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APPENDICES

APPENDIX A

COLORIMETRIC VALUES OF THE SPECIMENS FOR CHANGE IN COLOUR ASSESSMENT

Table A Colorimetric values of the specimens for change in colour assessment

sp.	Untreated specimen								Treated specimen							
no.	L*	a*	b*	C*	h	Hue	Value	Chroma	L*	a*	b*	C*	h	Hue	Value	Chroma
1	78.82	0.43	15.07	15.08	88.37	Y	7.74	2.54	78.14	0.47	14.78	14.79	88.19	Y	7.67	2.50
2	79.30	0.11	16.62	16.62	89.63	Y	7.79	2.75	80.33	0.35	14.90	14.91	88.65	Y	7.90	2.51
3	79.80	0.32	15.07	15.07	88.77	Y	7.84	2.54	80.66	0.54	12.60	12.61	87.56	Y	7.93	2.18
4	78.28	0.10	14.56	14.56	89.59	Y	7.68	2.47	77.06	0.25	12.58	12.58	88.88	Y	7.56	2.20
5	51.49	0.98	15.53	15.56	86.38	Y	4.99	2.59	53.47	0.98	15.82	15.85	86.47	Y	5.19	2.64
6	52.30	1.20	15.86	15.91	85.66	Y	5.07	2.64	52.31	1.27	16.05	16.10	85.46	Y	5.07	2.67
7	52.81	1.28	15.87	15.92	85.40	Y	5.12	2.65	54.87	1.52	15.60	15.67	84.43	Y	5.32	2.62
8	52.27	1.34	15.81	15.87	85.14	Y	5.07	2.64	58.64	1.37	14.92	14.98	84.77	Y	5.69	2.53
9	39.94	2.54	12.71	12.96	78.68	Y	3.88	2.16	39.07	2.60	12.49	12.76	78.22	Y	3.79	2.14
10	40.45	2.57	12.25	12.52	78.14	Y	3.93	2.09	41.25	2.46	12.83	13.06	79.16	Y	4.00	2.16
11	39.68	2.67	12.65	12.93	78.06	Y	3.85	2.16	40.87	2.50	12.88	13.12	79.03	Y	3.97	2.17
12	39.67	2.51	12.67	12.92	78.80	Y	3.85	2.16	43.86	2.22	13.08	13.27	80.38	Y	4.25	2.21
13	72.49	-0.82	44.55	44.56	91.06	Y	7.09	6.64	72.46	-1.01	43.36	43.37	91.33	Y	7.09	6.46
14	71.90	-1.49	42.56	42.59	92.00	Y	7.03	6.34	72.39	-0.89	41.05	41.06	91.24	Y	7.08	6.13
15	71.98	-0.86	44.48	44.49	91.11	Y	7.04	6.63	73.69	-1.46	41.21	41.24	92.03	Y	7.21	6.14
16	71.78	-0.83	44.09	44.09	91.07	Y	7.02	6.57	73.57	-1.67	39.37	39.40	92.42	Y	7.20	5.89
17	53.45	-4.10	42.07	42.27	95.57	Y	5.18	6.01	53.00	-4.15	41.33	41.54	95.74	Y	5.14	5.92
18	53.48	-4.07	42.09	42.29	95.53	Y	5.19	6.02	53.59	-4.15	41.43	41.63	95.73	Y	5.20	5.94
19	53.20	-4.17	42.02	42.23	95.67	Y	5.16	6.00	55.09	-3.18	40.53	40.66	94.49	Y	5.34	5.83
20	52.55	-3.55	41.35	41.50	94.90	Y	5.10	5.90	60.44	-1.52	39.91	39.94	92.18	Y	5.87	5.80
21	78.58	3.18	76.62	76.68	87.63	Y	7.72	11.24	78.71	2.77	76.19	76.24	87.92	Y	7.73	11.16
22	79.54	3.21	77.72	77.79	87.63	Y	7.81	11.40	80.06	2.16	76.24	76.27	88.38	Y	7.87	11.15
23	80.22	3.45	78.64	78.71	87.49	Y	7.88	11.55	79.92	1.69	73.66	73.68	88.68	Y	7.85	10.79
24	78.74	3.47	77.04	77.12	87.42	Y	7.73	11.31	81.30	-1.42	66.89	66.91	91.22	Y	8.00	9.74
25	79.27	-9.02	6.93	11.37	142.47	GY	7.79	2.49	79.93	-9.19	6.40	11.20	145.15	G	7.85	2.47
26	81.31	-9.64	7.46	12.19	142.27	GY	8.00	2.61	79.57	-9.63	6.64	11.70	145.42	G	7.82	2.56
27	80.30	-9.97	5.99	11.63	149.00	G	7.89	2.58	79.22	-9.30	7.78	12.13	140.10	GY	7.78	2.59
28	79.98	-9.71	6.62	11.75	145.73	G	7.86	2.57	81.48	-8.79	2.48	9.13	164.22	G	8.01	2.22
29	52.77	-9.57	5.65	11.11	149.45	G	5.12	2.57	53.24	-9.64	5.62	11.16	149.73	G	5.16	2.58
30	52.92	-9.43	5.66	11.00	149.01	G	5.13	2.55	54.51	-9.48	5.39	10.90	150.36	G	5.29	2.53

Table A Colorimetric values of the specimens for change in colour assessment (continued)

sp. no.	Untreated specimen								Treated specimen							
	L*	a*	b*	C*	h	Hue	Value	Chroma	L*	a*	b*	C*	h	Hue	Value	Chroma
31	52.57	-9.44	5.67	11.02	149.00	G	5.10	2.56	54.31	-9.59	5.20	10.91	151.51	G	5.27	2.54
32	53.79	-9.59	5.47	11.04	150.28	G	5.22	2.56	53.19	-9.47	-0.18	9.47	181.11	G	5.16	2.37
33	32.53	-7.44	2.10	7.73	164.25	G	3.17	2.12	32.52	-7.57	2.09	7.85	164.58	G	3.17	2.14
34	31.92	-7.26	1.97	7.52	164.81	G	3.11	2.09	34.87	-7.90	2.62	8.33	161.64	G	3.39	2.20
35	31.94	-7.38	1.96	7.63	165.10	G	3.11	2.11	35.86	-7.99	2.97	8.53	159.62	G	3.49	2.22
36	32.85	-7.67	1.85	7.89	166.44	G	3.20	2.15	41.28	-10.57	-2.03	10.77	190.89	BG	4.01	2.59
37	70.60	-29.92	14.35	33.18	154.38	G	6.90	6.51	71.18	-29.15	15.32	32.93	152.28	G	6.96	6.44
38	72.35	-30.17	13.51	33.06	155.88	G	7.08	6.53	72.98	-28.87	14.17	32.16	153.86	G	7.14	6.31
39	70.82	-29.04	15.79	33.05	151.46	G	6.92	6.45	72.04	-28.29	16.03	32.52	150.46	G	7.05	6.34
40	70.84	-28.98	15.66	32.94	151.62	G	6.92	6.43	74.08	-25.24	15.49	29.62	148.47	G	7.25	5.73
41	51.19	-23.46	8.82	25.07	159.40	G	4.96	5.12	50.93	-23.75	8.58	25.25	160.13	G	4.94	5.16
42	50.59	-24.44	8.26	25.80	161.33	G	4.90	5.28	51.28	-24.09	8.93	25.69	159.66	G	4.97	5.24
43	51.26	-24.84	7.89	26.06	162.38	G	4.97	5.35	53.76	-24.15	8.68	25.66	160.24	G	5.21	5.23
44	51.08	-25.05	7.89	26.27	162.53	G	4.95	5.39	55.63	-21.92	10.23	24.19	154.98	G	5.40	4.87
45	55.80	-41.35	13.51	43.50	161.91	G	5.41	8.46	55.70	-41.62	13.48	43.75	162.06	G	5.40	8.51
46	56.41	-41.10	14.05	43.43	161.13	G	5.47	8.44	57.84	-40.38	14.91	43.05	159.73	G	5.62	8.34
47	56.45	-43.05	12.62	44.87	163.66	G	5.48	8.77	58.29	-40.94	15.14	43.65	159.70	G	5.66	8.45
48	55.55	-42.19	12.72	44.07	163.22	G	5.39	8.60	61.70	-36.72	17.46	40.66	154.57	G	6.00	7.74
49	79.94	-4.78	1.62	5.04	161.23	G	7.85	1.58	79.06	-5.27	1.18	5.40	167.41	G	7.76	1.63
50	79.05	-5.24	0.82	5.30	171.14	G	7.76	1.61	79.26	-5.30	0.73	5.35	172.16	G	7.79	1.62
51	79.28	-5.25	0.47	5.27	174.88	G	7.79	1.60	79.45	-4.44	0.70	4.49	171.04	G	7.80	1.49
52	80.22	-4.89	0.35	4.90	175.94	G	7.88	1.54	79.75	-5.79	3.11	6.57	151.77	G	7.84	1.79
53	52.53	-7.16	-4.55	8.48	212.43	BG	5.09	2.06	53.23	-7.44	-4.12	8.51	208.97	BG	5.16	2.09
54	51.24	-6.95	-4.25	8.15	211.45	BG	4.97	2.01	53.02	-6.82	-4.08	7.94	210.90	BG	5.14	1.97
55	51.93	-6.94	-4.31	8.17	211.83	BG	5.04	2.01	55.53	-6.90	-3.59	7.78	207.50	BG	5.39	1.95
56	51.81	-7.02	-4.12	8.14	210.44	BG	5.02	2.01	58.02	-6.22	-2.43	6.68	201.38	G	5.63	1.78
57	32.57	-4.41	-4.13	6.04	223.10	BG	3.17	1.52	33.13	-4.26	-4.08	5.90	223.76	BG	3.23	1.49
58	32.50	-4.47	-4.12	6.07	222.66	BG	3.17	1.53	33.64	-4.58	-4.32	6.30	223.33	BG	3.27	1.56
59	31.77	-4.19	-4.33	6.03	225.92	BG	3.10	1.49	36.89	-4.77	-4.18	6.34	221.25	BG	3.59	1.58
60	32.39	-4.12	-4.21	5.90	225.62	BG	3.16	1.46	42.15	-4.65	-2.19	5.14	205.19	G	4.09	1.46

Table A Colorimetric values of the specimens for change in colour assessment (continued)

sp. no.	Untreated specimen								Treated specimen							
	L*	a*	b*	C*	h	Hue	Value	Chroma	L*	a*	b*	C*	h	Hue	Value	Chroma
61	71.44	-13.72	-7.10	15.45	207.37	BG	6.98	3.48	71.72	-13.29	-6.14	14.64	204.81	BG	7.01	3.33
62	71.97	-13.82	-7.20	15.58	207.52	BG	7.04	3.51	71.83	-12.38	-5.99	13.75	205.80	BG	7.02	3.14
63	72.16	-13.85	-7.24	15.63	207.60	BG	7.06	3.52	73.16	-12.59	-5.96	13.93	205.33	BG	7.16	3.18
64	73.20	-14.11	-7.26	15.87	207.23	BG	7.16	3.57	72.93	-13.99	-3.19	14.35	192.83	BG	7.14	3.31
65	41.92	-12.79	-11.47	17.18	221.88	BG	4.07	3.71	43.03	-13.09	-11.43	17.38	221.12	BG	4.17	3.77
66	41.41	-12.89	-11.36	17.18	221.41	BG	4.02	3.71	42.64	-12.94	-11.35	17.21	221.25	BG	4.14	3.73
67	41.65	-12.82	-11.53	17.24	221.95	BG	4.04	3.72	45.34	-13.47	-10.81	17.27	218.74	BG	4.40	3.80
68	41.81	-12.73	-11.39	17.08	221.83	BG	4.06	3.69	46.80	-13.97	-9.97	17.16	215.51	BG	4.54	3.81
69	57.08	-31.56	-17.54	36.11	209.07	BG	5.54	7.89	58.11	-30.99	-17.12	35.40	208.92	BG	5.64	7.74
70	57.80	-31.25	-17.75	35.94	209.60	BG	5.61	7.86	58.75	-30.79	-17.04	35.19	208.96	BG	5.71	7.69
71	57.27	-32.11	-18.39	37.00	209.79	BG	5.56	8.09	59.52	-30.20	-16.47	34.40	208.60	BG	5.78	7.52
72	57.75	-32.07	-19.02	37.29	210.67	BG	5.61	8.16	61.25	-28.78	-13.60	31.83	205.29	BG	5.95	6.93
73	79.57	1.66	-0.39	1.71	346.67	GY	7.82	0.68	79.97	1.48	-0.92	1.75	328.19	GY	7.86	0.65
74	79.19	1.68	-1.04	1.98	328.37	GY	7.78	0.62	78.40	1.37	-0.55	1.48	338.13	GY	7.70	0.68
75	78.62	1.69	-1.78	2.46	313.46	GY	7.72	0.55	81.05	2.71	-1.09	2.92	338.13	GY	7.97	0.54
76	79.17	1.23	-0.95	1.56	322.22	GY	7.78	0.67	80.63	0.88	1.65	1.87	61.84	GY	7.93	0.92
77	54.34	7.01	-5.00	8.61	324.49	RP	5.27	0.95	54.49	7.53	-5.25	9.18	325.10	RP	5.29	1.10
78	53.20	7.07	-4.31	8.28	328.64	RP	5.16	0.95	53.22	7.36	-5.34	9.09	324.04	RP	5.16	1.08
79	54.18	7.16	-4.62	8.53	327.16	RP	5.26	0.98	58.01	7.87	-4.13	8.89	332.32	RP	5.63	1.11
80	54.36	7.05	-4.48	8.35	327.55	RP	5.27	0.94	60.17	8.23	-3.78	9.05	335.34	RP	5.85	1.18
81	32.43	9.86	-8.43	12.97	319.45	P	3.16	1.63	33.47	10.57	-8.92	13.83	319.85	P	3.26	1.80
82	32.04	10.14	-8.68	13.35	319.44	P	3.12	1.69	34.00	10.07	-8.57	13.23	319.61	P	3.31	1.70
83	31.93	10.11	-8.78	13.39	319.01	P	3.11	1.69	35.74	11.23	-8.56	14.12	322.70	P	3.48	1.92
84	31.91	10.09	-8.59	13.25	319.57	P	3.11	1.67	38.52	11.96	-7.84	14.30	326.74	RP	3.74	2.04
85	71.69	10.26	-12.32	16.03	309.80	P	7.01	2.59	72.09	10.24	-12.29	15.99	309.79	P	7.05	2.58
86	72.09	10.67	-13.09	16.89	309.18	P	7.05	2.79	72.40	10.42	-12.48	16.25	309.86	P	7.08	2.64
87	72.89	10.65	-13.29	17.03	308.70	P	7.13	2.82	73.45	10.09	-10.65	14.67	313.44	P	7.19	2.33
88	71.23	9.43	-11.03	14.51	310.55	P	6.96	2.23	76.04	6.57	-4.94	8.22	323.07	RP	7.45	0.68
89	43.99	16.34	-17.91	24.24	312.38	P	4.27	4.14	44.51	15.89	-17.63	23.73	312.03	P	4.32	4.05
90	43.98	16.88	-18.71	25.20	312.06	P	4.26	4.34	45.97	16.49	-17.45	24.01	313.37	P	4.46	4.16

Table A Colorimetric values of the specimens for change in colour assessment (continued)

sp.	Untreated specimen								Treated specimen							
no.	L*	a*	b*	C*	h	Hue	Value	Chroma	L*	a*	b*	C*	h	Hue	Value	Chroma
91	43.90	16.60	-18.85	25.12	311.37	P	4.26	4.32	48.57	15.52	-17.56	23.44	311.47	P	4.71	4.11
92	43.62	16.70	-18.27	24.75	312.42	P	4.23	4.23	49.84	14.69	-17.01	22.48	310.81	P	4.83	3.92
93	46.87	20.20	-25.05	32.18	308.88	P	4.54	5.99	47.29	19.38	-24.69	31.38	308.13	P	4.58	5.81
94	47.56	19.35	-24.22	31.00	308.63	P	4.61	5.73	48.36	19.28	-24.16	30.91	308.58	P	4.69	5.72
95	47.38	20.42	-25.88	32.96	308.27	P	4.59	6.16	49.42	19.34	-24.13	30.92	308.71	P	4.79	5.75
96	46.16	19.90	-24.84	31.83	308.70	P	4.48	5.89	52.36	16.93	-21.71	27.53	307.95	P	5.08	5.08
97	79.26	2.99	6.38	7.05	64.87	Y	7.79	1.45	79.65	3.00	5.70	6.44	62.25	Y	7.83	1.36
98	79.84	3.22	5.16	6.08	58.08	Y	7.85	1.30	79.25	2.73	5.64	6.27	64.14	Y	7.78	1.34
99	78.61	3.64	5.46	6.57	56.30	Y	7.72	1.36	80.34	4.26	4.19	5.97	44.52	Y	7.90	1.23
100	79.62	6.34	4.93	8.03	37.90	YR	7.82	1.54	79.74	2.94	4.88	5.70	58.96	Y	7.83	1.25
101	52.35	10.45	3.70	11.08	19.50	YR	5.08	1.98	53.76	10.17	4.01	10.93	21.53	YR	5.21	1.94
102	52.86	10.42	3.51	10.99	18.62	YR	5.13	1.96	53.80	10.23	3.39	10.78	18.31	YR	5.22	1.91
103	53.43	10.53	3.53	11.10	18.52	YR	5.18	1.98	53.50	10.68	2.61	10.99	13.74	R	5.19	1.95
104	51.95	10.22	3.60	10.83	19.43	YR	5.04	1.93	58.28	10.59	3.34	11.10	17.49	YR	5.66	1.96
105	33.46	11.51	4.52	12.37	21.42	YR	3.26	1.97	33.88	11.63	3.25	12.07	15.63	R	3.30	1.90
106	33.05	11.65	4.33	12.43	20.37	R	3.22	1.97	34.91	10.95	4.16	11.71	20.80	YR	3.40	1.87
107	32.86	11.54	4.09	12.24	19.52	R	3.20	1.93	37.12	11.49	4.06	12.19	19.46	R	3.61	1.97
108	32.72	11.30	4.36	12.11	21.09	YR	3.19	1.91	40.71	11.93	4.51	12.76	20.70	YR	3.95	2.10
109	69.68	21.48	11.33	24.29	27.82	R	6.80	4.76	69.96	21.69	11.51	24.55	27.95	R	6.83	4.81
110	70.02	21.10	11.26	23.92	28.08	R	6.84	4.67	70.93	20.95	10.99	23.66	27.68	R	6.93	4.64
111	70.68	21.00	11.25	23.82	28.18	R	6.91	4.66	72.27	20.44	9.87	22.70	25.79	R	7.07	4.46
112	70.68	21.54	11.48	24.40	28.05	R	6.91	4.79	72.54	19.23	9.03	21.24	25.15	R	7.10	4.16
113	42.17	30.38	13.03	33.05	23.21	R	4.09	6.28	41.41	30.35	13.22	33.10	23.54	R	4.02	6.27
114	41.74	31.12	13.74	34.02	23.83	R	4.05	6.46	43.40	30.98	12.54	33.42	22.04	R	4.21	6.41
115	41.54	31.42	13.98	34.39	23.99	R	4.03	6.52	43.93	29.95	12.48	32.45	22.62	R	4.26	6.20
116	42.02	30.78	13.38	33.56	23.49	R	4.08	6.38	47.82	29.10	11.52	31.30	21.60	R	4.64	6.04
117	46.12	54.06	19.98	57.63	20.28	R	4.47	11.84	46.72	54.58	20.41	58.27	20.50	R	4.53	11.97
118	47.61	55.85	21.96	60.01	21.47	R	4.62	12.33	48.00	54.52	19.41	57.88	19.60	R	4.65	11.91
119	46.67	54.40	20.33	58.08	20.49	R	4.52	11.93	48.64	53.91	19.08	57.19	19.49	R	4.71	11.74
120	46.98	54.93	20.99	58.80	20.91	R	4.55	12.08	51.12	52.80	18.69	56.01	19.49	R	4.96	11.47

