FINAL
ALTERNATIVE ASSESSMENT

(COVER PAGE)

Session	:	**August 2020**
Programme	:	Diploma in Business (DIB) Diploma In Finance (DIF) Diploma In Marketing (DMKT) Diploma In Entrepreneurship (DENT)
Course	:	**MAT1106: Business Mathematics**
Date of Examination	:	December 16, 2020 (Wednesday)
Time	:	12.00 noon – 2.30 pm 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 :

This paper consists of **ALL FIVE (5)** questions.

Materials permitted :

Non-Programmable Calculator

Materials provided :

MAT1106 Formula Sheet

Examiner(s)	:	**Dinesh Kumar Govindasamy,** Aneesha Pillay Balachandran Pillay, Nurul Asyima Zulkeflee, Nor Aliza Mokhtar, Dr Narinderjit Singh, Billy Siew Woo Bing and and Bark Chee Beng
Chief Moderator	:	Hatin Fathiah Binti Hasan

*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)

MAT1106 BUSINESS MATHEMATICS
FINAL ALTERNATIVE ASSESSMENT: AUGUST 2020 SESSION

Instructions: This paper consists of **FIVE (5)** structured-type questions. Answer **ALL** the questions hand written in either **BLUE/BLACK** ink on a foolscap paper. Hence, upload the answer **(PDF FORMAT)** in Blackboard by using **TINY SCANNER/CAM SCANNER.**

Question 1

Gilbert is an engineer by profession and he has been saving RM 500 every month in *ABC Bank* for the past 10 years since he was a junior engineer. Gilbert plans to buy a condominium worth RM 650,000 located in Shah Alam with a 10% down payment towards financing the house.

(a) Determine Gilbert's accumulated savings in *ABC Bank* if the bank offers him an interest of 3.2% compounded monthly for the first 4 years and 3.9% compounded monthly for the rest of the period. (12 marks)

(b) How much is the down payment of 10% and the loan amount of 90% for the condominium? Does Gilbert have enough money to pay the down payment for the condominium? (4 marks)

(c) After paying the down payment for the condominium, Gilbert applies for housing loan from *XYZ Bank* and the bank approves the loan. Determine the monthly installment of the housing loan, if he was offered 4.25% interest compounded monthly for 30 years. (4 marks)

(Total: 20 marks)

Question 2

Below is the share price of FTSE Malaysia KLCI (KLSE) for the past 10 months. Obtain a trend value for this data using exponential smoothing with a smoothing constant of $\alpha = 0.4$. Hence, find the forecasted share price for the month of APRIL 2020. *(Please round up the forecasted figure to 2 decimal places).*

Date	**Price (RM)**	**Forecast ($\alpha = 0.4$)**	**Forecast Error**
2019-Jun	1,672.13		
2019-Jul	1,634.87		
2019-Aug	1,612.14		
2019-Sep	1,583.91		
2019-Oct	1,597.98		
2019-Nov	1,561.74		
2019-Dec	1,588.76		
2020-Jan	1,531.06		
2020-Feb	1,482.64		
2020-Mar	1,350.89		

(20 marks)

Question 3

Jennice is a nurse by profession and she has been saving RM 300 every month in *PQR Bank* for the past 8 years since she started to work. With her accumulated savings, Jennice plans to buy a car worth RM 146,000.

(a) Determine Jennice's accumulated savings in *PQR Bank* if the bank offers her an interest rate of 3.75% compounded monthly and find the interest earned by Jennice. (6 marks)

(b) How much is the down payment of 20% and the loan amount of 80% for the SUV? Does Jessica has enough savings to pay the down payment for the SUV? (4 marks)

(c) Determine Jennice's monthly installment for her car if a bank offers her 2.1% interest compounded monthly for 5 years and find the interest paid towards her financing. (6 marks)

(d) Five years ago, Jennice invested RM *P* in *JQK Bank* where she was offered an interest rate of 3.5% compounded monthly. Today the amount is RM 13,000. Find the amount that Jennice deposited five years ago. (4 marks)

(Total: 20 marks)

Question 4

A company manufactures and sells x unit of laptop bags per week. The revenue and cost equations are given as below:

$$\textbf{Revenue: } R(x) = 2500x - 0.05x^2$$
$$\textbf{Cost: } C(x) = 30,000 + 900x$$
$$Price = 2500 - 0.05x$$

(a) Determine the maximum weekly revenue and the number many laptop bags should be sold to achieve the maximum weekly revenue. (5 marks)

(b) Find the price of each laptop bags to be sold to achieve its maximum revenue. (2 marks)

(c) Find the profit function. (2 marks)

(d) Determine the maximum weekly profit and the number many laptop bags should be sold to achieve maximum weekly profit. (5 marks)

(e) Find the price of each laptop bag to be sold to achieve its maximum profit. (2 marks)

(f) Find the quantity of laptop bags to be sold to break-even. (4 marks)

(Total: 20 marks)

Question 5

(a) LEGALEGA Sdn Bhd is a company that manufactures gloves. 3 years back, the company bought machine worth RM 2,200,000. At present, the machine's value has depreciated to RM 1,800,000.

(i) Find the equation that satisfy the above information where the value of the machine is depending on the age of the machine. (5 marks)

(ii) Determine the value of the machine on the 6^{th} year. (2 marks)

(iii) Find the age of the machine when the machine has no value. (2 marks)

(iv) Interpret the slope and the y-intercept of the equation found in question 5(a). (4 marks)

(b) The table below shows the sales of product over the last 7 months.

Month	JAN	FEB	MAR	APR	MAY	JUN	JUL
Sales in (RM Millions)	10.2	10.14	10.9	11.05	10.8	11	11.01

(i) Use a 3-years moving average of the sales to forecast for the month of May and find the forecast error. *(Please round up the forecasted figure to 3 decimal places).* (3 marks)

(ii) Use a 5-years moving average of the sales to forecast for the month of July and find the forecast error. *(Please round up the forecasted figure to 3 decimal places).* (4 marks)

(Total: 20 marks)

~The End~

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