PENINSULA COLLEGE GEORGETOWN DK266-03(P)

FINAL EXAMINATION

Semester	:	**SEPTEMBER 2024 SEMESTER**
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 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) Round off the following expression to the nearest thousandth.

   i) 0.1278 (1 mark)

   ii) 0.0456 (1 mark)

   iii) 6.5789 (1 mark)

   iv) 14.705 (1 mark)

   v) 17.7802 (1 mark)

   b) State the significant figures of the following numbers.

   i) 100 (1 mark)

   ii) 10.015 (1 mark)

   iii) 0.00792 (1 mark)

   iv) 82.0202 (1 mark)

   v) 404 (1 mark)

   c) Solve the quadratic equation $4x^2 + 2x - 60 = 0$ by using quadratic formula. (6 marks)

   d) Make z the subject for the equation, $\frac{2z+6y}{x} = 10.$ (4 marks)

   e) Sketch the graph of the equation $y = 3x - 4.$ (5 marks)

   Total: [25 marks]

2. a) State **FOUR (4)** examples of fixed cost and variable cost. (8 marks)

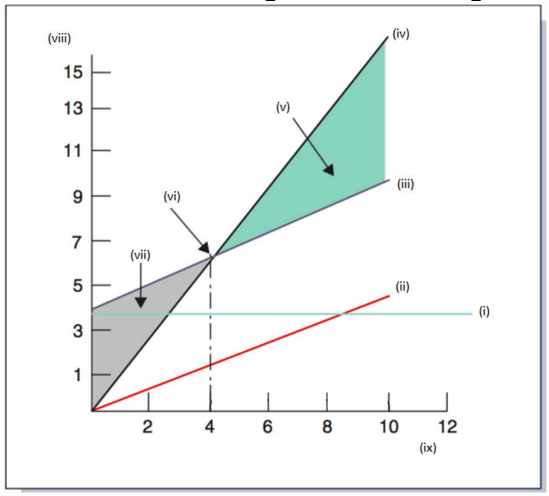
   b) Jane have started a small business selling prelove book. She has determined that the fixed costs are RM500 per month for rent, supplies, and utilities. She plans to sell each book for RM10 and expects to sell 100 books per month. The variable costs per book are RM5 for supplies and labour.
   Based on the above scenario, calculate the

   i) Total Revenue (2 marks)

   ii) Total Cost (2 marks)

2. b) iii) Profit if the book she sells is 30 units (4 marks)

c) Name the label from A to F in the following break-even diagram.



(9 marks)
Total: [25 marks]

3. a) Define the following terms:

i) Accumulated depreciation (2 marks)

ii) Book value (2 marks)

b) In the case of Air Asia, an investment of RM50,000 was made in a aircraft maintenance. This maintenance is projected to have a useful life of four years, with an estimated salvage value of RM9,000 at the end of the three-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 book value of the aircraft maintenance at the end of 2 years. (3 marks)

c) Motorcycle equipment cost RM20,000. Ahmad expects the motorcycle equipment to have a useful life of 4 years, and its estimated salvage value at the end of the 4-year period is RM5,000. Using the straight-line method of depreciation, prepare a depreciation schedule:

Year	Amount of Depreciation, RM	Accumulated Depreciation, RM	Book Value
0	-	-	20,000
1			
2			
3			
4			

(12 marks)
Total: [25 marks]

4. a) The following table represents the prices of four shoes brands in the year 1997,1998,1999 and 2000.

Brand	**1997**	**1998**	**1999**	**2000**
Nike	12.00	14.00	16.00	18.00
Puma	17.00	19.00	21.00	23.00
Adidas	13.00	15.00	18.00	21.00
Asics	23.00	25.00	28.00	31.00

i) Calculate the price index 1998,1999 and 2000 by using year 1997 as base period.

(12 marks)

ii) Find the average price index for year 2021, 2022 and 2023.

(7 marks)

b) The following table shows the quantity for three types of food 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	Quantity in 2022, units	Quantity in 2023, units	Quantity Relatives
Pizza	**X**	760	60
Spaghetti	1200	**Y**	140
Salad	400	600	**Z**

(6 marks)
Total: [25 marks]

- END OF QUESTIONS -

FORMULAE LIST

Basic Mathematics

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

Depreciation

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

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

$$Accumulates\ depreciation = Annual\ depreciation \times Numbers\ of\ years$$

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

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

Simple and Compound Interest

$$Interest, I = Prt$$

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

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

Business Ownership

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

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

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

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

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

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

$$Profit = TR - TC$$

Index Number

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

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

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

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

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

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

- END OF FORMULAE LIST -