UNIVERSITI KUALA LUMPUR

BUSINESS SCHOOL

FINAL EXAMINATION

JANUARY 2016 SEMESTER

COURSE CODE	:	EBB 30903
COURSE NAME	:	FINANCIAL MODELLING
COURSE LEVEL	:	BACHELOR
TIME	:	2.00 PM - 5.00 PM
DURATION	:	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 B.

4. Answer **ALL** questions in Section A, Choose THREE (3) out of FOUR (4) questions in Section B

4. Please write your answers in the answer booklet provided.

5. All questions must be answered in English (any other language is not allowed).

6. This question paper must not be removed from the examination hall.

7. Formula sheets are given at the end of the questions.

THERE ARE NINE (9) PAGES OF QUESTIONS AND TWO (2) PAGES OF APPENDICES, EXCLUDING THIS PAGE.

1. What would be the value of cell B3?

	A	B	C	D
1			Dec 2015	Dec 2016
2	Revenue	56008	51324	40958
3	Cost of Revenue, Total	=AVERAGE(C3/C2,D3/D2)*B2	39568	33758

(2 marks)

2. What would be the value of cell C4?

	A	B	C
1		Dec 15	
2	*Total Liabilities & Shareholders' Equity*	147000	
3	*Total Assets*	144000	
4	Discretionary Financing Needed	=B3-B2	=IF(B4<0,"Surplus",IF(B4>0,"Deficit","Balanced"))

(2 marks)

3. What would be the value of cell B7? (Hint: use the results on the chart)

	A	B	C
1	Year	Sales (RM)	Cost of Goods (RM)
2	2011	1,890,532	1,570,200
3	2012	2,098,490	1,695,694
4	2013	2,350,308	1,492,400
5	2014	3,432,000	1,864,000
6	2015	3,850,000	3,250,000
7	2016	4,100,000	
8			
9			
10			
11			

Cost of Goods vs. Sales 2011 to 2015
y = 0.958x − 63681
R² = 0.998
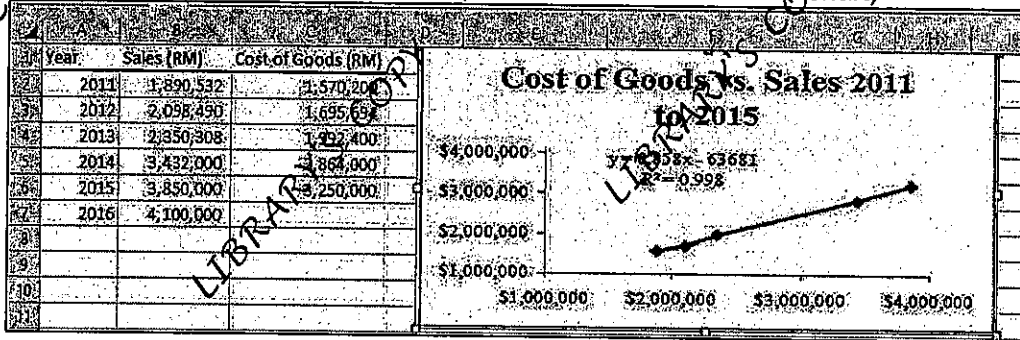
(2 marks)

4. What is the value of cell B3 below?

STDEV.S ▼ =IF(AND(B1+B2<B6,B5<0),B1+B2-B6,IF(B1+B2>B7,B1+B2-B7,0))

	A	B	C	D	E	F	G	H
1	Unadjusted Cash Balance	(3,775)						
2	Current Borrowing	13,775						
3	Current Investing	=IF(AND(B1+B2<B6,B5<0),B1+B2-B6,IF(B1+B2>B7,B1+B2-B7,0))						
4	Ending Cash Balance	15,000						
5	Cumulative Borrowing (Investing)	(5,000)						
6	Minimum Acceptable Cash	15,000						
7	Maximum Acceptable Cash	15,000						

(2 marks)

