



臺中健康暨管理學院
九十三年學年度碩士班招生考試試題紙

系所別	組別	考試科目	考試日期	時間	備註
生物資訊研究所碩士班	--	生物統計學	93.5.3	13:30-15:10	共一頁

公告用

(1) 試舉例說明下類四種變項之不同處？ (20%)

- a、類別變項 (nominal variable)
- b、序位變項 (ordinal variable)
- c、等距變項 (interval variable)
- d、等比變項 (ratio variable)

(2) 簡述何謂 a、第一類誤差 (type-I error) (α -error) ? (10%)

b、第二類誤差 (type-II error) (β -error) ? (10%)

(3) $\bar{X} = 5, \bar{Y} = 3$

$$S_X^2 = \frac{\sum_{i=1}^n (X_i - \bar{X})^2}{n-1} = 10, S_Y^2 = \frac{\sum_{i=1}^n (Y_i - \bar{Y})^2}{n-1} = 4, S_{XY} = \frac{\sum_{i=1}^n (X_i - \bar{X})(Y_i - \bar{Y})}{n-1} = 6,$$

求迴歸方程式 $\hat{Y}_i = a + bX_i$ ，且求 $X = 4$ 時之 \hat{Y} 值？ (20%)

(4) 已知 $\bar{X}_1 - \bar{X}_2 \sim N\left(\mu_1 - \mu_2, \frac{\sigma^2}{n_1} + \frac{\sigma^2}{n_2}\right)$, $\sigma^2 = 8$, $n_1 = n_2 = 9$, $\bar{x}_1 = 84.3$, $\bar{x}_2 = 82.1$

檢定 $H_0: \mu_1 \leq \mu_2$ vs $H_1: \mu_1 > \mu_2$ at $\alpha = 0.05$ (20%)

(5) 已知 $\bar{X}_1 - \bar{X}_2 \sim N\left(\mu_1 - \mu_2, \frac{\sigma^2}{n_1} + \frac{\sigma^2}{n_2}\right)$,

$$n_1 = n_2 = 9, \bar{x}_1 = 84.3, \bar{x}_2 = 82.1, S_1^2 = 9, S_2^2 = 7$$

檢定 $H_0: \mu_1 \leq \mu_2$ vs $H_1: \mu_1 > \mu_2$ at $\alpha = 0.05$ (20%)

【註： $P(Z > z_\alpha) = \alpha$, $z_{0.05} = 1.645$, $P(T > t_\alpha(df)) = \alpha$, $t_{0.05}(16) = 1.746$, $t_{0.05}(18) = 1.734$ 】