

O.K.

國立中央大學94學年度碩士班考試入學試題卷 共 2 頁 第 1 頁  
所別：財務金融學系碩士班甲乙組 科目：統計

- (25%) 假設 AIDS 血液測試的正確度是99%。也就是假若你有 AIDS，檢驗的結果有99%的機會是陽性反應，1%是陰性反應。而假若你沒有 AIDS，檢驗的結果有99%的機會是陰性反應，1%是陽性反應。總之，不論你是否得了愛滋，檢驗錯誤的機會是1%。現在，假若你做了檢查，天啊！結果是陽性反應，那麼你得到愛滋的機率是多少？(假設平均而言，每1000人中有一人有 AIDS。)
- 假若一項對250位愛滋病檢測的研究調查發現罹患愛滋病與高危險群間有如下的關係：

		罹患愛滋病	
		有	沒有
高危險群	是	160	40
	不是	40	10

回答以下問題，並解釋：

- (10%) 這四格數字中 (左上、左下、右上、右下) 的哪一格對於決定二者是否有關係是需要的?(可複選)
  - (5%) 接續上題，你覺得愛滋病與高危險群間有關係嗎？有、沒有、或不確定？
- (10%) 下面這四張卡片一面為字母，另一面是數字。

E 4 K 7

有人告訴你：「任一張卡片只要一面的字是母音，則另一面的數字就是偶數。」請問：你需要翻動哪些卡片才能判定這個人是否說謊呢？為什麼?(複選題)

- (A) E (B) 4 (C) K (D) 7

注意：背面有試題

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4. NCU Inc. conducts an annual audit of its financial records. An internal control policy for the company is that a check be issued only after the accounts payable manager initials the invoice. The tolerable exception rate for this internal control is 0.04. Suppose that during the audit, a sample of 300 invoices is examined and 11 invoices are found to violate the internal control.
- (a) (5%) Calculate the upper bound for a 95% one-sided confidence interval estimate for the rate of noncompliance.
- (b) (10%) Based on (a), what should the auditor conclude?
5. (15%) How does testing the significance of the entire regression model differ from testing the contribution of each independent variable in the multiple regression model?
6. An annual time series with 17 consecutive values is obtained. A third-order autoregressive model is fitted to the data and has the following estimated parameters and standard deviations:
- |                  |                  |                  |              |
|------------------|------------------|------------------|--------------|
| $a_0 = 4.5$      | $a_1 = 1.80$     | $a_2 = 0.80$     | $a_3 = 0.24$ |
| $S_{a_0} = 0.50$ | $S_{a_1} = 0.30$ | $S_{a_2} = 0.10$ |              |
- (a) (5%) At the 0.05 level of significance, test the appropriateness of the fitted model.
- (b) (5%) The three most recent observations are:  
 $Y_{15} = 23$     $Y_{16} = 28$     $Y_{17} = 34$   
Forecast the series for the next year and following year
- (c) (10%) Write an equation to indicate how you would forecast  $j$  years into the future.