1(I)=(Y1(I)-Y1B)**2
DY2(I)=(Y2(I)-Y2B)**2
DY3(I)=(Y3(I)-Y3B)**2
DY4(I)=(Y4(I)-Y4B)**2
DX1(I)=(X1(I)-X1B)**2

```



```

DX2(I)=(X2(I)-X2B)**2
DX3(I)=(X3(I)-X3B)**2
DX4(I)=(X4(I)-X4B)**2
922 CONTINUE
SSDY1=0.
SSDY2=0.
SSDY3=0.
SSDY4=0.
SSDX1=0.
SSDX2=0.
SSDX3=0.
SSDX4=0.
DO 923 I=1,8
SSDY1=SSDY1+DY1(I)
SSDY2=SSDY2+DY2(I)
SSDY3=SSDY3+DY3(I)
SSDY4=SSDY4+DY4(I)
SSDX1=SSDX1+DX1(I)
SSDX2=SSDX2+DX2(I)
SSDX3=SSDX3+DX3(I)
SSDX4=SSDX4+DX4(I)
923 CONTINUE
C
C COMPUTE VARIANCE OF Y
C
VARY(1)=SSDY1/(8-1)
VARY(2)=SSDY2/(8-1)
VARY(3)=SSDY3/(8-1)
VARY(4)=SSDY4/(8-1)
C
C COMPUTE VARIANCE OF X
C
VARX(1)=SSDX1/(8-1)
VARX(2)=SSDX2/(8-1)
VARX(3)=SSDX3/(8-1)
VARX(4)=SSDX4/(8-1)
C
C SORT VARIANCE OF Y
C
DO 924 K=1,3
J=4-K
DO 925 L=1,J
IF(VARY(L).LE.VARY(L+1))GO TO 926
TEMP=VARY(L)
VARY(L)=VARY(L+1)
VARY(L+1)=TEMP
925 CONTINUE
924 CONTINUE
C
C TEST HOMOGENEITY OF VARIANCE
C
FVAR=VARY(4)/VARY(1)
IF(FVAR.GT.3.00)GO TO 777
C
C TEST MEAN OF X
C

```

```

IF(ABS(X1B-100).GT.5)GO TJ 777
IF(ABS(X2B-100).GT.5)GO TJ 777
IF(ABS(X3B-100).GT.5)GO TJ 777
IF(ABS(X4B-100).GT.5)GO TJ 777

```

```

C
C
C
TEST VARIANCE OF X

```

```

IF(ABS(VARX(1)-VAR(N9)).GT.0.5)GO TO 777
IF(ABS(VARX(2)-VAR(N9)).GT.0.5)GO TO 777
IF(ABS(VARX(3)-VAR(N9)).GT.0.5)GO TO 777
IF(ABS(VARX(4)-VAR(N9)).GT.0.5)GO TO 777

```

```

C
C
C
TEST CORRELATION BETWEEN X AND Y

```

```

SDXY1=0.
SDXY2=0
SDXY3=0
SDXY4=0
SDY1=0.
SDY2=0.
SDY3=0.
SDY4=0.
SDX1=0.
SDX2=0.
SDX3=0.
SDX4=0.
DO 95 I=1,8
DEVX1(I)=X1(I)-X1B
DEVX2(I)=X2(I)-X2B
DEVX3(I)=X3(I)-X3B
DEVX4(I)=X4(I)-X4B
DEVY1(I)=Y1(I)-Y1B
DEVY2(I)=Y2(I)-Y2B
DEVY3(I)=Y3(I)-Y3B
DEVY4(I)=Y4(I)-Y4B
DEVXY1(I)=DEVX1(I)*DEVY1(I)
DEVXY2(I)=DEVX2(I)*DEVY2(I)
DEVXY3(I)=DEVX3(I)*DEVY3(I)
DEVXY4(I)=DEVX4(I)*DEVY4(I)
SDXY1=SDXY1+DEVXY1(I)
SDXY2=SDXY2+DEVXY2(I)
SDXY3=SDXY3+DEVXY3(I)
SDXY4=SDXY4+DEVXY4(I)
SDY1=SDY1+DY1(I)
SDY2=SDY2+DY2(I)
SDY3=SDY3+DY3(I)
SDY4=SDY4+DY4(I)
SDX1=SDX1+DX1(I)
SDX2=SDX2+DX2(I)
SDX3=SDX3+DX3(I)
SDX4=SDX4+DX4(I)
CONTINUE

```

```

95
C
C
C
TEST CORRELATION BETWEEN X AND Y FOR EACH TREATMENT POPULATION

```

```

R1=SDXY1/SQR(1(SDY1*SDX1)

```

```

R2=SDXY2/SQRT(SDY2*SDX1)
R3=SDXY3/SQRT(SDY3*SDX1)
R4=SDXY4/SQRT(SDY4*SDX1)

```

C
C
C

CHECK CORRELATION BETWEEN X AND Y. POSITIVE

