



**UNIVERSITI TEKNOLOGI MARA  
ASSESSMENT 3**

<b>COURSE</b>	: STATISTICS FOR BUSINESS AND SOCIAL SCIENCES
<b>COURSE CODE</b>	: STA404
<b>TASK</b>	: CASE STUDY ASSIGNMENT (GROUP)
<b>DURATION</b>	: 5 DAYS ONLY (WEEK 12)

**INSTRUCTIONS TO CANDIDATES**

1. This question paper consists of **FOUR (4)** questions.
2. Candidates are required to choose the most appropriate analysis for the question.
3. You may answer ALL questions using SPSS software in order to produce the output of the selected analysis for the question or perform the analysis manually.
4. If you use the SPSS output, perform the analysis according to the procedure.
5. Candidates must accomplish this group assessment within **FIVE(5)** days.
6. Candidates are required to convert their completed answer in one PDF file before submission (<FULLNAME\_GROUP>.pdf) ex: ALI\_KAM2283F.pdf
7. Answer ALL questions in English.

**NAME:**

<b>Q1</b>	<b>/5</b>	
<b>Q2</b>	<b>/5</b>	
<b>Q3</b>	<b>/5</b>	
<b>Q4</b>	<b>/5</b>	
<b>TOTAL</b>	<b>/20</b>	<b>%</b>

**STUDENT NO:**

- 1)  
2)  
3)  
4)

**GROUP:**

**PLEASE SUBMIT THIS ASSESSMENT ON THE REQUIRED DATE**

*This assessment paper consists of 2 printed pages*

**QUESTION 1**

Refer to Exercise 8-3; Question 21, page 450 from textbook A.G. Bluman, Elementary Statistics: A Step by Step Approach, 9<sup>th</sup> ed., McGraw Hill Higher Education, 2014, ISBN:9780073534985. Perform an appropriate analysis and answer the following questions:

(5 marks)

**QUESTION 2**

Refer to Exercise 9-2; Question 14, page 504 from textbook A.G. Bluman, Elementary Statistics: A Step by Step Approach, 9<sup>th</sup> ed., McGraw Hill Higher Education, 2014, ISBN: 9780073534985. Perform an appropriate analysis and show your calculation clearly.

(5 marks)

**QUESTION 3**

Refer to Exercise 9-3; Question 12, page 516 from textbook A.G. Bluman, Elementary Statistics: A Step by Step Approach, 9<sup>th</sup> ed., McGraw Hill Higher Education, 2014, ISBN: 9780073534985. Perform an appropriate analysis and show your calculation clearly.

(5 marks)

**QUESTION 4**

Refer to Exercise 12-1; Question 20, page 658 from textbook A.G. Bluman, Elementary Statistics: A Step by Step Approach, 9<sup>th</sup> ed., McGraw Hill Higher Education, 2014, ISBN: 9780073534985. Perform an appropriate analysis and show your calculation clearly.

(5 marks)

**END OF QUESTIONS**

**QUESTION 1**

OUTPUT: (2)

**One-Sample Statistics**

	N	Mean	Std. Deviation	Std. Error Mean
NUMBER_OF_VISITS	20	3.85	2.519	.563

**One-Sample Test**

	Test Value = 5.8					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
NUMBER_OF_VISITS	3.462	19	.003	-1.950	-3.13	-.77

$$H_0: \mu = 5.8 \text{ (claim)} \checkmark$$

$$H_1: \mu \neq 5.8 \checkmark$$

$$\alpha = 0.05$$

$$\text{pvalue} = 0.003 \checkmark$$

Decision: Since  $\text{pvalue} (0.003) < \alpha (0.05)$ , Reject  $H_0$

Conclusion: There is not enough evidence to conclude that the average is still 5.8 visits per year. (3)

(5 marks)

## QUESTION 2

Output c

(1)

## Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means						
	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Goals	Equal variances assumed	.000	.991	1.202	18	.245	5.505	4.581	-4.119 15.129
	Equal variances not assumed			1.174	15.244	.258	5.505	4.688	-4.473 15.483

## Levene Test

$$H_0: \sigma_1^2 = \sigma_2^2$$

$$H_1: \sigma_1^2 \neq \sigma_2^2$$

✓

(1.5)

$$\alpha = 0.05$$

$$p\text{value} = 0.991$$

Decision: Since  $p\text{value}(0.991) > \alpha(0.05)$ , Accept  $H_0$

Conclusion: Equal variances assumed. ✓

$$H_0: \mu_1 = \mu_2$$

$$H_1: \mu_1 \neq \mu_2 \text{ (claim)} \quad \checkmark$$

$$\alpha = 0.05$$

$$p\text{value} = 0.245$$

Decision: Since  $p\text{value}(0.245) > \alpha(0.05)$ , Accept  $H_0$

Conclusion: There is not enough evidence to conclude that there is a difference in means. ✓

1- Eastern

2- Western

(2.5)

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**QUESTION 3**

OUTPUT: (2)

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)			
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference							
				Lower	Upper						
Pair 1 Before - After	3.500	2.881	1.176	.477	6.523	2.976	5	.031			

$$H_0: \mu_d = 0 \quad \checkmark$$

$$H_1: \mu_d > 0 \text{ (claim)} \quad \checkmark \quad 1 > 2$$

$$\alpha = 0.05$$

$$p\text{value} = 0.031 / 2 = 0.0155 \quad \checkmark$$

Decision: Since  $p\text{value} (0.0155) < \alpha (0.05)$ , Reject  $H_0$   
 Conclusion: There is enough evidence to conclude  
 that there was a decrease in the  
 mean number of mistakes -  $\checkmark$

1 - Before  
 2 - After

(3)

(5 marks)

**QUESTION 4**

OUTPUT: (2)

ANOVA

Debt

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	56889040.950	3	18963013.650	5.543	.008
Within Groups	54737476.800	16	3421092.300		
Total	111626517.750	19			

$$H_0: \mu_1 = \mu_2 = \mu_3 = \mu_4 \quad \checkmark$$

$H_1$ : At least one differs from four states (claim)  $\checkmark$

$$\alpha = 0.05$$

$$p\text{value} = 0.008 \quad \checkmark$$

Decision: Since  $p\text{value} (0.008) < \alpha (0.05)$ , Reject  $H_0$   $\checkmark$

Conclusion: The average debt at graduation differs  
from these four states.

(3)

(5 marks)