

**FINAL
ALTERNATIVE ASSESSMENT**

(COVER PAGE)

Session	:	<u>January 2022</u>			
Programme	:	<u>Diploma In Business (DIB) Diploma In Marketing (DMKT)</u>			
Course	:	<u>MAT1106: Business Mathematics</u>			
Date of Examination	:	<u>March 7, 2022 (Monday)</u>			
Time	:	<u>12.00 pm – 2.30 pm</u>	Reading Time	:	<u>Nil</u>
Duration	:	<u>2 Hours : 30 Minutes</u>			

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 **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**

Materials permitted : Non-Programmable Calculator

Materials provided : Formulae List

Examiner(s) : Hatin Fatihah, Dinesh Kumar, Nurul Asyima, Goh Chok Huat,
Nhivashni Womasuthan, & Billy Siew Woo Bing

Chief Moderator : Teng Mei Tuan

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

DIPLOMA IN BUSINESS PROGRAMME(DIB)
DIPLOMA IN MARKETING PROGRAMME (DMKT)
MAT1106: BUSINESS MATHEMATICS
FINAL ALTERNATIVE ASSESSMENT: JANUARY 2022 SESSION

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Question 1

A skincare company manufactures x units of skincare set per week. The revenue, $R(x)$ and cost functions, $C(x)$ (in ringgit) are given as below:

$$R(x) = 500x - 0.5x^2$$

$$C(x) = 300 + 100x$$

- (a) Determine the number of units of skincare set that should be produced and sold to maximize weekly revenue and the maximum weekly revenue. (5 marks)
- (b) Find the price function and the price for each of skincare to be sold to achieve its maximum revenue. (3 marks)
- (c) Find the profit function. (2 marks)
- (d) Determine the number of units of skincare set that should be produced and sold to maximize weekly profit and the maximum weekly profit. (4 marks)
- (e) Find the price of skincare set to be sold to achieve its maximum profit. (2 marks)
- (f) Find the quantity of skincare set to be sold to break-even. (4 marks)

Question 2

- (a) Mr Awang has been saving RM650 every month in Octopus Bank for the past 6 years. The bank offers him an interest of 5% compounded monthly for the first 3 years and 2% compounded monthly for the rest of the period. Find the accumulated savings. (11 marks)
- (b) Ms Zahraa has been saving RM500 every month in Tiger Bank for the past 5 years since she started to work and she also has a fixed deposit of RM10,000 in the same bank for the past 4 years. Determine Ms Zahraa's accumulated savings in Tiger Bank if the bank offers her an interest rate of 3.56% compounded monthly for both of her savings. (9 marks)

Question 3

The data below shows the historical share price of Top Glove Corporation Berhad for the past 10 months. Obtain the 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 February 2022. (Please show all the steps clearly and round the forecasted figure to 2 decimal places).

Month	Price (RM)	Forecast ($\alpha = 0.2$)	Forecast Error
Apr 2021	21.74		
May 2021	23.71		
Jun 2021	19.33		
Jul 2021	21.17		
Aug 2021	20.43		
Sep 2021	20.41		
Oct 2021	20.02		
Nov 2021	21.58		
Dec 2021	22.30		
Jan 2022	22.50		

(20 marks)

Question 4

Mr Ray has a t-shirt printing business. Mr Ray deposited RM10,000 in Blue Bank earning a 2.5% interest compounded monthly since 6 years ago. At the same time Mr Ray deposited RM500 once every three months in AFRO Bank earning 3% interest compounded quarterly.

- (a) Determine Mr Ray's accumulated savings in both banks at the end of 6th year. (9 marks)
- (b) Mr Ray plans to open a new branch of printing shop which cost him RM30,000. He intends to use 81% of his total savings in opening the new branch. For the balance, he plans to take up a personal loan from a financial institution. Determine the monthly installment on his personal loan if he was offered 5% interest compounded monthly for 2 years. (6 marks)
- (c) Find the accumulated amount of Mr Ray's remaining savings if he invested all his savings in an account that pays 2.7% interest compounded monthly for the next 5 years. Hence, find the interest earned. (5 marks)

Question 5

- (a) Fatimah bought a small shop-lot for RM15,000 to make it as her homemade skincare lab. After 3 years, she found that the worth of her lab appreciated to RM21,500.
 - (i) Find the equation that satisfy the above information where the price of the small shop-lot is dependent on its age. (5 marks)
 - (ii) Determine the value of the shop-lot at the end of 5th year. (2 marks)
 - (iii) Estimate the age of the lab to be sold if Fatimah plans to sell the lab for RM30,000. (2 marks)
 - (iv) Interpret the slope of the equation found in question 3(a)(i). (2 marks)

- (b) Miss Hatin intends to use moving average to observe the trend of price of gold bar. She obtained the price of 1gram of gold bar for the past 7 days as stated in the table below.

Day	1	2	3	4	5	6	7
Price (RM/g)	265	265	266	267	267	264	262

- (i) Use a 3-days moving average of the price to forecast for the day 6 and find the forecast error for day 6. (Please round the forecasted figures to 2 decimal places). (3 marks)
- (ii) Use a 5-days moving average of the price to forecast for the day 7 and find the forecast error for day 7. (Please round the forecasted figures to 2 decimal places). (4 marks)
- (iii) Find the forecast price of 1gram gold bar for day 8 by using a 5-days moving average. (Please round the forecasted figures to 2 decimal places). (2 marks)

~THE END~