```

IF(R1.LE.0.)GO TO 777
IF(R2.LE.0.)GO TO 777
IF(R3.LE.0.)GO TO 777
IF(R4.LE.0.)GO TO 777
ZF1=(.5)*ALOG((1.+R1)/(1.-R1))
ZF2=(.5)*ALOG((1.+R2)/(1.-R2))
ZF3=(.5)*ALOG((1.+R3)/(1.-R3))
ZF4=(.5)*ALOG((1.+R4)/(1.-R4))
ZFA=(.5)*ALOG((1.+RHO)/(1.-RHO))
ZC=8-3
ZF1A=(ZF1-ZFA)*SQRT(ZC)
ZF2A=(ZF2-ZFA)*SQRT(ZC)
ZF3A=(ZF3-ZFA)*SQRT(ZC)
ZF4A=(ZF4-ZFA)*SQRT(ZC)
IF(ZF1A.GT.1.645)GO TO 777
IF(ZF2A.GT.1.645)GO TO 777
IF(ZF3A.GT.1.645)GO TO 777
IF(ZF4A.GT.1.645)GO TO 777

```

C
C
C
C
C

TEST HOMOSEDASTICITY FOR EACH TREATMENT POPULATION

SORT X AND Y FOR TREATMENT POPULATION 1

```

NA=7
DO 2014 KA=1,7
JA=8-KA
DJ 1001 LA = 1,JJA
    IF(X1(LA).LE.X1(LA+1)) GO TO 1001
        TEMP=X1(LA)
        SAVE=Y1(LA)
        X1(LA)=X1(LA+1)
        Y1(LA)=Y1(LA+1)
        X1(LA+1)=TEMP
        Y1(LA+1)=SAVE

```

1001
2014

CONTINUE
CONTINUE

C
C
C

SORT X AND Y FOR TREATMENT POPULATION 2

```

NNB=7
DO 2019 KB=1,7
JJB=8-KB
DJ 1009 LB = 1,JJB
    IF(X2(LB).LE.X2(LB+1)) GO TO 1009
        TEMPB=X2(LB)
        SAVEB=Y2(LB)
        X2(LB)=X2(LB+1)
        Y2(LB)=Y2(LB+1)
        X2(LB+1)=TEMPB
        Y2(LB+1)=SAVEB

```

```

1009      CONTINUE
2019      CONTINUE
C
C      SORT X AND Y FOR TREATMENT POPULATION 3
C
      NND=7
      DO 2919 KD=1,7
      JJD=8-KD
        DO 1900 LD = 1,JJD
          IF(X3(LD).LE.X3(LD+1)) GO TO 1900
          TEMPD=X3(LD)
          SAVED=Y3(LD)
          X3(LD)=X3(LD+1)
          Y3(LD)=Y3(LD+1)
          X3(LD+1)=TEMPD
          Y3(LD+1)=SAVED
1900      CONTINUE
2919      CONTINUE
C
C      SORT X AND Y FOR TREATMENT POPULATION 4
C
      NNE=7
      DO 2018 KE=1,7
      JJE=8-KE
        DO 1008 LE = 1,JJE
          IF(X4(LE).LE.X4(LE+1)) GO TO 1008
          TEMPE=X4(LE)
          SAVEE=Y4(LE)
          X4(LE)=X4(LE+1)
          Y4(LE)=Y4(LE+1)
          X4(LE+1)=TEMPE
          Y4(LE+1)=SAVEE
1008      CONTINUE
2018      CONTINUE
C
C      COMPUTE SSE FOR FIRST DATA IN TREATMENT POPULATION 1
C
      DO 2011 I15=1,3
      SSXYA(I15)=0.
      CA(I15)=0.
      DA(I15)=0.
2011      CONTINUE
      SSX1A=0.
      B1HA=0.
      B0HA=0.
      SSXY1A=0.
      SSEA=0.
      TTA=0.
      TT1A=0.
      NA=3
      DO 1211 I16=1,3
      TTA=TTA+Y1(I16)
      TT1A=TT1A+X1(I16)
1211      CONTINUE
      YBA=TTA/NA
      XBA=TT1A/NA

```



```

DO 1311 117=1,3
SSXA(I17)=(X1(I17)-XBA)**2
SSXBA(I17)=X1(I17)-XBA
SSYBA(I17)=Y1(I17)-YBA
SXYA(I17)=(SSXBA(I17)*SSYBA(I17))
SSX1A=SSX1A+SSXA(I17)
SSXY1A=SSXY1A+SXYA(I17)
1311 CONTINUE
BIHA=SSXY1A/SSX1A
BOHA=YBA-(BIHA*XBA)
DO 1411 118=1,3
CA(I18)=BOHA+(BIHA*X1(I18))
DA(I18)=(Y1(I18)-CA(I18))**2
SSEA=SSEA+DA(I18)
1411 CONTINUE
C
C COMPUTE SSE FOR LAST DATA IN TREATMENT POPULATION 1
C
DO 2010 155=6,8
SSXYAT(155)=0.
CAT(155)=0.
DAT(155)=0.
2010 CONTINUE
SSX1AT=0.
BIHAT=0.
BOHAT=0.
TXY1AT=0.
SSEAT=0.
TTAT=0.
TT1AT=0.
NAT=3
DO 1210 156=6,8
TTAT=TTAT+Y1(156)
TT1AT=TT1AT+X1(156)
1210 CONTINUE
YBAT=TTAT/NAT
XBAT=TT1AT/NAT
DO 1310 157=6,8
SSXAT(157)=(X1(157)-XBAT)**2
SSXBAT(157)=X1(157)-XBAT
SSYBAT(157)=Y1(157)-YBAT
SXYAT(157)=(SSXBAT(157)*SSYBAT(157))
SSX1AT=SSX1AT+SSXAT(157)
TXY1AT=TXY1AT+SXYAT(157)
1310 CONTINUE
BIHAT=TXY1AT/SSX1AT
BOHAT=YBAT-(BIHAT*XBAT)
DO 1410 158=6,8
CAT(158)=BOHAT+(BIHAT*X1(158))
DAT(158)=(Y1(158)-CAT(158))**2
SSEAT=SSEAT+DAT(158)
1410 CONTINUE
AFCAL=SSEAT/SSEA
IF(AFCAL.GT.39.9150)DJ 777
C
C COMPUTE SSE FOR FIRST DATA IN TREATMENT POPULATION 2

```

