No.: Date:

Assignment 3

Question 1

1.a) $\hat{p} = \frac{345 + 420 + 390 + 410 + 380 + 400 + 430 + 360 + 375 + 390 + 405 + 415 + 400 + 385 + 395}{15}$

$= \frac{5900}{15}$

$= 393.3333$

b) $s = \sqrt{\frac{(345 - 393.3333)^2 + (420 - 393.3333)^2 + (390 - 393.3333)^2 + (410 - 393.3333)^2 + (380 - 393.3333)^2 + (400 - 393.3333)^2 + (430 - 393.3333)^2 + (360 - 393.3333)^2 + (375 - 393.3333)^2 + (390 - 393.3333)^2 + (405 - 393.3333)^2 + (415 - 393.3333)^2 + (400 - 393.3333)^2 + (385 - 393.3333)^2 + (395 - 393.3333)^2}{(15 - 1)}}$

$= \sqrt{\frac{7083.3333}{14}}$

$= 22.50$

$df = 15 - 1 = 14$; confidence level = 95% ($\alpha = 0.05$)

t critical value = 2.145

$393.3333 \pm 2.145 \left(\frac{22.50}{\sqrt{15}} \right)$

$= (380.87, 405.80)$

∴ We are 95% confident mean monthly grocery expenditure from a specific neighbourhood is between RM 380.87 and RM 405.80

No.: Date:

Question 2

a) $H_0 = \mu = 5$

$H_1 : \mu < 5$

b) $\mu = 4.6$

$\sigma = 1.2$

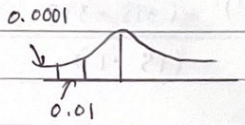
$\alpha = 0.01$

$n = 500$

$$z = \frac{\bar{x} - \mu}{\frac{\sigma}{\sqrt{n}}} = \frac{4.6 - 5}{\frac{1.2}{\sqrt{500}}} = -7.45$$

c) $\alpha = 0.01$

d)



$z = 0.5 - 0.4999$

$= 0.0001$

$-0.01 > -0.0001$

reject H_0 statement

e) There is enough evident to support claim where the average waiting time for customer in the bank's queue is less than 5 minutes