INTI International University & Colleges

FINAL
ALTERNATIVE ASSESSMENT

(COVER PAGE)

Session	:	**January 2021**
Programme	:	Diploma in Quantity Surveying (DQS)
Course	:	**STA1105: Quantitative Method**
Date of Examination	:	8 March 2021 (Monday)
Time	:	12.00noon – 2.30pm Reading Time : Nil
Duration	:	2 Hours 30 Minutes

Special Instructions :

This paper consists of **FOUR (4)** questions. Answer **ALL** questions. All questions carry equal marks.

Material permitted :
Non-Programmable Scientific Calculator

Materials provided :
Key Formula

Examiner(s)	:	**Azila Adros**
Chief Moderator	:	Mashithah Abdullah Bayanoeddin

*This paper consists of **6** printed pages, including the cover page*

DIPLOMA IN QUANTITY SURVEYING PROGRAMME (DQS)
STA1105: QUANTITATIVE METHODS
FINAL ALTERNATIVE ASSESSMENT: JANUARY 2021 SESSION

Instructions: This paper consists of **FOUR (4)** questions. Answer **ALL** questions. All questions carry equal marks.

Question 1 (25 marks)

(a) The above table shows the unit prices and quantities sold for three brands of multivitamins for the year 2000 and 2005.

Brand	2000		2005	
	Average price (RM)	Quantity	Average price (RM)	Quantity
Provit	270	1200	220	1350
Multimax	35	960	25	900
Supervit	540	720	680	900

By using year 2000 as the base year, determine the

(i) the simple relative price index for the brand Provit

(3 marks)

(ii) the simple aggregate quantity index

(3 marks)

(iii) the Laspeyres price index

(3 marks)

(iv) the Paasche quantity index

(3 marks)

(b) The table below shows the marks obtained by 8 students for Mathematics and Science in the mid-semester examination.

Student	1	2	3	4	5	6	7	8
Mathematics, x	30	70	45	50	65	35	80	48
Science, y	40	60	50	45	70	50	90	65

(i) Plot a scatter diagram for the above data.

(3 marks)

(ii) Compute Σx, Σx^2, Σy, Σy^2 and Σxy.

(5 marks)

(iii) Calculate the Pearson's coefficient of correlation for the above data.

(3 marks)

(iv) Calculate the coefficient of determination.

(2 marks)

Question 2 (25 marks)

(a) The prices of detergents in year 2009 and 2010 are as shown in the table below:

Detergent	**Price per litre**	
	2009	**2010**
A	7.00	8.05
B	8.10	9.00
C	5.00	4.20

Using 2009 as the base year, determine the

(i) simple relative price index for each item for year 2010.

(3 marks)

(ii) simple aggregate price index for year 2010.

(3 marks)

(b) Suppose that the weight of apples are normally distributed with mean $\mu = 8$ ounces, and standard deviation $\sigma = 1.5$ ounces. Determine the probability proportion of oranges weigh

(i) less than 8.7 ounces

(3 marks)

(ii) between 6.2 and 7 ounces

(4 marks)

(iii) between 10.3 and 14 ounces

(4 marks)

(iv) between 6.8 and 8.9 ounces

(4 marks)

(c) There are two types of error in hypothesis. Define the meaning of Type I error and Type II error.

(4 marks)

Questions 3 (25 marks)

(a) The table below shows the weights of mothers and their babies when delivered.

Weight of mother (kg), x	55	54	56	53	53	57	58
Weight of baby (kg), y	3.3	2.9	3.0	3.5	3.0	3.0	3.4

(i) Compute Σx, Σx^2, Σy, Σy^2 and Σxy.

(5 marks)

(ii) Determine the linear regression equation, $y = a + bx$.

(3 marks)

(iii) Estimate the weight of the baby if the weight of the mother is 54.5kg.

(3 marks)

(iv) Estimate the weight of the mother if the weight of the baby is 3.1kg.

(3 marks)

(b) A sample of size 15 drawn from a normally distributed has a sample mean 35 and sample standard deviation 14. Construct a 95% confidence interval for the sample mean.

(5 marks)

(c) Describe z for each of the following confidence levels. Round to two decimals.

(i) 90%

(ii) 95%

(iii) 96%

(iv) 97%

(v) 98%

(vi) 99%

(6 marks)

Question 4 (25 marks)

(a) The average prices (RM per kilogramme) and price indices for item P, Q and R in year 2010 and 2011 are as shown in the table below:

Item	2010	2011	Price Index
P	4.00	4.80	***b***
Q	6.00	6.60	110
R	***a***	3.00	125

Using year 2010 as the base year, determine

(i) the values of a and b.

(6 marks)

(ii) the average relatives price index.

(3 marks)

(b) Let x be a normal random variable with its mean equal to 40 and standard deviation equal to 5. Determine the following probabilities for this normal distribution.

(i) $P(x > 55)$

(3 marks)

(ii) $P(x < 49)$

(3 marks)

(c) In a poll conducted in 2020, citizens aged 18 and older were asked if upper income people were "paying their fair share in taxes, paying too much or paying too little." Of the respondents, 61% said too little, 24% said fair share, 13% said too much, and 2% had no opinion. Assume that these percentages hold true for the 2020 population of citizens aged 18 and older. Recently, 1000 randomly selected citizens aged 18 and older were asked the same question. The following table lists the number of citizens in this sample who belonged to each response.

Response	Too Little	Fair Share	Too Much	No Opinion
Frequency	581	256	138	25
Percentage (%)	61	24	13	2

Examine at a 2.5% level of significance whether the current distribution of opinions is different from that for 2020.

(10 marks)

~THE END~