



**Corporate Finance II**  
**Undergraduate Programs**  
**Final Exam**  
**January 24th, 2012**  
**2 HOURS ; EXTRA TIME: 0**

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.
  - Question 7 is worth 3 points.
  - Questions 8 and 9 are worth 4 points each.
- 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

<b>Question #</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>1</b>				
<b>2</b>				
<b>3</b>				
<b>4</b>				
<b>5</b>				
<b>6</b>				



**GRELHA PARA RESPONDER ÀS PERGUNTAS DE ESCOLHA MÚLTIPLA**

<b>Pergunta #</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>1</b>	<b>x</b>			
<b>2</b>			<b>x</b>	
<b>3</b>				<b>x</b>
<b>4</b>			<b>x</b>	
<b>5</b>	<b>x</b>			
<b>6</b>			<b>x</b>	



1) (1.5, 0, or -0.25 points) Von Bora Corporation is expected pay a dividend of \$1.40 per share at the end of this year and \$1.50 per share at the end of the second year. You expect Von Bora's stock price to be \$25.00 at the end of two years. Von Bora's equity cost of capital is 10%. Suppose you plan to hold Von Bora stock for only one year. Your dividend yield from holding Von Bora stock for the first year is closest to:

- A) 6.0%
- B) 4.0%
- C) 6.5%
- D) 5.5%

Div1	1,4
Div2	1,5
P2	25
Re	0,1
Po	23,17355
Div1/P0	0,060414

2) (1.5, 0, or -0.25 points) Consider a bond that pays annually an 8% coupon with 20 years to maturity. The percentage change in the price of the bond if its yield to maturity increases from 5% to 7% is closest to:

- A) +20%
- B) +22%
- C) -20%
- D) -22%

cpn	0,08	0,08
T	20	20
FV	1000	1000
ytm	5%	7%
Price	1373,87	1105,94
%Change	-0,19502	



3) (1.5, 0, or -0.25 points) Luther Industries has a market capitalization of \$23 billion, no debt, and \$4 billion in cash. If Luther's estimated equity beta is 1.32, then the beta of Luther's underlying business enterprise is closest to:

- A) 1.09
- B) 1.32
- C) 1.48
- D) 1.60**

E	23
Debt	0
Cash	4
D	-4
E+D	19
Be	1,32
Bd	0
Bu	1,597895

4) (1.5, 0, or -0.25 points) Which of the following statements is false?

- A) To determine the project's debt capacity for the interest tax shield calculation, we need to know the value of the project.
- B) To compute the present value of the interest tax shield, we need to determine the appropriate cost of capital.
- C) Because we don't value the tax shield separately, with the APV method we need to include the benefit of the tax shield in the discount rate as we do in the WACC method.**
- D) A target leverage ratio means that the firm adjusts its debt proportionally to the project's value.

5) (1.5, 0, or -0.25points) Google Corporation has no debt on its balance sheet in 2008, but paid \$1.6 billion in taxes. Assume that Google's marginal tax rate is 35% and Google's borrowing cost is 7%. Assume that investors in Google pay a 15% tax rate on income from equity and a 35% tax rate on interest income. If Google were to issue sufficient debt to reduce its corporate taxes by \$1 billion per year permanently, then the value that would be created is closest to:

- A) \$6.1 billion**
- B) \$10.2 billion
- C) \$12.2 billion
- D) \$14.3 billion



Tc	35%		
Rd	7%		
Te	15%		
Ti	35%		
ITS	1 billion	annual	
D	40,81633		
PV(ITS)	6,122449		

6) (1.5, 0, or -0.15 points) Monsters Incorporated (MI) is ready to launch a new product. Depending upon the success of this product, MI will have a value of either \$100 million, \$150 million, or \$191 million, with each outcome being equally likely. The cash flows are unrelated to the state of the economy (i.e. risk from the project is diversifiable) so that the project has a beta of 0 and a cost of capital equal to the risk-free rate, which is currently 5%. Assume that the capital markets are perfect. Suppose that MI has zero-coupon debt with a \$125 million face value due next year. The expected return of MI's debt is closest to:

- A) 25.0%
- B) 12.5%
- C) 5.0%**
- D) 7.8%

scenario	1	2	3	Rf	0,05
prob	0,333333	0,333333	0,333333	FV Debt	125
Assets	100	150	191		
Debt holders payoff	100	125	125		
Expected payoff	116,6667				
PV(D)	111,1111				
Expected return	0,05				



- 7) (3 points) Suppose there are only two securities in the market: Stock AP and Stock DP. Stock AP has an expected return of 15% and a standard deviation of returns of 30%, and stock DP has an expected return of 10% and a standard deviation of returns of 20%. The correlation coefficient between the returns of AP and DP is 0.
- a) (1.5 points) What is the volatility and what is the expected return of a portfolio with 35% invested in stock AP and 65% in stock DP? Explain.
- b) (1.5 points) Is the portfolio described in part a) efficient? Explain.

