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) Round off the following expression to the nearest **THREE (3)** significant figures.

   i) 3.209 kg (1 mark)

   ii) 10.1827 cm (1 mark)

   iii) 4.9962 mL (1 mark)

   iv) 0.05089 m (1 mark)

   v) 0.10300 g (1 mark)

   vi) 10080 mg (1 mark)

   b) Convert the following linear equations into the slope-intercept form $(y = mx + c)$.

   i) $x = \frac{y-2}{8}$ (3 marks)

   ii) $4y - 1 = 3(x + 3)$ (3 marks)

   iii) $3x + 3y - 15 = 0$ (3 marks)

   iv) $x + 1 = 2(y + 2)$ (3 marks)

   c) Aden plans to have a total of RM 15,000 in a bank that offers simple interest of 3% per annum for 3 years. Find the principal that Aden should deposit at the beginning of the year.

   (3 marks)

   d) If Jane deposits RM 5,500 in an account with 2.65% annual interest compounded quarterly, calculate the total amount of money that will be in the account after 5 years.

   (4 marks)
   Total: [25 marks]

2. a) State **THREE (3)** examples of fixed cost and variable cost. (6 marks)

   b) A CEO must decide between two location alternatives, Batu Kawan and Shah Alam, to set up the factory in Malaysia.

   Batu Kawan would have annual fixed costs of RM150,000, transportation costs of RM120 per unit, and labour and material costs of RM200 per unit. While, Shah Alam would have annual fixed costs of RM120,000, transportation costs of RM140 per unit, and labour and material costs of RM240 per unit.

2. b) Assume that the revenue will be RM450 per unit for an annual demand of 4,000 units,

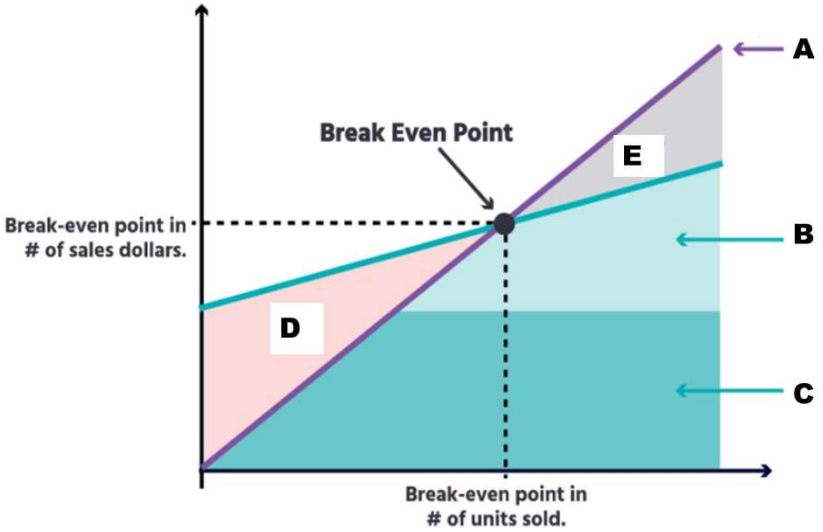
   i) calculate the total sales revenue. (2 marks)

   ii) calculate the total cost for both locations. (6 marks)

   iii) determine the profit or loss for both locations. (4 marks)

   iv) justify your decision on which location is the best to set up the factory. (2 marks)

c) Name the label from A to E in the following break-even diagram. (5 marks)



Total: [25 marks]

3. a) Define the following terms:

   i) Salvage value (2 marks)

   ii) Useful life (2 marks)

b) A stamping machine costs RM25,000. It will be worth RM5,000 for 4 years. Using the straight-line method of depreciation, prepare a depreciation schedule as follow:

Year	Amount of depreciation, RM	Accumulated depreciation, RM	Book value
0	–	–	
1			
2			
3			
4			

(11 marks)

3. c) Using the double declining-balance depreciation method, find the value for P, Q, R, S and T.

Cost, RM	Depreciation rate, %	Useful year	Book value, RM	Accumulated depreciation, RM
10,000	10	5	**P**	**Q**
R	8	3	4500	**S**
15,000	**T**	4	12218	2782

(10 marks)
[25 marks]

4. a) The following table represents the prices of four goods (A, B, C, and D) in the year 2020 and 2021.

Goods	Price 2020, RM	Price 2021, RM
A	10	12
B	20	25
C	18	15
D	8	9

i) Calculate the aggregate price index for the four goods using the year 2020 as the base year.

(4 marks)

ii) Calculate the Unweighted Price Index Number using the year 2020 as the base year.

(8 marks)

iii) Using the data obtained in 4a) ii), compute the average of the relative price index.

(3 marks)

b) The following table shows the quantity for three types of fish sold in 2021 and 2022 and the relative quantity.

Types of fish	Quantity sold in kg in 2021	Quantity sold in kg in 2022	Relative quantity, %
Tuna	545	**X**	110.25
Salmon	988	955	**Y**
Ray	**Z**	400	109.59

i) Using the year 2021 as the base year, find the values of X, Y and Z.

(6 marks)

ii) From the data obtained in 4b) i), compute the aggregate quantity index by using year 2021 as the base year.

(4 marks)
Total: [25 marks]

– END OF QUESTIONS –

FORMULAE LIST

Solving Equation

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

Interest

$$Interest, I = Prt$$

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

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

Business ownership

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

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

$$Profit = TR - TC$$

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

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

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

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

Depreciation

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

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

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

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

Index Number

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

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

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

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

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

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

– END OF FORMULAE LIST –