APPENDIX B

COLORIMETRIC VALUES OF THE SPECIMENS FOR STAINING ASSESSMENT

Table B Colorimetric values of the specimens for staining assessment

S. No.	Untreated specimens								Treated specimens							
	L*	a*	b*	C*	h	Hue	Value	Chroma	L*	a*	b*	C*	h	Hue	Value	Chroma
1	89.31	-0.02	4.76	4.76	90.20	GY	8.82	1.28	87.83	1.61	5.48	5.71	73.66	Y	8.67	1.29
2	89.88	-0.17	3.74	3.74	92.60	GY	8.88	1.20	86.59	3.37	5.16	6.16	56.83	Y	8.54	1.30
3	90.31	-0.04	3.62	3.62	90.69	GY	8.92	1.18	86.16	4.92	5.43	7.33	47.82	Y	8.50	1.44
4	90.19	-0.30	2.82	2.84	96.01	GY	8.91	1.14	83.35	9.09	7.47	11.76	39.41	YR	8.21	2.25
5	89.77	-0.27	3.72	3.73	94.15	GY	8.87	1.21	81.09	12.30	8.49	14.95	34.61	YR	7.97	2.88
6	90.22	-0.20	3.31	3.32	93.40	GY	8.91	1.17	77.98	14.12	10.71	17.72	37.18	YR	7.65	3.36
7	90.28	-0.17	3.68	3.68	92.60	GY	8 92	1.19	73.66	19.25	14.29	23.97	36.59	YR	7.21	4.57
8	88.80	-0.81	5.91	5.97	97.77	GY	8.77	1.44	67.46	24.54	16.51	29.58	33.93	YR	6.58	5.71
9	89.16	-0.18	4.27	4.27	92.37	GY	8.80	1.24	87.58	0.67	6.51	6.55	84.10	GY	8.64	1.42
10	90.15	-0.15	3.79	3.79	92.22	GY	8.90	1.20	86.73	2.58	7.48	7.91	70.96	Y	8.55	1.56
11	89.67	-0.20	3.51	3.52	93.32	GY	8.86	1.18	84.46	3.49	9.38	10.01	69.62	Y	8.32	1.86
12	89.58	-0.14	3.37	3.37	92.38	GY	8.85	1.17	83.21	5.99	12.33	13.70	64.10	Y	8.19	2.49
13	89.49	-0.31	3.63	3.64	94.83	GY	8.84	1.20	82.34	6.45	19.45	20.49	71.67	Y	8.10	3.55
14	90.26	-0.16	2.76	2.77	93.24	GY	8.92	1.12	79.72	9.07	24.45	26.08	69.65	Y	7.83	4.47
15	90.03	-0.20	3.05	3.06	93.69	GY	8.89	1.15	76.75	11.33	32.79	34.69	70.94	YR	7.53	5.80
16	89.60	0.12	3.73	3.73	88.16	GY	8.85	1.17	73.78	15.14	37.59	40.52	68.06	YR	7.22	6.83
17	88.55	0.26	4.83	4.84	86.88	GY	8.74	1.27	87.60	-0.28	7.62	7.62	92.13	GY	8.64	1.57
18	89.81	-0.09	3.55	3.55	91.45	GY	8.87	1.18	87.97	-1.29	11.08	11.16	96.64	GY	8.68	1.97
19	89.89	-0.06	3.31	3.31	90.98	GY	8.88	1.16	87.20	-2.26	16.47	16.63	97.82	GY	8.60	2.69
20	90.08	-0.07	3.08	3.08	91.24	GY	8.90	1.14	85.96	-2.19	18.98	19.11	96.59	Y	8.48	3.02
21	89.23	-0.10	2.97	2.98	91.99	GY	8.81	1.13	84.26	-2.59	26.90	27.02	95.50	Y	8.30	4.13
22	89.58	-0.12	2.83	2.83	92.50	GY	8.85	1.12	82.67	-1.71	33.80	33.84	92.90	Y	8.14	5.13
23	89.14	-0.14	3.06	3.06	92.56	GY	8.80	1.14	79.43	-0.59	38.31	38.32	90.88	Y	7.80	5.79
24	88.63	-0.27	3.37	3.38	94.58	GY	8.75	1.18	73.93	-1.27	39.47	39.49	91.84	Y	7.24	5.91
25	88.49	-0.08	4.24	4.24	91.04	GY	8.73	1.23	88.20	-1.41	6.68	6.82	101.92	GY	8.70	1.55
26	89.43	-0.11	3.54	3.54	91.78	GY	8.83	1.18	88.85	-3.29	9.99	10.51	108.22	GY	8.77	1.99
27	89.65	-0.12	3.43	3.43	91.95	GY	8.85	1.17	88.07	-4.25	11.80	12.54	109.81	GY	8.69	2.26
28	90.36	0.03	3.01	3.01	89.49	GY	8.93	1.12	86.78	-7.75	17.63	19.26	113.74	GY	8.56	3.22
29	87.99	-0.15	3.05	3.06	92.81	GY	8.68	1.14	84.68	-10.37	22.65	24.91	114.60	GY	8.34	4.05
30	90.03	-0.09	2.86	2.86	91.80	GY	8.89	1.12	83.08	-12.20	25.96	28.68	115.17	GY	8.18	4.62

Table B Colorimetric values of the specimens for staining assessment (continued)

S. No.	Untreated specimens								Treated specimens							
	L*	a*	b*	C*	h	Hue	Value	Chroma	L*	a*	b*	C*	h	Hue	Value	Chroma
31	90.22	-0.12	2.82	2.82	92.44	GY	8.91	1.12	80.63	-15.88	33.26	36.86	115.52	GY	7.93	5.83
32	89.73	-0.10	3.45	3.45	91.72	GY	8.86	1.17	77.85	-13.67	37.10	39.54	110.23	GY	7.64	6.07
33	89.02	-0.02	4.52	4.52	90.21	GY	8.79	1.26	90.06	-2.57	5.12	5.73	116.62	GY	8.90	1.52
34	88.98	0.16	4.07	4.07	87.75	GY	8.78	1.20	87.62	-5.83	5.32	7.89	137.64	GY	8.64	1.89
35	89.79	-0.11	3.41	3.41	91.79	GY	8.87	1.17	87.19	-8.38	5.39	9.96	147.27	G	8.60	2.24
36	90.44	-0.11	3.23	3.23	91.95	GY	8.93	1.15	84.82	-13.11	7.21	14.96	151.20	G	8.36	3.12
37	88.90	-0.15	3.05	3.05	92.76	GY	8.78	1.14	81.95	-17.98	9.99	20.57	150.95	G	8.06	4.13
38	90.11	-0.11	3.20	3.20	91.97	GY	8.90	1.15	80.82	-22.13	8.81	23.82	158.30	G	7.95	4.76
39	89.49	-0.09	3.33	3.33	91.55	GY	8.84	1.16	78.17	-26.23	13.94	29.70	152.01	G	7.67	5.70
40	89.56	-0.11	3.87	3.87	91.63	GY	8.84	1.20	74.15	-30.11	11.47	32.22	159.14	G	7.26	6.43
41	89.19	-0.04	4.39	4.39	90.48	GY	8.81	1.25	89.06	-3.40	3.75	5.06	132.23	GY	8.79	1.50
42	89.92	-0.06	3.54	3.54	91.03	GY	8.88	1.17	87.79	-6.03	3.02	6.74	153.41	G	8.66	1.79
43	89.76	-0.07	3.16	3.16	91.27	GY	8.86	1.14	85.61	-9.61	2.91	10.04	163.15	G	8.44	2.34
44	90.27	-0.09	3.04	3.04	91.63	GY	8.92	1.14	85.07	-12.11	2.57	12.38	168.02	G	8.38	2.78
45	89.42	-0.15	2.97	2.97	92.83	GY	8.83	1.14	80.75	-15.28	1.72	15.37	173.56	G	7.94	3.43
46	90.61	-0.19	2.75	2.76	93.95	GY	8.95	1.12	79.53	-19.38	-0.70	19.39	182.08	G	7.81	4.24
47	90.27	-0.14	2.83	2.84	92.76	GY	8.92	1.12	73.96	-23.52	1.05	23.54	177.44	G	7.24	5.08
48	90.45	-0.13	3.36	3.36	92.22	GY	8.94	1.17	69.70	-25.03	2.86	25.24	173.50	G	6.81	5.39
49	90.02	-0.04	4.18	4.18	90.55	GY	8.89	1.23	88.58	-1.19	2.70	2.95	113.73	GY	8.74	1.20
50	89.79	-0.11	3.21	3.22	91.96	GY	8.87	1.15	87.40	-4.59	0.53	4.62	173.41	G	8.62	1.50
51	90.02	-0.10	2.99	2.99	91.98	GY	8.89	1.13	85.45	-6.31	-1.79	6.56	195.87	G	8.42	1.74
52	90.03	0.26	2.54	2.55	84.16	GY	8.89	1.07	84.55	-8.41	-4.51	9.54	208.19	BG	8.33	2.19
53	89.62	-0.40	3.16	3.18	97.28	GY	8.85	1.17	80.87	-14.94	-7.94	16.92	207.99	BG	7.95	3.77
54	89.82	-0.13	2.72	2.72	92.74	GY	8.87	1.11	76.59	-16.14	-6.86	17.53	203.02	BG	7.51	3.92
55	90.41	-0.09	2.87	2.87	91.73	GY	8.93	1.12	70.38	-16.11	-7.17	17.63	203.99	BG	6.88	3.94
56	89.90	-0.09	3.47	3.47	91.43	GY	8.88	1.17	65.29	-15.74	-7.68	17.52	206.01	BG	6.36	3.88
57	89.62	-0.05	4.16	4.16	90.73	GY	8.85	1.22	87.04	-0.55	2.59	2.65	102.04	GY	8.59	1.14
58	90.16	-0.17	3.47	3.47	92.86	GY	8.91	1.18	85.56	-0.91	1.19	1.50	127.23	GY	8.43	1.06
59	90.29	-0.12	3.09	3.09	92.29	GY	8.92	1.14	84.44	-0.89	-2.36	2.52	249.24	G	8.32	0.89
60	90.74	-0.14	2.65	2.65	92.92	GY	8.96	1.11	82.95	-0.85	-4.98	5.05	260.28	BG	8.16	1.05

Table B Colorimetric values of the specimens for staining assessment (continued)

S. No.	Untreated specimens								Treated specimens							
	L*	a*	b*	C*	h	Hue	Value	Chroma	L*	a*	b*	C*	h	Hue	Value	Chroma
61	89.82	-0.17	2.71	2.72	93.59	GY	8.87	1.12	79.19	-3.78	-9.42	10.15	248.15	B	7.78	2.00
62	90.53	-0.12	2.54	2.54	92.63	GY	8.94	1.10	76.40	-5.19	-13.03	14.03	248.29	B	7.49	2.85
63	89.53	-0.30	2.63	2.64	96.59	GY	8.84	1.12	71.87	-4.36	-15.49	16.09	254.27	B	7.03	3.30
64	90.16	-0.15	3.71	3.71	92.32	GY	8.91	1.20	67.94	-7.07	-19.54	20.78	250.10	B	6.63	4.44
65	89.29	0.07	5.15	5.15	89.18	GY	8.82	1.31	86.51	1.20	4.94	5.08	76.35	GY	8.53	1.24
66	88.88	-0.12	4.27	4.27	91.57	GY	8.77	1.24	85.70	1.47	3.18	3.50	65.22	GY	8.45	1.04
67	89.98	-0.12	3.63	3.63	91.84	GY	8.89	1.19	84.09	2.91	-0.90	3.05	342.81	GY	8.28	0.56
68	90.72	-0.12	3.21	3.21	92.14	GY	8.96	1.15	82.00	5.49	-5.28	7.61	316.14	R	8.07	0.26
69	88.18	-0.20	3.48	3.48	93.29	GY	8.70	1.18	79.09	7.22	-5.69	9.19	321.76	RP	7.77	0.93
70	90.27	-0.16	3.30	3.31	92.77	GY	8.92	1.16	73.38	9.37	-8.42	12.60	318.06	P	7.18	1.87
71	88.62	0.22	5.38	5.39	87.70	GY	8.75	1.33	67.59	12.11	-13.11	17.85	312.74	P	6.59	3.01
72	88.80	-0.09	5.28	5.28	91.01	GY	8.77	1.33	62.66	13.53	-14.90	20.12	312.25	P	6.10	3.52
73	90.16	-0.04	4.52	4.52	90.55	GY	8.91	1.26	87.76	2.01	4.07	4.54	63.72	Y	8.66	1.13
74	90.20	-0.10	4.05	4.05	91.46	GY	8.91	1.22	86.56	3.07	3.84	4.91	51.33	Y	8.54	1.12
75	89.50	-0.12	3.69	3.69	91.81	GY	8.84	1.19	84.96	5.90	1.53	6.09	14.52	YR	8.37	1.04
76	90.61	-0.12	3.07	3.07	92.24	GY	8.95	1.14	83.87	9.27	1.34	9.37	8.23	YR	8.26	1.71
77	90.01	-0.11	2.83	2.83	92.16	GY	8.89	1.12	81.12	12.81	-0.78	12.83	356.51	R	7.98	2.48
78	89.58	-0.14	2.93	2.94	92.73	GY	8.85	1.13	75.54	16.52	0.10	16.52	0.34	R	7.40	3.25
79	90.45	-0.11	3.00	3.01	92.03	GY	8.94	1.14	72.54	21.46	1.21	21.50	3.23	R	7.10	4.43
80	90.56	-0.16	3.82	3.83	92.35	GY	8.95	1.21	67.66	22.27	3.79	22.59	9.65	R	6.60	4.61

APPENDIX C

VISUAL RESULTS OF CHANGE IN COLOUR ASSESSMENT

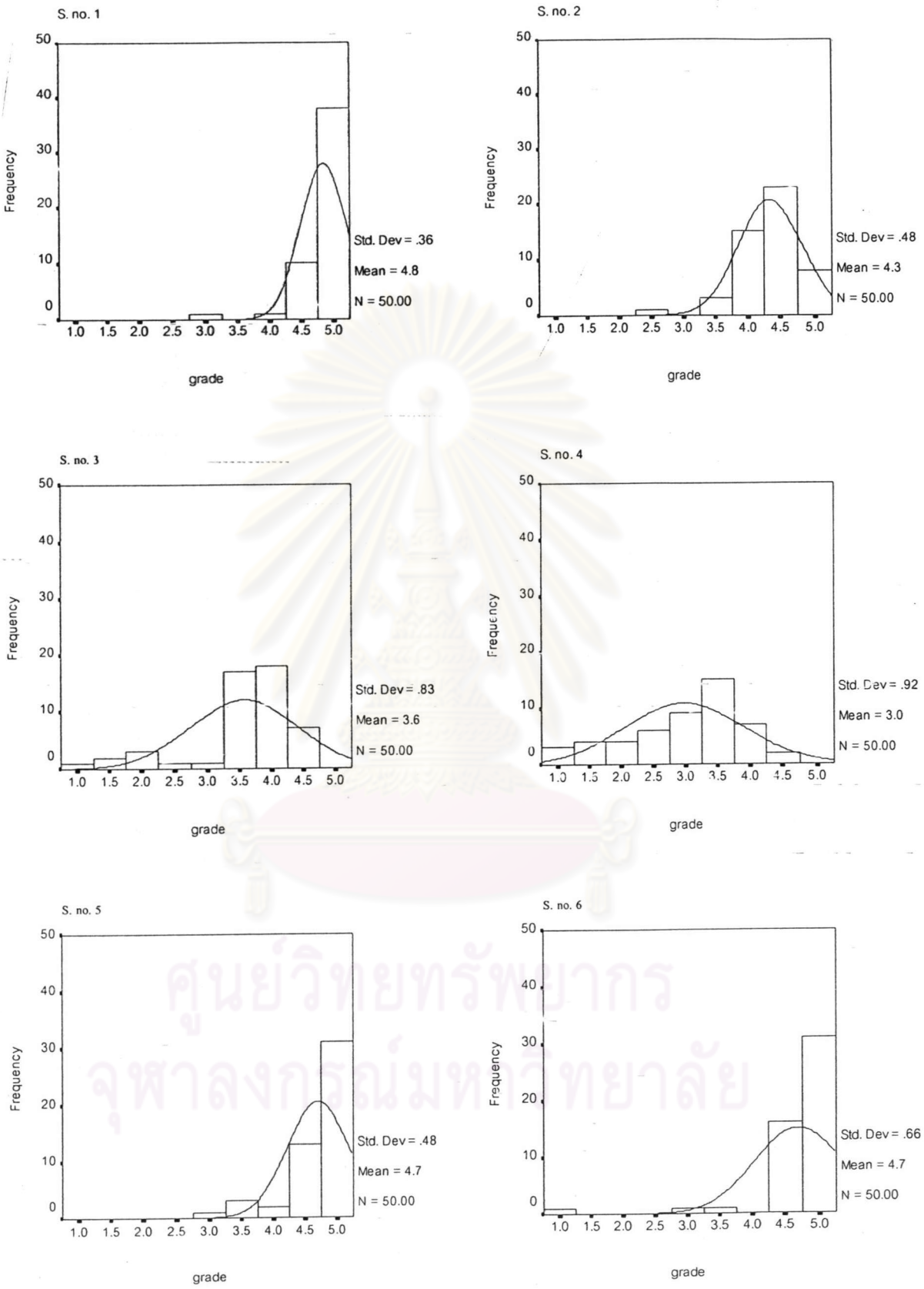

Figure C Visual results of change in colour assessment

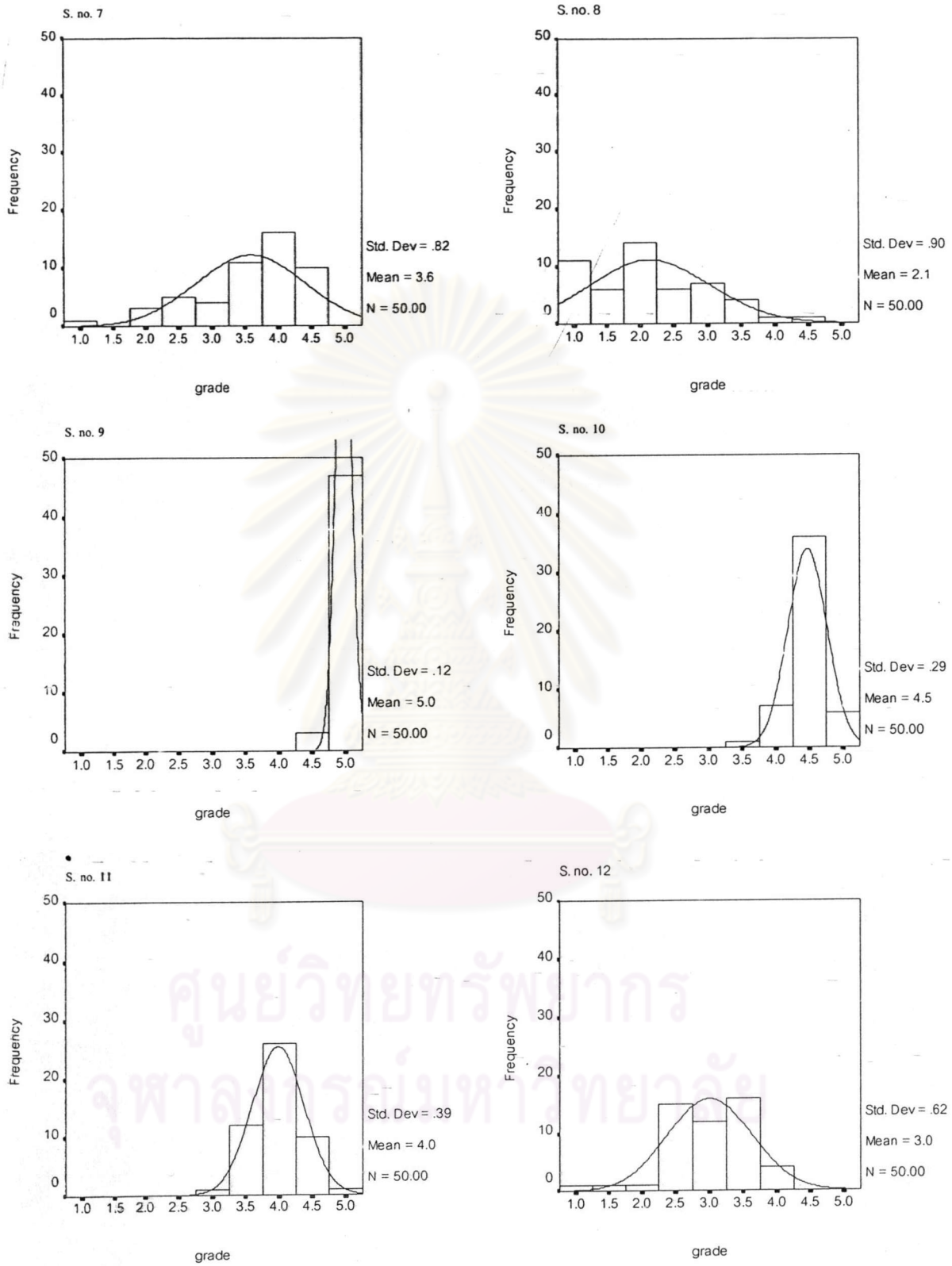

Figure C Visual results of change in colour assessment (continued)

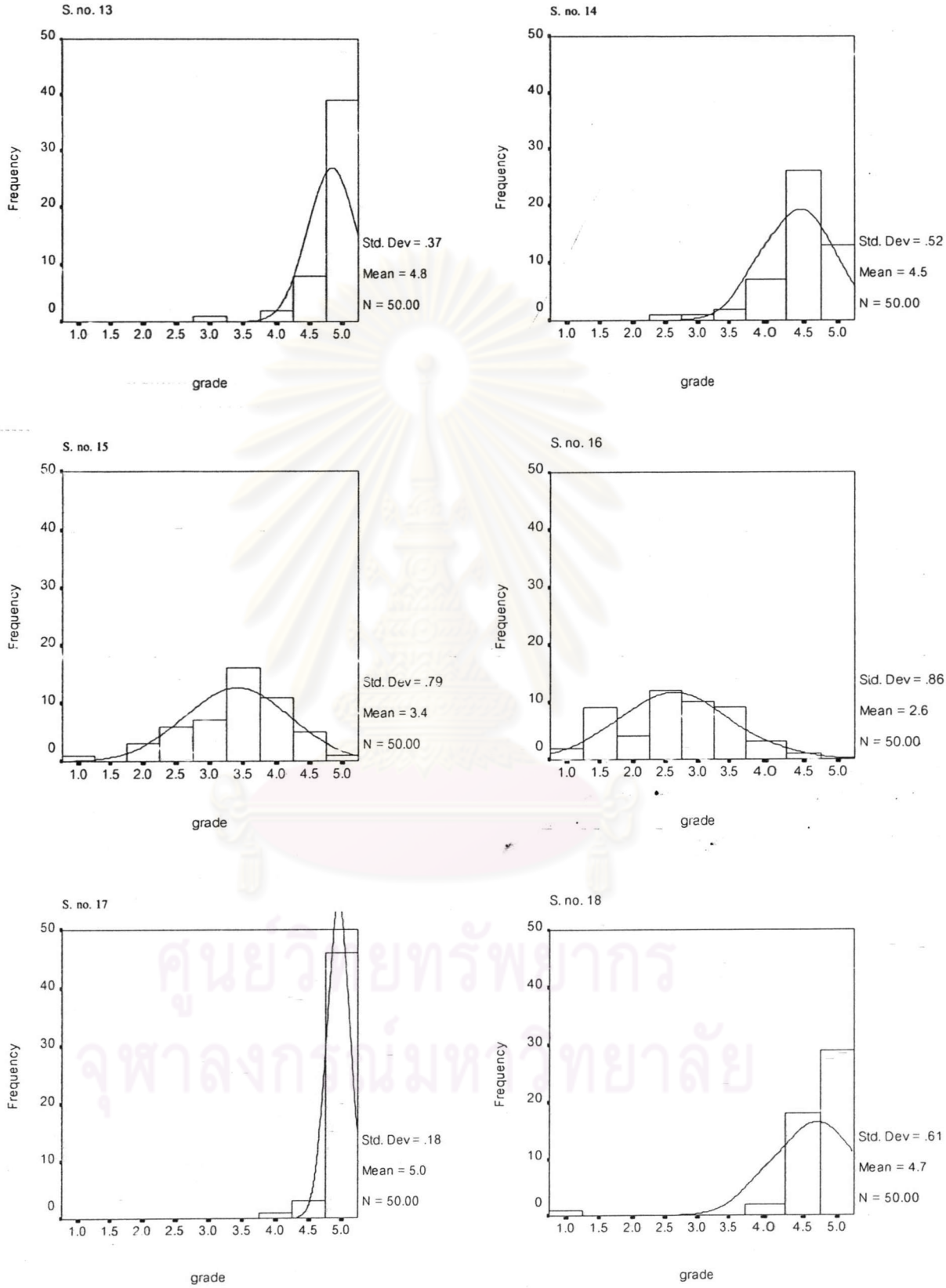

Figure C Visual results of change in colour assessment (continued)

