Stat 762 **Spring 2006**

Assignments for Chapter 6

Section	Problems
6.2.1	1, 3
6.2.2	9(d)*, A27, A28
6.2.3	13
6.2.4	10*, 20(a,e), 30
6.3, 6.4	Just read.

Additional Problems:

A27: Find a minimal sufficient statistic for the gamma(α, β) distribution.

A28: Let T_1 and T_2 be functions from $\mathcal{S}$ to $\mathcal{T}$. Show that $\mathcal{P}(T_2)$ is a refinement of $\mathcal{P}(T_1)$ iff $\exists g : \mathcal{T} \to \mathcal{T}$ such that $T_1 = g \circ T_2$. ($\mathcal{P}(T)$ denotes the partition of $\mathcal{S}$ consisting of the level curves of the function T.)

*Notes, hints:

6.9(d): Note that $(X_{(1)}, \ldots, X_{(n)})$ is always sufficient. Is it minimal sufficient?

6.10: Find a function $g(T)$ which violates the definition of completeness (i.e., satisfies the premise but not the conclusion).

Extra Credit Problems:

ECR12 Fill in the details of the proof of Theorem 5.5.24 (Delta Method). In addition to the details mentioned in Problem 5.43, I believe you need to show that $\sqrt{n}\, R(Y_n) \xrightarrow{P} 0$.

ECR13 For any partition $\mathcal{P}$ of a set $\mathcal{S}$ let $\mathcal{F}(\mathcal{P})$ denote the sigma-algebra generated by $\mathcal{P}$ (i.e., the smallest sigma-algebra of subsets of $\mathcal{S}$ containing $\mathcal{P}$). Show that $\mathcal{F}(\mathcal{P}_1) \subset \mathcal{F}(\mathcal{P}_2) \Rightarrow \mathcal{P}_2$ is a refinement of $\mathcal{P}_1$. Show that the converse is false.