	AP	DP
Exp ret	0,15	0,1
SD ret	0,3	0,2
correl	0	
w	0,35	0,65

$E(R_p)$  0,1175  
 $SD(R_p)$  0,167108

$W_{mvp}$  0,307692  
minimum weight in stock AP for portfolios to be efficient.  
so portfolio a) is efficient.

- 8) (4 points) Firm DEB is analyzing a new investment project, called “LEO”. The following table shows forecasts of **annual earnings** for the firm in two scenarios: the Current Scenario (without the project), and the Scenario with Project “LEO”:

Current Scenario (without Project LEO)	Years 1 to 4	New Scenario (with Project LEO)	Years 1 to 4
Revenues	€ 1000	Revenues	€ 1 700
Operating Costs	€ 500	Operating Costs	€ 600
Depreciation	€150	Depreciation	€ 400
Interest Expenses	€ 80	Interest Expenses	€ 80
Net Income	€ 189	Net Income	€ 434

Project LEO requires immediate investment of € 1 000 in capital expenditures, and net working capital is 6% of next year’s revenues. We also know that the appropriate discount rate to use is 11%.

- (1 point) Compute the free cash flows of project LEO. Explain.
- (1 point) What is the discounted payback period of project LEO? Explain.
- (1 point) Read the statement: “Because Net income more than doubles with project LEO, it is necessarily viable”. Do you agree with this statement? Explain.
- (1 point) **Without computing the IRR** of project LEO, do you think it is less than 10%? Explain.

t	0	1	2	3	4
Revenues	0	700	700	700	700
Operating Costs	0	100	100	100	100
Depreciation	0	250	250	250	250
EBIT	0	350	350	350	350
Unlevered NI	0	245	245	245	245
CapEx	1000	0	0	0	0
NWC	42	42	42	42	0
Change in NWC	42	0	0	0	-42
a FCF	-1042	495	495	495	537

b discFCF	-1042	445,9459	401,7531	361,9397	353,7385
cumulative	-1042	-596,054	-194,301	167,6388	521,3773
DPP		2,536832	years		

- viable not because of change in net income but because of positive NPV of 521.3773 given that with 11% discount NPV is positive, and cash flows are "well behaved"
- , then irr must be larger than 11%.



9 (4 points) Consider the following data about EDU Industries:

**EDU Industries Market Value Balance Sheet (\$ Millions) and Cost of Capital**

Assets		Liabilities		Cost of Capital	
Cash	150	Debt	250	Debt	6%
Other Assets	1000	Equity	900	Equity	13%
				$T_C$	25%

The risk free rate of interest is 5.5% and the market risk premium is 6%. The company has a new investment opportunity. Assume that this new project is of average risk for EDU and that the firm wants to hold constant its debt to equity ratio. The expected free cash flows are:

**EDU Industries New Project Free Cash Flows (unit: '000\$)**

Year	0	1	2
Free Cash Flows	(\$620)	\$350	\$590

- a) (2 points) What is the net present value of the project? Should the firm invest in it? Explain.
- b) (2 points) Suppose the company decides to finance the project with a bank loan of \$310 thousand, paying annual interest of 6%, and maturing in two years time. After all, the project is in a new line of business for EDU – the movie industry. For companies with comparable projects in this industry we have the following information:

Firm Name	Equity Beta	Debt Beta	Debt to Equity Ratio
Linney	1.25	0	0.25
Blinney	1.6	0.2	1
Noddey	2.3	0.3	1.5

How good is the project? Explain.

Rf	5,50%
Rm-Rf	6%
Be	1,25

- a)  $R_{wacc} = 0,1215$  NPV = 161,17 >0, invest.

Firm Name	Equity Beta	Debt Beta	Debt to Equity Ratio	Bu
Linney	1,25	0	0,25	1
Blinney	1,6	0,2	1	0,9
Noddey	2,3	0,3	1,5	1,1 Average 1

How good is the project?

Explain.

Ru	11,50%
Vu	788,47 €
NPV	177,00 €