```

C
DO 2022 I21=1,3
SSXYB(I21)=0.
CB(I21)=0.
DB(I21)=0.
2022 CONTINUE
SSX1B=C.
B1HB=0.
BOHB=0.
SSXY1B=0.
SSEB=0.
TTB=0.
TT1B=0.
NB=3
DO 1222 I22=1,3
TTB=TTB+Y2(I22)
TT1B=TT1B+X2(I22)
1222 CONTINUE
YBB=TTB/NB
XBB=TT1B/NB
DO 1322 I23=1,3
SSXB(I23)=(X2(I23)-XBB)**2
SSXBB(I23)=X2(I23)-XBB
SSYBB(I23)=Y2(I23)-YBB
SXYB(I23)=(SSXBB(I23)*SSYBB(I23))
SSX1B=SSX1B+SSXB(I23)
SSXY1B=SSXY1B+SXYB(I23)
1322 CONTINUE
B1HB=SSXY1B/SSX1B
BOHB=YBB-(B1HB*XBB)
DO 1422 I24=1,3
CB(I24)=BOHB+(B1HB*X2(I24))
DB(I24)=(Y2(I24)-CB(I24))**2
SSEB=SSEB+DB(I24)
1422 CONTINUE
C
C COMPUTE SSE FOR LAST DATA IN TREATMENT POPULATION 2
C
DO 2020 I29=6,8
SSXYBO(I29)=0.
CBO(I29)=0.
DBO(I29)=0.
2020 CONTINUE
SSX1BO=C.
B1HBO=0.
BOHBO=0.
TXY1BO=0.
SSEBO=0.
TTBO=0.
TT1BO=0.
NBO=3
DO 1220 I28=6,8
TTBO=TTBO+Y2(I28)
TT1BO=TT1BO+X2(I28)
1220 CONTINUE
YBBO=TTBO/NBO

```

```

XBBO=TT1B0/NB0
DO 1320 178=6,8
SSXBO(178)=(X2(178)-XBBO)**2
SSXBB0(178)=X2(178)-XBBO
SSYBB0(178)=Y2(178)-YBBO
SXYBO(178)=(SSXBB0(178)*SSYBB0(178))
SSX1B0=SSX1B0+SSXBO(178)
TXY1B0=TXY1B0+SXYBO(178)
1320 CONTINUE
B1HBO=TXY1B0/SSX1B0
BOHBO=YBBO-(B1HBO*XBBO)
DO 1420 189=6,8
CBO(189)=BOHBO+(B1HBO*X2(189))
DBO(189)=(Y2(189)-CBO(189))**2
SSEBO=SSEBO+CBO(189)
1420 CONTINUE
AFCAL1=SSEBO/SSEB
IF(AFCAL1.GT.39.9)GO TO 777
C
C COMPUTE SSE FOR FIRST DATA IN TREATMENT POPULATION 3
C
DO 2015 114=1,2
SSXYR(114)=C.
CR(114)=C.
DK(114)=C.
2015 CONTINUE
SSX1R=C.
B1HR=0.
BOHR=0.
SSXY1R=C.
SSEB=0.
TTR=0.
TT1R=0.
NR=3
DO 1215 187=1,3
TTR=TTR+Y3(187)
TT1R=TT1R+X3(187)
1215 CONTINUE
YBR=TTR/NR
XBR=TT1R/NR
DO 1318 137=1,3
SSXR(137)=(X3(137)-XBR)**2
SSXBR(137)=X3(137)-XBR
SSYBR(137)=Y3(137)-YBR
SXYR(137)=(SSXBR(137)*SSYBR(137))
SSX1R=SSX1R+SSXR(137)
SSXY1R=SSXY1R+SXYR(137)
1318 CONTINUE
B1HR=SSXY1R/SSX1R
BOHR=YBR-(B1HR*XBR)
DO 1418 181=1,3
CR(181)=BOHR+(B1HR*X3(181))
DR(181)=(Y3(181)-CR(181))**2
SSEB=SSEB+DR(181)
1418 CONTINUE
C

```