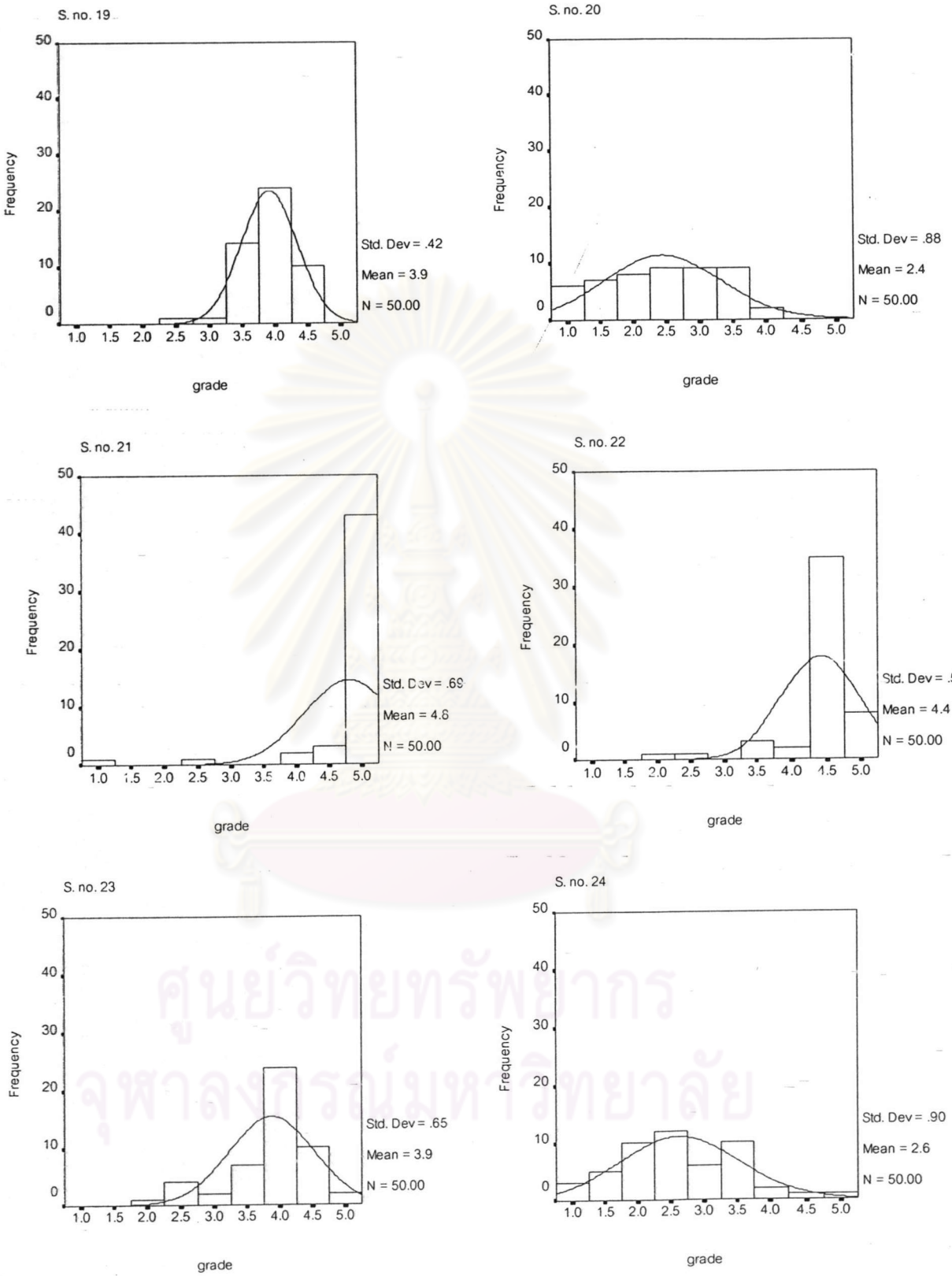

Figure C Visual results of change in colour assessment (continued)

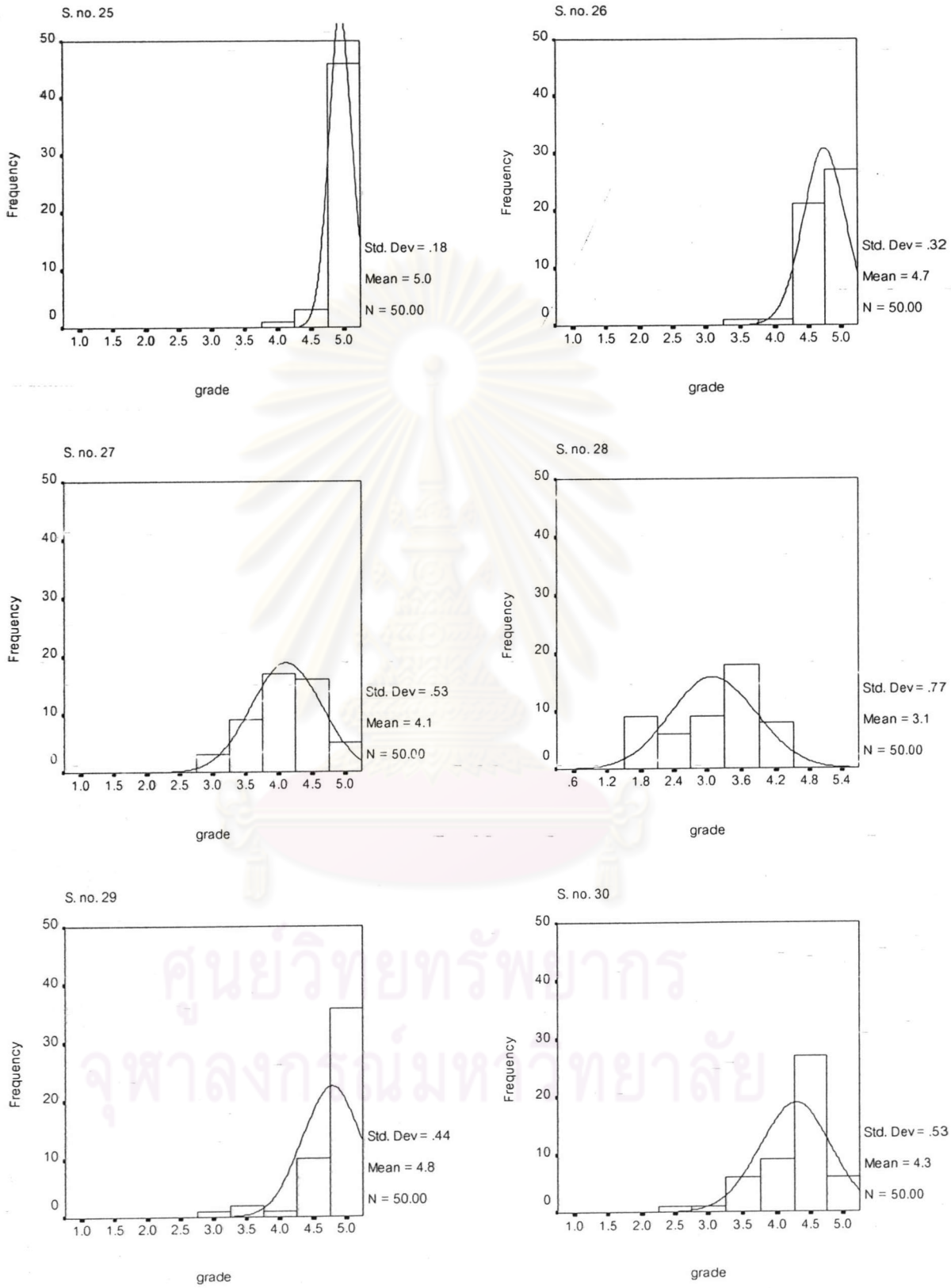

Figure C Visual results of change in colour assessment (continued)

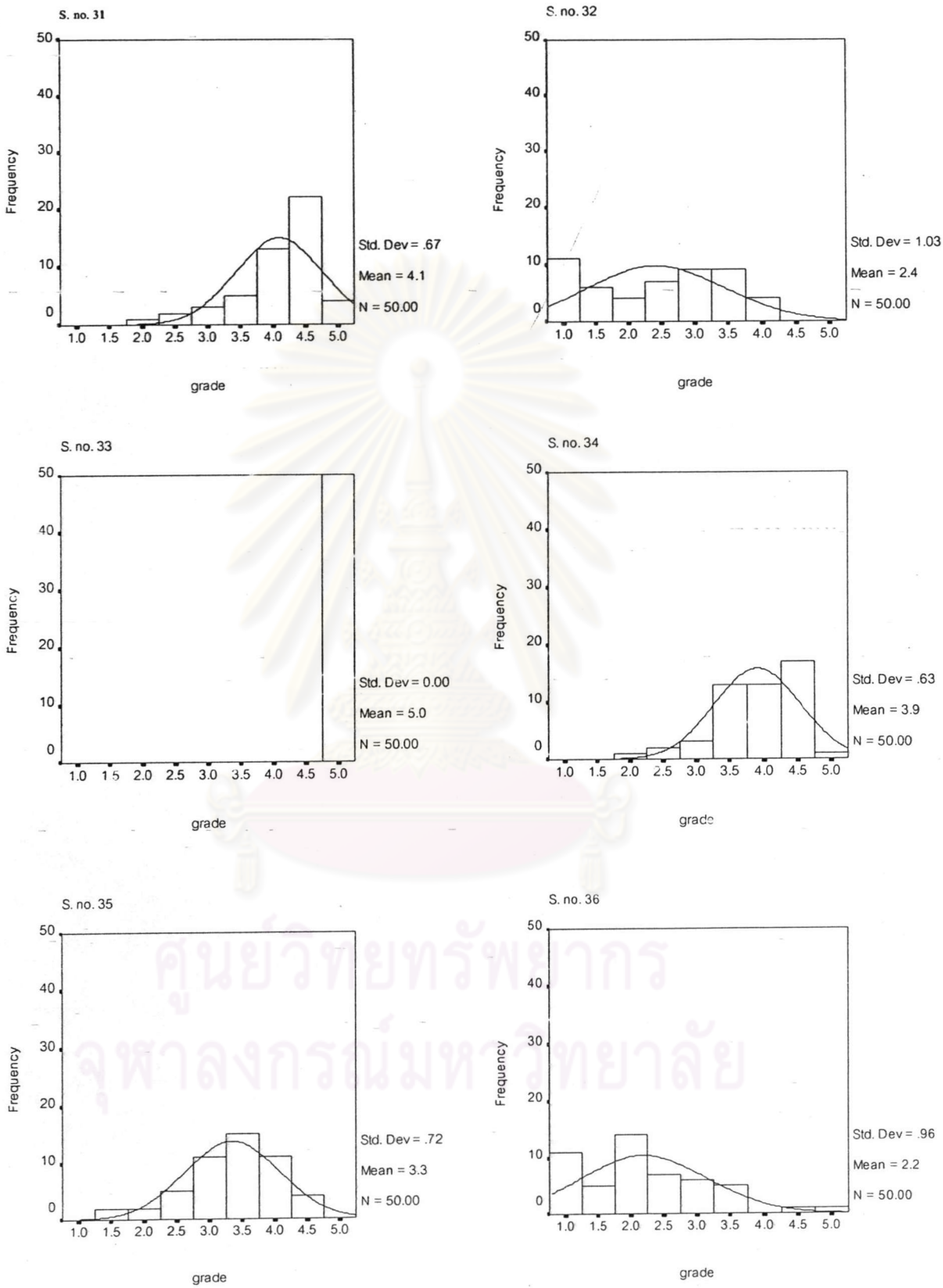

Figure C Visual results of change in colour assessment (continued)

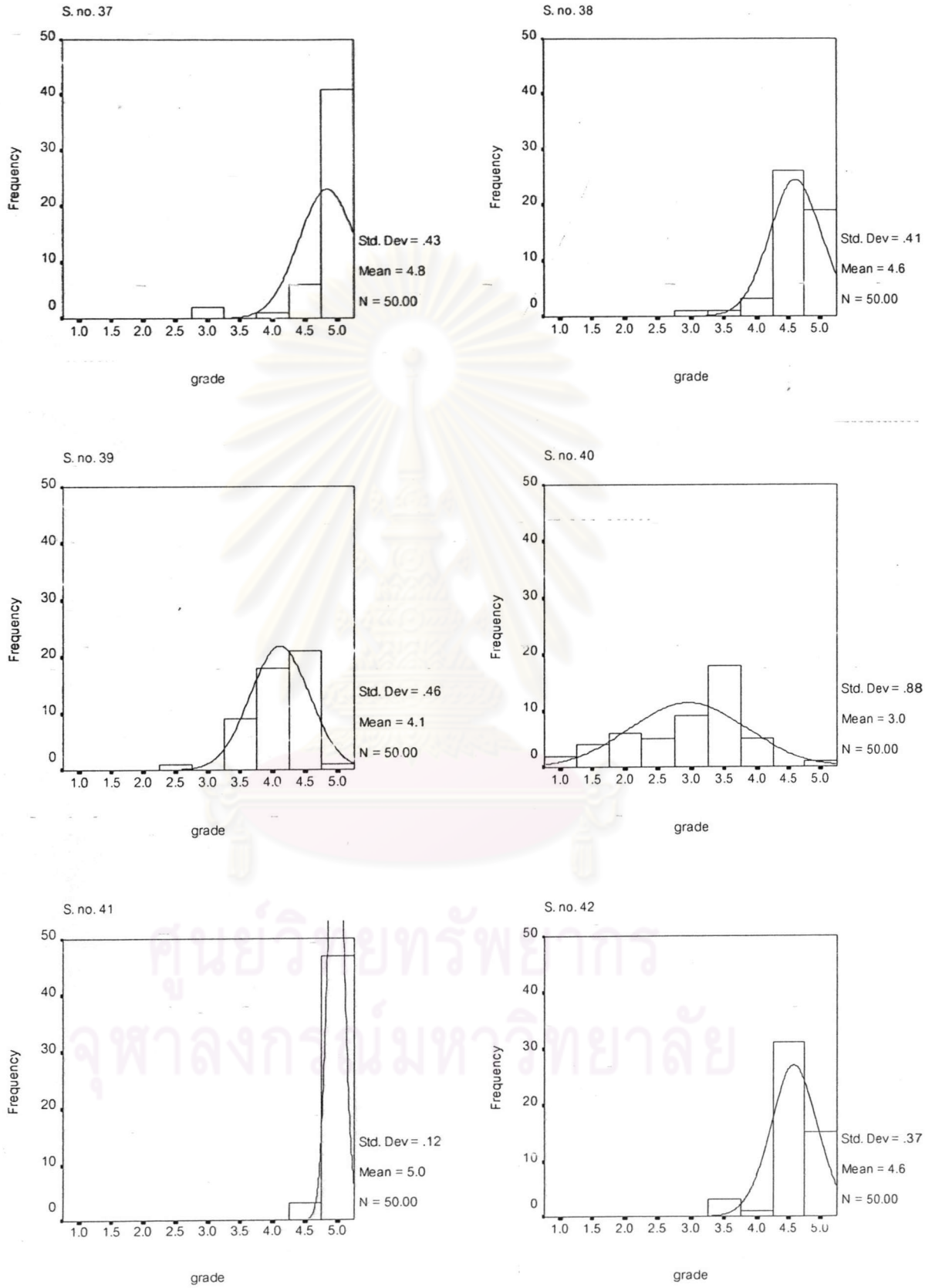

Figure C Visual results of change in colour assessment (continued)

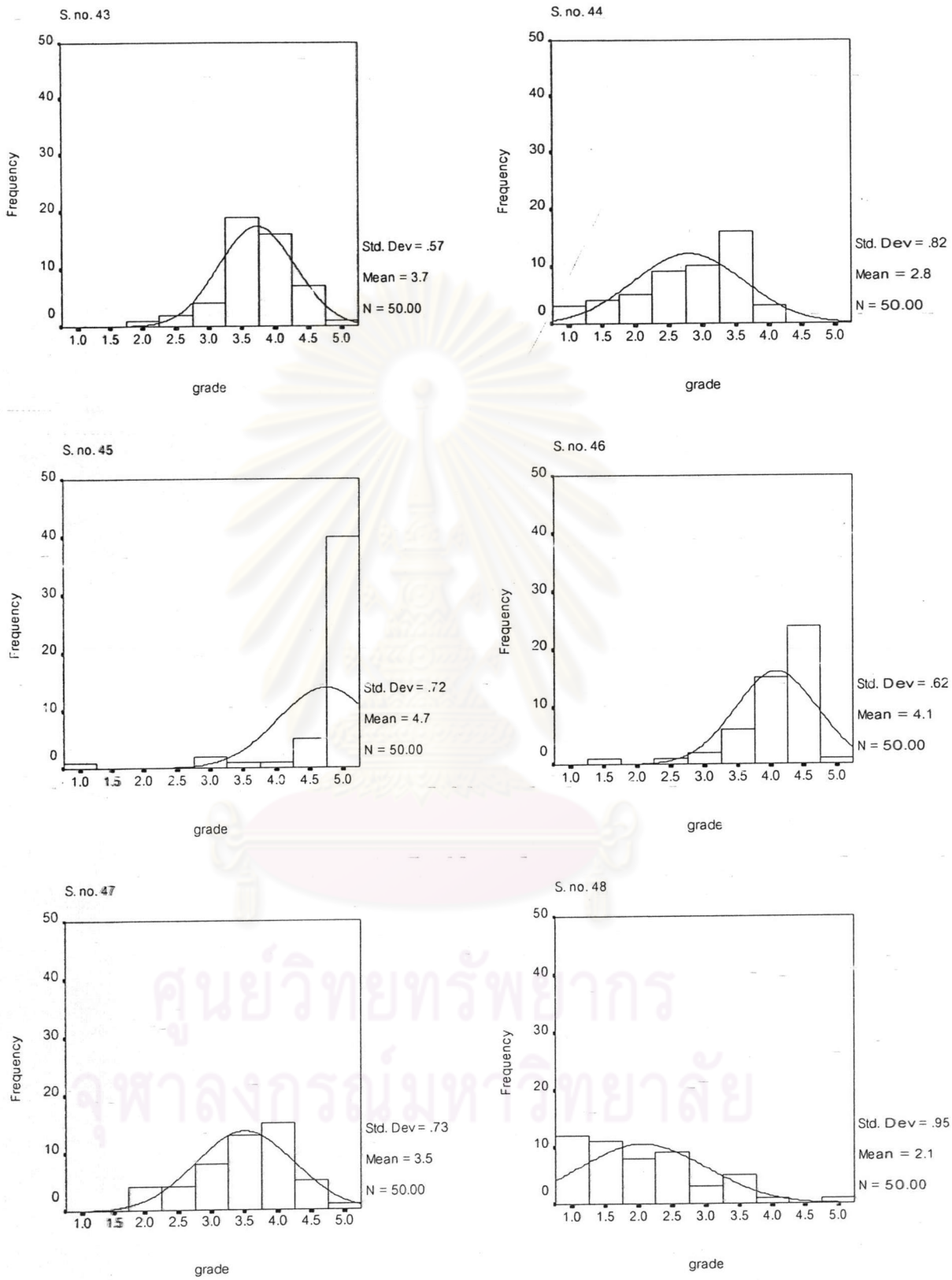

Figure C Visual results of change in colour assessment (continued)

