FINAL ALTERNATIVE ASSESSMENT

(COVER PAGE)

Session	:	**January 2021**
Programme	:	Diploma in Business (DIB)
Course	:	**MAT1106: Business Mathematics**
Date of Examination	:	March 10, 2021 (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 :

Nil

Examiner(s)	:	**Dinesh Kumar Govindasamy,** Aneesha Pillay Balachandran Pillay, Hatin Fathiah Hassan, Taamaraiselvi Chinathamby, Billy Siew Woo Bing and and Bark Chee Beng
Chief Moderator	:	Goh Chok Huat

*This paper consists of **4** printed pages, including the cover page*

DIPLOMA IN BUSINESS PROGRAMME (DIB)
MAT1106 BUSINESS MATHEMATICS
FINAL ALTERNATIVE ASSESSMENT: JANUARY 2021 SESSION
ASSESSMENT DURATION: 2 HOURS 30 MINUTES

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

Question 1

Dr. Foo has been saving RM 600 every month in *JUNE Bank* for the past 4 years and RM 500 every month in *NOV Bank for the* past 6 years. He plans to buy a semidetached house worth RM 850,000 located in Putrajaya with a 10% down payment towards financing the house.

(a) Determine Dr. Foo's accumulated savings in *JUNE Bank* if the bank offers him an interest of 2.1% compounded monthly. Hence, find the interest earned. (6 marks)

(b) Determine Dr. Foo's accumulated savings in *NOV Bank* if the bank offers him an interest of 2.3% compounded annually. Hence find the interest earned. (10 marks)

(c) After paying the down payment for his house, Dr. Foo applies for housing loan from *DIMB Bank*. Determine the monthly installment of the housing loan, if he was offered 4% interest compounded monthly for 30 years. (4 marks)

(Total: 20 marks)

Question 2

The data below shows the historical share price of Top Glove Corporation Bhd (TPGC) for the past 10 months. Obtain a trend value for this data using exponential smoothing with a smoothing constant of $\alpha = 0.2$. Hence, find the forecasted share price for the month of DEC 2020. *(Please show all steps clearly and round the forecasted figure to 2 decimal places).*

Month	**Price (RM)**	**Forecast ($\alpha = 0.2$)**	**Forecast Error**
Feb 2020	1.88		
Mar 2020	2.15		
Apr 2020	2.42		
May 2020	4.43		
Jun 2020	5.37		
Jul 2020	8.63		
Aug 2020	8.76		
Sep 2020	8.30		
Oct 2020	8.57		
Nov 2020	7.12		

(20 marks)

Question 3

Mrs. Foo is a nurse by profession and she has been saving RM 4000 every year in *LION Bank* for the past 10 years since she started to work. Mrs. Foo plans to buy the following products for her new house.

Products	Price
ROBAM built in oven R312	RM 3,899
HITACHI Refrigerator R-WX670KM (722L)	RM 11,600
Philips Perfect Care Performer Steam Generator Iron GC8755	RM 1,550
Electrolux 11kg Ultimate Care 900 Washing Machine EWF1142BE	RM 3,900
Samsung DV80H4200CW Dryer with Condenser Dryer, 8kg	RM 3,300

(a) Determine Mrs. Foo accumulated savings in *LION Bank* if the bank offers her an interest rate of 1.75% compounded annually and find the interest earned. 6 marks)

(b) Show that Mrs. Foo have enough savings to purchase the listed products for her new house. (2 marks)

(c) From the balance of the purchases made for her new house, Mrs. Foo plans to buy Honda CITY 1.5L V worth RM 87,000. Determine the down payment of 10% and the loan amount of 90% for the car. (2 marks)

(d) Determine Mrs. Foo monthly installment for her car if a bank offers her 2% interest compounded monthly for 5 years and find the interest paid towards her financing. (6 marks)

(e) After paying for the listed products for her new house and also the down payment for her new car, Mrs. Foo invests all the balance of her saving into a bank account paying an interest rate of 2% compounded annually. Calculate the accumulated amount after 5 years and the interest earned. (4 marks)

(Total: 20 marks)

Question 4

A furniture manufacturer assembles and sells x units per month. The revenue and cost equations are given as below:

$$\boldsymbol{Revenue}: \boldsymbol{R(x) = 3{,}000x - 0.15x^2}$$
$$\boldsymbol{Cost}: \boldsymbol{C(x) = 40{,}000 + 600x}$$
$$\boldsymbol{Price: P = 3{,}000 - 0.15x}$$

(a) Determine the maximum monthly revenue and the number of units of furniture that should be sold to achieve the maximum monthly revenue. (5 marks)

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

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

(d) Determine the maximum monthly profit and the number of units of furniture should be sold to achieve maximum monthly profit. (5 marks)

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

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

(Total: 20 marks)

Question 5

(a) The quantity demanded for a company commodity is 82,000 units when the unit price is RM1.60. At unit price of RM2.20, the quantity demanded depreciates to 64,000 units.

(i) Find the demand equation, assuming that the relationship between demand and price is linear. (6 marks)

(ii) What is the quantity demanded if the company intend to set the price at RM2.80? (2 marks)

(iii) What is the unit price corresponding to quantity demanded of 100,000 units. (3 marks)

(iv) Interpret the slope of the demand equation found in question 5(a). (2 marks)

(b) Albert intends to use moving average forecasting to observe the trend of his existing consortium sales and to forecast the near future sales. He obtained the sales (RM Millions) for the past 7 months, from JAN 2019 to JUL 2019 as stated in the table below.

Month	**JAN**	**FEB**	**MAR**	**APR**	**MAY**	**JUN**	**JUL**
Sales in (RM Million)	12.32	11.62	12.11	13.32	14.54	10.38	12.65

(i) Use a 3-months moving average of the sales to forecast for the month of APR and find the forecast error. *(Please round the forecasted figure to 2 decimal places).* (3 marks)

(ii) Use a 5-months moving average of the sales to forecast for the month of July and find the forecast error. *(Please round the forecasted figure to 2 decimal places).* (4 marks)

(Total: 20 marks)

~The End~