```

C      COMPUTE SSE FOR LAST DATA IN TREATMENT POPULATION 3
C
      DO 2300 I95=6,8
      SSXYRT(I95)=0.
      CRT(I95)=0.
      DRT(I95)=0.
2300   CONTINUE
      SSX1RT=0.
      B1HRT=0.
      BOHRT=0.
      TXY1RT=0.
      SSERT=0.
      TTRT=0.
      TT1RT=0.
      NRT=3
      DO 1200 I76=6,8
      JTR7=TTRT+Y3(I76)
      TT1RT=TT1RT+X3(I76)
1200   CONTINUE
      YBRT=TT1RT/NRT
      XBRT=TT1RT/NRT
      DO 1300 I75=6,8
      SSXRT(I75)=(X3(I75)-XBRT)**2
      SSXBRT(I75)=X3(I75)-XBRT
      SSYBRT(I75)=Y3(I75)-YBRT
      SXYRT(I75)=(SSXBRT(I75)*SSYBRT(I75))
      SSX1RT=SSX1RT+SSXRT(I75)
      TXY1RT=TXY1RT+SXYRT(I75)
1300   CONTINUE
      B1HRT=TXY1RT/SSX1RT
      BOHRT=YBRT-(B1HRT*XBRT)
      DO 2400 I85=6,8
      CRT(I85)=BOHRT+(B1HRT*X3(I85))
      DRT(I85)=(Y3(I85)-CRT(I85))**2
      SSERT=SSERT+DRT(I85)
2400   CONTINUE
      AFCAL3=SSERT/SSER
      IF(AFCAL3.GT.39.9)GO TO 777
C
C      COMPUTE SSE FOR FIRST DATA IN TREATMENT POPULATION 4
C
      DO 5022 I51=1,3
      SSXYQ(I51)=0.
      CQ(I51)=0.
      DQ(I51)=0.
5022   CONTINUE
      SSX1Q=0.
      B1HQ=0.
      BUHQ=0.
      SSXY1Q=0.
      SSEQ=0.
      TTQ=0.
      TT1Q=0.
      NQ=3
      DJ 9222 I92=1,3
      TTQ=TTQ+Y4(I92)

```



```

          TT1Q=TT1Q+X4(I92)
9222  CONTINUE
          YBQ=TTQ/NQ
          XBQ=TT1Q/NQ
          DO 9322 I93=1,3
          SSXQ(I93)=(X4(I93)-XBQ)**2
          SSXBQ(I93)=X4(I93)-XBQ
          SSYBQ(I93)=Y4(I93)-YBQ
          SXYQ(I93)=(SSXBQ(I93)*SSYBQ(I93))
          SSX1Q=SSX1Q+SSXQ(I93)
          SSXY1Q=SSXY1Q+SXYQ(I93)
9322  CONTINUE
          B1HQ=SSXY1Q/SSX1Q
          B0HQ=YBQ-(B1HQ*XBQ)
          DO 9422 I94=1,3
          CQ(I94)=B0HQ+(B1HQ*X4(I94))
          DQ(I94)=(Y4(I94)-CQ(I94))**2
          SSEQ=SSEQ+DQ(I94)
9422  CONTINUE
C
C      COMPUTE SSE FOR LAST DATA IN TREATMENT POPULATION 4
C
          DO 7020 I96=6,8
          SSXYQ0(I96)=C.
          CQ0(I96)=0.
          DQ0(I96)=0.
7020  CONTINUE
          SSX1Q0=C.
          B1HQ0=0.
          B0HQ0=0.
          TXY1Q0=C.
          SSEQ0=C.
          TTQ0=0.
          TT1Q0=C.
          NQ0=3
          DO 8220 I82=6,8
          TTQ0=TTQ0+Y4(I82)
          TT1Q0=TT1Q0+X4(I82)
8220  CONTINUE
          YBQ0=TTQ0/NQ0
          XBQ0=TT1Q0/NQ0
          DO 8320 I84=6,8
          SSXQ0(I84)=(X4(I84)-XBQ0)**2
          SSXBQ0(I84)=X4(I84)-XBQ0
          SSYBQ0(I84)=Y4(I84)-YBQ0
          SXYQ0(I84)=(SSXBQ0(I84)*SSYBQ0(I84))
          SSX1Q0=SSX1Q0+SSXQ0(I84)
          TXY1Q0=TXY1Q0+SXYQ0(I84)
8320  CONTINUE
          B1HQ0=TXY1Q0/SSX1Q0
          B0HQ0=YBQ0-(B1HQ0*XBQ0)
          DO 7420 I99=6,8
          CQ0(I99)=B0HQ0+(B1HQ0*X4(I99))
          DQ0(I99)=(Y4(I99)-CQ0(I99))**2
          SSEQ0=SSEQ0+DQ0(I99)
7420  CONTINUE

```

```

AFCAL4=SSEQD/SSEQ
IF(AFCAL4.GT.39.9)GO TO 777
C
C ANALYSIS OF VARIANCE OF RANDOMIZED BLOCK
C
C NOTATION
C IS9=TOTAL NUMBER OF EXPERIMENTAL UNIT
C ICC=NUMBER OF TREATMENT
C IK=NUMBER OF BLOCK
C IW=NUMBER OF EXPERIMENTAL UNIT IN BLOCK
C M=NUMBER OF EXPERIMENTAL UNIT IN EACH TREATMENT
C
IS9=32
ICC=4
IK=2
IW=16
M=8
DO 333 I94=1,IK
DO 333 J94=1,ICC
DO 333 K94=1,IW
XX9(I94,J94,K94)=0.
333 CONTINUE
DO 111 I5=1,M
XYZ(I5)=X1(I5)
J2=I5+8
XYZ(J2)=X2(I5)
J1=I5+16
XYZ(J1)=X3(I5)
J91=I5+24
XYZ(J91)=X4(I5)
111 CONTINUE
DO 338 I5=1,M
J3=I5+8
XYZ1(I5)=Y1(I5)
XYZ1(J3)=Y2(I5)
J4=I5+16
XYZ1(J4)=Y3(I5)
J76=I5+24
XYZ1(J76)=Y4(I5)
338 CONTINUE
C
C SORT X AND Y FOLLOW X IN ORDER TO DIVIED BLOCK
C
IN=31
DO 201 K99=1,31
J11=32-K99
DO 100 LL2 = 1,J11
IF (XYZ(LL2).LE.XYZ(LL2+1)) GO TO 100
TEMPA=XYZ(LL2)
SAVEA=XYZ1(LL2)
XYZ(LL2)=XYZ(LL2+1)
XYZ1(LL2)=XYZ1(LL2+1)
XYZ(LL2+1)=TEMPA
XYZ1(LL2+1)=SAVEA
100 CONTINUE

```

