

長庚大學期中、期末考試答案用紙

科目 \_\_\_\_\_

學年度 第 \_\_\_\_\_ 學期 考 資 工 系 姓名 鄭楷新 學號 B0729028

1. a)  $H_0: \mu \leq 70$   $H_1: \mu > 70$   $z = \frac{\bar{x} - \mu}{s/\sqrt{n}} = \frac{75 - 70}{\frac{15}{\sqrt{5}}} = \frac{15}{\sqrt{5}} = 1.875$   $\alpha = 0.05$   
 $P(Z > 1.875) = 0.0301 \Rightarrow$  拒絕  $H_0$

b)  $S = 9$   
 $z = \frac{\bar{x} - \mu}{s/\sqrt{n}} = \frac{71.875 - 70}{\frac{9}{\sqrt{5}}} = 1$   $P = P(Z > 1) = 0.1587 \Rightarrow$  拒絕

2. a)  $E(\hat{p}) = E\left(\frac{x}{n}\right) = \frac{1}{n} E(x) = \frac{1}{n} n \cdot p = p$

b)  $Var(\hat{p}) = Var\left(\frac{x}{n}\right) = \frac{1}{n^2} Var(x) = \frac{1}{n^2} n \cdot p \cdot q = \frac{pq}{n}$   
 $std(\hat{p}) = \sqrt{\frac{pq}{n}}$

c)  $\hat{p} = \frac{60}{100} = 0.6$

$0.6 - 1.96 \times \sqrt{\frac{0.6 \times 0.4}{100}} = 0.6 - 0.09602 = 0.50398$

$0.6 + 0.09602 = 0.69602$

$[0.50398, 0.69602]$

d)  $0.6 - 1.645 \times \sqrt{\frac{0.6 \times 0.4}{100}} = 0.6 - 0.08059 = 0.51941$

$0.6 + 0.08059 = 0.68059$

$[0.51941, 0.68059]$

3. a)  $P(X=66) = \sum_{x=0}^{66} b(x; 100, \frac{1}{6})$

b)

c)

d) 不拒絕接受

(請翻面繼續作答)