6.7

(1) $1-\alpha=0.98$, $\frac{\alpha}{2}=0.025$, $z_{\frac{\alpha}{2}}=z_{0.025}=1.96$

$\Rightarrow \bar{x} \pm z_{\frac{\alpha}{2}}\frac{s}{\sqrt{n}} = 16.33 \pm 1.96\ \frac{4.29}{\sqrt{36}} = 16.33 \pm 1.40$

即 (14.93, 17.73)

(2) $1-\alpha=0.90$, $\frac{\alpha}{2}=0.05$, $z_{\frac{\alpha}{2}}=z_{0.05}=1.645$

$\Rightarrow \bar{x} \pm z_{\frac{\alpha}{2}}\frac{s}{\sqrt{n}} = 16.33 \pm 1.645\ \frac{4.29}{\sqrt{36}} = 16.33 \pm 1.18$

即 (15.15, 17.51)

6.9

(1) μ 之估計為 $\bar{x}=15,291.67$

(2) $1-\alpha=0.90$, $\frac{\alpha}{2}=0.05$, 自由度 $n-1=12-1=11$

$t_{0.05}(11)=1.796$ $\Rightarrow \mu$ 之 90% 信賴區間 =

$$\bar{x} \pm t_{\frac{\alpha}{2}}(n-1)\frac{s}{\sqrt{n}} = 15,291.67 \pm 1.796\ \frac{197.52}{\sqrt{12}}$$

$$= 15,291.67 \pm 102.41$$

$\Rightarrow$ (15,189.26, 15,394.08)

$\rightarrow$ 每個省電燈泡的平均壽命為 15,189.26 ~ 15,394.08 之間 N1時

(3) μ 之 90% 的區間長度為

$$15,394.08 - 15,189.26 = 204.82$$

或者 $2t_{\frac{\alpha}{2}}(n-1)\frac{s}{\sqrt{n}} = 2 \times t_{0.05}(11)\frac{197.52}{\sqrt{12}}$

$$= 2 \times 102.41$$

$$= 204.82$$

[6.19]

$1-\alpha=0.95$, $z_{\frac{\alpha}{2}}=z_{0.025}=1.96$, $e=0.01$, $s=0.05$

$$n=\left(\frac{z_{\frac{\alpha}{2}}s}{e}\right)^2=\left(\frac{1.96\times0.05}{0.01}\right)^2=96.04$$

$\Rightarrow n=97$ $\quad 97-35=62$ 袋.

应再抽.