```

201  CONTINUE
      DO 57 N=1,1W
      C4(N)=C.
      A4(N)=0.
      J4(N)=0.
      E4(N)=0.
      JJ7(N)=C.
      D3(N)=0.
      E3(N)=C.
57   CONTINUE
      DO 68 L9=1,IR
      DO 68 M1=1,ICC
      AC4(L9,M1)=0.
38   CONTINUE
      DO 3 I41=1,ISS
      DO 4 J41=1,M
      IF(XYZ1(I41).EQ.W1(J41))JJ7(I41)=1
      IF(XYZ1(I41).EQ.W2(J41))JJ7(I41)=2
      IF(XYZ1(I41).EQ.W3(J41))JJ7(I41)=3
      IF(XYZ1(I41).EQ.W4(J41))JJ7(I41)=4
4    CONTINUE
3    CONTINUE
      AA4=0.
      CC4=0.
      DD4=0.
      EE4=0.
      BB4=0.
      DO 7 I15=1,IR
      KK4=0.
      LL4=0.
      MM4=0.
      NN4=0.
      DO 8 M9=1,1w
      BB4=BB4+1.
      IF(JJ7(BB4).NE.1)GO TO 903
      KK4=KK4+1
      XX9(I15,JJ7(BB4),KK4)=XYZ1(BB4)
      A4(I15)=KK4
      GO TO 8
909  IF(JJ7(BB4).NE.2)GO TO 905
      LL4=LL4+1
      XX9(I15,JJ7(BB4),LL4)=XYZ1(BB4)
      C4(I15)=LL4
      GO TO 8
906  IF(JJ7(BB4).NE.3)GO TO 907
      MM4=MM4+1
      XX9(I15,JJ7(BB4),MM4)=XYZ1(BB4)
      D3(I15)=MM4
      GO TO 8
907  NN4=NN4+1
      XX9(I15,JJ7(BB4),NN4)=XYZ1(BB4)
      E3(I15)=NN4
      GO TO 8
8    CONTINUE
7    CONTINUE
      DO 9 I20=1,IR

```

```

AA4=AA4+A4(I28)
CC4=CC4+C4(I28)
DD4=DD4+D3(I28)
EE4=EE4+E3(I28)
9 CONTINUE
E4(1)=AA4
E4(2)=CC4
E4(3)=DD4
E4(4)=EE4
DD 19 I26=1,IR
D4(I26)=A4(I26)+C4(I26)+D3(I26)+E3(I26)
19 CONTINUE
DD 16 I16=1,IR
AC4(I16,1)=A4(I16)
AC4(I16,2)=C4(I16)
AC4(I16,3)=D3(I16)
AC4(I16,4)=E3(I16)
16 CONTINUE
C
C CHECK NUMBER OF EXPERIMENT UNIT FOR EACH CELL
C
DD 509 I17=1,IR
IF(AC4(I17,1).LE.1)GO TO 777
IF(AC4(I17,2).LE.1)GO TO 777
IF(AC4(I17,3).LE.1)GO TO 777
IF(AC4(I17,4).LE.1)GO TO 777
509 CONTINUE
SSJ=0.
SSI=0.
T=0.
SST=0.
SSIJ=0.
SSABB=0.
SSABBS=C.
AROW1=0.
AROW2=0.
BCOL1=C.
BCOL2=C.
BCOL3=0.
BCOL4=0.
SSAC4=0.
DU 103 I14=1,IR
DJ 103 J2=1,ICC
SIJ(I14,J2)=0.
T1J(I14,J2)=0.
XBAR1J(I14,J2)=0.
103 CONTINUE
DU 102 J1=1,ICC
SJ(J1)=0.
TJ(J1)=0.
XBARJ(J1)=0.
102 CONTINUE
DU 104 I4=1,IR
S1(I4)=0.
T1(I4)=0.
XBAR1(I4)=0.

```

