

統計學(一)第 2 次小考參考解答

1. 名詞解釋(10%)

a. Standard Normal Probability Distribution is a normal distribution with a mean of zero and a standard deviation of one.

b. A continuity correction factor is used when you use a continuous probability distribution to approximate a discrete probability distribution. For example, when you want to use the normal to approximate a binomial.

2. 簡答題(50%)

a. 10 分鐘來一班公車，則等待公車到來之時間可用均勻分配描述；

擲一公正硬幣所得到之結果可用(離散型)均勻分配描述。

b. 全台灣男性身高可用常態分配描述；

統計學小考成績可用常態分配描述。

c. $Z = \frac{X - \mu}{\sigma}$ ，去單位，方便查詢機率

d. When using the normal approximation to the binomial, we set $\mu = np$ ， $\sigma = \sqrt{np(1 - p)}$ ，in the definition of the normal curve. In cases where $np \geq 5$ ，and $n(1 - p) \geq 5$ ，the normal distribution provides an approximation of binomial probabilities.

e. Providing decision-making information. Namely, once a probability

distribution is established for a particular application, it can be used to obtain probability information about the problem.

3. (20%)

a.(7%) $P\left(Z < \frac{3.50-3.73}{0.25}\right) = P(Z < -0.92) = 1 - P(Z < 0.92) = 0.1788$

b.(7%) $P\left(Z < \frac{3.5-3.4}{0.2}\right) = P(Z < 0.5) = 0.6915$ *i. e.* 69.15%

c.(6%) $P\left(Z > \frac{3.73-3.40}{0.2}\right) = P(Z > 1.65) = 1 - P(Z < 1.65) = 0.0495$

4. a.(7%) $0.3669 - 0.0322 = 0.3347$

b.(7%) 0.3192

c.(6%) 0.1492