FINAL ALTERNATIVE ASSESSMENT
Examination Paper

(COVER PAGE)

Session	:	**August 2020**
Programme	:	Diploma in Business (DIB) Diploma in Finance (DIF) Diploma in Marketing (DMKT) Diploma in Entrepreneurship (DENT)
Course	:	**STA1101: Quantitative Methods**
Date of Examination	:	December 14, 2020 (Monday)
Time	:	4.00pm – 6.30pm Reading Time : Nil
Duration	:	2 Hours : 30 Minutes

Note: 30 minutes is added into the duration of the examination to factor in any connectivity matters and for you to scan and upload your scripts.

Special Instructions :

Answer all **FOUR (4)** questions

Materials permitted :
Non-Programmable Calculator

Materials provided :
STA1101 Formula Booklet

Examiner(s)	:	**Hatin Fatihah Hassan**, Abdullah Sholehin Mohd Zainudin, Dinesh Kumar Govindasamy, Chok Huat Goh, Siew Woo Bing and Dr. Narinderjit Singh Sawaran Singh
Moderator	:	Aneesha Pillay Balachandran Pillay

*This paper consists of **4** printed pages, including the cover page*

DIPLOMA IN BUSINESS PROGRAMME (DIB)
DIPLOMA IN FINANCE PROGRAMME (DIF)
DIPLOMA IN MARKETING PROGRAMME (DMKT)
DIPLOMA IN ENTREPRENEURSHIP PROGRAMME (DENT)
STA1101 QUANTITATIVE METHODS
FINAL ALTERNATIVE ASSESSMENT: AUGUST 2020 SESSION

Instruction: This paper consists of **FOUR (4)** structured-type questions. Answer **ALL** the questions handwritten in either **BLUE/BLACK** ink on a foolscap paper. Hence, upload the answer **(PDF FORMAT)** in Blackboard.

Question 1

(a) The time needed for college students to complete a certain maze is said to follow a normal distribution. A group of nine students exercise vigorously for 30 minutes and then complete the maze. The time, in minutes, to complete the maze of the nine students are as follows:

39 45 62 65 40 43 46 35 43

(i) Calculate the unbiased estimate of population mean and standard deviation. (5 marks)

(ii) Construct a 99% confidence interval for the population mean. (5 marks)

(iii) Using 5% significance level, test whether the time taken for all college students to complete the maze is not less than 45 seconds. (9 marks)

(b) The price and the revenue of corn, oat and barley for year 2015 and year 2019 in a city are given below:

Type of food	2015		2019	
	Price/kg (RM)	Revenue (RM)	Price/kg (RM)	Revenue (RM)
Corn	5	2500	8	3200
Oat	3	900	5	2500
Barley	6	2400	9	8550

Using 2015 as the base year;

(i) calculate Paasche's Price Index for 2019. (3 marks)

(ii) calculate Laspeyres Quantity Index for 2019. (3 marks)

(Total: 25 marks)

Question 2

(a) Suppose that the shopping time for customers at a local grocery store has a variance of 400 minutes^2. A survey conducted on 64 customers from the grocery store found that the average time taken to shop is 75 minutes.

(i) Construct a 95% confidence interval for the average time taken to shop for all customers from the grocery store. (5 marks)

The same survey was conducted on another grocery store that has the same variance. 80 customers were selected and the average time taken is 80 minutes.

(ii) Test if there is any significant difference in shopping time for the two grocery store at 5% significance level. (9 marks)

(b) A fitness coach wants to test whether "keto-diet" is effective in reducing weight. She approached 8 women and consulted them with meal a plan for a month. The results of their weight with and without the meal plan is recorded below:

Participants	A	B	C	D	E	F	G	H
Without "keto-diet"	55	53	64	70	82	92	61	60
With "keto-diet"	54	56	65	67	75	82	58	58

Using 5% significance level, test whether "keto-diet" is effective in reducing weight.

(11 marks)

(Total: 25 marks)

Question 3

(a) The entrance and exit of a large departmental store is via one of four sets of doors. The table below shows the number of customers entering or leaving the store is counted at each set of doors for a period of time with the following results.

Set of doors	North	South	East	West
Number of customers	327	402	351	380

A manager claims that the percentage of customers using each of the four sets of doors is the same but one of the executives does not agree with the manager. Test at 1% significance level on the executive's belief. (14 marks)

(b) A consumer agency wanted to know whether there is a difference in the amount of caffeine in two brands of coffee. The agency took a sample of 15 one-pound jars coffee of Brand P and found the average of caffeine to be 80mg and standard deviation of 5mg. The agency also took a sample of 12 one-pound jars coffee of Brand Q and found the average of caffeine to be 77mg and variance of $36mg^2$. Test at 1% significance level.

(11 marks)

(Total: 25 marks)

Question 4

The paired data below consist of the temperature (^oC) on randomly chosen days and the amount a certain kind of plant grew (milimeters).

Growth (mm)	62	76	50	51	71	46	51
Temperature (^oC)	36	30	38	37	33	40	38

(a) Determine the least square regression equation that can be used to estimate the amount of certain kind of plant grew on temperature. (7 marks)

(b) Interpret the gradient of the equation. (3 marks)

(c) Draw a scatter diagram of plant growth on temperature and comment on the relationship between the two variables. (5 marks)

(d) Calculate the strength of correlation between the two variables and comment on your answer. (4 marks)

(e) Calculate the coefficient of determination of the model. Comment on your answer. (3 marks)

(f) Estimate the plant growth if the temperature is 25^oC. Comment on the reliability of your prediction. (3 marks)

(Total: 25 marks)

~The End ~