5. What is the value of C2?

STDEV.S	▾	=IF(B3>0,B3*D4,B3*D5)

	A	B	C	D	E
		Year	Issue		
	Short-term Interest Expense (Inc.)		=IF(B3>0,B3*D4,B3*D5)		
	Cumulative Borrowing (Investing)	(5,000)			
	Borrowing Rate (Annual)	8%	Monthly	0.50%	
	Lending Rate (Annual)	6%	Monthly	0.20%	

(2 marks)

6. What is the value of cell C2 below?

STDEV.S	▾	=IF(C2>B2,(B3+5%)*AVERAGE(B2:C2),B3*AVERAGE(B2:C2))

	A	B	C	D	E	F	G	H
		Year	Year					
	Sales	$100,000	$200,000					
	Partner Salaries	15%	=IF(C2>B2,(B3+5%)*AVERAGE(B2:C2),B3*AVERAGE(B2:C2))					

(2.5 marks)

7. What should be the formula on cell B6?

	A	B
1	Sales	$5,000,000
2	Variable Costs	2,000,000
3	Fixed Costs	1,500,000
4	Earnings Before Interest and Taxes	1,500,000
5	Degree of Financial Leverage	1.28
6	Degree of Combined Leverage	?

(2.5 marks)

8. What should be the correct formula for cell B8?

	A	B
1	Sales	$5,000,000
2	Variable Costs	2,000,000
3	Fixed Costs	1,500,000
4	Earnings Before Interest and Taxes	1,500,000
5	Estimated Microchip Sales in Units	100,000
6	Price per Microchip	$50
7	Variable Cost per Microship	$20
8	Degree of Operating Leverage	?

(2.5 marks)

9. What should be the formula on cell B5?

	A	B
1	Fixed Costs	9,000,000
2	Depreciation	3,000,000
3	Selling Price	50
4	Variable cost per unit	30
5	Cash break-even point	?

(2.5 marks)

10. What should be the formula on cell B5?

	A	B	C
		2010	2011
1	Sales	$2,750,000	$2,500,000
2	EBIT	$700,000	$600,000
3	Earnings per Share	$0.26	$0.20
4	DFL	?	

(2.5 marks)

11. What should be the correct formula for cell B5?

	A	B
1	Debt-Equit	0.5
2	Cost of Equity	15%
3	After-tax Cost of Debt	6.00%
4	Tax Rate	35%
5	WACC	?

(2.5 marks)

12. What should be the correct formula for cell B6?

	A	B
1	Capital Structure	
2	Debt	40%
3	Equity	60%
4	Payout Ratio	30%
5	Net Income 2015	$15,000,000
6	RE Breakpoint	?

(2.5 marks)

13. What should be the correct formula for cell B7?

A	B
Cost of Equity	12%
Weight of Equity	60%
Before Tax Cost of Debt	7%
Cost of Preferred Stock	8%
Weight of Preferred Stock	10%
Tax Rate	40%
WACC	?

(2.5 marks)

14. What should be the right formula for cell B8?

Year	Project A
0	(50,000.00)
1	20,000.00
2	25,000.00
3	30,000.00
WACC	12%
NPV	?

(2.5 marks)

15. What is the formula in B5?

Project	Cost	NPV
A	628,200	72,658
B	352,100	36,418
C	1,245,600	212,150
Total	1,873,800	284,808

(2.5 marks)

16. What is the formula for C4?

Scenario	Probabilities	NPV
Worst Case	0.2	($198,083.40)
Base Case	0.6	$91,275.55
Best Case	0.2	?
Expected NPV	106303.052	

(2.5 marks)

17. What should be the formula for cell B8?

	A	B
1	Discount Securities	
2	Settlement Date	2/15/2011
3	Maturity Date	8/15/2011
4	Redemption Value	100
5	Purchase Price	98.5
6	Days to Maturity	181
7		
8	Bond Equivalent Yield	?