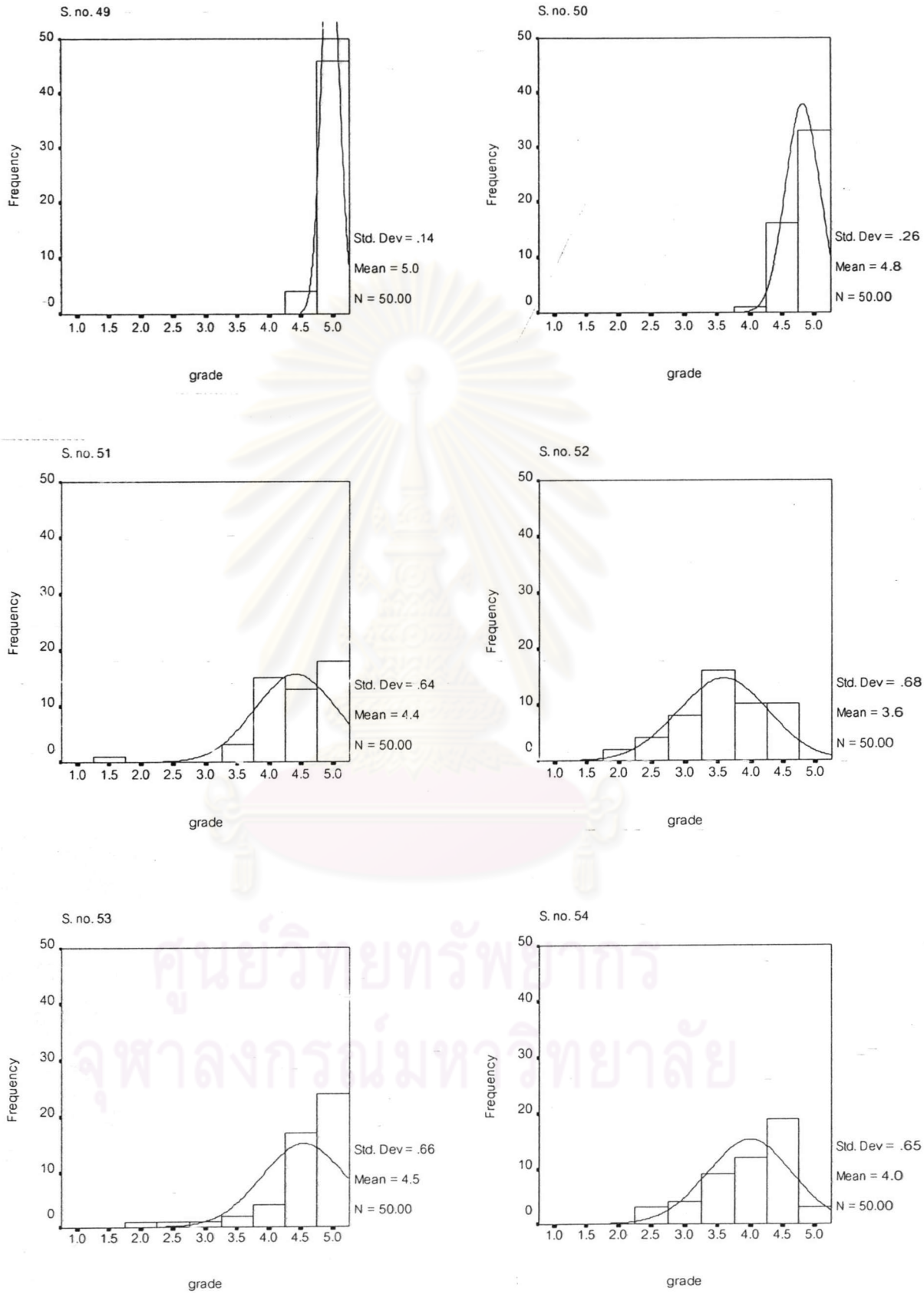

Figure C Visual results of change in colour assessment (continued)

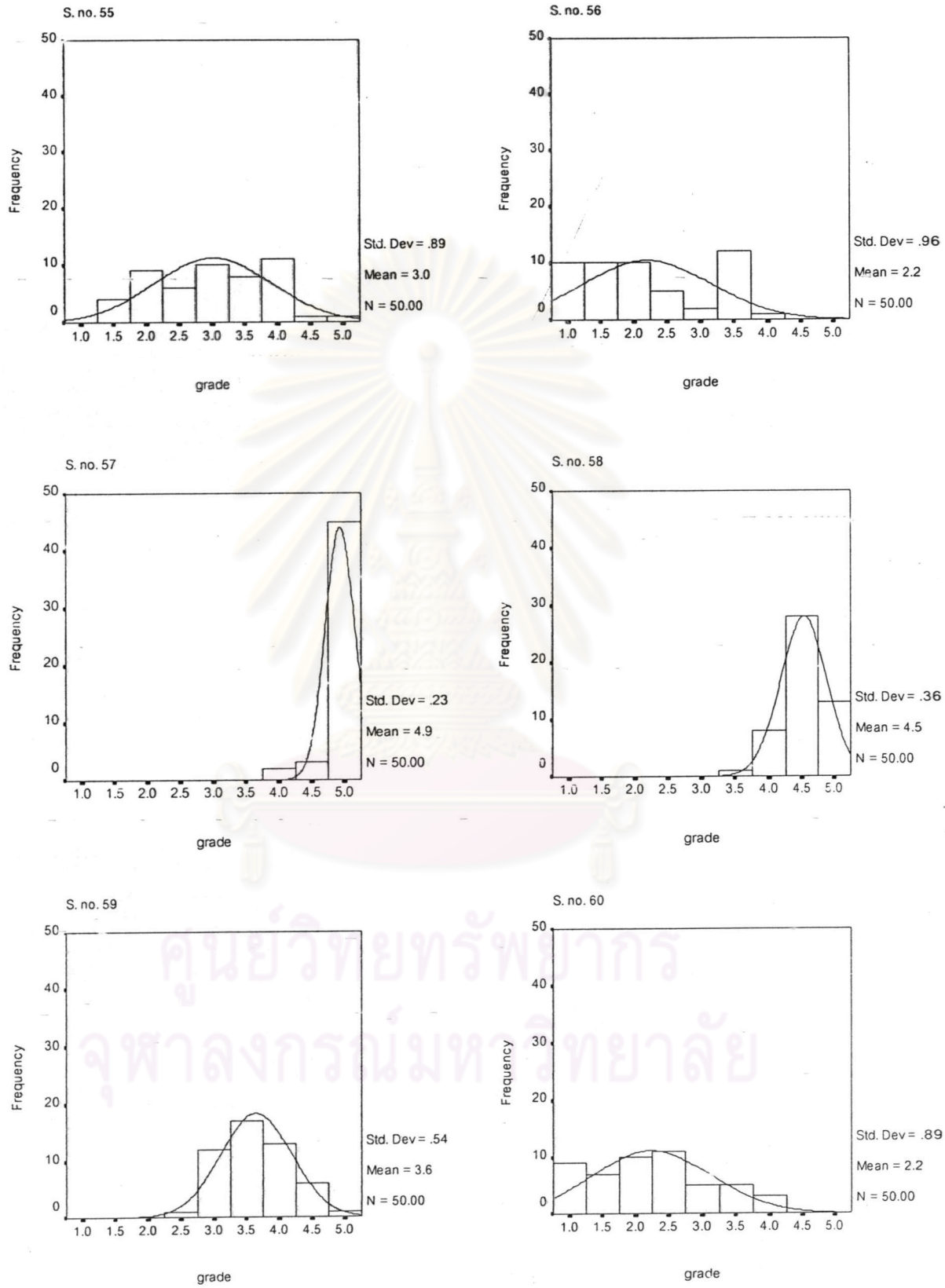

Figure C Visual results of change in colour assessment (continued)

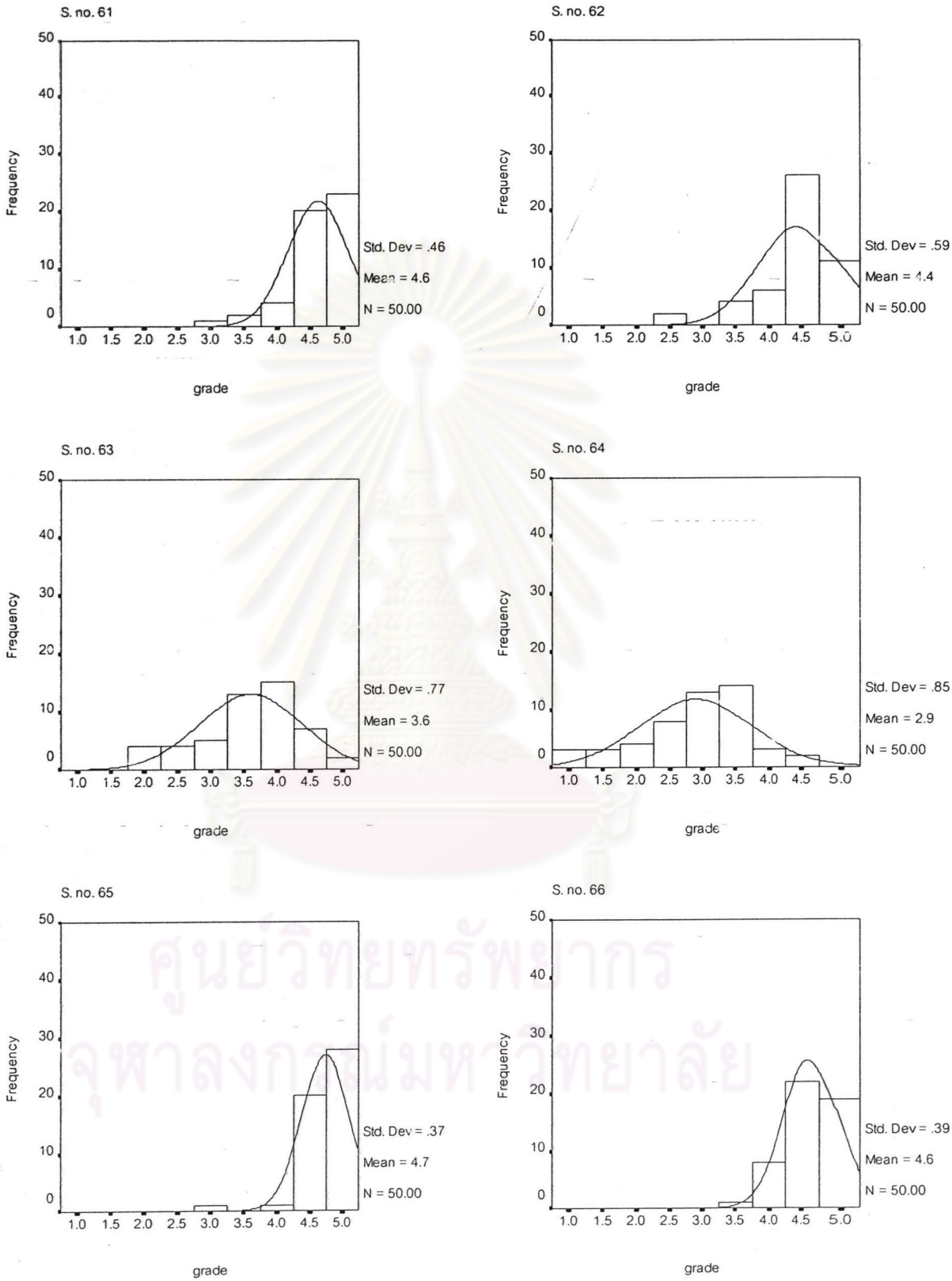

Figure C Visual results of change in colour assessment (continued)

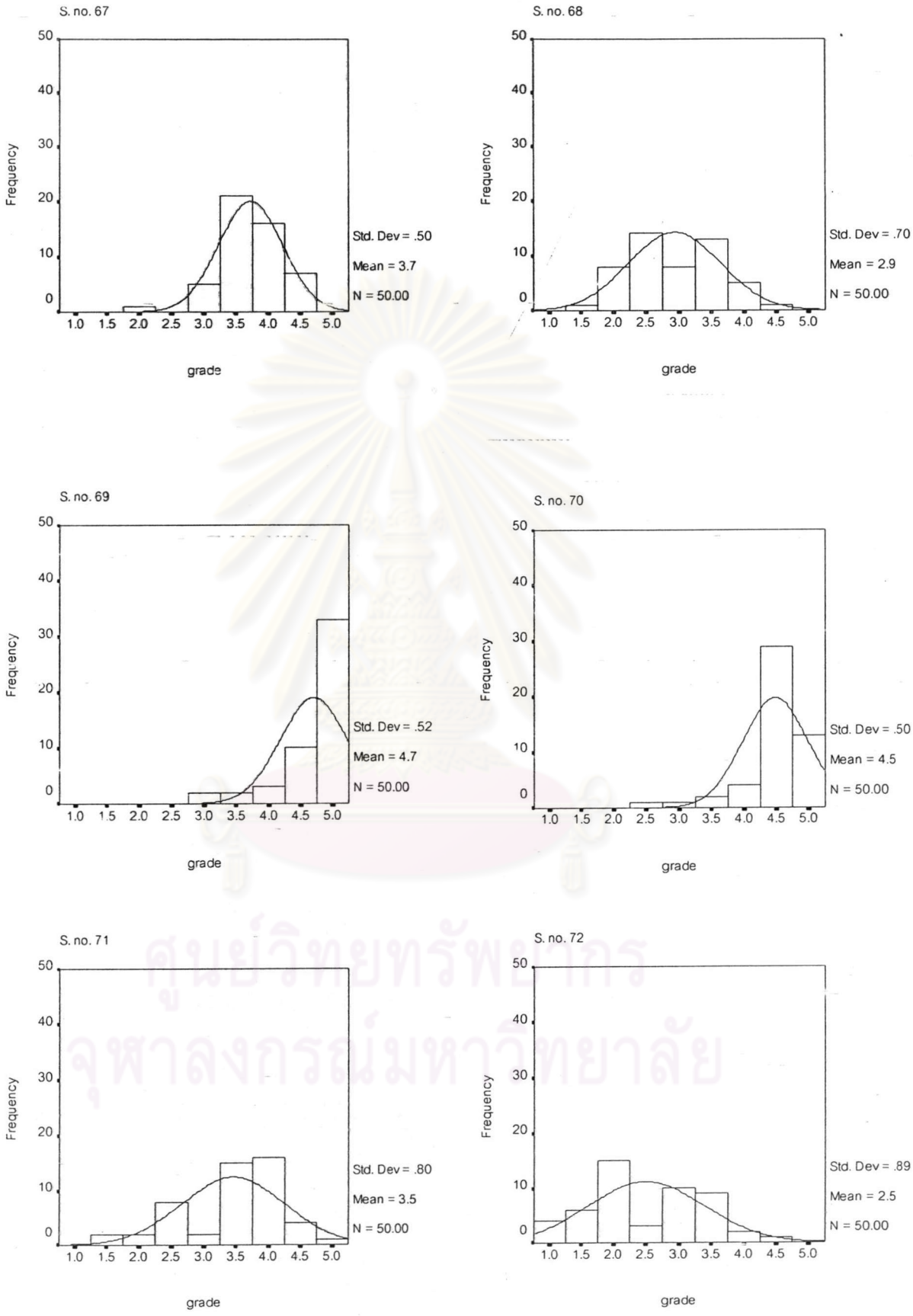

Figure C Visual results of change in colour assessment (continued)

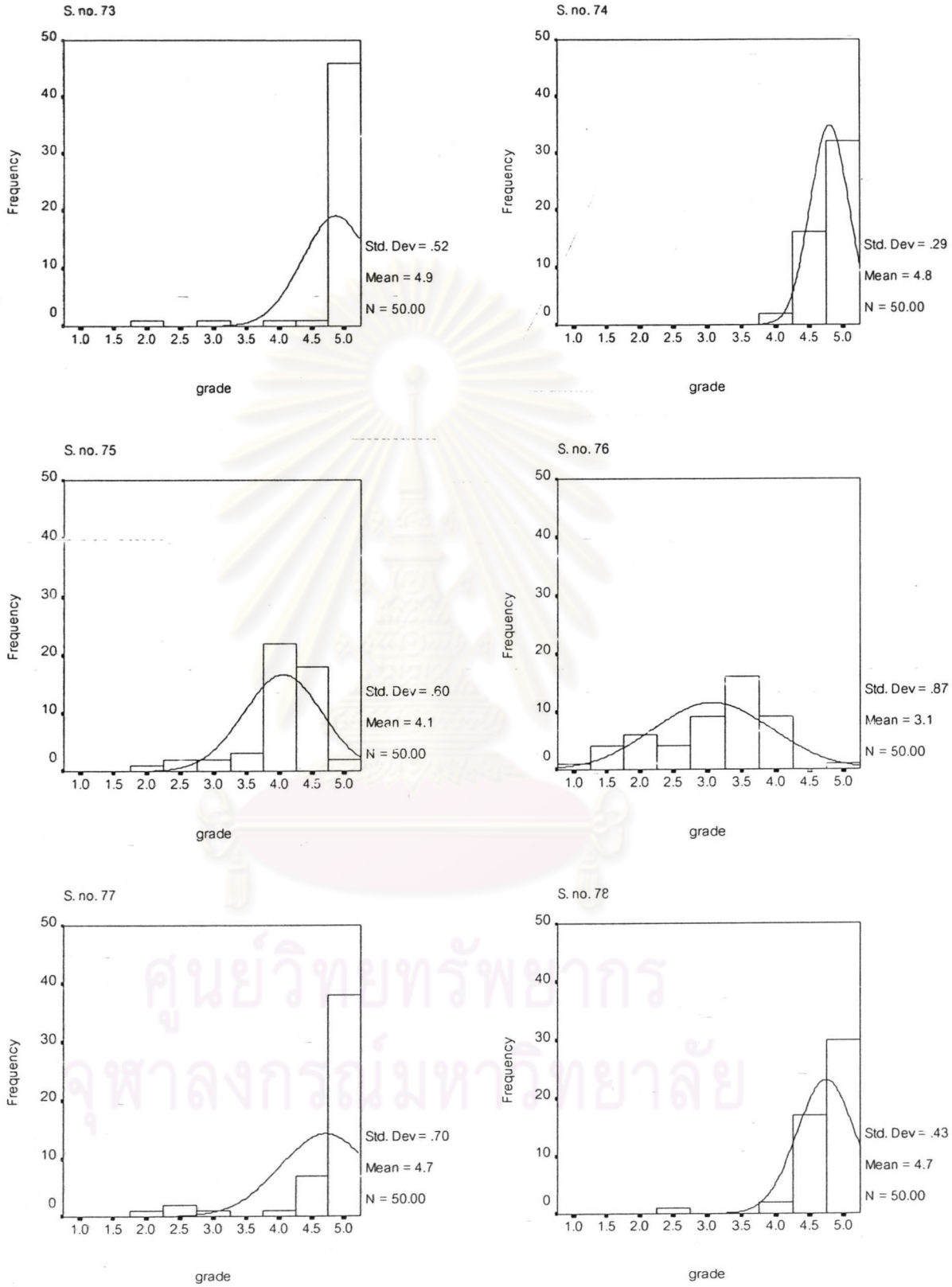

Figure C Visual results of change in colour assessment (continued)

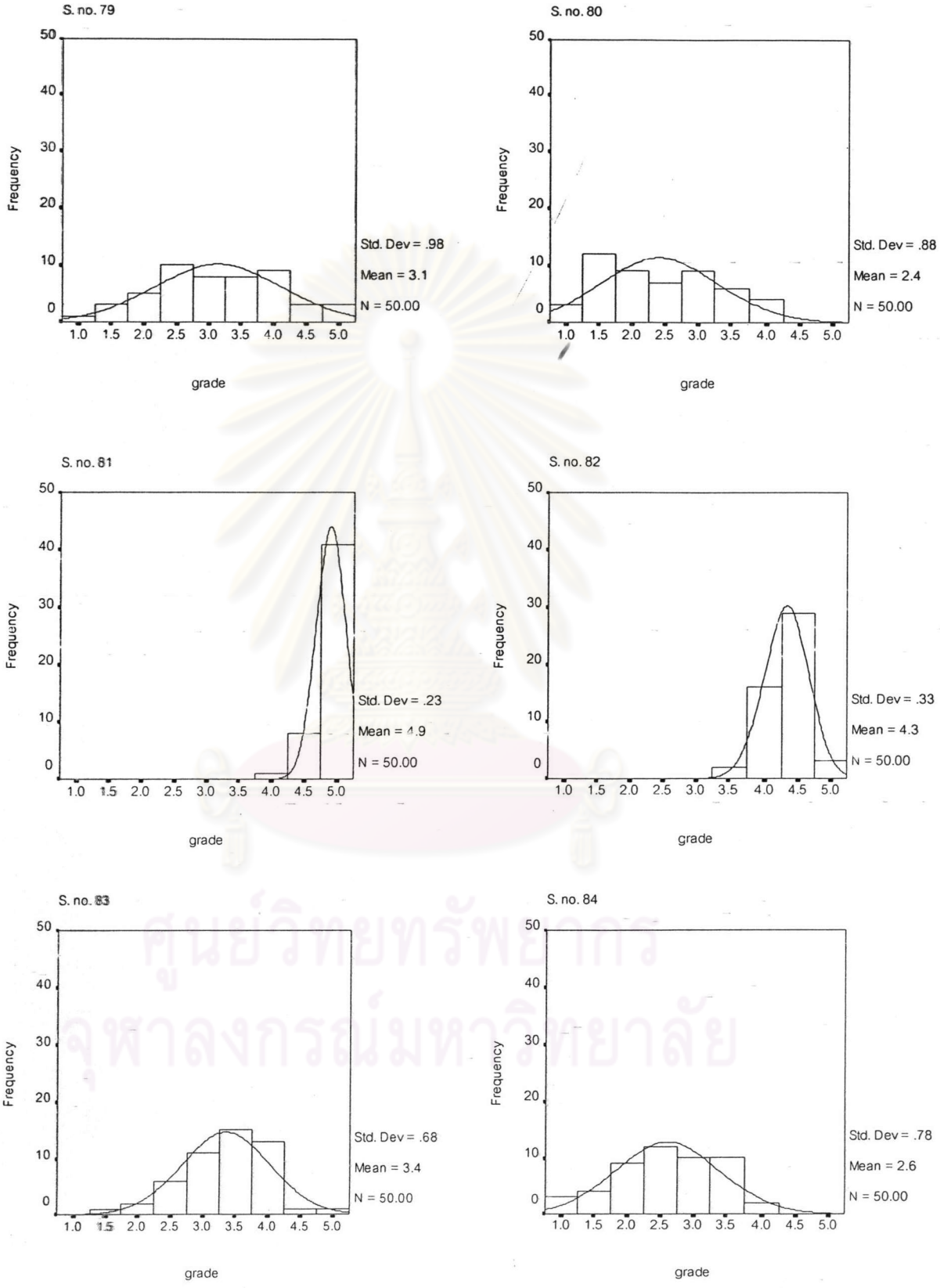

Figure C Visual results of change in colour assessment (continued)

