PENINSULA COLLEGE GEORGETOWN

FINAL SEMESTER EXAMINATION

Programme	:	**DIPLOMA IN BUSINESS STUDIES** **DIPLOMA OF ACCOUNTANCY** **DIPLOMA IN LOGISTIC MANAGEMENT**
Course	:	**BUSINESS MATHEMATICS**
Course Code	:	**DBMT3013**
Duration	:	**3 Hours**

INSTRUCTIONS TO CANDIDATES:

1. Please read the instructions given in the question paper **CAREFULLY.**
2. This 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 the accordance with the clauses stipulated in the Students' Handbook, up to and including expulsion from Peninsula College Georgetown.

(*This booklet contains 3 printed pages including this page*)

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

For examiner's use only

QUESTION NO.	MARKS
1	/ 25
2	/ 25
3	/ 25
4	/ 25
Total	**/ 100**

Answer **ALL** questions on the separate sheet provided. **[100 marks]**

1.

Commodities	Year 2007 (RM)	Year 2008 (RM)
Oranges	3.00	2.60
Apples	2.50	2.30
Grapes	11.00	12.00
Mangoes	5.50	7.50
Pears	4.00	3.20
Papayas	6.00	5.20

a) Given the data above, calculate the price index of each commodities by using 2007 as the base year. (18 marks)

b) By using the same data, calculate the

i) simple aggregative price index for year 2008 (4 marks)

ii) simple average of price relative index for year 2008 (3 marks)

Total: [25 marks]

2. Considering the linear programming problem as below.

Maximize $3x + 2y$
subject to: $2x + y \leq 18$
$3x + y \leq 24$
$x \geq 0 , y \geq 0$

By using simplex method, compute the elimination process by using the right pivot to determine the value for x and y, and the maximization value. (25 marks)

Total: [25 marks]

3. A company produced its product and sold it at RM15 per unit. During the production, RM7 of variable cost is required each unit of product. Fixed costs, incurred uniformly throughout the year, is RM120,000.

a) What is the company's break-even point in sales dollars and units? (7 marks)

b) If the company's fixed product costs unexpectedly increased by 20%, what is the new unit selling price that would yield the same break-even sales as before the cost increase? (9 marks)

c) If the company want to yield a profit of RM200,000, how many units of product need to be sold if the price per unit, variable cost per unit and fixed cost are still maintained at RM15, RM7 and RM120,000? (4 marks)

d) If the company's variable cost per unit increased up to RM10, what is the new break-even point in units and total sales, assuming the fixed cost and selling price per unit remained at RM120,000 and RM15? (5 marks)

Total: [25 marks]

4. Zee and Adnan run a small bicycle shop called "Z to A Bicycles". They must order bicycles for the coming season. The actions taken and states of nature are shown as below.

Actions	States of Nature (RM)			
	Demand 10	Demand 30	Demand 50	Demand 70
Buy 20 bicycles	100	-230	-550	-870
Buy 40 bicycles	650	570	350	300
Buy 60 bicycles	550	1370	1450	1130
Buy 80 bicycles	450	1270	1950	2230

Applying each of the decision criterion, how many bicycles should Zee and Adnan order?

a) Maximax Criterion (5 marks)

b) Maximin Criterion (5 marks)

c) Minimax Regret Criterion (5 marks)

d) Equally likely Criterion (5 marks)

e) Criterion of Realism ($\alpha = 0.8$) (5 marks)

Total: [25 marks]

- END OF QUESTIONS –

Formula:

Simple Price Index = $\frac{P_1}{P_0} x100$

Simple Average of Price Relative Index = $\frac{\Sigma\left(\frac{P_1}{P_0} x100\right)}{N}$

Simple Aggregative Price Index = $\frac{\Sigma P_1}{\Sigma P_0} x100$

Break-even Analysis:

BEP: TR = TFC + TVC

TR = TFC + TVC + Net income

Decision Analysis:

Weighted average = α(maximum in row) + (1 – α)(minimum in row)