



UNIVERSITI KUALA LUMPUR BUSINESS SCHOOL

FINAL EXAMINATION

JANUARY 2016 SEMESTER

SUBJECT CODE : EAB 10703/EIB 10503
SUBJECT TITLE : MATHEMATICS FOR BUSINESS/ BUSINESS MATHEMATICS
LEVEL : BACHELOR
TIME / DURATION : 2:00PM – 5:00PM / 3 HOURS
DATE : 30TH MAY 2016

INSTRUCTIONS TO CANDIDATES

1. Please read the instructions given in the question paper **CAREFULLY**.
2. This question paper is printed on both sides of the paper.
3. This question paper consists of **TWO (2)** sections; **Section A** and **Section B**.
4. Answer **ALL** questions in **SECTION A** and **SECTION B**
5. Please write your answers on the answer booklet provided.
6. All questions must be answered in English (any other language is not allowed).
7. This question paper must not be removed from the examination hall.

THERE ARE FIVE (5) PAGES OF QUESTIONS, ONE (1) PAGE OF FORMULEA AND ONE (1) PAGE OF TABLE EXCLUDING THIS PAGE.

SECTION A (Total: 40 marks)

INSTRUCTION: Answer ALL questions.

Please use the answer booklet provided.

Question 1

A project which requires an initial outlay of RM9,000 will produce the following annual inflows.

Year 1	RM 2,000
Year 2	RM 4,000
Year 3	RM 6,000

- a. What is the present value
- b. NPV if the discount rate is 8 % per annum

(3 Marks)

(3 Marks)

[Total: 6 marks]

Question 2

Rasa Simpati Sdn Bhd intends to give a scholarship worth RM5,000 every year for six years. How much must the company has to deposit into an account that pays an interest of 7% per annum to provide the scholarship.

(5 Marks)

Question 3

Solve the following system by using Gauss-Jordan elimination method.

$$x + y + z = 5$$

$$2x + 3y + 5z = 8$$

$$4x + 5z = 2$$

(9 Marks)

Question 4

Nordin received a bonus of RM6,000.00. He planned to give all the money to his children, Dan, Din and Don according to the ratio $X : 3 : 2$. If the amount received by Don is RM2,000.

a) Amount received by Din

(2 Marks)

b) Amount received by Din and Don

(2 Marks)

c) The value of x

(1 Mark)

[Total 5 Marks]

Question 5

Alia has RM470,000 invested in two rental properties. One yields 10% on the investment, and the other yields 12%. Her total income from them is RM51,000. How much is her income from each property.

(5 Marks)

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Question 6

Suppose RM100 is deposited at the beginning of each month for 3 years in an account that pay 6% annually, compounded monthly.

(a) What is the total number of payment (or periods)?

(2.5 Marks)

(b) What is interest rate per period?

(2.5 Marks)

(c) What formula is used to find the future value of annuity?

(2.5 Marks)

(d) Find the future value

(2.5 Marks)

[Total 10 Marks]

Question 7

Find the market equilibrium point for the following demand and supply functions.

Demand: $2p = -q + 320$

Supply : $p = 8q + 2$

(5 Marks)

Question 8

RM1,800 is invested for 9 month at an annual simple interest rate 15%.

a) How much interest will be earned

(2.5 Marks)

b) What is the future value if the investment after 9 months?

(2.5 Marks)

[Total: 5 Marks]

SECTION B: Total (60 Marks)**INSTRUCTION : Answer ALL Questions****Question 1**

Cukup Selesa Sdn Bhd produces sport attire. The cost of raw materials is RMRM20.00 per unit and the cost labour is RM15.00 per unit. Other variable cost is RM12.00 per unit. Total fixed cost is RM40,000.00. If a product can be sold at RM80.00 per unit,

- a) Formulate the total cost function $C(x)$. (4 Marks)
- b) Formulate total revenue function. (4 Marks)
- c) Draw a graph to determine :
- i) The break even price and value (8 Marks)
- ii) The profit if 3,000 unit where sold (4 Marks)

[Total:20 Marks]**Question 2**

Suppose that an economy has two sector, Mining and Electricity. For each unit of output, Mining requires 0.4 units of its own production and 0.2 units of Electricity. Moreover, for each unit of output, Electricity requires 0.2 units of Mining and 0.6 units of its own production.

