UNIVERSITI TEKNOLOGI MARA
ANSWER ASSESSMENT 2

COURSE	**:**	**STATISTICS FOR BUSINESS AND SOCIAL SCIENCES**
COURSE CODE	**:**	**STA404**
EXAMINATION	**:**	**JAN 2021**
TIME	**:**	**1 HOUR 30 MINUTES**

QUESTION 1

$H_0: \mu = 98.6$ (claim) ✓

$H_1: \mu \neq 98.6$ ✓

From calculator

$\bar{x} = 98.2625$ ✓

$s = 0.7009$ ✓

Test value:

$$t = \frac{\bar{x} - \mu}{s/\sqrt{n}}$$ ✓

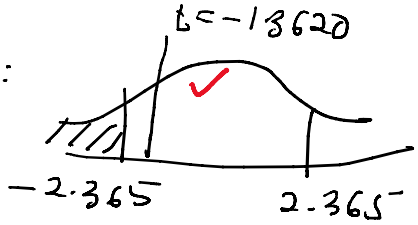
$$= \frac{98.2625 - 98.6}{0.7009/\sqrt{8}} = -1.3620$$ ✓ ✓

Critical value: $t_{\frac{0.05}{2}, df=7} = \pm 2.365$ ✓

$df = 7$

6

Decision:



, Accept H_0 ✓

Conclusion: There is enough evidence to conclude that the mean temperature of adults is 98.6°F. ✓ ✓

QUESTION 2

a)

$$A = \frac{(110-111.8)^2}{111.8} + \frac{(94-92.1)^2}{92.1} + \cdots + \frac{(27-26.9)^2}{26.9}$$

$$= 10.2538 / 0.254$$

$$B = (2-1)(3-1) = 2$$

b)

H_0: The age category is not related to gender.

H_1: The age category is related to gender

c)

$\alpha = 0.05$

p-value = 0.879

Since p-value $> \alpha$, Fail to Reject H_0

There is no enough evidence to conclude that the age category is related to gender among noter vehicle crash deaths.

QUESTION 3

a)

$\Sigma x^2 = 746$

$\Sigma x = 76$

$\Sigma y^2 = 1602$

$\Sigma y = 120$

$\Sigma xy = 749$

$n = 10$

$$r = \frac{749 - \frac{(76)(120)}{10}}{\sqrt{\left[746 - \frac{(76)^2}{10}\right]\left[1602 - \frac{(120)^2}{10}\right]}}$$

$= -0.9867$ *

There are strong negative linear relationship between number of hours practised and number of errors.

b)

$y = 19.356 - 0.968x$

For every 1 hour increase in number of hours of practiced each week, the number of errors decreased by 0.99.

c)

$y = 19.356 - 0.968(17)$

$= 2.9$ *

QUESTION 4

a)

mean difference $= 22.08 - 23.03$ ✓ 1 ✓ $\frac{1}{2}$

$= -0.95$ ✓

b)

$H_0 : \mu_1 = \mu_2$ ✓

$H_1 : \mu_1 \neq \mu_2$ ✓ 1

μ_1 = mean age of resident students

μ_2 = mean age of non-resident students

c)

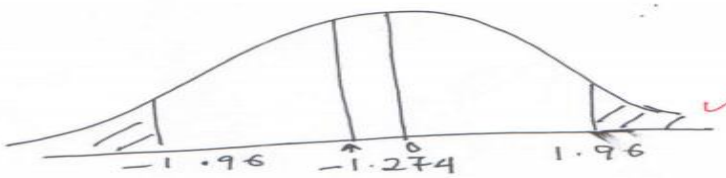
$$\text{Z-statistic} = \frac{-0.95 - 0}{\sqrt{\frac{(3.331)^2}{40} + \frac{(3.340)^2}{40}}}$$ ✓ ✓ ✓

$= -1.2737$

$= -1.274$ ✓ 2

d)

Critical value $= \pm 1.96$ ✓



✓ 2

∴ Accept H_0 ✓

Conclusion: There is no ✓ different in mean age between resident and non-resident students.

QUESTION 5

a) Paired sample test

b)

QUESTION 6

a)

$$SSB = \left(\frac{20^2}{4} + \frac{47^2}{4} + \frac{18^2}{4}\right) - \frac{(85)^2}{12} \quad 3$$

$$= 131.167 \#$$

$$X = 11 - 2 = 9 \# \quad 1$$

$$Y = \frac{65.583}{4.417} = 14.8478 = 14.848 \# \quad 2$$

b)

$H_0: \mu_A = \mu_B = \mu_C$

$H_1:$ At least one of the means is different.

Since p-value $= 0.001 < \alpha = 0.05$

$\therefore$ Reject H_0.

Conclusion: There is a difference in the diets programs. 4

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$$Y = \frac{MSB}{MSW} = \frac{\left(\frac{131.167}{2}\right)}{\left(\frac{39.750}{9}\right)} = 14.8489 \#$$

$$= 14.849 \#$$

END OF QUESTION PAPER