```

104 CONTINUE
   DO 106 I5=1,5
   SS5(I5)=0.
106 CONTINUE
   DO 107 I6=1,IR
   DO 107 J6=1,ICC
   DO 107 K6=1,Iw
   SIJK(I6,J6,K6)=0.
107 CONTINUE
   DO 109 I7=1,5
   IDF2(I7)=0.
   ANS2(I7)=0.
   F2(I7)=0.
109 CONTINUE
   TD =0.
   DD4=0.
   EE4=0.
   DO 122 I23=1,IR
   DD4=DD4+D4(I23)
122 CONTINUE
   DO 112 I8=1,IR
   DO 112 J=1,ICC
   DO 112 K=1,Iw
   T1J(I8,J)=T1J(I8,J)+XX9(I8,J,K)
   T2J(J)=T2J(J)+XX9(I8,J,K)
   T1(I8)=T1(I8)+XX9(I8,J,K)
   T=T+XX9(I8,J,K)
   TU=TU+XX9(I8,J,K)**2
112 CONTINUE
   SST1=0.
   SSTJ=0.
   SSTIJ=0.
   DO 413 I11=1,IR
   T11(I11)=(T1(I11)**2)/D4(I11)
   SST1=SST1+T11(I11)
413 CONTINUE
   DO 1118 I8=1,IR
   DO 1118 J=1,ICC
   AT1J(I8,J)=T1J(I8,J)/AC4(I8,J)
1118 CONTINUE
   DO 813 J=1,ICC
   T21(J)=(T2J(J)**2)/E4(J)
   SSTJ=SSTJ+T21(J)
813 CONTINUE
   DO 718 I8=1,IR
   DO 718 J=1,ICC
   STJ(I8,J)=(T1J(I8,J)**2)/AC4(I8,J)
   SSTIJ=SSTIJ+STJ(I8,J)
718 CONTINUE
   DO 1112 I8=1,IR
   DO 1112 J=1,ICC
   SSABB=SSABB+AT1J(I8,J)
   SSABBS=SSABBS+AT1J(I8,J)**2
1112 CONTINUE
   XABB=SSABB**2/(ICC*R)
   DO 1112 J=1,ICC

```

```

AROW1=AROW1+ATIJ(1,J)
AROW2=AROW2+ATIJ(2,J)
1113 CONTINUE
SAROW1=AROW1**2/CC
SAROW2=AROW2**2/CC
SAB=SAROW1+SAROW2
DO 1114 I8=1,IR
BCOL1=BCOL1+ATIJ(I8,1)
BCOL2=BCOL2+ATIJ(I8,2)
BCOL3=BCOL3+ATIJ(I8,3)
BCOL4=BCOL4+ATIJ(I8,4)
1114 CONTINUE
SBCOL1=BCOL1**2/IR
SBCOL2=BCOL2**2/IR
SBCOL3=BCOL3**2/IR
SBCOL4=BCOL4**2/IR
SBB=SBCOL1+SBCOL2+SBCOL3+SBCOL4
DO 1115 I8=1,IR
DO 1115 J=1,ICC
SAC4(I8,J)=1./AC4(I8,J)
SSAC4=SSAC4+SAC4(I8,J)
1115 CONTINUE
SNBAR=(ICC*RI)/SSAC4
SSA=SNBAR*(SAB-XABB)
SSB=SNBAR*(SBB-XABB)
SSAB=SNBAR*(SSAEBB-SAB-SBB+XABB)
SWCELL=70-SSTIJ
C
C COMPUTE SUM SQUARE
C
SS5(1)=SSA
SS5(2)=SSB
SS5(3)=SSAB
SS5(4)=SWCELL
C
C COMPUTE DEGREE OF FREEDOM
C
IDF2(1)=IR-1
IDF2(2)=ICC-1
IDF2(3)=(IR-1)*(ICC-1)
IDF2(4)=IS9-IDF2(1)-IDF2(2)-IDF2(3)
C
C COMPUTE MEAN SQUARE
C
DO 119 N=1,4
AMS2(N)=SS5(N)/IDF2(N)
119 CONTINUE
C
C COMPUTE SUM OF MEAN SQUARE ERROR FOR 25 CASES
C
EKKLRB=ERRORB+AMS2(3)
C
C COMPUTE F TEST
C
F2(1)=AMS2(1)/AMS2(4)
F2(2)=AMS2(2)/AMS2(4)

```