- a) Determine the consumption of matrix C for the economy (4 Marks)
- b) Find the inverse of $(I - C)$ (8 Marks)
- c) Using the Leontif Model, determine the production levels from each sector that are necessary to satisfy a final demand of 20 units from mining and 10 units of electricity. (8 Marks)

[Total: 20 Marks]

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Question 3

The revenue function and marginal cost function of a product are $R(x) = 200x - x^2$ and $C'(x) = 0.1x^2 + 2x + 800$ respectively, find

- a) The cost function (4 marks)
- b) The profit function (4 Marks)
- c) The maximum revenue (4 Marks)
- d) The price at maximum revenue (4 Marks)
- e) The increase in cost if the number of product increase from 50 unit to 100 units (4 Marks)

[Total:20 Marks]

END OF QUESTION PAPER

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FORMULAE

1.	$I = Prt$
2.	$NPV = -C_0 + \left(\frac{c_1}{1+r} + \frac{c_2}{(1+r)^2} + \frac{c_3}{(1+r)^3} \dots \frac{c_t}{(1+r)^t} \right)$
3.	$S = P(1+rt)$
4.	$S = P(1+i)^n$
5.	$r = \left(1 + \frac{k}{m} \right)^m - 1$
6.	$S = R \left(1 + \frac{1+i}{i} \right)^n - 1$
7.	$A = R \left(1 - \frac{1+i}{i} \right)^{-n}$

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Present value interest factor of \$1 per period at i% for n periods, PVIF(i,n).

Period	1%	2%	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%
1	0.990	0.980	0.971	0.962	0.952	0.943	0.935	0.926	0.917	0.909	0.901	0.893	0.885	0.877	0.870
2	0.980	0.961	0.943	0.925	0.907	0.890	0.873	0.857	0.842	0.826	0.812	0.797	0.783	0.769	0.756
3	0.971	0.942	0.915	0.889	0.864	0.840	0.816	0.794	0.772	0.751	0.731	0.712	0.693	0.675	0.658
4	0.961	0.924	0.888	0.855	0.823	0.792	0.763	0.735	0.708	0.683	0.659	0.636	0.613	0.592	0.572
5	0.951	0.906	0.863	0.822	0.784	0.747	0.713	0.681	0.650	0.621	0.593	0.567	0.543	0.519	0.497
6	0.942	0.888	0.837	0.790	0.746	0.705	0.666	0.630	0.596	0.564	0.535	0.507	0.480	0.456	0.432
7	0.933	0.871	0.813	0.760	0.711	0.665	0.623	0.583	0.547	0.513	0.482	0.452	0.425	0.400	0.376
8	0.923	0.853	0.789	0.731	0.677	0.627	0.582	0.540	0.502	0.467	0.434	0.404	0.376	0.351	0.327
9	0.914	0.837	0.766	0.703	0.645	0.592	0.544	0.500	0.460	0.424	0.391	0.361	0.333	0.308	0.284
10	0.905	0.820	0.744	0.676	0.614	0.558	0.508	0.463	0.422	0.386	0.352	0.322	0.295	0.270	0.247
11	0.896	0.804	0.722	0.650	0.585	0.527	0.475	0.429	0.388	0.350	0.317	0.287	0.261	0.237	0.215
12	0.887	0.788	0.701	0.625	0.557	0.497	0.444	0.397	0.356	0.319	0.286	0.257	0.231	0.208	0.187
13	0.879	0.773	0.681	0.601	0.530	0.469	0.415	0.368	0.326	0.290	0.258	0.229	0.204	0.182	0.163
14	0.870	0.758	0.661	0.577	0.505	0.442	0.388	0.340	0.299	0.263	0.232	0.205	0.181	0.160	0.141
15	0.861	0.743	0.642	0.555	0.481	0.417	0.362	0.315	0.275	0.239	0.209	0.183	0.160	0.140	0.123
16	0.853	0.728	0.623	0.534	0.458	0.394	0.339	0.292	0.252	0.218	0.188	0.163	0.141	0.123	0.107
17	0.844	0.714	0.605	0.513	0.436	0.371	0.317	0.270	0.231	0.198	0.170	0.146	0.125	0.108	0.093
18	0.836	0.700	0.587	0.494	0.416	0.350	0.296	0.250	0.212	0.180	0.153	0.130	0.111	0.095	0.081
19	0.828	0.686	0.570	0.475	0.396	0.331	0.277	0.232	0.194	0.164	0.138	0.116	0.098	0.083	0.070
20	0.820	0.673	0.554	0.456	0.377	0.312	0.258	0.215	0.178	0.149	0.124	0.104	0.087	0.073	0.061
25	0.780	0.610	0.478	0.375	0.295	0.233	0.184	0.146	0.116	0.092	0.074	0.059	0.047	0.038	0.030
30	0.742	0.552	0.412	0.308	0.231	0.174	0.131	0.099	0.075	0.057	0.044	0.033	0.026	0.020	0.015
35	0.706	0.500	0.355	0.253	0.181	0.130	0.094	0.068	0.049	0.036	0.026	0.019	0.014	0.010	0.008
40	0.672	0.453	0.307	0.208	0.142	0.097	0.067	0.046	0.032	0.022	0.015	0.011	0.008	0.005	0.004
50	0.608	0.372	0.228	0.141	0.087	0.054	0.034	0.021	0.013	0.009	0.005	0.003	0.002	0.001	0.001