UNIVERSITI KUALA LUMPUR
MALAYSIAN INSTITUTE OF INFORMATION TECHNOLOGY

FINAL EXAMINATION
JANUARY 2016 SEMESTER

COURSE CODE	:	IGB 12402
COURSE NAME	:	BUSINESS MATHEMATICS
PROGRAMME NAME	:	BACHELOR OF BUSINESS TECHNOLOGY (HONS) IN COMPUTER ENTREPRENEURIAL MANAGEMENT
DATE	:	27 MAY 2016
TIME	:	3.00 pm – 5.30 pm
DURATION	:	2 ½ HOURS

INSTRUCTIONS TO CANDIDATES

1. Please CAREFULLY read the instructions given in the question paper.
2. This question paper has information printed on both sides of the paper.
3. This question paper consists of TWO (2) sections; Section A and Section B. Answer ALL questions.
4. Please write your answers on the answer booklet provided.
5. Answer all questions in English language ONLY.
6. Formula sheet has been appended for your reference.

THERE ARE 5 PAGES OF QUESTIONS, EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

Question 1

Solve the following equations $2\frac{1}{7}\times 49+\left[14\frac{2}{5}+\left(-\frac{1}{4}\right)-\frac{1}{16}\right]$

[3 marks]

Question 2

Fared launch a promotion campaign on Facebook advertisement. The maximum cost for the campaigns is RM 500. If RM 250 is spend to RM 1.25 per click and the rest give RM 0.05 per click. What is the total number of click can be reached?

[3 marks]

Question 3

Nurul and Aunie start-up a small online business. The ratio of their profit is same, if the income is RM 64, 000 and the total expenses is RM 13, 000. Determine the ratio of profit for Nurul, Aunie and expenses.

[3 marks]

Question 4

Simplify the following logarithmic and exponential expressions to the simplest form

a) $3\log 3 - \log 3x$ [2 marks]

b) $\log x^2 y - 2\log\left(\frac{y}{x}\right) + 3\log\left(\frac{x}{y}\right)$ [3 marks]

c) $\frac{\left(x^3\sqrt{y}\right)\left(\sqrt{x^3}\sqrt{y}\right)}{\left(x^6 y^{10}\right)^{\frac{1}{2}}}$ [3 marks]

Question 5

If $\log_2 3 = 1.585$, $\log_2 5 = 2.322$ determine each of the following **without using a calculator.**

i. $\log_2 (3 \div 5 \times 3)$ [3 marks]

ii. $\log_2 75$ [4 marks]

Question 6

Solve the following equations.

a) $3^{2x} \cdot 3^{x-1} = 9$ [4 marks]

b) $4 \ln 2x = 5 \ln x$ [3 marks]

Question 7

Solve the following simultaneous equations for p and q by using **elimination method.**

$$4p - q = 5$$
$$2q = 1 - 3p$$

[5 marks]

Question 8

Solve the quadratic equation $3x^2 + 10x - 2 = 20x - 7$ by using **quadratic formula.**

[4 marks]

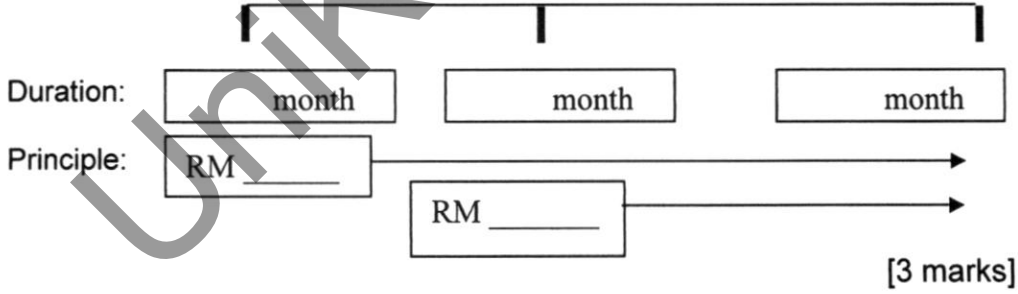
SECTION B (Total: 60 marks)

INSTRUCTION: Answer ALL questions.
Please use the answer booklet provided.

Question 1

a) Mr. Khairi invested RM12,000 for advertising cost at Facebook Ads to promote TweetResponse.com which is an email marketing company. The company agree to pay with the highest profit rate which is 12% compounded monthly within 2 years of operations. Eight months later, TweetResponse.com decided to add Google Adwords as new funnel marketing channel. Hence, as an investor Mr. Khairi add another RM 12,000 for advertising cost on Google Adwords.

i) Copy and complete the information by using the time line of the investment below.



[3 marks]

ii) Determine the compound amount of the investment after 2 years of operations.