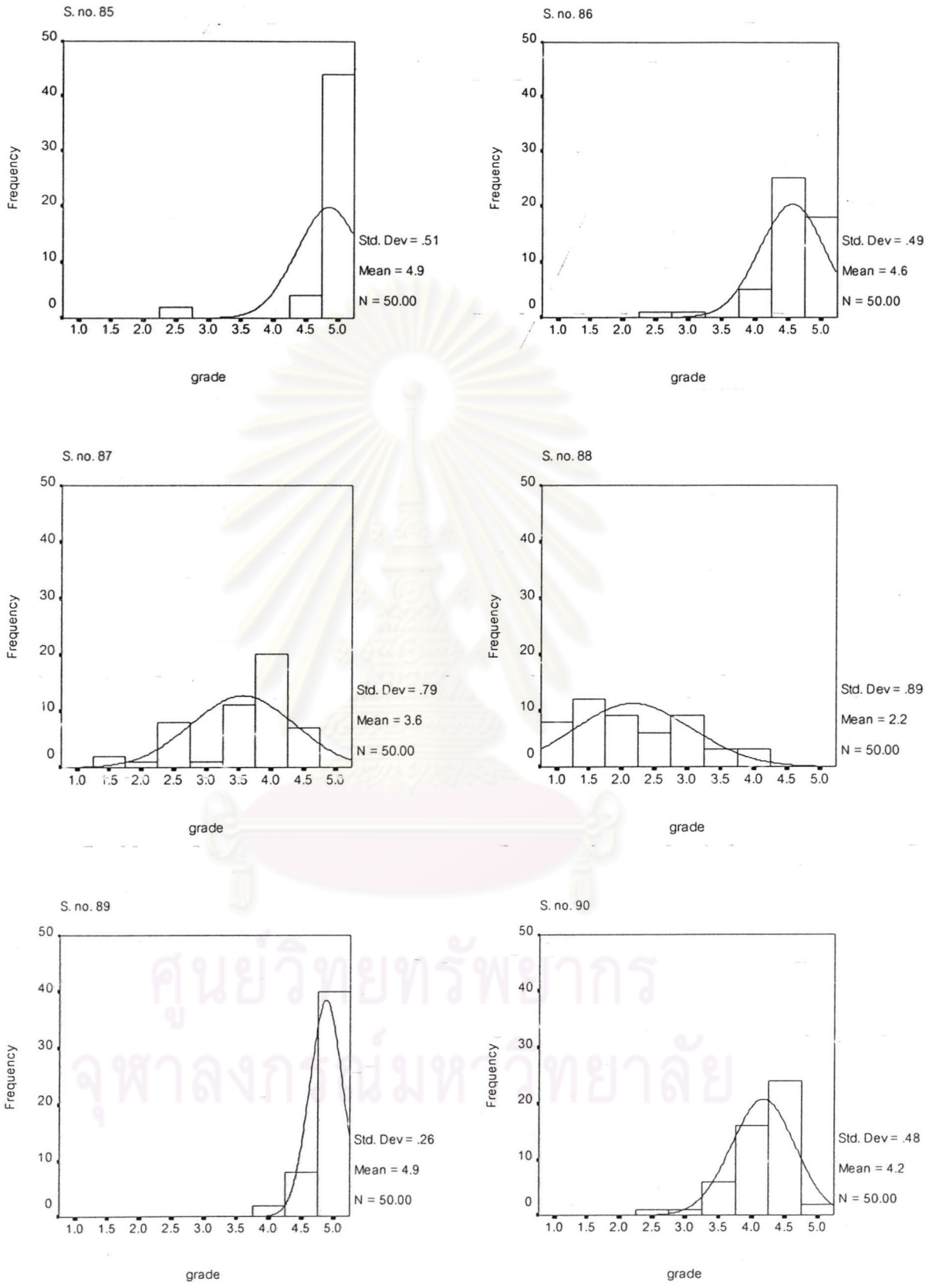

Figure C Visual results of change in colour assessment (continued)

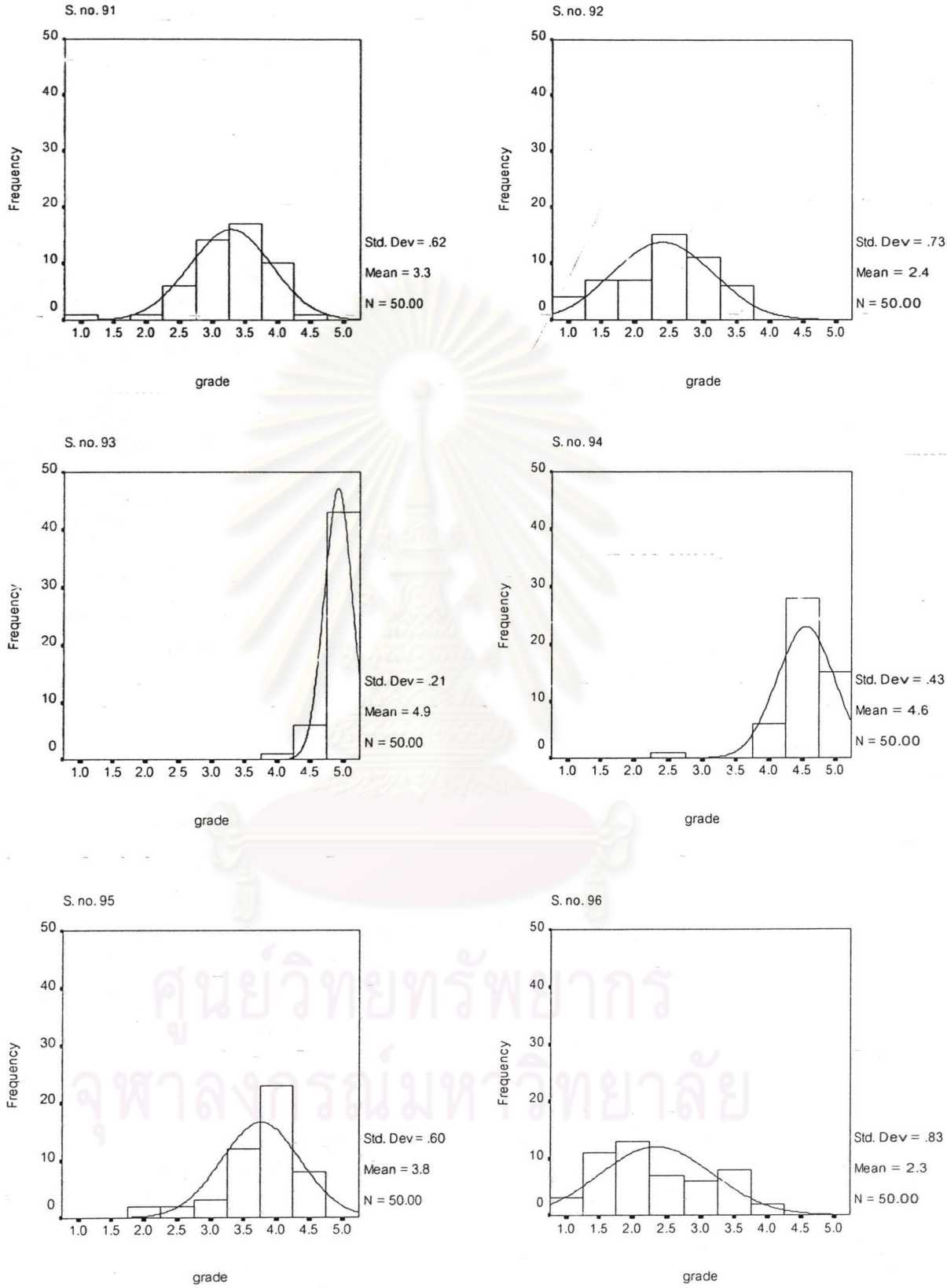

Figure C Visual results of change in colour assessment (continued)

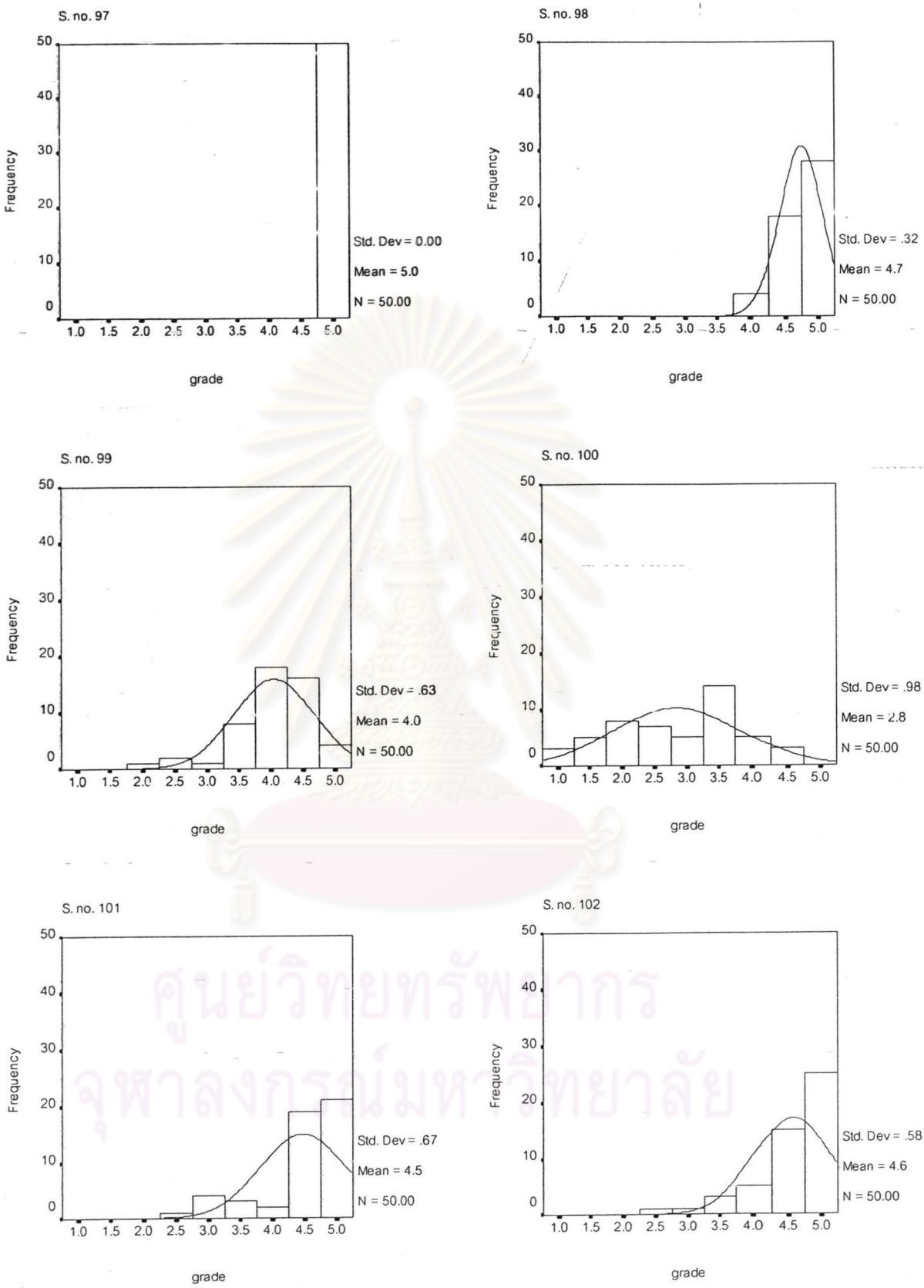

Figure C Visual results of change in colour assessment (continued)

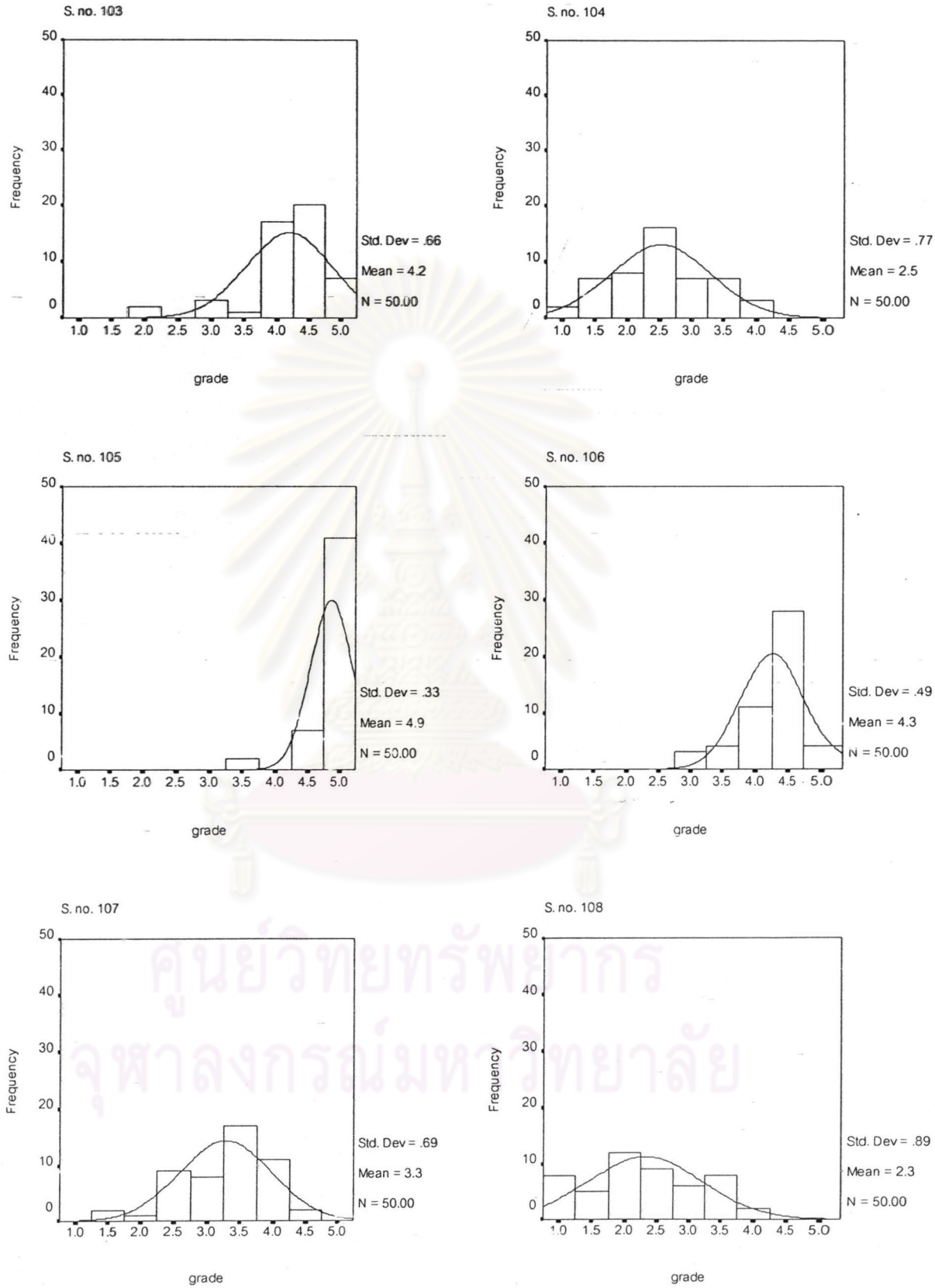

Figure C Visual results of change in colour assessment (continued)

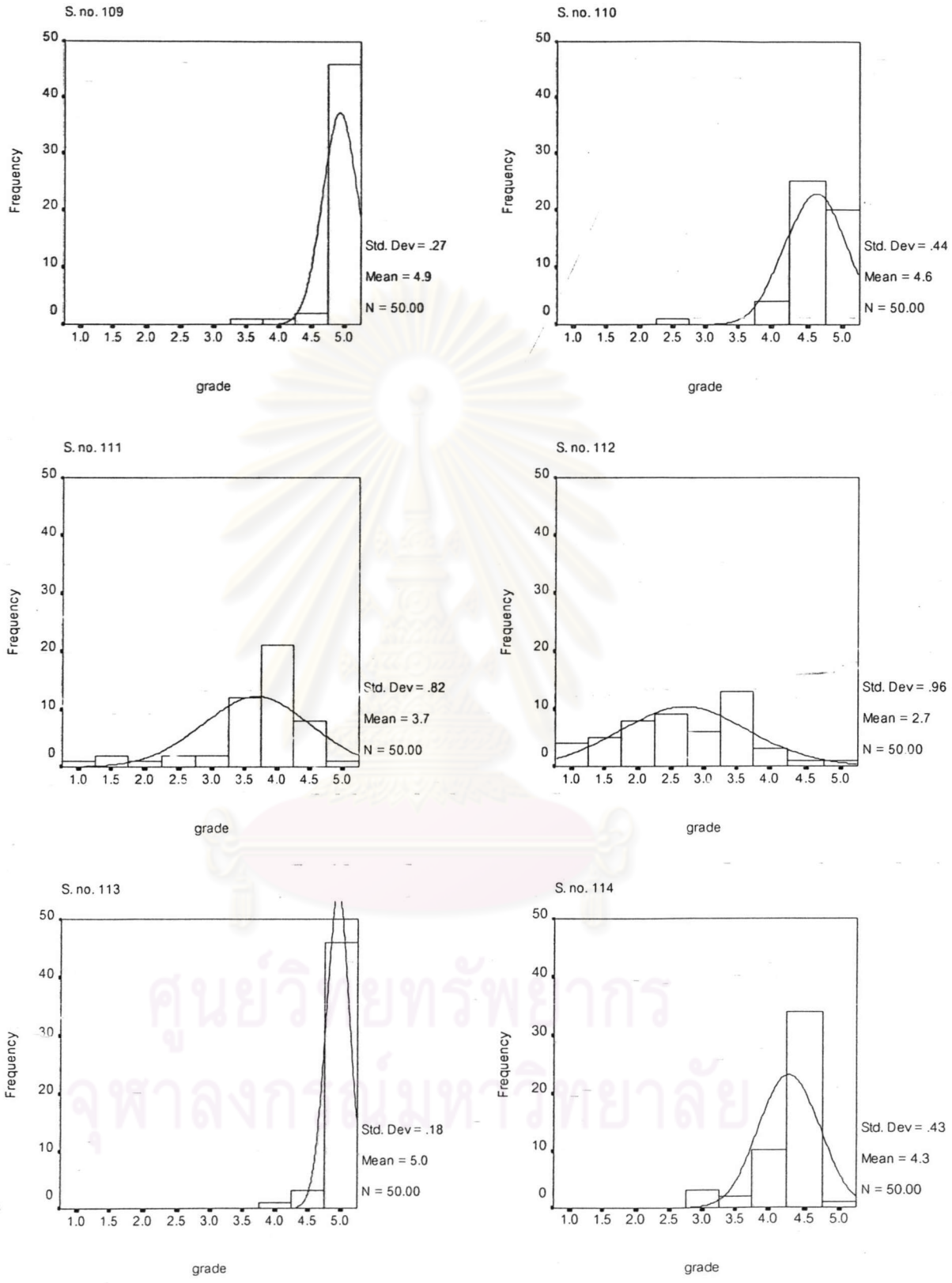

Figure C Visual results of change in colour assessment (continued)

