

國立高雄第一科技大學 97 學年度 碩士班 招生考試 試題紙

系 所 別：財務管理系

組 別：不分組

考科代碼：4301

考 科：統計學

注意事項：

- 1、本科目可使用本校提供之電子計算器。
- 2、請於答案卷上規定之範圍作答，違者該題不予計分。

1. Let X be a continuous random variable whose probability density function is

$$f(x) = \begin{cases} (x+2)/18 & -2 \leq x \leq 4 \\ 0 & \text{otherwise} \end{cases}$$

Find the mean and variance of X . 【10%】

2. A sample of executives was surveyed about their loyalty to the company. One of the questions was, "If you were given an offer by another company equal to or slightly better than your present position, would you remain with the company or take the other position?" The responses of the 200 executives in the survey were cross-classified with their length of service with the company.

Loyalty	Length of Service			
	Less than 1 year (B1)	1-5 years (B2)	6-10 years (B3)	More than 10 years (B4)
Would remain (A1)	10	30	5	75
Would not remain (A2)	25	15	10	30

- a. What is the probability of randomly selecting an executive who is loyal to the company (would remain) and who has more than 10 years of service? 【5%】
- b. What is the probability of randomly selecting an executive who is loyal to the company (would remain) or who has less than 1 year of service? 【5%】

3. Consider the two stocks with the following results:

Stock	Expected Return	Beta	Firm-Specific Standard Deviation
A	13%	0.8	30%
B	18%	1.2	40%

The market index has a standard deviation of 22% and the risk-free rate is 8%.

- What are the standard deviations of Stocks A and B? 【10%】
- Suppose that we were to construct a portfolio with proportions:

	Stock A	Stock B	T-bills
weights	30%	45%	25%

Compute the expected return, standard deviation, beta, and nonsystematic standard deviation of the portfolio. 【20%】

4. The following is a partial analysis of variance table. Please complete the table. 【25%】

Source	Sum of squares	Degree of freedom	Mean square	F value
Model	2600	(a)	(b)	(c)
Error	(d)	8	25	
Total	(e)	9		

5. Consider a simple linear regression model is given as:

$$y = \beta_0 + \beta_1 x + e$$

The dependent variable y is explained by a component that varies systematically with the independent variable x and by the random error term e . Show that the formulas for the least squares estimates of β_1 and β_0 . 【25%】