淡江大學 98 學年度碩士班招生考試試題

系別：財務金融學系 B 組　　科目：統　計　學

准帶項目請打「V」	
V	簡單型計算機

本試題共 1 頁，5 大題

1. (15 points) Suppose that Y_1, Y_2, Y_3 is a sample or observations from a $N(\beta,\sigma^2)$ population, but that Y_1, Y_2 and Y_3 are not independent. In fact suppose, $\text{cov}(Y_1,Y_2)=\text{cov}(Y_2,Y_3)=\text{cov}(Y_1,Y_3)=0.5\sigma^2$, Let $\bar{Y}=(Y_1+Y_2+Y_3)/3$

(a) Find $E(\bar{Y})$.

(b) Find $\text{var}(\bar{Y})$.

2. (20 points) Suppose that X and Y are continuous random variables with the joint probability density function.

$$f(x,y)=\begin{cases}k(x+y) & for \quad 0\le x\le 1, 0\le y\le 2\\ 0 & otherwise\end{cases}$$

(a) Find k

(b) Find the var(X), var(Y)

(c) Find the E (XY), cov (XY)

(d) Are X and Y independent? Explain why?

3. (15 points) Algebraically show that the fitted least squares line $\hat{y}_t=b_1+b_2x_t$ passes through the point of the means, $(\bar{x},\bar{y})$

4. (30 points) Consider the following estimated regression equation:

$$\underset{(1.23)\ (0.117)}{y_t=5.83+0.869x_t} \qquad R^2=0.756$$

Rewrite the estimated equation that would result if:

(a) all values of x_t were divided by 10 before estimation.

(b) all values of y_t were divided by 10 before estimation.

(c) all valued of y_t and x_t were divided by 10 before estimation.

5. (20 points) Examine whether the following statements are **true** or **false.** Explain your answer briefly.

(a) A significance level tells you how important the null hypothesis is.

(b) It is always better to use a significance level of 0.01 than a level of 0.05.