Stat 8680: Applied Nonparametric Methods

Assignment 4

- **1. Problem 7.13**. (page 225)
- **2. Problem 7.15**. (page 225)

*7.13 Lubischew (1962) gives measurements of maximum head width in units of 0.01 mm for three species of *Chaetocnema*. Part of his data is given below. Use a Kruskal-Wallis test to see if there is a species difference in head widths.

Species 1	53	50	52	50	49	47	54	51	52	57	
Species 2	49	49	47	54	43	51	49	51	50	46	49
Species 3	.58	51	45	53	49	51	-50	51			

7.14 Biggins, Loynes and Walker (1987) considered various ways of combining examination marks where all candidates sat the same number of papers but different candidates selected different options from all those available. The data below are the marks awarded by four different methods of combining results for each of 12 candidates. Do the schemes give consistent ranking of the candidates? Is there any evidence that any one scheme treats some candidates strikingly differently than the way they are treated by other schemes so far as rank order is concerned? Is there any evidence of a consistent difference between the marks awarded by the various schemes?

Cand:	1	.2	ż	4	5.	6	Ϋ́	8	9	10	11	1,2
À	54.3	30.7	36.0	55.7	36.7	52.0	54.3	46.3	40.7	43.7	46.0	48.3
В	60.6	35.1	34.1						39.8			47.6
C	59.5	33.7	34.3	55.8	37.0	49.0	51.6	45.6	40.3	43.7	45.5	48.2
D	61.6	35.7	34.0	55.1	38.3	46.9	51.3	44.8	39.7	43.2	44.8	47.5

*7.15 Chris Theobald supplied the following data from a study of 40 patients suffering from a form of cirrhosis of the liver. One purpose was to examine whether there was evidence of association between spleen size and blood platelet count. Blood platelets form in bone marrow and are destroyed in the spleen, so it was thought that an enlarged spleen might lead to more platelets being eliminated and hence to a lower platelet count. The spleen size of each patient was found using a scan and scored from 0 to 3 on an arbitrary scale, 0 representing a normal spleen and 3 a grossly enlarged spleen. The platelet count was determined as the number in a fixed volume of blood. Do these data indicate an association between spleen size and platelet count in the direction anticipated by the experimenter?

Size													
0.												395	481
1	65	105	.121	150	158	170.	214	235	238	255	265	390	
2	33	70	87	.109	114	132	150	179	184	241	323		
.3	79	84	94	259					·				