UNIVERSITI TEKNOLOGI MARA
ANSWER ASSESSMENT 1

COURSE	:	STATISTICS FOR BUSINESS AND SOCIAL SCIENCES
COURSE CODE	:	STA404
DATE OF EXAMINATION	:	25 NOVEMBER 2020
DURATION	:	30 MINUTES

QUESTION 1

a) T

b) F

c) F

d) T

e) T

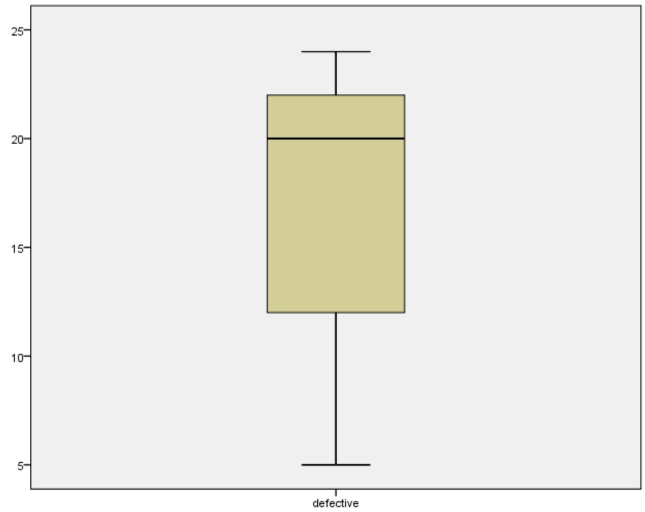
(5 marks)

QUESTION 2

a) mean = 252/15 = 16.8 , standard deviation = √38.6 = 6.2129

(2 marks)

b)



(2 marks)

c) The shape of the distribution is skewed to the left.

(1 mark)

QUESTION 3

a)

$$99\%CI = 115.35 \pm Z_{\frac{0.01}{2}}\left(\frac{20.44}{\sqrt{35}}\right)$$

$$99\%CI = 115.35 \pm (2.58)\left(\frac{20.44}{\sqrt{35}}\right)$$

$$99\%CI = 115.35 \pm 8.914$$

$$99\%CI = (106.436, 124.264)$$

(3 marks)

b) We can conclude that the customers not spent more than RM110 because 110 is included in the interval.

(2 marks)

QUESTION 4

a) **X** = 85.20 – 82.30 = 2.90
Y = 9

(2 marks)

b) 95% CI = (1.199, 4.601)

(1 mark)

c) There is enough evidence to conclude that their resting pulse rate has reduced after five weeks because 0 is not included in the interval

(2 marks)

END OF QUESTIONS

APPENDIX 1
SAMPLE MEASUREMENTS

Mean	$\bar{x} = \frac{\sum x}{n}$
Standard deviation	$s = \sqrt{\frac{1}{n-1}\left[\sum x^2 - \frac{\left(\sum x\right)^2}{n}\right]}$ or $s = \sqrt{\frac{1}{n-1}\left[\sum (x-\bar{x})^2\right]}$
Coefficient of Variation	CV = $\frac{s}{\bar{x}} \times 100\%$
Pearson's Measure of Skewness	Coefficient of Skewness = $\frac{3(\text{mean} - \text{median})}{\text{standard deviation}}$ OR $\frac{\text{mean} - \text{mode}}{\text{standard deviation}}$

CONFIDENCE INTERVAL

Parameter and description	A (1 - α) 100% confidence interval
Mean μ, for large samples, σ^2 unknown	$\bar{x} \pm z_{\alpha/2} \frac{s}{\sqrt{n}}$
Mean μ, for small samples, σ^2 unknown	$\bar{x} \pm t_{\alpha/2} \frac{s}{\sqrt{n}}$; df = n – 1
Difference in means of two normal distributions, $\mu_1 - \mu_2$ $\sigma_1^2 = \sigma_2^2$ and unknown	$(\bar{x}_1 - \bar{x}_2) \pm t_{\alpha/2} s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$; df = $n_1 + n_2 - 2$ $s_p = \sqrt{\frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2}}$
Difference in means of two normal distributions, $\mu_1 - \mu_2$, $\sigma_1^2 \neq \sigma_2^2$ and unknown	$(\bar{x}_1 - \bar{x}_2) \pm t_{\alpha/2} \sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}$; $df = \frac{\left[s_1^2/n_1 + s_2^2/n_2 \right]^2}{\frac{\left(s_1^2/n_1 \right)^2}{n_1 - 1} + \frac{\left(s_2^2/n_2 \right)^2}{n_2 - 1}}$
Mean difference of two normal distributions for paired samples, μ_d	$\bar{d} \pm t_{\alpha/2} \frac{s_d}{\sqrt{n}}$; df = n – 1 where n is no. of pairs