```

SBY(I3)=SBY(I3)+YY3(I3,J)
SBX(I3)=SBX(I3)+XX3(I3,J)
12 CONTINUE
XY1(I3)=SBY(I3)*SBX(I3)/M
BYSQ(I3)=SBY(I3)**2/M
BXSQ(I3)=SBX(I3)**2/M
BXY=BXY+XY1(I3)
BY=BY+BYSQ(I3)
BX=BX+BXSQ(I3)
21 CONTINUE
SBSY=0.
BSY=0.
SBSX=0.
BSX=0.
BSXY=0.
DO 41 I4=1,L
DO 41 J=1,M
SBSY=SBSY+YY3(I4,J)
BSY=BSY+YSQ(I4,J)
SBSX=SBSX+XX3(I4,J)
BSX=BSX+XSQ3(I4,J)
BSXY=BSXY+SXY(I4,J)
41 CONTINUE
YY=SBSY**2/(L*M)
XX=SBSX**2/(L*M)
XY2=SBSY*SBSX/(M*L)
C CALCULATION1
TYY=BSY-YY
BYY=BY-YY
SYY=BSY-BY
TXX=BSX-XX
BXX=BX-XX
SXX=BSX-BX
TXY=BSXY-XY2
BBXY=BXY-XY2
SXY1=BSXY-BXY
C
C COMPUTE SUM SQUARE FOR ANCOVA
C
TADJ=TYY-(TXY**2)/TXX
SADJ=SYY-(SXY1**2)/SXX
BADJ=TADJ-SADJ
C
C COMPUTE DEGREE OF FREEDOM FOR ANCOVA
C
DFB=L-1
DFS=(M*L)-2-L+1
DFT=(M*L)-2
C
C COMPUTE MEAN SQUARE FOR ANCOVA
C
AMSI=BADJ/DFB
AMSD=SADJ/DFS
C
C COMPUTE F TEST
C

```


F1=AMS1/AMS3

COMPUTE SUM OF MEAN SQUARE ERROR FOR 25 CASES

AMST1=AMST1+AMS3

PRINT OUTPUT OF ANALYSIS OF COVARIANCE IN CRD TABLE

WRITE(6,22)

WRITE(6,344) BADJ,DFB,AMS1,F1

WRITE(6,44) SADJ,DFS,AMS3

WRITE(6,55) TADJ,DFT

FORMAT(//10X,'SOURCE',22X,'SS',15X,'DF',25X,'MS',30X,'F')

FORMAT(1X,'1.BET.GP(BADJ)',10X,F18.5,10X,F3.0,10X,F20.5,10X,F20.5)

FORMAT(1X,'2.WITH.GP(SADJ)',10X,F18.5,10X,F3.0,10X,F20.5,10X,F20.5)

*5)

FORMAT(1X,'3.TOTALADJ',15X,F18.5,10X,F3.0)

COMPUTE ANALYSIS OF VARIANCE ON REPEATED MEASUREMENT

NOTATION

L=NUMBER OF TREATMENT

M=TRIAL

N5=NUMBER OF EXPERIMENTAL UNIT FOR EACH TREATMENT

IC=TOTAL NUMBER OF EXPERIMENTAL UNIT

L=4

M=2

N5=8

IC=32

DO 900 I5=1,L

DO 900 K=1,M

DO 900 J=1,N5

IF(I5.EQ.1.AND.K.EQ.1) X(I5,J,K)=X1(J)

IF(I5.EQ.1.AND.K.EQ.2) X(I5,J,K)=Y1(J)

IF(I5.EQ.2.AND.K.EQ.1) X(I5,J,K)=X2(J)

IF(I5.EQ.2.AND.K.EQ.2) X(I5,J,K)=Y2(J)

IF(I5.EQ.3.AND.K.EQ.1) X(I5,J,K)=X3(J)

IF(I5.EQ.3.AND.K.EQ.2) X(I5,J,K)=Y3(J)

IF(I5.EQ.4.AND.K.EQ.1) X(I5,J,K)=X4(J)

IF(I5.EQ.4.AND.K.EQ.2) X(I5,J,K)=Y4(J)

900 CONTINUE

AS=C.

AB=0.

AA=0.

B=0.

XX=C.

DO 888 I1=1,5

IDF(I1)=C

SS(I1)=C.

AMS(I1)=0.

F(I1)=C.

A2(I1)=C.

B2(I1)=C.

888 CONTINUE

DO 05 I2=1,N5

```

DC 65 J=1,N5
SUMX(I2,J)=0.
SUMQ(I2,J)=0.
SUMT(I2,J)=0.
AB1(I2,J)=0.
ABX=0.
65 CONTINUE
DO 330 I2=1,L
DO 220 J=1,N5
DO 210 K=1,M
SUMX(I2,K)=SUMX(I2,K)+X(I2,J,K)
XSQ(I2,J,K)=X(I2,J,K)**2
ABX=ABX+XSQ(I2,J,K)
SUMT(I2,J)=SUMT(I2,J)+X(I2,J,K)
210 CONTINUE
AS1=SUMT(I2,J)**2/M
AS=AS+AS1
220 CONTINUE
DO 330 K = 1,M
AB1(I2,K)=SUMX(I2,K)**2/N5
AB=AB+AB1(I2,K)
330 CONTINUE
DO 40 I2=1,L
A1 = 0.0
DO 50 K=1,M
A1=A1+SUMX(I2,K)
50 CONTINUE
A2(I2)=A1**2/N5/M
AA=AA+A2(I2)
40 CONTINUE
DO 60 K = 1,M
B1=0.0
DO 70 I2 = 1,L
B1=B1+SUMX(I2,K)
70 CONTINUE
B2(K)=B1**2/N5/L
B=B+B2(K)
60 CONTINUE
XX1=0.0
DO 80 I2=1,L
DO 80 K = 1,M
XX1=XX1+SUMX(I2,K)
80 CONTINUE
C
C COMPUTE SUM SQUARE
C
XX=(XX1**2)/(L0*M)
SS(1)=AA-XX
SS(2)=AS-AA
SS(3)=B-XX
SS(4)=AB-AA-B+XX
SS(5)=ABX-AB-AS+AA
SSTOT=ABX-XX
C
C COMPUTE DEGREE OF FREEDOM
C

```

