PENINSULA COLLEGE
GEORGETOWN

FINAL EXAMINATION

Programme Name	:	**CERTIFICATE IN BUSINESS STUDIES**
Course Code & Name	:	**CBS1034 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 the 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) Solve for x when $2x + 5 = 11$. (3 marks)

   b) Make x the subject for the equation, $\frac{3x+7y}{z} = 16$. (3 marks)

   c) Draw the graph of the equation $y = 2x + 3$. (5 marks)

   d) Solve the quadratic equation $2x^2 + 5x - 3 = 0$ using the quadratic formula. (5 marks)

   e) John invests RM5,000 in a savings account that earns an annual interest rate of 5%. If the interest is compounded monthly, how much money will he have in the account after 3 years? Round your answer to the nearest cent. (9 marks)

   Total: [25 marks]

2. a) You have started a small business selling handmade candles. You have determined that your fixed costs are RM500 per month for rent, supplies, and utilities. You plan to sell each candle for RM10 and expect to sell 100 candles per month. The variable costs per candle are RM5 for supplies and labor.
   Based on the above scenario, calculate the

   i) Revenue (2 marks)

   ii) Total Cost (2 marks)

   iii) Breakeven point (3 marks)

   iv) profit if the unit sold is 278 units. (4 marks)

   v) new breakeven point if promotion for 20% of selling price is given. (5 marks)

2 b) Name labels i) to (ix) in the breakeven graph shown in Figure 2b below: (9 marks)

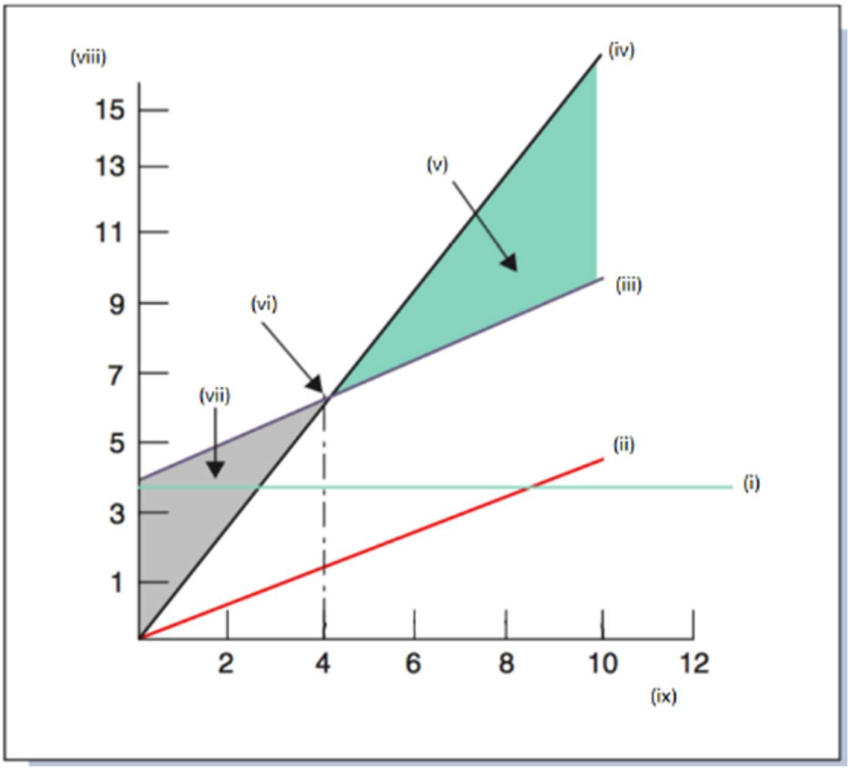

Figure 2b: Breakeven Graph

Total: [25 marks]

3. a) A phone making factory purchased a new production machine at a cost of RM 50,700. The estimated life of the machine is 5 years, with a salvage value of RM 5,500. Using the straight-line method, find

i) the annual rate of depreciation. (2 marks)

ii) the annual amount of depreciation. (4 marks)

iii) the book value at the end of first year. (2 marks)

b) Orange Phone selects the straight-line method of depreciation for machine costing RM 50,000 with a 3-year life and an expected salvage value of RM 5,000. Prepare a depreciation schedule as follow: (12 marks)

Table Q3b: Depreciation schedule of Q3b

Year	**Amount of depreciation, RM**	**Accumulated depreciation, RM**	**Book Value**
0			
1			
2			
3			

3. c) The cost of a cement machine is RM 120,000. The declining balance method is used for computing depreciation. If the depreciation rate is 15%, compute the book value and accumulated depreciation of the machine at the end of five years. (5 marks)

Total: [25 marks]

4. a) The pricing trend of vegetables items are shown as Table 4a below:

Table 4a: Pricing Trend of Vegetable

Product	Price (Per KG) in RM			
	2019	2020	2021	2022
Cabbage	12.00	13.00	14.00	15.50
Spinach	17.00	18.50	19.00	18.50
Carrot	13.00	11.00	13.00	14.00
Tomato	23.00	22.00	23.50	24.00

i) Calculate the price index for years 2020, 2021 and 2022 by using year 2019 as base period. (12 marks)

ii) Compute the average price index for year 2020, 2021 and 2022. (7 marks)

b) The following Table 4b shows the quantity for three brands of Phone A, B, C sold in year 2018 and 2020 and the quantity relatives in 2020. Using year 2018 as the base year, find the values of X, Y and Z. (6 marks)

Table 4b: Sales of Phone

Brands	Quantity in 2018, units	Quantity in 2020, units	Quantity relatives
A	800	1000	X
B	1200	Y	140
C	Z	600	120

Total: [25 marks]

- END OF QUESTIONS -

FORMULAE LIST

Solving Equation

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Interest

$$Interest, I = Prt$$

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

$$Present\ Value, P = \frac{A}{1 + rt}$$

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

Break-Even Analysis

$$Total\ Revenue, TR = P \times Q$$

$$Total\ Cost, TC = FC + VC$$

$$Contribution\ Margin, CM = P - VC$$

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

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

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

$$Profit = TR - TC$$

Depreciation

$$Annual\ Depreciation = \frac{C - Scrap\ Value}{Useful\ Life}$$

$$Depreciation\ Rate, r = \frac{100}{Useful\ life}$$

$$Book\ Value, BV = C - Accumulated\ Depreciation$$

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

Index Number

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

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

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

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

- END OF FORMULAE LIST -