[8 marks]

b) Zahrul have a debt with PTPTN with amount RM 25, 000 without paying back after three years graduated his first degree. Assuming money is worth 14% compounded semi-annually without applying Ujrah scheme. Determine

i) The present value of this debt

[3 marks]

ii) The value of his debt at the end of the first year

[3 marks]

iii) If he apply PTPTN worth RM 25 000 for second degree. At the end of 3 years the loan worth RM 33 521. Find simple interest rate that offered?

[3 marks]

Question 2

a) Hani decided to take a Takaful Education Scheme for her son. If every month RM 150 is deposited to this fund for 10 years at 3% compounded monthly. What is the future value of this annuity at the end of the investment period? How much the interest is earned?

[7 marks]

b) Anna won a house at Taman Alam Megah, Shah Alam, Selangor from an auction bit worth RM 65,000. She applies a mortgage with a bank which requires payment in equal monthly payment over 35 years at 5% compounded monthly. What is the monthly payment that Anna needs to pay to the bank?

[5 marks]

c) Raju just receive his first salary amounted RM 5,300 as a developer. He save 10% of his monthly salary and every month for 5 years into a saving account that offered 8% compounded monthly. What is the future value of this annuity at the end of the investment? Calculate the total interest is obtained?

[8 marks]

Question 3

a) Amin purchased 100 units of electric bicycle from Alibaba.com. He got dealer price with the lowest cost price of RM650 per unit. He wants to sell the bicycle to his target market via ecommerce store and Facebook fan page.

i. Determine the selling price per unit if he wants 45% markup based on overall retail price.

[6 marks]

ii. His competitor knew about his offer on the ecommerce store. The competitor has decided to markdown their price by 10%. If the new retail price is RM1150, calculate the old retail price.

[5 marks]

b) TR Corporation paid at a lump sum cost for 15,000 units of digital watch. The market price for a digital watch is RM 37. The company's operating expenses run to 35% of cost and make a net profit of 15%

i. Determine the cost price per unit of the product.

[4 marks]

ii. If TR Corporation sells 10 00 units of the product, calculate the total gross profit they should receive.

[3 marks]

iii. Calculate the break-even price of the product.

[2 marks]

END OF EXAMINATION PAPER

I	QUADRATIC FORMULA
	If $ax^2 + bx + c = 0$ Then, $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

II	LAWS OF EXPONENT		
1.	$a^m \times a^n = a^{m+n}$	4.	$(ab)^n = a^n b^n$
2.	$\dfrac{a^m}{a^n} = a^{m-n}$	5.	$\left(\dfrac{a}{b}\right)^n = \dfrac{a^n}{b^n}$
3.	$(a^m)^n = a^{mn}$	6.	$a^{-n} = \dfrac{1}{a^n}$

III	LAWS OF LOGARITHM
1.	$\log_a xy = \log_a x + \log_a y$
2.	$\log_a\left(\dfrac{x}{y}\right) = \log_a x - \log_a y$
3.	$\log_a x^n = n \log_a x$
4.	$\log_a a = 1$
5.	$\log_a 1 = 0$
6.	$\log_b x = \dfrac{\log_a x}{\log_a b}$ or $\log_b x = \dfrac{\ln x}{\ln b}$

IV	SIMPLE INTEREST
1.	**Interest:** $I = PRT$
2.	**Simple Amount:** $S = P(1 + RT)$
3.	**Present Value:** $P = S(1 + RT)^{-1}$

V	COMPOUND INTEREST
1.	**Compound Amount:** $S = P(1+i)^n$
2.	**Continuous Compound Amount:** $A = Pe^{it}$
3.	**Effective Rate:** $r_{eff} = \left(1 + \dfrac{r}{m}\right)^m - 1$
4.	**Present Value:** $P = S(1+i)^{-n}$

VI	ANNUITY / AMORTIZATION / SINKING FUND		
1.	**Future value of ordinary annuity certain:** $S = R\left[\dfrac{(1+i)^n - 1}{i}\right]$	2.	**Present value of ordinary annuity certain:** $A = R\left[\dfrac{1-(1+i)^{-n}}{i}\right]$
3.	**Future value of the annuity continuous compounding:** $S = R\left[\dfrac{e^{kt} - 1}{e^{k/p} - 1}\right]$	4.	**Present value of the annuity continuous compounding:** $A = R\left[\dfrac{1 - e^{-kt}}{e^{k/p} - 1}\right]$

VII	MARKUP & MARKDOWN		
1.	**Markup:** $R = C + M \Rightarrow M = R - C$ R = retail price C = cost price M = markup (or gross profit)	2.	**Markdown:** $MD = OP - NP$ MD = markdown OP = old retail price NP = new retail price
3.	**Markup percent based on retail price:** $\%M_r = \dfrac{M}{R} \times 100\%$	4.	**Markdown percent based on old price:** $\%MD = \dfrac{MD}{OP} \times 100\%$
5.	**Breakeven Price:** $BEB = C + OE$ BEB = breakeven price C = cost price OE = operating expenses	6.	**Retail Price:** $R = C + NP + OE$ C = cost price NP = *net price* OE = operating expenses