```

IDF(1)=L-1
IDF(2)=(1L-L)
IDF(3)=M-1
IDF(4)=(L-1)*(M-1)
IDF(5)=(1C-L)*(M-1)
IDFTOT=IC*M-1

```

```

C
C COMPUTE MEAN SQUARE
C

```

```

DO 90 I2 = 1,5
AMS(I2)=SS(I2)/IDF(I2)
CONTINUE

```

```

C
C COMPUTE SUM OF MEAN SQUARE ERROR FOR RPM FOR 25 CASES
C

```

```

ERRORR=ERRORR+AMS(2)

```

```

C
C COMPUTE F TEST
C

```

```

F(1)=AMS(1)/AMS(2)
F(3)=AMS(3)/AMS(5)
F(4)=AMS(4)/AMS(5)

```

```

C
C PRINT OUTPUT FOR ANALYSIS OF VARIANCE ON REPEATED MEASUREMENT
C

```

```

WRITE (6,53)

```

```

53 FORMAT (//5X, 'SOURCE', 22X, 'SS', 20X, 'DF', 25X, 'MS(SS/DF)'
*, 15X, 'F')

```

```

WRITE(6,29)SS(1),IDF(1),AMS(1),F(1)
WRITE(6,218)SS(2),IDF(2),AMS(2),F(2)
WRITE(6,228)SS(3),IDF(3),AMS(3),F(3)
WRITE(6,23)SS(4),IDF(4),AMS(4),F(4)
WRITE(6,24)SS(5),IDF(5),AMS(5),F(5)

```

```

29 FORMAT(1X, '1. A(TREAT)', 10X, F18.5, 10X, I3, 5X, F18.5, 5X, F18.5)

```

```

218 FORMAT(1X, '2. SUBJ W. GR', 10X, F18.5, 10X, I3, 5X, F18.5, 5X, F18.5)

```

```

228 FORMAT(1X, '3. B(TRIAL)', 9X, F18.5, 10X, I3, 7X, F18.5, 8X, F18.5)

```

```

23 FORMAT(1X, '4. AXB', 15X, F18.5, 9X, I3, 8X, F18.5, 10X, F18.5)

```

```

24 FORMAT(1X, '5. BXSUB W. GR', 5X, F18.5, 13X, I3, 7X, F18.5, 7X, F18.5)

```

```

WRITE (6,550) SSTOT, IDFTOT

```

```

550 FORMAT (/ 'TOTAL', 15X, F15.5, 10X, I3)

```

```

C
C TEST SIGNIFICANT OF F FOR ANCOVA, REPEATED MEASUREMENT AND RBD
C FOR ALPHA EQUAL 0.01, 0.05 AND 0.10
C

```

```

DO 77 KK=1,9

```

```

77 ICODE(KK)=2

```

```

IF(F1.GT.7.385) ICODE(1)=1

```

```

IF(F1.GT.4.107) ICODE(2)=1

```

```

IF(F1.GT.2.852) ICODE(3)=1

```

```

IF(F11.GT.7.36) ICODE(4)=1

```

```

IF(F(1).GT.4.098) ICODE(5)=1

```

```

IF(F(1).GT.2.648) ICODE(6)=1

```

```

IF(F2(2).GT.8.025) ICODE(7)=1

```

```

IF(F2(2).GT.4.275) ICODE(8)=1

```

```

IF(F2(2).GT.2.96) ICODE(9)=1

```

```

WRITE(6,1111)AMS3, (MARK(KK, ICODE(KK)), KK=1, 3), AMS(2),

```

```

*(MARK(KK,ICODE(KK)),KK=4,6),AMS2(4),(MARK(KK,ICODE(KK)),KK
*=7,9),F1,F(1),F2(2)
1111  FORMAT(1X,F10.5,3X,A2,3X,A2,3X,A2,3X,F10.5,3X,A2,3X
*,A2,3X,A2,3X,F10.5,3X,A2,3X,A2,3X,A2,3X,F10.5,1X,F10.5,1X,F10.5/)
C
C
C
CHECK NUMBER OF CASE EQUAL 25 CASES
K55=K55+1
IF(K55.EQ.25) GO TO 301
GO TO 777
C
C
C
COMPUTE AVERAGE OF MEAN SQUARE ERROR OF RBD,ANCCVA AND RPM MODEL
301  AEMSB=ERRGRK/25
AEMSC=ERRGRB/25
AEMSR=AMST1/25
WRITE(C,401)AEMSB,AEMSC,AEMSR
401  FORMAT(1X,'AEMSB=',F10.5,1X,'AEMSC=',F10.5,1X,'AEMSR=',F10.5)
701  CONTINUE
706  CONTINUE
STOP
END

SUBROUTINE GAUSS(IX,S,AM,V)
A=0.0
DO 50 I = 1,12
CALL RANDU(IX,IY,Y)
IX = IY
50  A = A+Y
V = (A-6.0)*S+AM
RETURN
END

SUBROUTINE RANDU(IX,IY,YFL)
IY = IX*65539
IF(IY) 5,6,6
IY = IY+2147483647+1
YFL = IY
YFL = YFL*.4656613E-9
RETURN
END

```

ประวัติผู้เขียน

นางสาวอวยพร จุฑานนท์ เกิดวันที่ 14 พฤศจิกายน 2504 ที่อำเภอบางปะหัน จังหวัดพระนครศรีอยุธยา สำเร็จการศึกษาปริญญาวิทยาศาสตรบัณฑิต (สถิติ) คณะวิทยาศาสตร์ มหาวิทยาลัยศิลปากร ปีการศึกษา 2524 และเข้าศึกษาต่อสาขาวิชาสถิติ ภาควิชาสถิติ คณะพาณิชยศาสตร์และการบัญชี จุฬาลงกรณ์มหาวิทยาลัย เมื่อปีการศึกษา 2525.