(2.5 marks)

[TOTAL: 40 MARKS]

SECTION B (TOTAL: 60 MARKS)

INSTRUCTIONS: CHOOSE THREE (3) QUESTIONS

PLEASE USE THE ANSWER BOOKLET PROVIDED

QUESTION 1

A factory supplies chairs and tables to playschools around Klang Valley. They sell each chair for RM1.76 and each table for RM4.40 based on the following calculations:

	Chair department	Table department
No. of units	100,000	20,000
Cost of material	RM 80,000.00	RM 35,000.00
Cost of labour	RM 40,000.00	RM 20,000.00
Fixed cost	RM 40,000.00	RM 25,000.00
Total cost	RM 160,000.00	RM 80,000.00
Cost per unit	RM 1.60	RM 4.00
Plus 10% profit	RM 1.76	RM 4.40

They receive an offer from a school to supply an additional 10,000 chairs and 2,000 tables for the price of RM1.05 and RM3.50, respectively. The financial advisor advices the factory manager not to take the offer because the price does not even cover the cost of production.

a.   Is the financial advisor correct?

(2 marks)

b.   State your reason for (a).

(3 marks)

c.   Show the calculation to obtain minimum selling price per unit of chair and table, to support your reason in (b).

(5 marks)

d.   The management is considering buying a new machine which cost RM60,000 and its expected life span is 5 years. The machine is expected to reduce the production cost by RM15,000 annually. The terminal value of the machine is RM20,000 but the management believes that it would only manage to sell it for RM10,000. If the appropriate discount rate is 15% and the corporate tax is 35%, calculate the project NPV. Should they consider to accept the project?

(10 marks)

TOTAL: 20 MARKS

Financial Data for two automotive parts manufacturers is given below:

	Alpha Manufacturing Bhd	Gamma Autoparts Berhad
Selling Price	RM70	RM90
Unit Sales	1,200,000	900,000
Times Interest Earned Ratio	8	9
Variable Costs (% of Sales)	57%	55%
Fixed Costs	RM9,000,000	RM12,000,000
Return on Common Equity	11%	10%
Common Equity	RM120,000,000	RM110,000,000
Common Shares	13,000,000	12,000,000

a. Using the financial data given in the above table, create income statements for each firm. Assume a common tax rate of 40% for each company.

(10 marks)

b. Determine the break-even points in both units and RM, and the degrees of operating, financial, and combined leverage for each firm.

(10 marks)

TOTAL: 20 MARKS

QUESTION 3

Pancaran Berlian Berhad., a manufacturer of carbon and graphite products for the metal production, electronics, aerospace and transportation industries, is considering several funding alternatives for an investment project. To finance the project, the company can sell 1,000 15-year bonds with a RM1,000 face value, 7% coupon rate. The bonds require an average discount of RM50 per bond and flotation costs of RM40 per bond when being sold. The company can also sell 5,000 preferred stocks that will pay a RM2 dividend per share at a price of RM40 per share. The cost of issuing and selling preferred stocks is expected to be RM5 per share. To calculate the cost of common stock, the company uses the dividend discount model. The firm just paid a dividend of RM3 per common share. The company expects this dividend to grow at a constant rate of 3% per year indefinitely. The flotation costs for issuing new common shares of stock are 7%. The company plans to sell 10,000 shares at a price of RM50 per share. The company's tax rate is 40%.

a.   Calculate the company's after-tax cost of long-term debt.

(4 marks)

b.   Calculate the Company's cost of preferred stock.

(4 marks)

c.   Calculate the company's cost of common stock.

(4 marks)

d.   Calculate the company's weighted average cost of capital.

(4 marks)

e.   What would be the company's weighted average cost of capital without flotation costs?

(4 marks)

TOTAL: 20 MARKS

QUESTION 4

One Mega Cleaning Berhad has some new products that it expects to lead to high growth in the near future, it has given analyst the following forecast for the next three years:

	2016	2017	2018
Depreciation	RM15,000	RM21,000	RM27,000
EBIT	RM125,000	RM145,000	RM165,000
Investment in Operating Assets	RM35,000	RM25,000	RM10,000

The firm's debt has a current market value of RM250,000 and it has RM64,000 in marketable securities. There are 500,000 common shares outstanding. The expected tax rate is 38% and the WACC is estimated to be 15%.

a. Calculate the free cash flow for each of the next three years.

