

世新大學九十五學年度碩士班招生考試試題卷

第 1 頁共計 2 頁

系所組別	考試科目
財務金融學系	統計學

※考生請於答案卷內作答

- I. In a study to determine whether gender affects salary offers for graduate MBA students. Let X (in thousands of dollars) denote the annual salary for female, and Y the annual salary for male, with $E(X) = \mu_X$, $E(Y) = \mu_Y$ and $Var(X) = Var(Y) = \sigma^2$. 30 female students and 36 male students are selected with $\bar{x} = 28$, $\bar{y} = 29.7$, $s_x^2 = 3$ and $s_y^2 = 4$.
- Set up the null hypothesis and the alternative hypothesis. (5%)
 - What is your conclusion, with type I error probability $\alpha = 0.05$? (5%)
 - p-value=? (5%)
- II. The chief financial officer in a company believes that including a stamped self-addressed (SSA) envelop in the monthly invoice sent to customers will decrease the amount of time it take for customers to pay their monthly bills. Currently, customers return their payments in 26 days on the average, with a standard deviation of 5 days. They believe that an improvement of 3 days on the average will cover the costs of envelopes. Let μ denote the mean return time of payment with SSA envelopes. A random sample of 225 customers was selected and SSA envelopes were included with their invoice packs.
- Set up the null hypothesis and the alternative hypothesis. (5%)
 - Find the rejection region with type I error probability $\alpha = 0.05$. (5%)
 - What is the probability that the chief officer belief's will be accepted, when $\mu = 22.5$. (5%)
- III. How well do airline companies serve their customers? A study showed the customer rating: 3% excellent, 28% good, 45% fair, and 24% poor. In a follow-up study of service by telephone companies, assume that a sample of 400 adults found and the following customer rating: 24 excellent, 124 good, 172 fair, and 80 poor. Is the distribution of the customer ratings for telephone companies different from the distribution of customer rating for airline companies?
- Set up the null hypothesis and the alternative hypothesis. (5%)
 - What is your conclusion, with type I error probability $\alpha = 0.05$? (15%)
- IV. A car dealer wants to find the relationship between the odometer reading (x) and the selling price (y) of used cars. A regression line, $y_i = \alpha + \beta x_i + \varepsilon_i$, $\varepsilon_i \stackrel{iid}{\sim} N(0, \sigma^2)$. Let b denote the least square estimate of β .
- $b = ?$ (5%)
 - $E(b) = ?$ (Sketch the proof!) (5%)
 - $Var(b) = ?$ (Sketch the proof!) (5%)
- V. A trucking company whose major business involves deliveries throughout its local area. To develop better work schedule, the managers want to estimate the total daily travel time for their drivers. The manager believed that the total daily travel time would be closely related to the number of miles traveled and the number of deliveries. A simple random sample of 11 driving assignment is provided and a multiple regression analysis are performed. The regression equation is

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