

FINAL
Alternative Assessment

(COVER PAGE)

Session : August 2020

Programme : Foundation in Business Information Technology (CFPI)

Course : STA1203: Business Statistics

Date of Examination : 15 December 2020 (Tuesday)

Time : 2:00pm – 4:30pm Reading Time : Nil

Duration : 2 hours + 30 minutes (uploading time)

Special Instructions :

Answer **ALL** questions.

Materials permitted :

Non-programmable calculator

Materials provided :

Nil

Examiner(s) : Dr. Nurulanati Othman

Chief Moderator : Mr. Goh Chok Huat

This paper consists of 5 printed pages, including the cover page.

FOUDATION IN BUSINESS INFORMATION TECHNOLOGY (CFPI)
 STA1203: BUSINESS STATISTICS
 FINAL ALTERNATIVE ASSESSMENT: AUGUST 2020 SESSION

Instructions: This paper consists of **FIVE (5)** questions. Answer **ALL** questions. All questions carry equal marks. Workings must be shown.

Question 1

- (a) Explain the difference between population and sample using a specific example. (2 marks)
- (b) Identify whether the following variables are quantitative or qualitative.
- (i) Color of the sky. (1 mark)
- (ii) The age of your car. (1 mark)
- (iii) The smell of a perfume. (1 mark)
- (iv) The number of students involved in an art class. (1 mark)
- (v) Shoe sizes of your family members. (1 mark)
- (c) A sample of 80 adults was taken, and these adults were asked about the number of credit cards they possess. The following table gives the frequency distribution of their responses.

Number of Credit Cards	Number of Adults
0 – 3	18
4 – 7	26
8 – 11	22
12 – 15	11
16 – 19	3

- (i) Calculate the cumulative relative frequencies and cumulative percentage for all classes. (5 marks)
- (ii) Draw an ogive for the cumulative percentage distribution. (5 marks)
- (iii) Using the ogive, find the percentage of adults who possess more than 10 credit cards. (3 marks)

Question 2

- (a) Given a set of 9 sample values:

158 165 154 159 147 162 164 150 154

Find the mean, median and range.

(3 marks)

- (b) **Table A** shows the waiting time for 40 passengers at a bus stop.

Table A

Time (minutes)	1 – 4	5 – 8	9 – 12	13 – 16	17 – 20	21 – 24
Number of passengers	2	7	13	10	5	3

- (i) Copy and complete **Table B**.

Table B

Class boundary	Cumulative frequency	x (x : midpoint)	fx	fx^2
0.5 – 4.5				
4.5 – 8.5				
8.5 – 12.5				
12.5 – 16.5				
16.5 – 20.5				
20.5 – 24.5				
			$\sum fx =$	$\sum fx^2 =$

(4 marks)

- (ii) Find the mean, variance, lower-quartile, upper quartile and inter-quartile range of the times.

(8 marks)

- (c) There are 30 red marbles and 40 blue marbles in a box. Then k blue marbles are added to the box so that the probability of obtaining a blue marble from the box is $\frac{2}{3}$. Find the value of k .

(5 marks)

Question 3

- (a) A keep fit enthusiast swims, runs or cycles everyday with possibilities 0.3, 0.5 and 0.2, respectively. The probabilities that he spends time sauna after swimming, running or cycling are 0.3, 0.4 and 0.2, respectively.

- (i) Represent the above information with a tree diagram.

(2 marks)

On any particular day, find the probability that he

- (ii) has been cycling and has not been using the sauna,

(1 mark)

- (iii) has been using the sauna after all activities, (2 marks)
- (iv) has been swimming given that he has been using the sauna, (2 marks)
- (v) has been running given that he has not been using the sauna. (2 marks)
- (b) A factory produces metal spheres whose diameters are normally distributed with a mean of 10mm and a standard deviation of 0.1mm.
- (i) If a metal sphere is chosen at random, find the probability that its diameter is less than 9.85mm. (3 marks)
- (ii) If five metal spheres are chosen at random, find the probability that their diameter is more than 50.5mm. (4 marks)
- (iii) Find the probability of metal spheres having diameters between 9.80 and 10.05mm. (4 marks)

Question 4

A loaded dice is such that when it is thrown the probabilities of obtaining a score 6, a score 3 and a score 2 are 0.12, 0.53 and 0.35, respectively.

In 20 independent throws of the dice, find the probability that

- (a) a score of 2 will be obtained at most two throws using binomial formula, (4 marks)
- (b) a score of 2 will be obtained more than three throws using binomial table, (3 marks)
- (c) a score of 6 will be obtained more than one throws using binomial formula. (3 marks)
- (d) Calculate the mean and standard deviation of the number of throws to obtain a score of 6. (3 marks)
- (e) Find the number of throws that have to be made so that the probability of obtaining at least one throw to obtain a score of 3 is more than 0.95. (7 marks)

Question 5

- (a) The time, X seconds, taken for the runners to run a 1000 meter race can be assumed to be normally distributed. 10% of the runners took less than 160 seconds and 20% took less than 165 seconds.

Find the mean and standard deviation of X in three decimal places.

(6 marks)

- (b) Table C shows the pairs of data x and y .

Table C

x	y
1	11
5	19
9	35
4	21
6	24
2	11

- (i) Copy and fill in Table D.

Table D

x	y	x^2	xy
1	11		
5	19		
9	35		
4	21		
6	24		
2	11		
$\sum x =$	$\sum y =$	$\sum x^2 =$	$\sum xy =$

(8 marks)

- (ii) Hence, find the least squares regression equation of y on x .

(6 marks)