

FINAL
Alternative Assessment

(COVER PAGE)

Session : August 2021

Programme : Foundation in Business Information Technology (CFPI)
Foundation in Business (CFB)

Course : STA1203: Business Statistics

Date of Examination : 4 December 2021 (Saturday)

Time : 9:00am – 11:30am Reading Time : Nil

Duration : 2 hours + 30 minutes (uploading time)

Special Instructions :

This paper consists of **FIVE (5)** structured-type questions. Answer **ALL** the questions handwritten showing all steps in either **BLUE/BLACK** ink on foolscap papers.

Then, upload the answers (**PDF FORMAT in ONE file**) to Blackboard.

Materials permitted :
Non-programmable calculator

Materials provided :
Nil

Examiner(s) : Mr. Goh Chok Huat

Chief Moderator : Dr. Nurulanati Othman

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

FOUNDATION IN BUSINESS INFORMATION TECHNOLOGY (CFPI)
 FOUNDATION IN BUSINESS (CFB)
 STA1203: BUSINESS STATISTICS
 FINAL ALTERNATIVE ASSESSMENT: AUGUST 2021 SESSION

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Question 1

- (a) Determine whether each of the following variables is quantitative or qualitative. If it is quantitative, further classify it as continuous or discrete. If it is qualitative, further classify it as ordinal or nominal.
- (i) The final position of contestants in a race. (2 marks)
 - (ii) The time taken by contestants to complete a race. (2 marks)
 - (iii) The hair colour of contestants in a race. (2 marks)
- (b) Samples of light bulbs from two suppliers were tested in a laboratory for length of life (in hours). The following table shows the sample statistics.

	Supplier A	Supplier B
Sample mean	1520	1200
Sample standard deviation	90	85

Calculate the coefficient of variation and comment on the variability of the length of life of suppliers' bulbs. (6 marks)

- (c) The following table gives a two-way classification of 220 dining customers in an international cuisine restaurant.

Gender	Types of Food Preferred		
	Local	Asian	Western
Male	43	20	51
Female	26	57	23

A customer is chosen randomly. Find the probability that

- (i) the customer is a female, (2 marks)
- (ii) the customer is a male and prefers western food, (2 marks)
- (iii) the customer is a male or prefers Asian Food, (2 marks)
- (iv) the customer prefers local food, given that the customer is a male. (2 marks)

Question 2

A survey was done on female students' weight in a particular college and the result is shown below.

Weight (kg)	Number of students
40 but less than 45	5
45 but less than 50	7
50 but less than 55	16
55 but less than 60	18
60 but less than 65	4

- (a) Calculate the sample mean and standard deviation. (8 marks)
- (b) Draw the cumulative frequency polygon (ogive) on a graph paper. (5 marks)
- (c) Use the ogive in (b) to find an estimate of 1st Quartile and 3rd Quartile of weight of students. Hence find the quartile deviation. (4 marks)
- (d) If there are 30% of students whose weight are x kg or more, estimate the value of x from the ogive in (b). (3 marks)

Question 3

- (a) Recent experiences with manufacturing a component used in a sophisticated solar tracking device has shown that approximately 25% are defective. A purchaser orders a lot of 30. Without using Binomial table,
- (i) find the probability that exactly 9 are defective. (2 marks)
 - (ii) find the probability that less than 2 are defective. (3 marks)
 - (iii) find the probability that 25 are not defective. (3 marks)
 - (iv) calculate the mean and variance of the number of defectives in this lot of 30. (2 marks)

- (b) The following table gives the probability distribution of the number of magazines read by a person per week based on a sample survey of adults.

Number of Magazines	0	1	2	3	4	5
Probability	0.35	0.27	0.15	0.10	0.07	0.06

- (i) Find the probability of a person reading less than 3 magazines per week. (1 mark)
 - (ii) Find the mean and variance of the number of magazines read by a person per week. (5 marks)
- (c) The number of typographical errors in new editions of textbooks is Poisson distributed with a mean of 1.5 per 100 pages. Without using Poisson table, find the probability that there are at least 2 typographical errors in a randomly selected 200 pages of a new book? (4 marks)

Question 4

- (a) The length of components produced by a company are approximately normally distributed with a mean of 5 cm and a standard deviation of 0.05 cm.
- (i) If a component is chosen at random, what is the probability that the length of this component is less than 5.04 cm?
(3 marks)
 - (ii) If a component is chosen at random, what is the probability that the length of this component is between 4.98 cm and 5.01 cm?
(3 marks)
 - (iii) Find the value of k , if 2.5% of the components are longer than k cm.
(5 marks)
 - (iv) A batch of components includes 1500 with lengths exceeded 5.03 cm. How many components are there likely to be in this batch?
(4 marks)
- (b) A box contains 25 apples, of which 20 are red and 5 are green. Of the red apples, 3 contain maggots and of the green apples, 1 contains maggot. If two apples are chosen at random from the box without replacement, find
- (i) the probability that both apples contain maggots.
(2 marks)
 - (ii) the probability that both apples are of different colours and contain maggots.
(3 marks)

Question 5

A production manager collected data on production cost (in RM'000) and the quantity produced (in '000 units) for 8 consecutive days. These data are given below

Day	Quantity ('000 units)	Cost (RM'000)
1	12	25
2	13	28
3	20	35
4	18	35
5	17	33
6	15	30
7	16	34
8	14	31

- (a) Calculate the correlation coefficient and comment. (6 marks)
- (b) Calculate the coefficient of determination and comment. (3 marks)
- (c) Determine the least squares regression equation of production cost on production quantity. (4 marks)
- (d) Interpret the constant and the gradient of the regression equation. (4 marks)
- (e) Estimate the production cost when the production quantity is 15,000 units. Comment on the reliability of the estimate. (3 marks)

~THE END~

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