

**FINAL EXAMINATION**

Semester	:	<b>JANUARY 2025 SEMESTER</b>
Programme Name	:	<b>CERTIFICATE IN BUSINESS STUDIES</b>
Course Code & Name	:	<b>CBS1034 BUSINESS MATHEMATICS</b>
Duration	:	<b>3 HOURS</b>

**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 6 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 the expression below:

i)  $3^2 - 2(8 \div 2) \times 2 + 4$  (3 marks)

ii)  $5 + 2^3 \times (7 - 3) \div 2$ . (3 marks)

b) Solve the quadratic equation  $6x^2 + 2x - 60 = 0$  by using quadratic formula. (6 marks)

c) Solve the following simultaneous linear equations by using elimination method.

$$4x = y + 5$$

$$3x + 7y = 0$$

(7 marks)

d) Jared borrowed RM35,000 from Maybank Bank to buy his new car. The loan is compounded semiannually with interest of 4.5% per annum. Find the total amount he must paid after 4 years. (6 marks)

Total: [25 marks]

2. a) State **TWO (2)** differences between fixed cost and variable cost. (8 marks)

b) Bata brands specialize in making shoes with a fixed cost are RM 800 per month. A pair of shoes was sold for RM 250 and expected to sell 20 pair of shoes per month. The variable costs for a pair of shoes are RM150.

Based on the above scenario, calculate the

i) Total revenue (2 marks)

ii) Total cost (2 marks)

iii) Profit if the shoes sold is 20 pair of shoes. (3 marks)

iv) Breakeven point in units. (4 marks)

2. c) Jane sells a table for RM987, she happens to loss 5% loss on the transaction.  
Determine the original purchase price of the table. (6 marks)  
Total: [25 marks]
3. a) Define the following terms:
- i) Useful life (2 marks)
  - ii) Cost (2 marks)
- b) In the case of Benelli Corporation, an investment of RM50,000 was made in a delivery vehicle. This vehicle is projected to have a useful life of 4 years, with an estimated salvage value of RM9,500 at the end of the four-year period. Using the straight-line depreciation method:
- i) Calculate the annual depreciation. (3 marks)
  - ii) Calculate the annual rate of depreciation. (3 marks)
  - iii) Calculate the accumulated depreciation of the vehicle at the end of the third year (3 marks)
- c) Aiszy Bakery purchased a bread making machine for RM25,524. The machine is expected to have a useful life of 4 years, with an estimated salvage value of RM5,252 at the end of this period. Using the straight-line depreciation method, prepare a depreciation schedule. (12 marks)  
Total: [25 marks]
4. a) The following table represents the quantity of sunflower seed brands in kg sold in the year 2020, 2021, 2022 and 2023.

<b>Brand</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
<b>Q</b>	12	17	16	18
<b>W</b>	17	19	21	23
<b>E</b>	13	15	19	21
<b>R</b>	23	50	28	30

- i) Calculate the quantity index for 2021, 2022 and 2023 by using year 2020 as base period. (12 marks)
- ii) Find the aggregate quantity index for year 2021 and 2022. (7 marks)

4. b) The following table shows the price for three types of vegetables sold in 2022, 2023 and relative quantity in 2023. Using year 2022 as the base year, find the values of **X**, **Y** and **Z**.

Type	price in 2022, units	price in 2023, units	Quantity Relatives
Carrot	<b>X</b>	12	16
Spinach	19	<b>Y</b>	24
Cabbage	14	20	<b>Z</b>

(6 marks)  
Total: [25 marks]

**- END OF QUESTIONS -**

## FORMULAE LIST

### Basic Mathematics

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

$$\text{Loss\%} = \frac{CP - SP}{CP} \times 100\%$$

### Depreciation

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

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

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

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

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

### Simple Interest

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

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

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

### Business Ownership

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

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

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

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

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

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

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

**Index Number**

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

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

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

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

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

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

**- END OF FORMULAE LIST -**