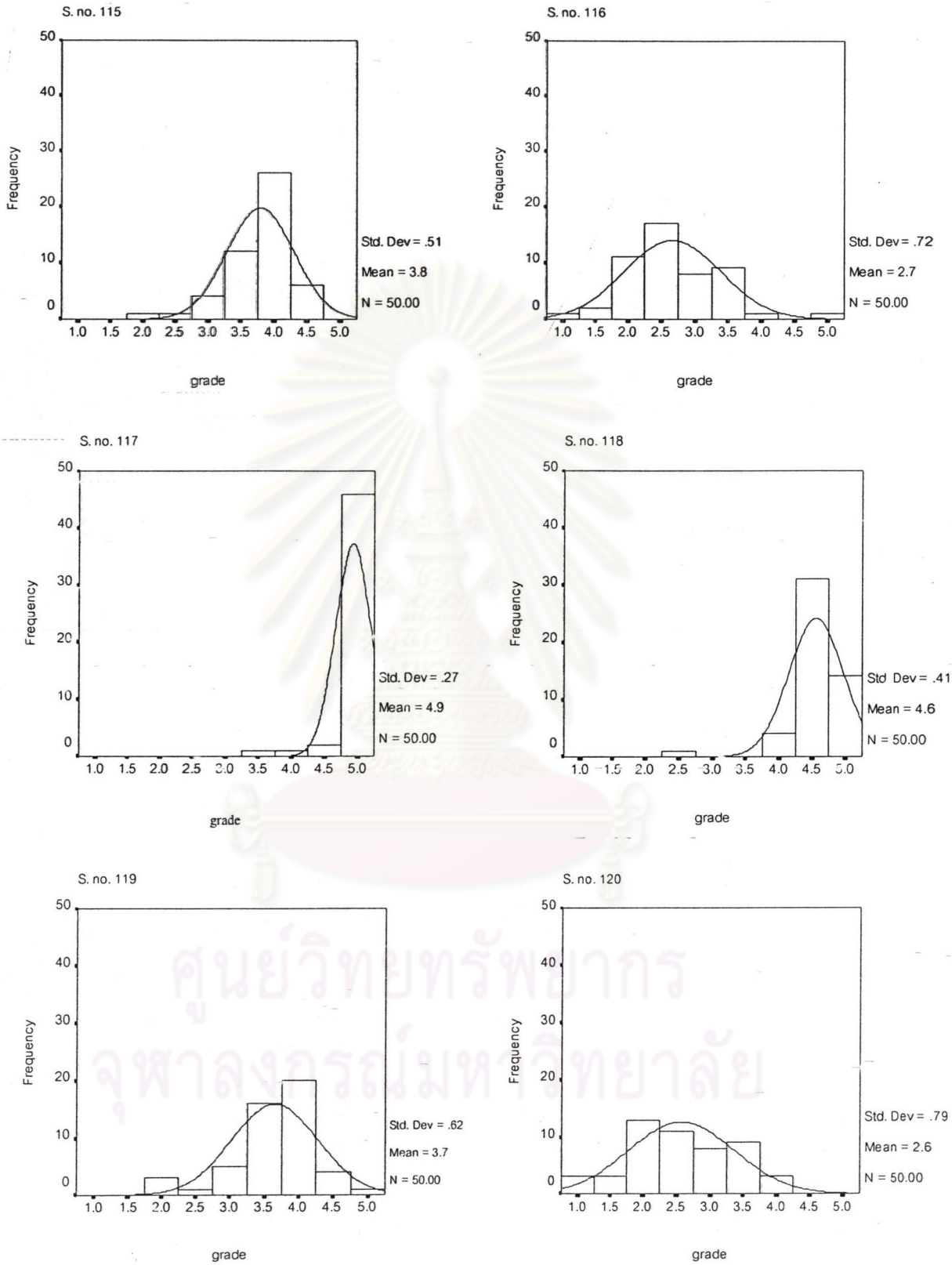

Figure C Visual results of change in colour assessment (continued)

APPENDIX D

VISUAL RESULTS OF STAINING ASSESSMENT

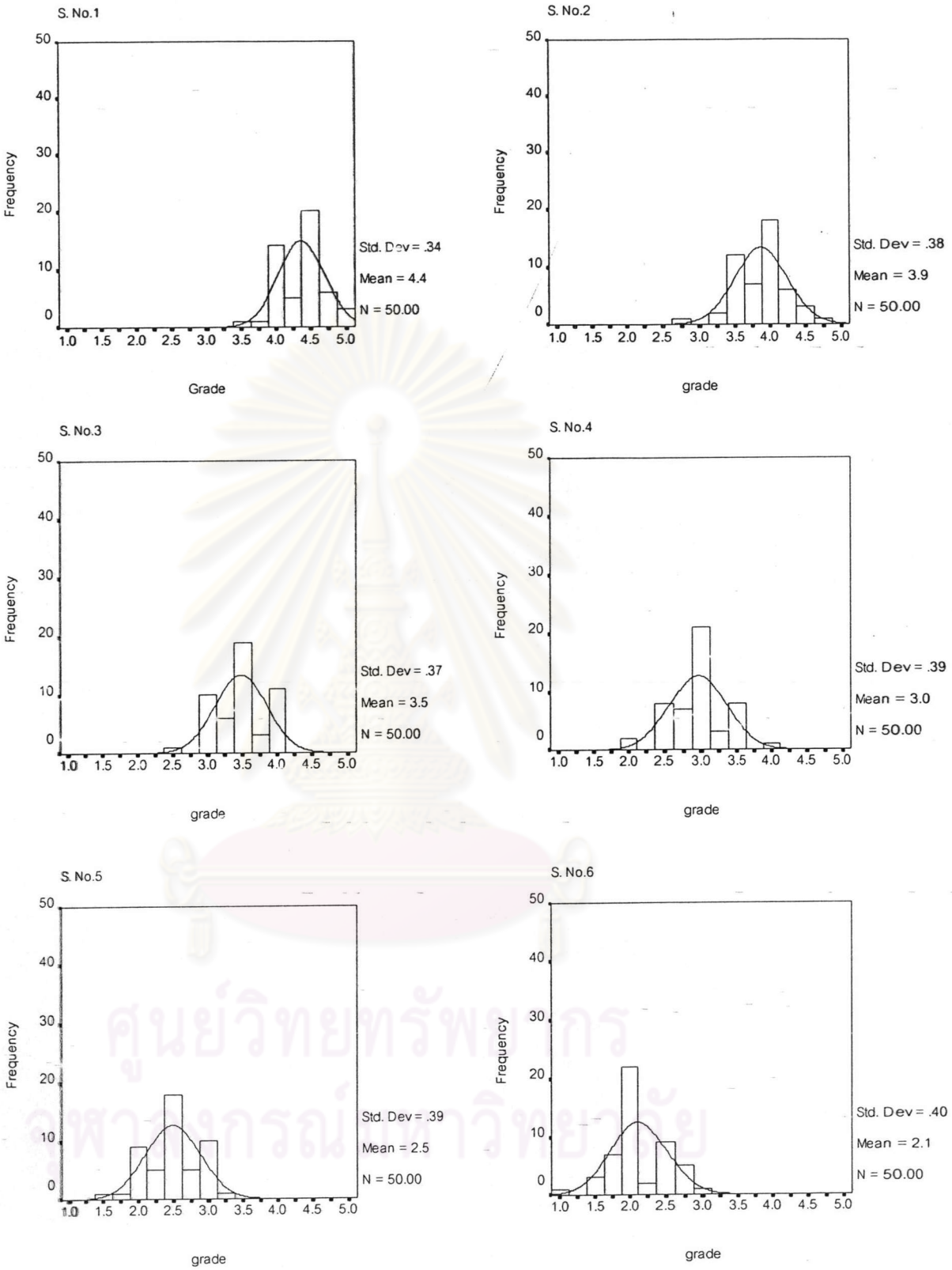

Figure D Visual results of staining assessment

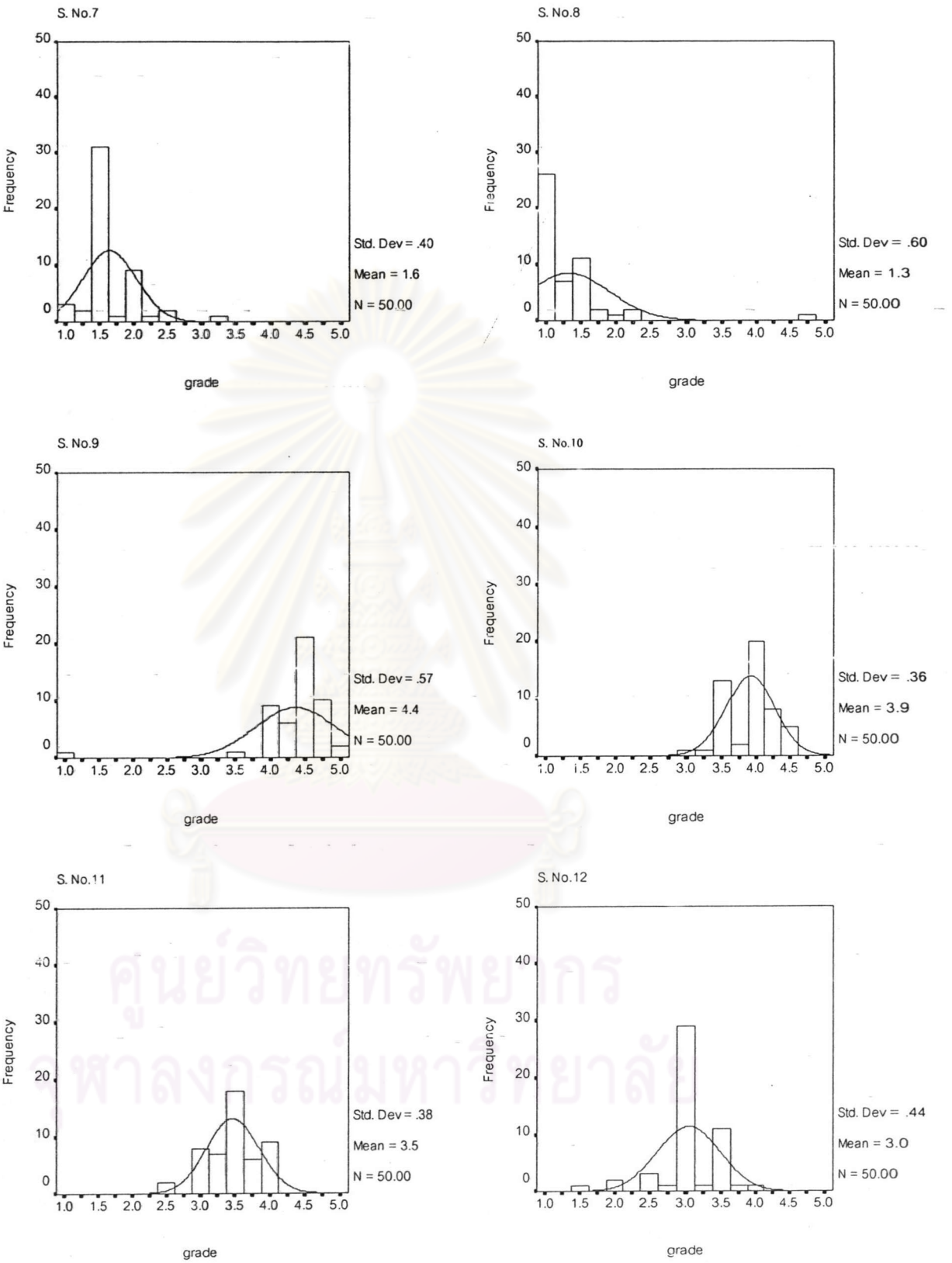

Figure D Visual results of staining assessment (continued)

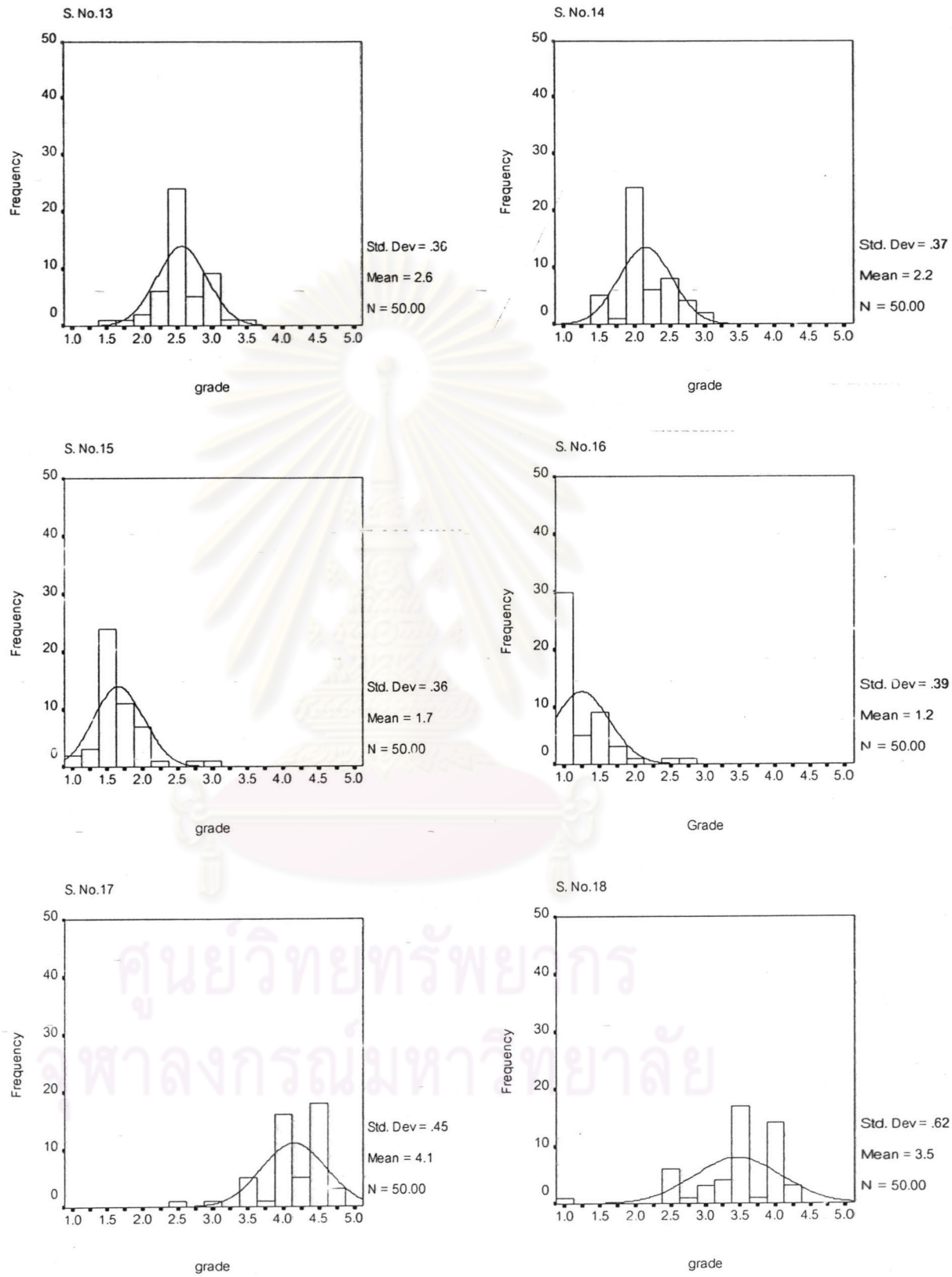

Figure D Visual results of staining assessment (continued)

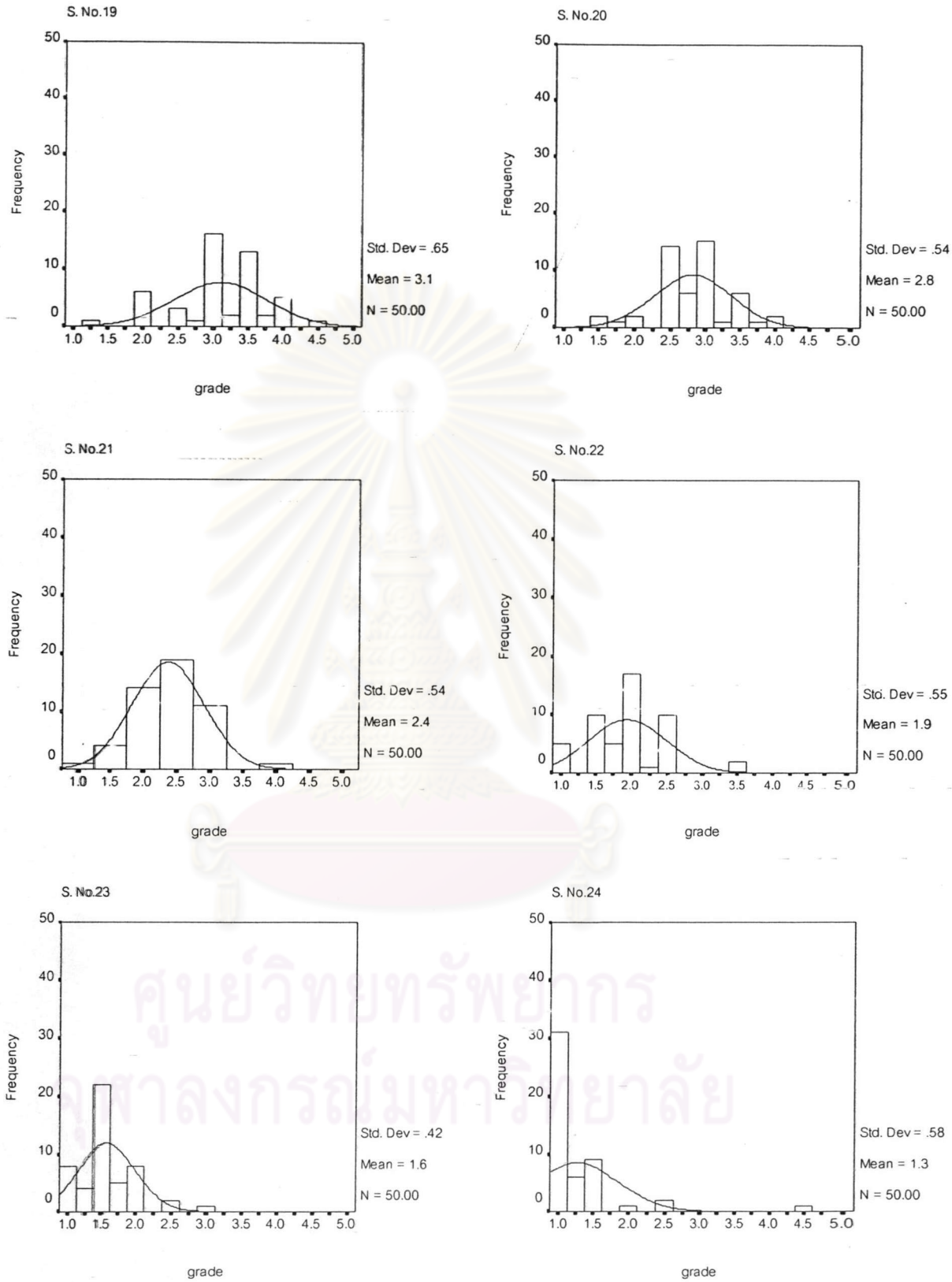

Figure D Visual results of staining assessment (continued)

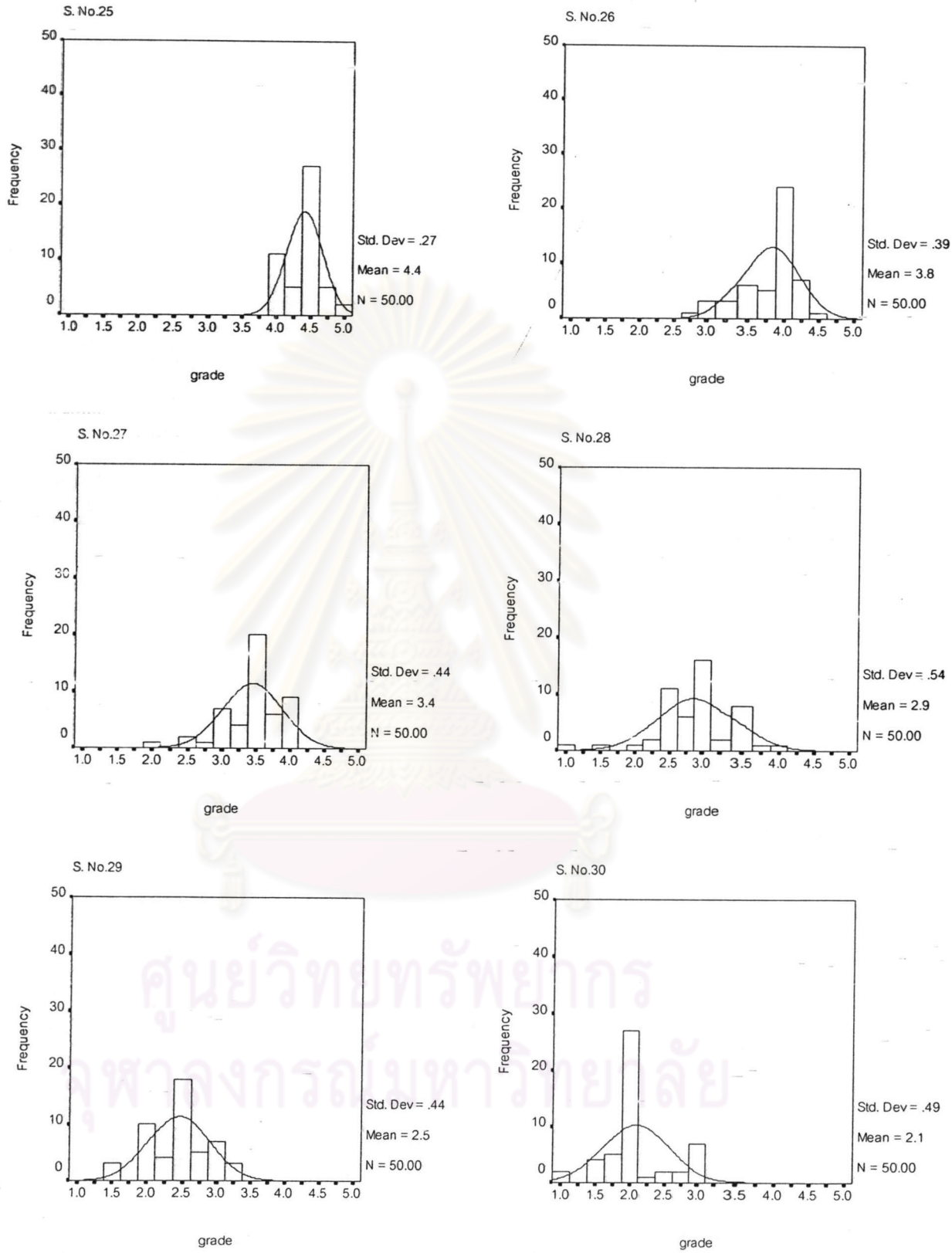

Figure D Visual results of staining assessment (continued)

