

**FINAL
ALTERNATIVE ASSESSMENT**

(COVER PAGE)

Session : August 2020

Programme : Diploma in Quantity Surveying (DQS)

Course : STA1105: Quantitative Method

Date of Examination : 17 December 2020 (Thursday)

Time : 8.00am – 10.30am 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 7 printed pages, including the cover page

DIPLOMA IN QUANTITY SURVEYING PROGRAMME (DQS)
 STA1105: QUANTITATIVE METHODS
 FINAL ALTERNATIVE ASSESSMENT: AUGUST 2020 SESSION

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

Question 1 (25 marks)

- (a) The table shows the average prices and quantities for three types of hockey equipment's sold at a sports outlet in year 2014 and 2015.

Types of equipment	2014		2015	
	Average price	Quantity	Average price	Quantity
Hockey helmets	RM270	1200	RM220	1350
Gloves	RM35	960	RM25	900
Hockey skates	RM540	720	RM680	900

By using 2014 as the base year, calculate the

- (i) average relative price index. (3 marks)
- (ii) Laspeyres price index. (3 marks)
- (iii) Paasche quantity index. (3 marks)
- (b) The scores of a test has a mean of 50 and standard deviation 10. Given that the scores are normally distributed. Determine the probability where a randomly selected score is
- (i) more than 60 (3 marks)
- (ii) less than 80 (3 marks)

(iii) between 20 and 70

(4 marks)

(v) between 70 and 80

(4 marks)

(c) Explain what a sampling error is.

(2 marks)

Question 2 (25 marks)

- (a) The table below shows prices and quantities consumed for 4 items in a household. Using year 2010 as the base year.

Item	2010		2020	
	Price per item	Quantity	Price per item	Quantity
A	0.21	8.0	0.23	6.0
B	0.11	2.0	0.12	2.0
C	2.64	4.5	2.95	8.0
D	0.37	10.0	0.45	16.0

Determine

- (i) the simple relative price index for each item. (4 marks)
- (ii) the simple relative quantity index for each item. (4 marks)
- (iii) the simple aggregate price index. (3 marks)
- (iv) the simple average relative price index. (3 marks)
- (v) the Laspeyres price index. (3 marks)
- (vi) the Laspeyres quantity index. (3 marks)

(b) Identify z for each of the following confidence levels. Round to two decimals.

- (i) 90%
- (ii) 95%
- (iii) 97%
- (iv) 98%
- (v) 99%

(5 marks)

Questions 3 (25 marks)

- (a) The following table shows the values of independent variable x and the corresponding variable y obtained from an experiment.

x	1.5	0.8	1.1	0.4	2.6	1.4	2.1	2.5
y	7.9	4.1	6.9	3.3	12.6	8.2	9.7	11.2

- (i) Plot a scatter diagram. (3 marks)
- (ii) Compute Σx , Σx^2 , Σy , Σy^2 and Σxy . (5 marks)
- (iii) Determine the linear regression $y = a + bx$ by using the least square method. (5 marks)
- (iv) Determine the value of y when $x = 0.3$. (2 marks)
- (b) It was found that the length of a rope is normally distributed with mean 20.05cm with a standard deviation of 0.02cm. Determine the probability that a part selected at random would have a length
- (i) between 20.03 cm and 20.08 cm. (4 marks)
- (ii) between 20.06 cm and 20.07 cm. (4 marks)
- (c) Explain what a null hypothesis is. (2 marks)

Question 4 (25 marks)

- (a) Penang Mutiara University gives each of its students an aptitude test. The scores on the test are normally distributed with a mean of 75 and a standard deviation of 15. A simple random sample of 25 is taken from a population of 500.
- (i) Determine the probability if the average aptitude test score in the sample is between 70.14 and 82.14. (3 marks)
- (ii) Determine the probability if the average aptitude test score in the sample is equal to or greater than 82.68. (3 marks)
- (b) To estimate the proportion of students at a large college who are male, a random sample of 120 students are selected. There are 69 male students in the sample. Construct a 90% confidence interval for the proportion of all students at the college who are male. (5 marks)
- (c) The owner of Seventeen Sdn. Bhd., an online retailer company, claims that at least 80 percent of the company's 1,000,000 customers are very satisfied. Again, 100 customers are surveyed using simple random sampling. The result: 73 percent are very satisfied. Based on these findings, discuss can we reject the CEO's hypothesis that 80% of the customers are very satisfied? Use a 0.05 level of significance. (5 marks)
- (d) Researchers have conducted a survey of 1600 hot chocolate drinkers asking how much hot chocolate they drink in order to confirm previous studies. Previous studies have indicated that 72% of Malaysian drink hot chocolate. The results of previous studies (left) and the survey (right) are below. At $\alpha = 0.05$, is there enough evidence to determine the distributions are the same?

Response	Drinkers
2 cups per week	15%
1 cup per week	13%
1 cup per day	27%
2+ cup per day	25%

Response	Frequency
2 cups per week	206
1 cup per week	193
1 cup per day	462
2+ cups per day	739

(9 marks)

-THE END-