(9 marks)

b. After 2018 free cash flow growth is expected to slow to 8% per year permanently. What is the value of the stock today?

(8 marks)

c. Without the new products, free cash flow in 2016 would be RM55,000 and it would grow at 8% per year forever. What is the value of the stock if the new products aren't introduced?

(3 marks)

[TOTAL: 20 MARKS]

END OF EXAMINATION PAPER

FORMULA SHEET

$$Current\ Ratio = \frac{Current\ Assets}{Current\ Liabilities}\ (times)$$

$$Quick\ Ratio = \frac{Current\ Assets - Inventories}{Current\ Liabilities}\ (times)$$

$$Inventory\ Turnover\ Ratio = \frac{Cost\ of\ Goods\ Sold}{Inventory}\ (times)$$

$$AR\ Turnover\ Ratio = \frac{Credit\ Sales}{Account\ Receivables}\ (times)$$

$$Average\ Collection\ Period = \frac{Accounts\ Receivables}{Credit\ Sales/360}\ (days)$$

$$Fix\ Asset\ Turnover\ Ratio = \frac{Sales}{Net\ Fixed\ Assets}\ (times)$$

$$Total\ Asset\ Turnover\ Ratio = \frac{Sales}{Total\ Assets}\ (times)$$

$$Total\ Debt\ Ratio = \frac{Total\ Liabilities}{Total\ Assets} = \frac{Total\ Assets - Total\ Equity}{Total\ Assets}$$

$$Long\ Term\ Debt\ Ratio = \frac{Long - Term\ Debt}{Total\ Assets}$$

$$Long\ Term\ Detb\ to\ Total\ Capitalization\ Ratio = \frac{LTD}{LTD + Preferred\ Equity + Common\ Equity}$$

$$Debt\ to\ Equity = \frac{Total\ Debt}{Total\ Equity}$$

$$Long\ Term\ Debt\ to\ Equity = \frac{LTD}{Preferred\ Equity + Common\ Equity}$$

$$Times\ Interest\ Earned\ Ratio = \frac{EBIT}{Interest\ Expense}$$

$$Cash\ Coverage\ Ratio = \frac{EBIT + Noncash\ Expenses}{Interest\ Expense}$$

$$Gross\ Profit\ Margin = \frac{Gross\ Profit}{Sales}$$

$$Operating\ Profit\ Margin = \frac{Net\ Operating\ Income}{Sales}$$

$$Net\ Profit\ Margin = \frac{Net\ Income}{Sales}$$

$$Return\ on\ Total\ Assets = \frac{Net\ Income}{Total\ Assets}$$

$$Return\ on\ Equity = \frac{Net\ income}{Total\ Equity}$$

$$Return\ on\ Common\ Equity = \frac{Net\ income\ Available\ to\ Common}{Common\ Equity}$$

$$Return\ On\ Equity = \frac{Net\ Profit\ Margin\ \times Total\ Asset\ Turnover}{1 - Total\ Debt\ Ratio}$$

$$Degree\ of\ Operating\ Leverage = \frac{\%\Delta\ in\ EBIT}{\%\Delta\ in\ Sales} = \frac{Q(B - V)}{Q(P - V) - F}$$

$$Degree\ of\ Financial\ Leverage = \frac{\%\Delta\ in\ EPS}{\%\Delta\ in\ EBIT} = \frac{EBIT}{EBT - \frac{PD}{(1 - t)}}$$

$$Degree\ of\ Combine\ Leverage = \frac{\%\Delta\ in\ EPS}{\%\Delta\ in\ Sales} = DOL\ \times DFL$$

$$Common\ Stock\ Value = \frac{FCF_1}{(WACC - g)} + Nonoperating\ Assets - V_D - V_P$$