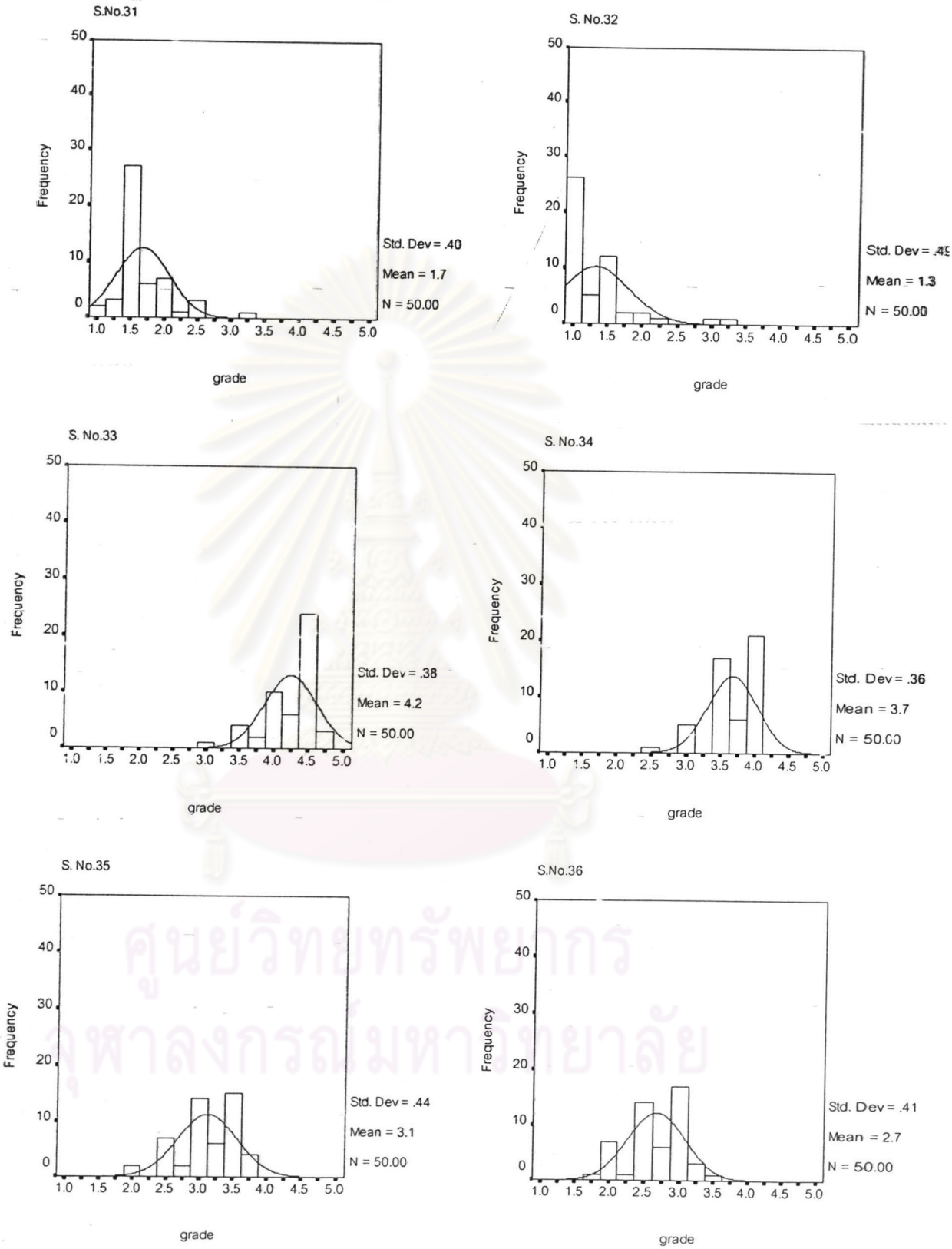

Figure D Visual results of staining assessment (continued)

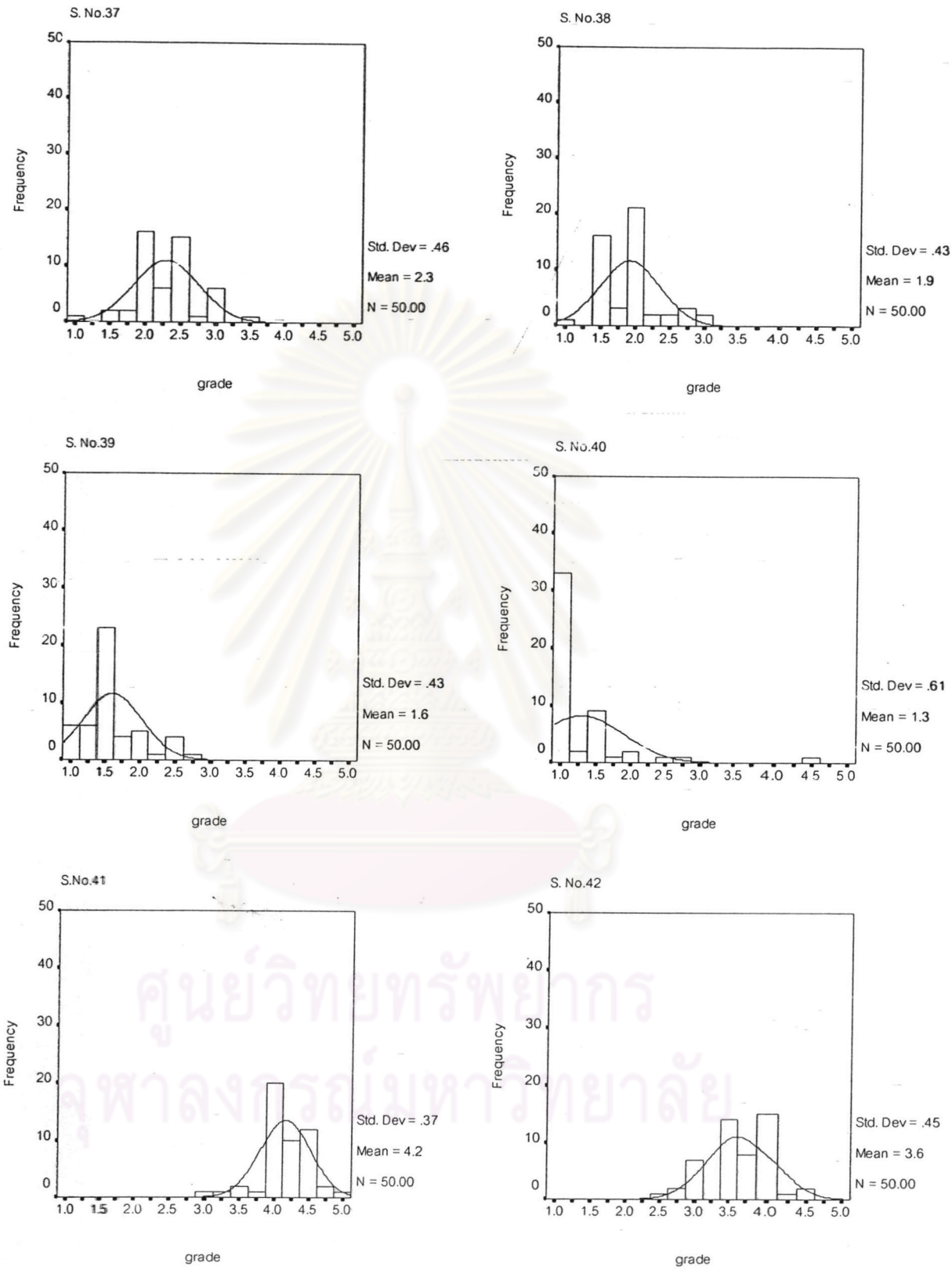

Figure D Visual results of staining assessment (continued)

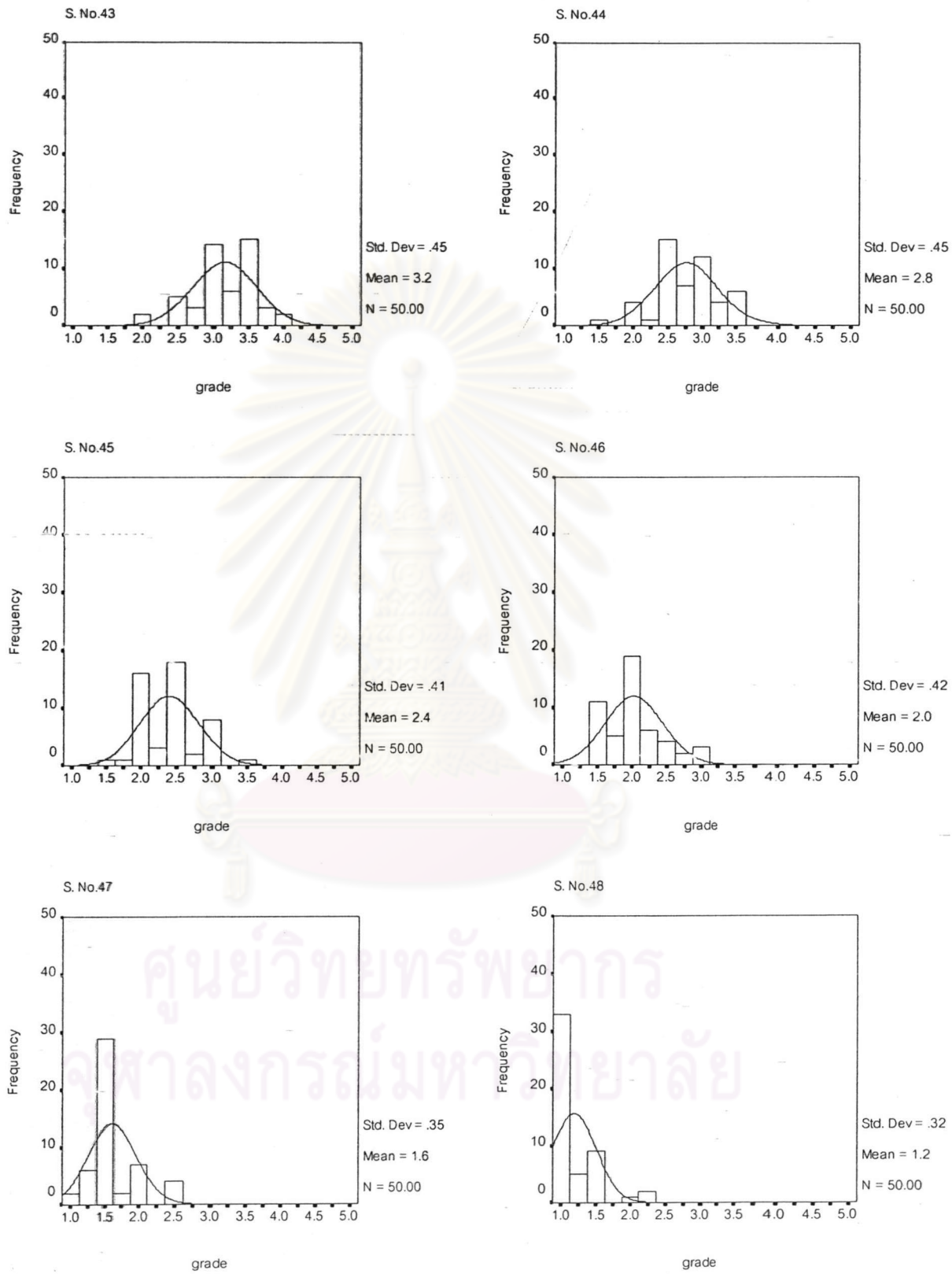

Figure D Visual results of staining assessment (continued)

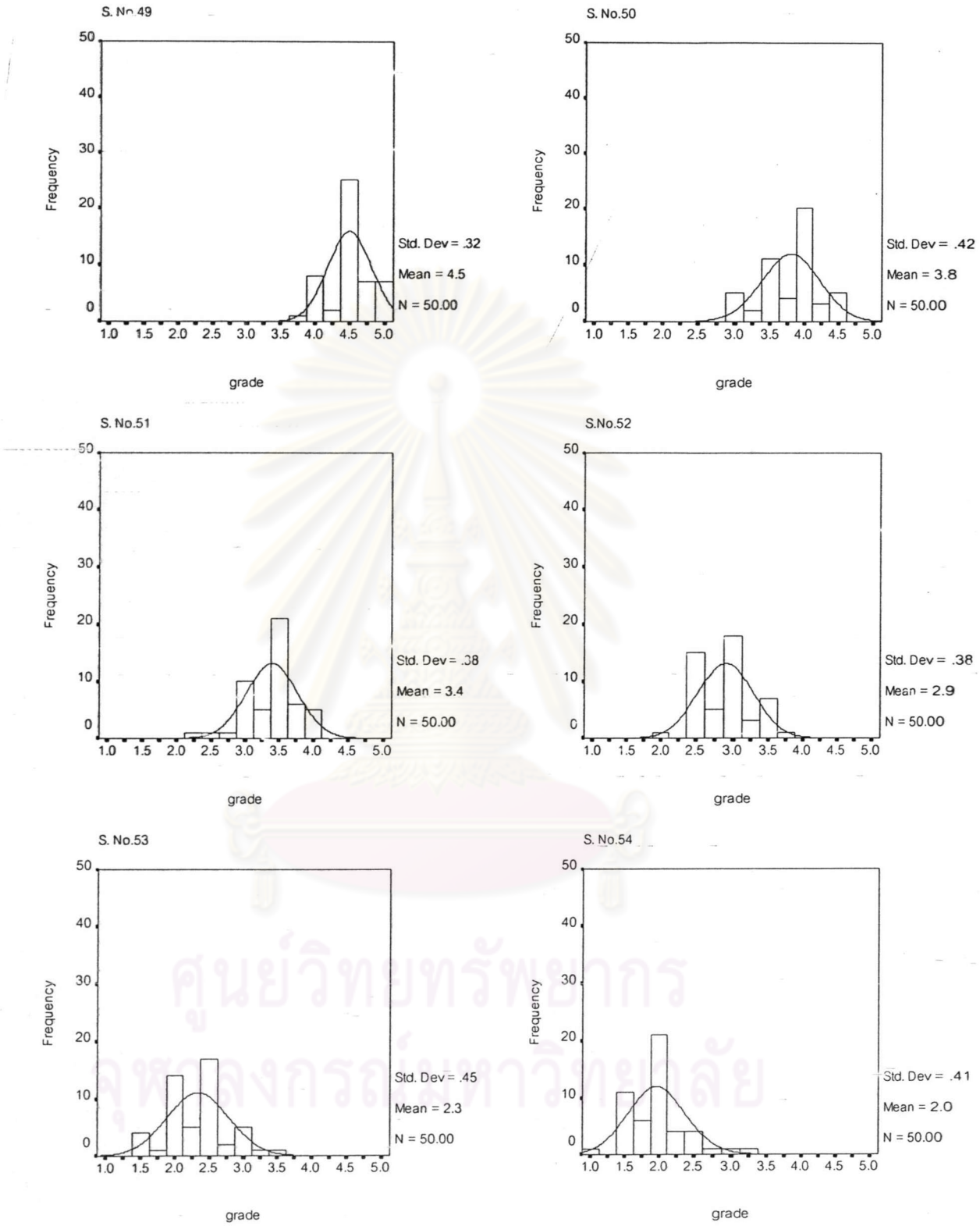

Figure D Visual results of staining assessment (continued)

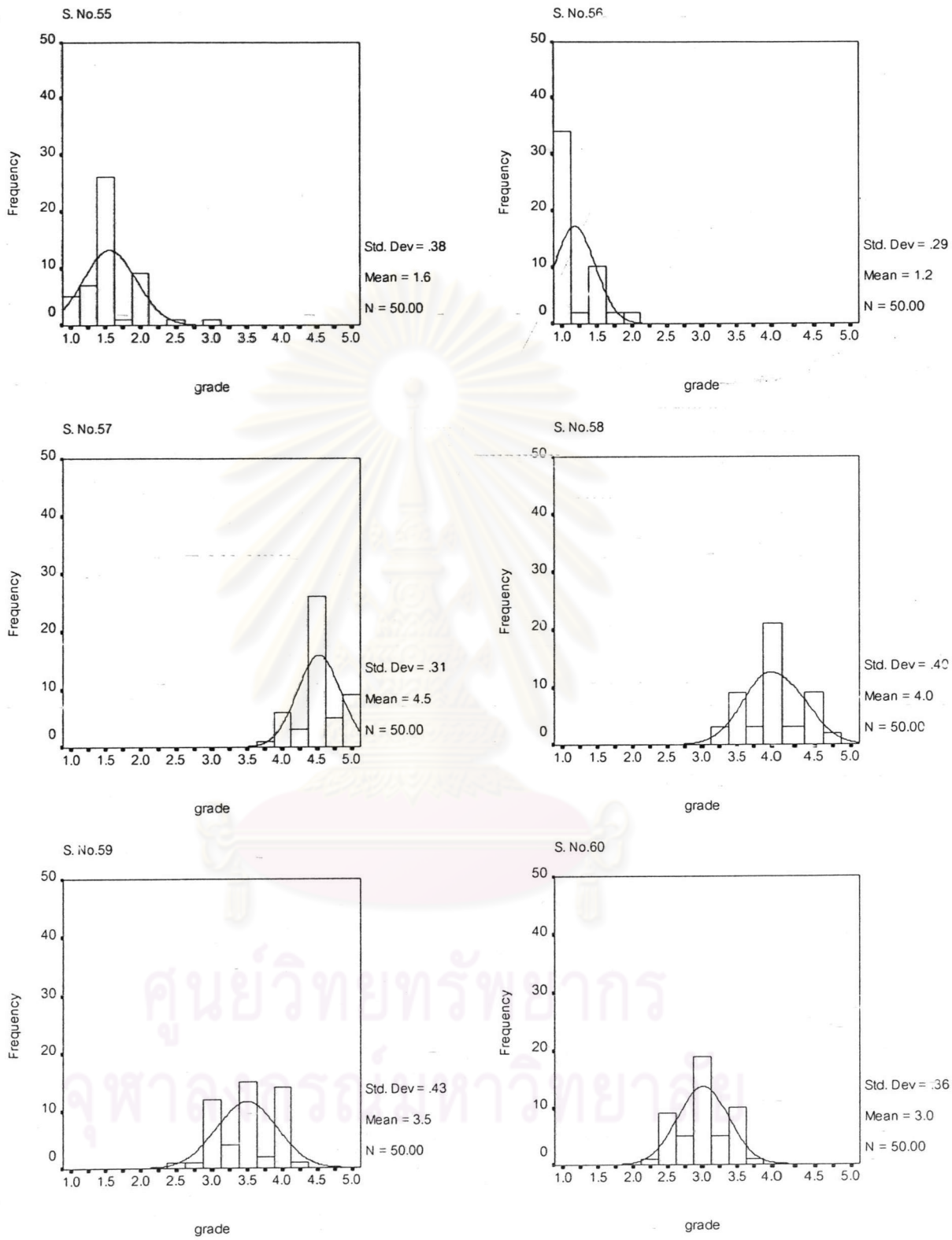

Figure D Visual results of staining assessment (continued)

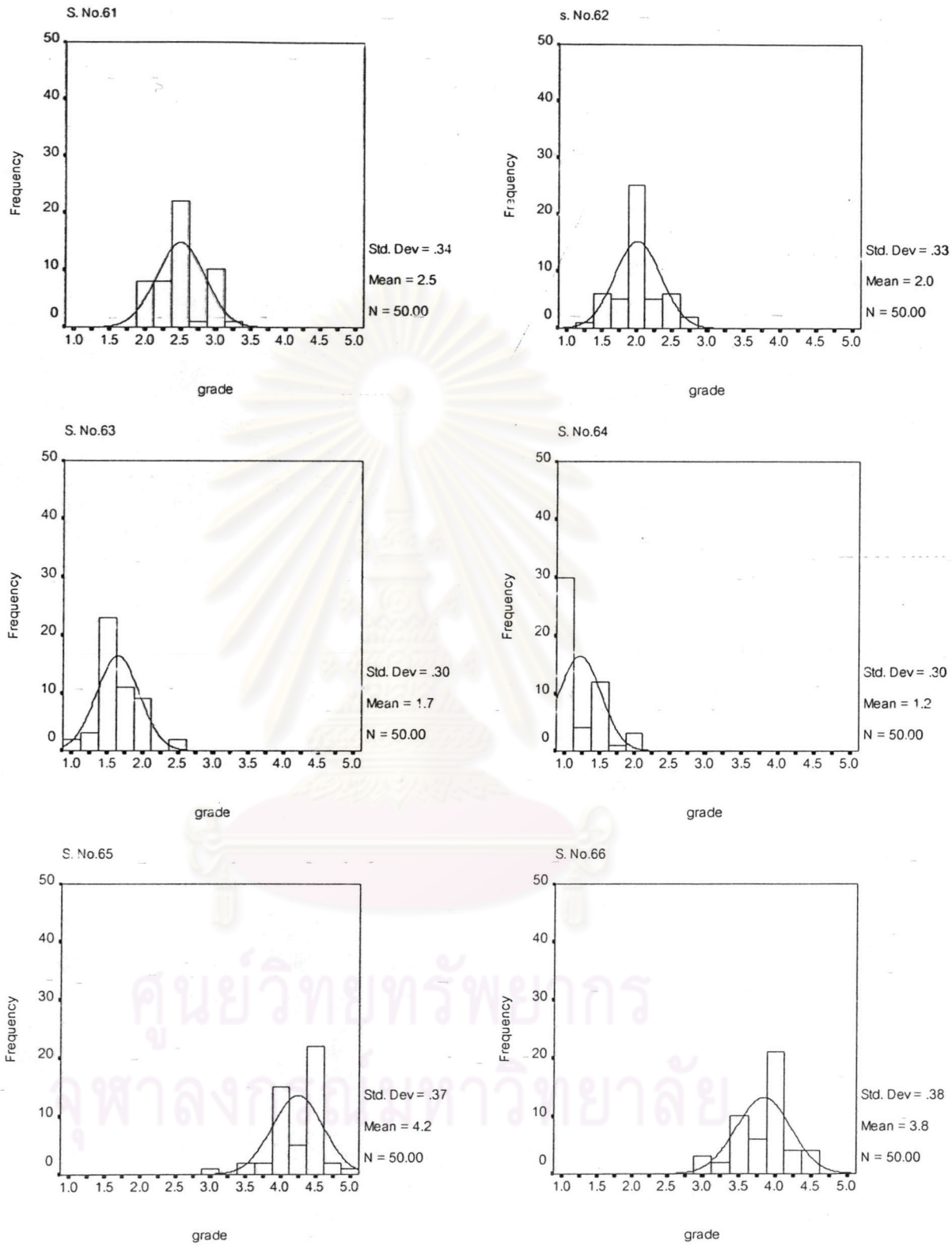

Figure D Visual results of staining assessment (continued)

