Instituto Superior de Economia e Gestão
UNIVERSIDADE TÉCNICA DE LISBOA

A

Corporate Finance II

Undergraduate Programs

Final Exam

January 4th, 2012

2 HOURS

Name: _____ No. _____

PLEASE READ THE FOLLOWING INFORMATION BEFORE SOLVING THE EXAM:

1) The exam has a version in English (odd pages) and a version in Portuguese (even pages).
2) You are allowed to keep your pens, pencils and a calculator with you.
3) The structure of the exam is the following:
    - Questions 1 to 6 are multiple choice;
    - Questions 7 to 9 require explaining all the steps in your solutions;
4) Grading:
    - Each correct multiple choice answer is worth 1.5 points. Each incorrect multiple choice answer penalizes 0.25 points. No answer in a multiple choice question is worth zero.
    - Questions 7 and 8 are worth 3 points each.
    - Question 9 is worth 5 points.
5) **Multiple choice questions must be answered in the grid.**
6) **You are not allowed to un-staple the exam.**

GOOD LUCK!

GRID TO ANSWER MULTIPLE CHOICE QUESTIONS

Question #	A	B	C	D
1				x
2				x
3			x	
4			x	
5				x
6		x		

1) (1.5, 0, or -0.25 points) Consider the following information:

Company	Ticker	Price per Share	Earnings per Share	Book Value per Share
Abbott Labs	ABT	54.35	3.69	13.79
Bristol-Myers-Squibb	BMY	25.45	1.93	7.33
GlaxoSmithKline	GSK	41.3	3.15	6.03
Novartis	NVS	44.1	3.35	6.80
Merck	MRK	36.25	3.81	10.86
Pfizer	PFE	$18.30	$1.20	$8.19

Assuming that Johnson & Johnson (JNJ) has a Book Value per share of $18.27, based upon the average P/B ratio for its competitors, the expected stock price for Johnson & Johnson is closest to:

A) $51.86
B) $64.35
C) $70.27
D) $80.14

Solution:

Company	Ticker	Price per Share	Earnings per Share	Book Value per Share	P/B	Average
Abbott Labs	ABT	54,35	3,69	13,79	3,9412618	
Bristol-Myers-Squibb	BMY	25,45	1,93	7,33	3,4720327	
GlaxoSmithKline	GSK	41,3	3,15	6,03	6,8490879	
Novartis	NVS	44,1	3,35	6,8	6,4852941	
Merck	MRK	36,25	3,81	10,86	3,3379374	
Pfizer	PFE	18,3	1,2	8,19	2,2344322	4,386674

Book Value	18,27
P	80,14454

=18.27*4.386674

2) (1.5, 0, or -0.25 points) Suppose that you currently hold a portfolio with an expected return of 12% and a volatility of 10%. The efficient (tangent) portfolio has an expected return of 17% and a volatility of 12%. The risk-free rate of interest is 5%. You want to maximize your expected return without increasing your risk. Without increasing your volatility beyond its current 10%, the maximum expected return you could earn is closest to:

A) 12.0%
B) 12.5%
C) 13.4%
D) 15.0%

Solution:

Tangency			
Exp Ret	17%	Sharpe	1,0
Sigma	12%		
Rf	5%		

Along the CML:		
For sigma	10%	
Exp Ret	15,0%	=5%+1.0*10%

3) (1.5, 0, or -0.25 points) When investors imitate each other's actions, this is known as _____ behavior.

A) pack
B) flock
C) herd
D) shepherd

4) (1.5, 0, or -0.25 points) Assume that the corporate tax rate is 40%, the personal tax rate on income from equity is 20%, and the effective tax advantage of a corporation issuing debt is 25%. The personal rate on interest income is closest to:

A) 25%
B) 30%
C) 35%
D) 40%

Solution:

$$t^* = 1 - \frac{(1-t_c)(1-t_e)}{(1-t_i)} = 1 - \frac{(1-.40)(1-.20)}{(1-.36)} = 25\%$$

Ti=36%.

5) (1.5, 0, or -0.25points) Which of the following statements is false?

A) The costs of selling assets below their value are greatest for firms with assets that lack competitive, liquid markets.

B) Firms in financial distress tend to have difficulty collecting money that is owed to them.

C) Suppliers may be unwilling to provide a firm with inventory if they fear they will not be paid.

D) The loss of customers is likely to be large for producers of raw materials (such as sugar or aluminum), as the value of these goods, once delivered, depends on the seller's continued success.

