系所組別： 會計學系乙組、財務金融研究所

考試科目： 統計學　　　　　　　　　　　　　　　　　考試日期：0220，節次：3

※ 考生請注意：本試題 □可　☑不可　使用計算機

1. Comparative analysis (60%):

請先針對個別名詞清楚定義(或:舉一個簡例)，而後相互比較其相同/相異點。需同時

回答上述兩點，否則不予計分:

(a) Classical inference vs. Bayesian inference (10%)
(b) Normal distribution vs. beta distribution (10%)
(c) Interval estimation vs. testing hypotheses (10%)
(d) Mutual exclusion vs. independence (10%)
(e) Analysis of variance (ANOVA) vs. regression analysis (10%)
(f) Weak exogeneity vs. strong exogeneity (10%)

2. Let $x_1, x_2, ..., x_n$ be a sample of size n from a normal distribution $N(u, \sigma^2)$. Consider the following point estimators of u: (20%)　（需詳列你/妳的證明過程，否則不予計分）

$$\hat{u}_1 = \bar{x}, \text{ the sample mean}$$

$$\hat{u}_2 = x_1$$

$$\hat{u}_3 = \frac{x_1}{2} + \frac{1}{2(n-1)}(x_2 + x_3 + ..., + x_n)$$

(a) Which of these are unbiased? (5%)
(b) Which of these are consistent? (5%)

(c) Find the relative efficiencies: $\hat{u}_1$ to $\hat{u}_2$, $\hat{u}_1$ to $\hat{u}_3$, and $\hat{u}_2$ to $\hat{u}_3$. What can you conclude from this? (5%)

(d) Are all unbiased estimators consistent? (2%)

(e) Is the assumption of normality needed to answer parts (a) to (d)? For what purpose is this assumption needed? (3%)

3. Regarding the multicollinearity problem (20%):

(a) What are the consequences? (5%)
(b) How do we detect this problem? (5%)
(c) What are the solutions? (10%)