POLITEKNIK
Jabatan Pengajian Politeknik

EXAMINATION AND EVALUATION DIVISION
DEPARTMENT OF POLYTECHNIC EDUCATION
(MINISTRY OF HIGHER EDUCATION)

COMMERCE DEPARTMENT

FINAL EXAMINATION
DECEMBER 2011 SESSION

PB203: BUSINESS MATHEMATICS

DATE : 26 APRIL 2012 (THURSDAY)
DURATION : 2 HOURS (2.30 PM - 4.30 PM)

This paper consists of **FIVE (5)** pages including the front page.
Answer all questions

CONFIDENTIAL
DO NOT OPEN THIS QUESTION PAPER UNTIL
INSTRUCTED BY THE CHIEF INVIGILATOR

(CLO stated at the end of each question is referred to the learning
outcome of the topic assessed. The CLO stated is only for lectures
reference. Student can ignore the CLO stated)

ESSAY (100 marks)

Instruction: This section consists of 4 structured questions. Answer all the questions.

QUESTION 1

The Production Manager of Company MBK has determined that the fixed cost for the one-year period was RM 97,500. If the sales price was RM 137 per unit and the variable cost for 150 units was RM 10,800, you are required to find:

a) The Total Revenue function, TR (x) and Total Cost function, TC (x).

(4 marks)

b) The Total profit function, TP (x).

(3 marks)

c) Breakeven point (BEP) in units and values (RM).

(6 marks)

d) Sketch a graph to show the Total Revenue, Total Cost, Fixed Cost, Variable Cost and Breakeven point in units and values.

(8 marks)

e) The units to be sold if the targeting profit is RM 175,500.

(4 marks)

QUESTION 2

a)   Bank SeMalaysia offers a personal loan to Johari for an amount of RM20,000 for 60 months. The interest rate is 15% per annum. Find the interest value borne by Johari. [CLO 3]

(4 marks)

b)   Asyraaf plans to buy a double storey terrace house in Denai Alam for his loving mother. The price of the house is RM316,000. The developer charges 10% from the house price as a deposit and the balance will be funded by a bank that charges an interest of 4% yearly for 25 years. You are required to calculate:

i.   The interest charges by the bank.

(4 marks)

ii.   The monthly payment that must be paid by Asyraaf.

(5 marks)

iii.   If Asyraaf wishes to pay all his debts after paying his 180th payment, how much is the balance that Asyraaf has to pay?

(8 marks)

c)   Find the accumulated value of an RM10,000 investment for 5 years at an interest rate of 5.5% if the money is compounded quarterly.

(4 marks)

QUESTION 3

Madam Tang plans to invest in one of the projects for her company. Both projects involve an investment of RM62,000 each and the cost of capital for both is 10%. The investments have cash flow as follows:

Year	Project SCORE (RM)	Project MSC (RM)
0	(62,000)	(62,000)
1	25,000	-
2	25,000	12,500
3	25,000	35,000
4	25,000	40,000
5	25,000	50,000

a) Calculate for each of the project:

    i. Payback period   (6 marks)

    ii. Net present value   (10 marks)

    iii. Profitability index   (6 marks)

b) Which project should be selected? Support your recommendation.

    (3 marks)

QUESTION 4

There are three audits that must be performed and four auditors available at the current time. Each has her own area expertise and consequently, the time involved in carrying out the audit varies from one job to the next. The anticipated time required for each auditor on each job is given in Table 1.0.

Auditors	Job (hours)		
	1	2	3
Marliah	22	25	29
Rohani	20	22	25
Saleha	29	24	23
Izatul	28	21	26

Table 1.0

a)   Find the optimal assignment that will minimize the total time required and determine which auditor should be assigned to which job.

(20 marks)

b)   What is the minimum total time?

(5 marks)

PB 203 – BUSINESS MATHEMATICS

FORMULA

Price x Quantity	Fixed cost + Total Variables Cost	Revenue – Total Cost
$\left(\dfrac{FixedCost}{ContributionM\arg in}\right)$	$\left(\dfrac{Fixed\,cost + T\arg et\,Pr ofit}{ContributionM\arg in}\right)$	Prt
$\left(\dfrac{Pr+Yr}{2}\right)t$	$P(1+rt)$	$S(1+rt)^{-1}$
$\left(\dfrac{\sum n}{\sum N}\right)I$	$S(1-dt)$	$S(1+i)^{-n}$
$R\left[\dfrac{(1+i)^n - 1}{i}\right]$	$R\left[\dfrac{1-(1+i)^{-n}}{i}\right]$	$N+\left[\dfrac{InitialInvestment - AccumulatedCashInflowForYearN}{CashFlowYearM}\right]$
$\dfrac{TotalInvestment - ScrapValue}{UsefulLife}$		$\dfrac{AverageCashFlow - Depreciation}{InitialInvestment}\times 100$
$\dfrac{TotalPr esentValue}{TotalInvestment}$		$\left(\dfrac{CF_1}{(1+r)^1} + \dfrac{CF_2}{(1+r)^2} + \dfrac{CF_3}{(1+r)^3} + \dfrac{CF_n}{(1+r)^n}\right) - CF_0$