



PENINSULA
COLLEGE
GEORGETOWN DK266-03(P)

FINAL EXAMINATION

Semester	:	MAY 2025 SEMESTER
Programme Name	:	DIPLOMA IN LOGISTIC MANAGEMENT DIPLOMA IN BUSINESS STUDIES DIPLOMA OF ACCOUNTACY
Course Code & Name	:	DBMT3013 BUSINESS MATHEMATICS
Duration	:	3 HOURS

INSTRUCTIONS TO CANDIDATES:

1. Please read the instructions given in the question paper **CAREFULLY**.
2. The question paper consists of **FOUR (4)** questions.
3. Answer **ALL** questions in the question paper.
4. Answers to the questions are to be written into the examination booklet.
5. Electronic dictionaries, lecture notes, files or any unauthorised materials except writing equipment are strictly prohibited.

This question paper must be submitted along with all used and/or unused rough papers and/ or graph papers (if any). Candidates are **NOT ALLOWED** to take any examination paper(s) used or unused out of the examination hall.

WARNING:

The Examination Board of Peninsula College Georgetown regards cheating as a very serious offence and will not hesitate to mete out the appropriate punitive actions according to the severity of the offence committed, and in accordance with the clauses stipulated in the Students' Handbook, up to and including expulsion from Peninsula College Georgetown.

(This booklet contains 5 printed pages including this page)

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE ALLOWED TO DO SO

Answer **ALL** questions on the separate sheet provided.

[100 marks]

1. a) Sketch a break even analysis graph a break-even analysis graph with the following label:
- i. Total revenue
 - ii. Total cost
 - iii. Variable cost
 - iv. Fixed cost
 - v. Loss
 - vi. Profit
 - vii. Break-Even point

(11 marks)

- b) The following information about the company Greg:

Fixed Office Overheads Cost	:	RM60,000
Fixed Selling Overheads Cost	:	RM12,000
Variable Selling Cost per Unit	:	RM15
Selling Price per Unit	:	RM24

Compute the

- i) Contribution Margin. (2 marks)
- ii) Break Even Point (BEP) in quantity and unit (s). (6 marks)
- iii) Number of units to be sold to earn a profit of RM90,000. (6 marks)

Total: [25 marks]

2. The following Table 1 shows the sales (in RM thousands) for a winter wear manufacturer from 2004 to 2006.

Year	Spring	Summer	Fall	Winter
2004	720	1234	2349	150
2005	1054	1902	1245	541
2006	1245	1134	1450	659

Table 1: Sales for a winter wear manufacturer from 2004 to 2006.

- a) Develop a table to find the specific seasonal index. (17 marks)
- b) Calculate the correction factor according to answer in Q2(a). (8 marks)

Total: [25 marks]

3. The following Table 2 represents the quantities (in unit) of five brands of smartphone in the year 2008 and 2009.

Brand	2008	2009
Oppo	251	344
Lenovo	342	432
Samsung	124	250
Redmi	265	325
Xiaomi	129	289

Table 2: Quantities of five smartphone brands

- a) Compute the quantity index for each brand in 2009 by using 2008 as the based year. (15 marks)
- b) Based on answer in Q3(a), find the average quantity index for 2009. (5 marks)
- c) Calculate the aggregate quantity index for 2009. (5 marks)
Total: [25 marks]
4. a) Swift Delivery Co. spent RM 25,654 on a major vehicle maintenance service to extend the life of its delivery vans. The maintenance is expected to be useful for 5 years, with an estimated salvage value of RM 5,432 at the end of that period. Using straight line method:
- i) Calculate the annual depreciation expense (5 marks)
- ii) Develop a depreciation table by using data in Q4(a)(i). (15 marks)
- b) A customer deposits RM5,000 into a savings account at a local bank that offers an annual interest rate of 4%, compounded quarterly. After 3 years, calculate both the final amount in the account and the total interest earned. (5 marks)
Total: [25 marks]

– END OF QUESTIONS –

FORMULAE LIST

Financial Mathematics

$$S_n = \frac{n}{2} [2a + (n - 1)d]$$

$$d = a_2 - a_1 = a_3 - a_2$$

$$r = \frac{a_2}{a_1} = \frac{a_3}{a_2}$$

$$T_n = a_1 + (n - 1)d$$

$$\text{Term} = T_n = ar^{n-1}$$

$$\text{Sum of infinity, } S_\infty = \frac{a}{1 - r}$$

$$\text{Annual Depreciation} = \frac{\text{Cost} - \text{Salvage Value}}{\text{Useful Life}}$$

$$\text{Depreciation Rate, } r = \frac{1}{\text{Useful life}} \times 100\%$$

$$\text{Accumulates depreciation} = \text{Annual depreciation} \times \text{Numbers of years}$$

$$\text{Book Value, } BV = \text{Cost} - \text{Accumulated Depreciation}$$

$$\text{Book Value, } BV = C (1 - r)^n$$

$$\text{Interest, } I = Prt$$

$$\text{Simple interest, } A = P(1 + rt)$$

$$\text{Compounded Amount, } A = P \left(1 + \frac{r}{n}\right)^{nt}$$

Times Series

$$b = \frac{\sum tY - \sum Y \left(\frac{\sum t}{n}\right)}{\sum t^2 - \frac{(\sum t)^2}{n}}$$

$$a = \frac{\sum Y}{n} - b \left(\frac{\sum t}{n}\right)$$

$$\text{Correction Factor, } CF = \frac{4.00}{\text{Total Means}}$$

Break Even Analysis

$$\text{Total Revenue, } TR = P \times Q$$

$$\text{Total Cost, } TC = FC + VC$$

$$\text{Contribution Margin, } CM = P - VC$$

$$\text{Contribution Margin Ratio, } CMR = \frac{P - VC}{P} \times 100\%$$

$$\text{Break - even Point, } BEP (\text{Unit}) = \frac{FC}{CM}$$

$$\text{Break - even Point, } BEP(\text{Price}) = \frac{FC}{CMR} = BEP(\text{unit}) \times P$$

$$\text{Profit} = TR - TC$$

Index Number

$$\text{Price Index, } I = \frac{P_1}{P_0} \times 100$$

$$\text{Average of Price Index} = \frac{\sum \frac{P_1}{P_0} \times 100}{k}$$

$$\text{Aggregate of Price Index} = \frac{\sum P_1}{\sum P_0} \times 100$$

$$\text{Quantity Index, } I = \frac{q_1}{q_0} \times 100$$

$$\text{Average of Quantity Index, } I = \frac{\sum \frac{q_1}{q_0} \times 100}{k}$$

$$\text{Aggregate of Quantity Index} = \frac{\sum q_1}{\sum q_0} \times 100$$

$$\text{Paasche's Price index} = \frac{\sum P_1 Q_1}{\sum P_0 Q_1} \times 100$$

$$\text{Laspeyres's Price index} = \frac{\sum P_1 Q_0}{\sum P_0 Q_0} \times 100$$

$$\text{Value Price index} = \frac{\sum P_1 Q_1}{\sum P_0 Q_0} \times 100$$

Decision Analysis

$$\text{Weighted average} = \alpha(\text{maximum in row}) + (1 - \alpha)(\text{minimum in row})$$

- END OF FORMULAE LIST -