長庚大學期中、期末考試答案用紙　　科目＿＿＿＿

＿＿學年度 第＿學期＿考＿＿＿系 姓名黃俊霖 學號B07Z9013

{1}

a) $Z = \frac{X-u}{\sigma}$, $f_z(x) = e^{-\frac{1}{2}x^2} \cdot \frac{1}{\sqrt{2\pi}}$

$E(Z) = 0$, $E(Z-u)^2 = 1$

$E(Z_0+Z_1) = 1$; $E(Z_0+Z_1-u)^2 = 1+1 = 2$ #

b) $Q_1 = Z^2$: $\chi^2(df=1)$ #

c) $Q_2 = Z_1^2 + Z_2^2$: $\chi^2(df=2)$ #

{2} (a) $P(Z_0+Z_1 \le 1) = 0.6914$, (1-st.norm.sf(1,0,2))

(b) $P(Z_0^2 \le 1) = 0.8413$, (1-st.norm.sf(1,0,1))

(c) $P(Z_1^2+Z_2^2 \le 1) = 0.6914$, (1-st.norm.sf(1,0,2))

(d) $P\left(\frac{Z_1}{Z_1} \le 1\right)$

{3} a) $u_A = 65$, $\frac{\sigma_A^2}{n} = \frac{3^2}{25} = \frac{9}{25}$

$Z = \frac{\bar{x}_A - 65}{\frac{3}{5}}$

$P(\bar{x}_A \le 64) = P\left(\frac{\bar{x}_A - 65}{\frac{3}{5}} \le \frac{64-65}{\frac{3}{5}}\right) = P(Z \le -1.67) \doteq 0.04746 =$ 4.7%

（請翻面繼續作答）