6) (1.5, 0, or -0.15 points) Kinston Enterprises has a debt obligation of $47 million that is due now. The market value of Kinston's assets is $102 million, and the firm has no other liabilities. Assume that capital markets are perfect and that Kinston has 5 million shares outstanding. The number of new shares that Kinston must issue to raise the capital needed to pay its debt obligation is closest to:

A) 4.0 million
B) 4.3 million
C) 4.7 million
D) 5.0 million

Solution:

Assets	102	D	47	
		E	55	
Total	102	Total	102	
#shares	5	million		
P	11			
To raise 47, issue new shares, #			4,272727	Million=47million/11

7) (3 points) Suppose you are given the following information about the default-free, coupon-paying yield curve:

Maturity (years)	1	2	3
Coupon Rate (annual Payments)	5%	0%	5%
Yield to Maturity	3.750%	4.000%	6.000%

a) (1 point)What is the market price of each of the 3 bonds in the table (assume bonds have face value of $1000)? Explain.

Solution:

Maturity (years)	1	2	3
Price	1012,048193	924,556213	973,27

b) (1 point) What is the zero-coupon yield curve for years 1 through 3? Explain.

Solution:

Maturity (years)	1	2	3
YTM	3,75%	4%	6,11%

c) (1 point)What is the forward interest rate for year 3 (the forward rate quoted today for an investment that begins in two years and matures in three years)?

Solution:

f2,3 10,46%

8) (3 points) Suppose there are only two risky assets, DIVAD and RUTRA, in which you may invest. The expected return of DIVAD is 15%, and its volatility is 25%. RUTRA's expected return is 10% and its volatility is 15%. The correlation coefficient between these two stocks is –0.25.

a) (1.5 points) Suppose you invest in these two assets. The expected return of your portfolio is 11%. What is the volatility of your portfolio? Explain.

Solution:

(a)	E(Rp)	11%	given
Wx	0,200		Find the weights
Wy	0,800		
SD(Rp)	0,117898261		And then find the volatility

b) (1.5 points) Suppose a risk-free security also existed, and that the Market portfolio had an expected return of 13% and a volatility of 18%. If stock RUTRA's Beta is 0.75, what is its correlation with the market portfolio, according to the CAPM? Explain.

Solution:

Rm	13,00%	
SD(Rm)	0,180	
		RUTRA
	Beta	0,75
	Cov(RUTRA,Rm)	0,0243
	Correl (RUTRA,Rm)	0,90

9) (5 points) ALM Industries has a new project to produce light bulbs with the following financial projections (corporate tax rate is 35%):

Year	1	2
Revenues	850,000	1,200,000

Due to this new project, the company will lose annual sales (***and production of an older light bulb model***) of 100,000. Annual Costs of Goods Sold are 40% of annual Revenues. Net working capital is 8% of next year revenues. Capital expenditures today are 600,000 in equipment with a life of 2 years (straight-line depreciation). In year 2 the equipment will be sold for 80,000.

a) (1.25 points) Compute the project's free cash flows (FCF). Explain.

t	0	1	2
Revenues	0	850000	1200000
Lost Revenues	0	100000	100000
Total Revenues	0	750000	1100000
COGS	0	300000	440000
Gross Profit	0	450000	660000
Depreciation	0	300000	300000
EBIT	0	150000	360000
Unlevered NI	0	97500	234000
CapEx	600000	0	0
Liquidation			52000
NWC	60000	88000	0
Change in NWC	60000	28000	-88000
FCF	-660000	369500	674000

b) (1.25 points) We have the following information about ALM Industries' market value and financing:

ALM Industries Market Value Balance Sheet ($ Millions) and Cost of Capital

Assets		**Liabilities**		**Cost of Capital**	
Cash	150	Debt	250	Debt	5%
Other Assets	1000	Equity	900	Equity	12%

Assume that the new project is of average risk for ALM Industries and that the firm wants to hold constant its debt to equity ratio. What is the project's weighted average cost of capital? Explain

Rd	5%
Re	12%
E	900
D	100
Tc	35%
Rwacc	0,11125

c) (1.25 points) Should the firm go ahead with the project? Explain.

(c) NPV Rwacc

218.311,98 € >0, so invest.

d) (1.25 points) Consider the cash flows of another project of the same company, to produce an alternative light bulb model:

ALM Industries Alternative Project Free Cash Flows

Year	**0**	**1**	**2**
Free Cash Flows	($500)	$350	$520

If the firm chooses to finance the project with a new target debt-to-equity ratio of 0.5 (increasing the cost of debt to 5.5%), what is the interest tax shield in year 1 and in year 2? Explain.

NEW			
D/E	0,5	D/(D+E)	0,333333333
Rd	5,50%		
OLD			
D/E	0,1111111		
PreTax WACC	0,1130		
NEW			
Re	0,142		
Rwacc	0,1065833		

t	**0**	**1**	**2**
FCF	-500	350	520
VL(t)	740,94 €	469,91 €	0
Dt	246,98 €	156,64 €	0,00 €
Interest Paymt	0	13,58 €	8,62 €
ITS	0	4,754383	3,015287296