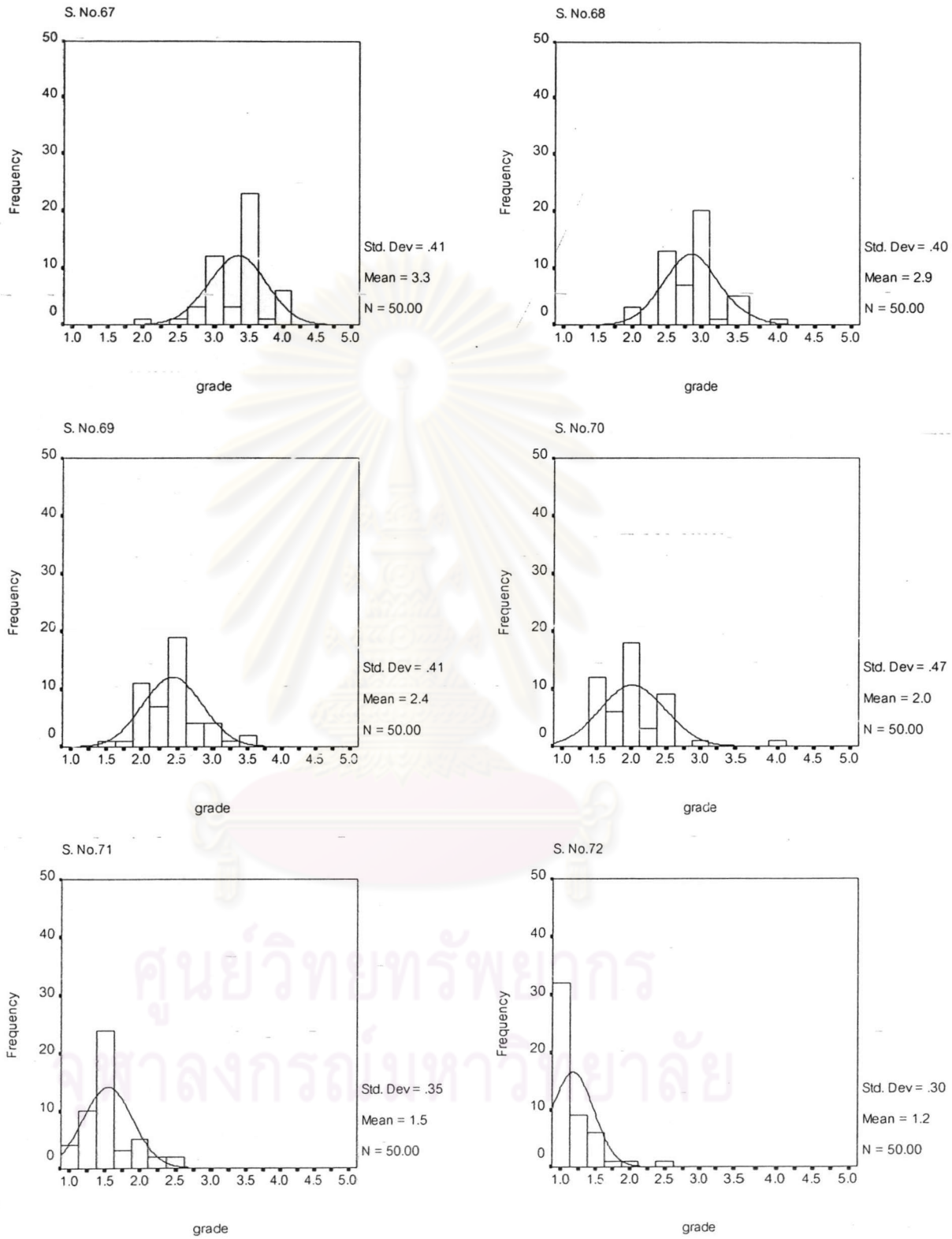

Figure D Visual results of staining assessment (continued)

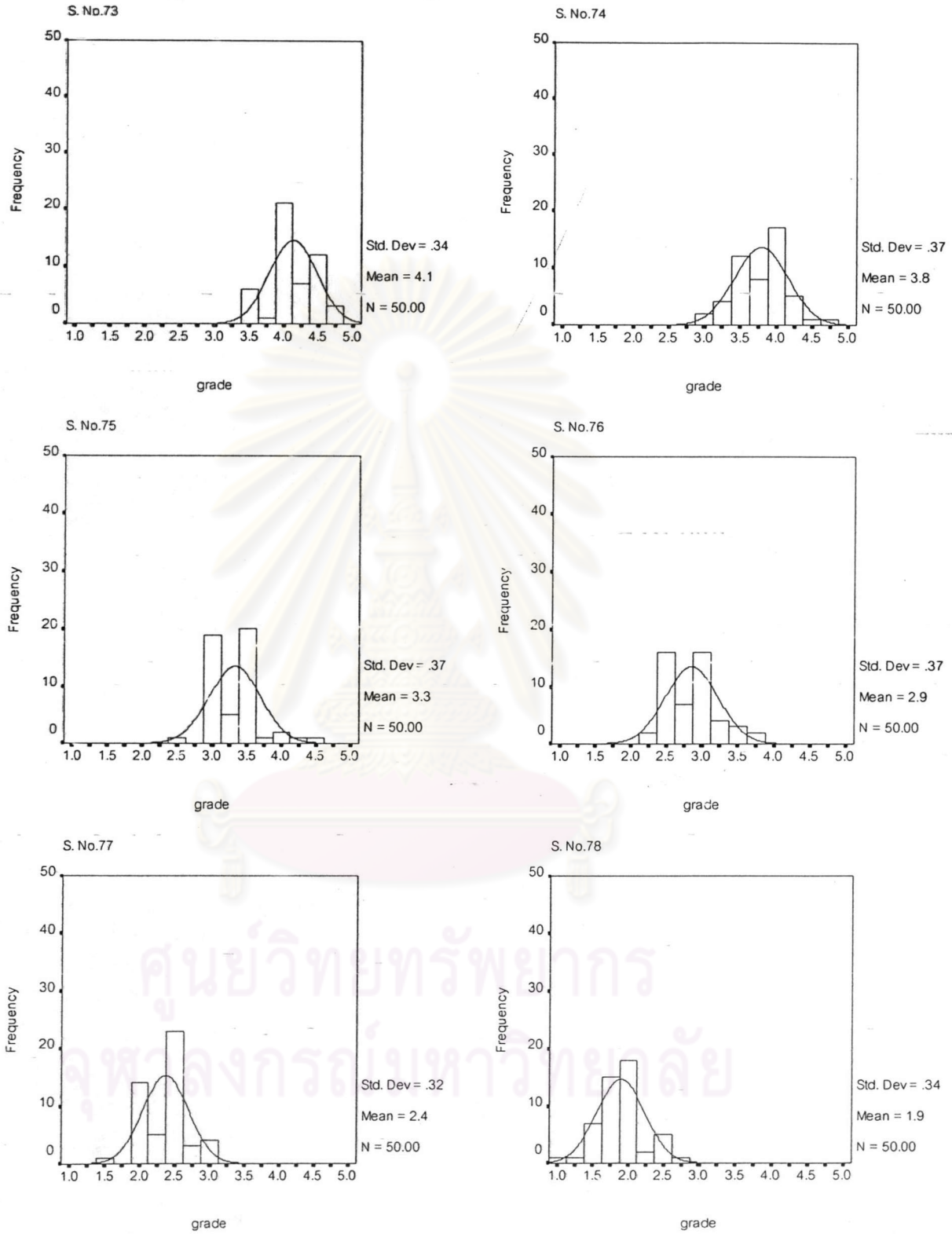

Figure D Visual results of staining assessment (continued)

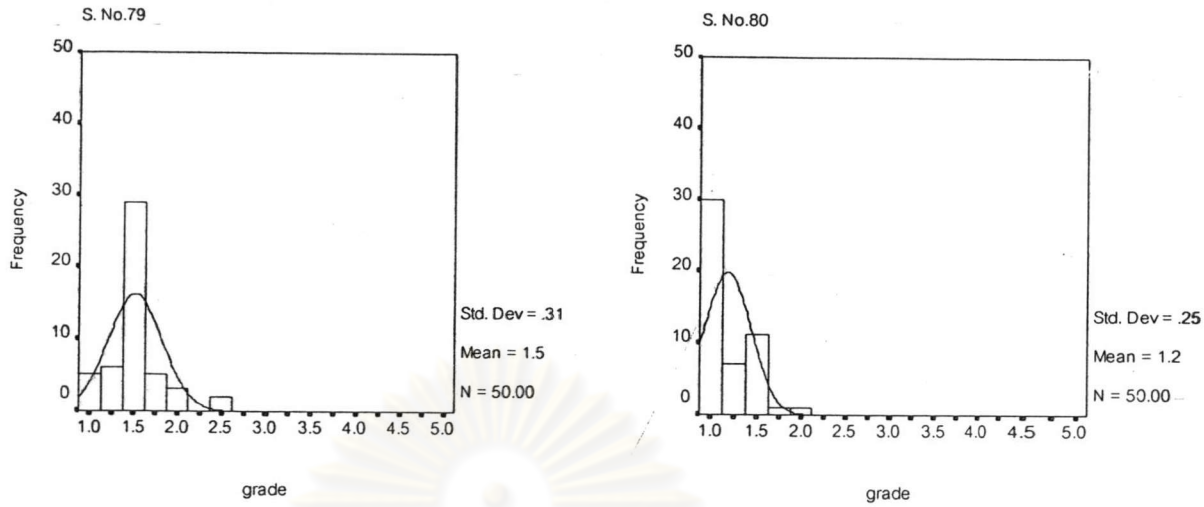

Figure D Visual results of staining assessment (continued)

APPENDIX E

INSTRUMENTAL ASSESSMENT VALUES OF CHANGE IN COLOUR ASSESSMENT

Table E Instrumental assessment values of change in colour assessment

sp. no.	CIELAB	CMC(1:1)	CMC(2:1)	ISO	$N_C^{\#}$	F_C
1	4.5	4.5	4.5	4.5	4.93	4.18
2	4	4	4.5	4	4.09	3.56
3	3.5	4	4	3.5	3.75	3.36
4	3.5	4	4	3.5	4.02	3.62
5	4	4	4.5	4	4.26	3.72
6	5	5	5	5	5.45	4.78
7	4	4	4.5	4	4.04	3.61
8	2	2.5	3.5	2	2.55	2.08
9	4.5	4.5	4.5	4.5	4.95	4.26
10	4.5	4.5	4.5	4.5	5.14	4.32
11	4.5	4	4.5	4.5	4.73	4.07
12	2.5	2.5	3.5	2.5	3.35	2.87
13	4.5	4.5	4.5	4.5	4.94	4.43
14	4	4.5	4.5	4.5	4.39	4.24
15	3	4	4	3.5	3.48	3.47
16	2.5	3.5	3.5	3	3.16	3.14
17	4.5	4.5	4.5	4.5	5.37	4.60
18	4.5	4.5	4.5	4.5	5.26	4.61
19	3.5	4	4.5	3.5	3.76	3.67
20	1.5	2	3	2	2.14	1.67
21	4.5	4.5	4.5	5	5.22	4.79
22	4	4.5	4.5	4.5	4.52	4.42
23	2.5	4	4	4	3.62	3.30
24	1.5	2.5	2.5	2.5	2.23	2.27
25	4.5	4.5	4.5	4.5	4.71	4.04
26	4	4	4.5	4	3.86	3.35
27	3.5	4	4	3.5	3.59	3.41
28	2.5	3	3	2.5	2.73	2.62
29	4.5	4.5	4.5	4.5	5.16	4.46
30	4	4	4.5	4	4.20	3.79
31	4	4	4.5	4	4.09	3.71
32	2.5	2.5	2.5	2.5	2.93	3.01
33	5	5	5	5	5.46	4.78
34	3	3	4	3	3.78	3.31
35	3	2.5	3.5	3	3.37	2.96
36	1.5	1.5	2	1.5	1.87	1.56
37	4	4.5	4.5	4	4.73	4.23
38	4	4.5	4.5	4	4.26	4.09
39	4	4.5	4.5	4	4.25	4.00
40	2.5	3	3.5	2.5	2.56	2.75
41	4.5	4.5	4.5	4.5	5.20	4.58
42	4.5	4.5	4.5	4.5	4.85	4.29
43	3.5	3.5	4	3.5	3.58	3.46
44	2	2.5	3	2.5	2.48	2.42
45	5	5	5	5	5.31	4.76
46	4	4	4.5	4	4.20	4.00
47	3	3.5	4	3	3.60	3.45
48	1.5	2	2.5	1.5	1.97	1.70
49	4.5	4.5	4.5	4.5	4.39	3.72
50	5	4.5	5	5	5.30	4.52
51	4.5	4.5	4.5	4.5	4.55	4.02
52	3.5	3	3	3.5	3.34	3.11
53	4.5	4.5	4.5	4.5	4.92	4.21
54	4	4	4.5	4	3.97	3.66
55	3	3	4	3	3.08	2.92
56	2	2.5	3	2	2.19	2.01
57	4.5	4.5	4.5	4.5	4.92	4.30
58	4.5	4	4.5	4.5	4.55	4.02
59	2.5	2	3	2.5	2.71	2.50
60	1.5	1	2	1.5	1.77	1.19

Table E Instrumental assessment values of change in colour assessment (continued)

sp. no.	CIELAB	CMC(1:1)	CMC(2:1)	ISO	$N_C^{\#}$	F_C
61	4.5	4.5	4.5	4.5	4.11	4.05
62	4	4	4	4	3.57	3.68
63	4	4	4	4	3.41	3.53
64	3	3	3	3	1.85	2.82
65	4.5	4.5	4.5	4.5	4.66	4.09
66	4.5	4.5	4.5	4.5	4.46	4.01
67	3	3	4	3	3.19	2.99
68	2.5	2.5	3.5	2.5	2.77	2.54
69	4.5	4.5	4.5	4.5	4.24	4.09
70	4	4.5	4.5	4.5	4.29	4.09
71	3	3.5	4	3.5	3.01	3.21
72	2	2.5	3	2	2.08	2.15
73	4.5	4.5	4.5	4.5	4.90	3.98
74	4.5	4.5	4.5	4.5	4.60	3.76
75	3.5	3.5	4	3.5	3.53	2.81
76	3	3	3	3	3.79	2.86
77	4.5	4.5	4.5	4.5	5.07	4.36
78	4.5	4.5	4.5	4.5	4.51	4.02
79	3	3	4	3	3.06	2.86
80	2	2.5	3.5	2	2.47	2.25
81	4	4	4.5	4	4.66	4.04
82	4	3.5	4.5	4	3.89	3.57
83	3	2.5	3.5	3	3.12	2.94
84	2	2	2.5	2	2.32	2.09
85	4.5	4.5	5	4.5	5.10	4.37
86	4.5	4.5	4.5	4.5	4.46	4.16
87	3.5	4	4	3.5	2.59	3.03
88	1.5	2	2.5	2	0.79	1.31
89	4.5	4.5	4.5	4.5	4.94	4.20
90	3.5	4	4.5	3.5	3.56	3.37
91	2.5	2.5	3.5	2.5	2.55	2.45
92	2	2	3	2	2.15	1.93
93	4.5	4.5	4.5	4.5	4.81	4.09
94	4.5	4.5	4.5	4.5	4.73	4.19
95	3.5	3.5	4	3.5	3.37	3.17
96	2	2	3	2	1.95	1.69
97	4.5	4.5	4.5	4.5	4.89	4.08
98	4.5	4.5	4.5	4.5	4.54	3.95
99	3.5	3.5	3.5	3.5	3.86	3.11
100	3	2.5	2.5	3	2.32	2.82
101	4	4	4.5	4	4.38	3.86
102	4.5	4.5	4.5	4.5	4.68	4.09
103	4.5	4.5	4.5	4.5	4.96	4.26
104	2	2.5	3.5	2	2.50	2.13
105	4	4	4	4	4.72	4.06
106	4	3.5	4.5	4	4.05	3.54
107	2.5	2.5	3.5	2.5	3.13	2.76
108	2	1.5	2.5	2	2.26	1.74
109	5	4.5	5	5	5.24	4.57
110	4.5	4.5	4.5	4.5	4.67	4.12
111	3.5	4	4	4	3.81	3.55
112	3	3.5	3.5	3	3.14	3.06
113	4.5	4.5	4.5	4.5	4.85	4.33
114	4	4	4.5	4	3.94	3.71
115	3	3.5	4	3.5	3.37	3.19
116	2	2	3	2	2.34	2.08
117	4.5	4.5	4.5	4.5	5.26	4.55
118	3.5	4	4	4	4.06	3.78
119	3.5	4	4.5	3.5	3.64	3.67
120	2.5	3	3.5	2.5	2.52	2.59

APPENDIX F

INSTRUMENTAL ASSESSMENT VALUES OF STAINING ASSESSMENT

Table F Instrumental assessment values of staining assessment

S. No.	CIELAB	SSR(UK)	SSR(ISO)	F_S	N_S
1	4.5	4.5	4.5	4.30	5.01
2	4	4	4	3.82	4.49
3	3.5	3.5	4	3.59	4.24
4	2.5	3	3	2.92	3.39
5	2	2.5	2.5	2.58	2.98
6	2	2.5	2.5	2.12	2.46
7	1.5	2	2	1.47	1.83
8	1	2	1.5	0.87	1.25
9	4.5	4	4.5	4.19	4.74
10	3.5	3.5	4	3.74	4.24
11	3	3.5	3.5	3.33	3.70
12	2.5	3	3	2.95	3.26
13	2	2.5	2.5	2.53	2.75
14	1.5	2	2	1.89	2.16
15	1	2	1.5	1.24	1.60
16	1	1.5	1.5	0.78	1.20
17	4.5	4	4.5	4.28	4.71
18	3	3.5	4	3.74	4.08
19	2.5	3	3	3.27	3.48
20	2	2.5	2.5	2.97	3.12
21	1.5	2	2	2.40	2.56
22	1	2	2	1.85	2.09
23	1	1.5	1.5	1.36	1.67
24	1	1.5	1.5	0.89	1.21
25	4.5	4	4.5	4.40	4.86
26	3.5	3.5	4	3.94	4.26
27	3	3.5	3.5	3.69	3.83
28	2	2.5	2.5	3.04	2.98
29	1.5	2.5	2.5	2.65	2.54
30	1.5	2	2	2.18	2.05
31	1	2	1.5	1.53	1.45
32	1	1.5	1.5	1.25	1.21
33	4.5	4	4.5	4.42	5.43
34	3.5	3.5	4	3.90	4.28
35	3	3.5	3.5	3.55	3.80
36	2	3	3	2.92	2.94
37	2	2.5	2.5	2.41	2.34
38	1.5	2	2	2.06	2.01
39	1	2	2	1.59	1.51
40	1	2	1.5	1.14	1.07
41	4	4	4.5	4.32	5.12
42	3.5	3.5	4	3.82	4.24
43	2.5	3	3.5	3.29	3.51
44	2.5	3	3	3.03	3.19
45	2	2.5	2.5	2.48	2.53
46	1.5	2.5	2	2.06	2.17
47	1.5	2	2	1.43	1.49
48	1	2	1.5	1.03	1.07
49	4.5	4.5	4.5	4.34	5.00
50	3.5	3.5	4	3.85	4.43
51	3	3.5	3.5	3.37	3.87
52	2.5	3	3	3.00	3.58
53	2	2.5	2.5	2.29	2.69
54	1.5	2.5	2	1.90	2.16
55	1.5	2	2	1.36	1.61
56	1	2	1.5	0.98	1.26
57	4.5	4	4.5	4.13	4.68
58	3.5	4	4	3.75	4.22
59	3	3.5	3.5	3.42	4.13
60	2.5	3	3	3.04	3.77

Table F Instrumental assessment values of staining assessment (continued)

S. No.	CIELAB	SSR(UK)	SSR(ISO)	F_S	N_S
61	2	2.5	2.5	2.45	3.08
62	1.5	2.5	2	1.99	2.54
63	1.5	2	2	1.59	2.12
64	1	2	1.5	1.11	1.60
65	4.5	4	4.5	4.10	4.63
66	4	4	4.5	4.01	4.64
67	3	3.5	3.5	3.42	4.36
68	2.5	3	3	2.81	4.08
69	2	3	2.5	2.61	3.80
70	1.5	2.5	2	1.86	2.70
71	1	2	1.5	1.29	2.18
72	1	2	1.5	0.87	1.71
73	4.5	4	4.5	4.14	4.89
74	4	4	4	3.84	4.56
75	3	3.5	3.5	3.48	4.46
76	2.5	3	3	3.01	3.73
77	2	2.5	2.5	2.54	3.26
78	1.5	2.5	2	1.91	2.49
79	1.5	2	2	1.42	1.99
80	1	2	1.5	1.03	1.52

VITA

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