**A**merican **U**niversity of **B**eirut

Suliman S. Olayan School of Business

Quiz 1

Spring 2009-2010

**Student's Name:**

**ID #:**

**Date:**

Please be sure that you read and understand the following points:

* Time Duration is 25 minutes.
* Non Programmable Calculators are allowed.
* All documents and notes are **NOT** allowed
* There are 6 questions
* Last question is a bonus question (5 points) requiring no explanation
* Remaining questions have 20 pts each, any answer without some reasonable amount of computations or explanation will be considered incorrect
* Answer on the exam paper

Q1. Ebersoll Manufacturing Company sells all its merchandise on credit. It has a profit margin of 4 percent, days sales in receivables equal to 60 days, receivables of $150,000, total assets of $3 million, and a debt ratio of 0.64**. What is the firm’s return on equity (ROE)? (Assume a 365-day year)**

ROE= PM \* TAT \* EM

= 0.04 \* Sales/3,000,000 \* EM

1. Sales

Days Sales in Receivables = 365 / Receivables Turnover

* Receivable Turnover = 365/ Days Sales in Receivables
* Receivable Turnover = 365/60 = 6.08
* **Receivable Turnover = 6.08**

Receivable Turnover = Sales/ Accounts Receivables

* Sales = Receivable Turnover \* Accounts Receivables
* Sales = 6.08 \* 150,000
* **Sales = 912,000**

1. EM

Debt Ratio = Debt/Asset

* EM = 1 / (1-Debt Ratio)
* EM = (1/ (1 – 0.64)
* **EM= 2.78**

1. ROE

ROE = PM \* TAT \* EM

= 0.04 \* Sales/3,000,000 \* EM

= 0.04 \* 912,000/3,000,000 \* 2.78

**ROE = 0.0338 = 3.38%**

Q2. A client has $202,971.39 in an account that earns 8% per year, **compounded monthly**. The client’s 35th birthday was yesterday and she will retire when the account reaches $1 million.

1. At what age should she retire if she puts no more money into the account.
2. At what age can she retire if she puts $250/**month** into the account every **month** beginning one month from today?
3. I/Y = 8/12

PV = - 202,971.39

FV = 1,000,000

CPT N

N= 240 months

N= 240/12 = 20 years

* **She should retire at the age of 55**

1. I/Y = 8/12

PV = - 202,971.39

FV = 1,000,000

PMT = -250

CPT N

N= 220 months

N= 220/12 = 18.33

* **She should retire at the age of 53**

Q3. Assume that Company X and Company Y have **similar** $1,000 par value bond issues outstanding. The bonds are **equally risky**.

Company X’s bond has a 9% annual coupon, matures in 4 years and is currently priced at $829.

Company Y’s bond has a 12% annual coupon and matures in 4 years

How much are you willing to pay for Company Y’s bond today?

Company X:

N= 4

PV = -829

PMT = 0.09 \* 1000 = 90

FV = 1,000

CPT I/Y

* **I/Y = 14.99**

Equally risky 🡪 I/Y for both bonds is the same

Company Y:

N= 4

I/Y = 14.99

PMT = 0.12 \* 1,000 = 120

FV = 1, 000

CPT PV

* **PV = - 914.62**

Q4. Mitts Cosmetics Co.’s stock recently paid $2 dividend. This dividend is expected to grow by 25% for the next three years and then grow forever at a constant rate of 5 percent. If the required rate of return is 12%, what is the price of the stock today?

D0 = 2

D1 =2 \* (1.25) = 2.5

D2 = 2.5 \* (1.25) = 3.125

D3 = 3.125 \* (1.25) = 3.906

D4 = 3.906 \* (1.05) = 4.1

Solve for P3

P3 = D4/ R-g

= 4.1 / 0.12- 0.05

= 4.1/ 0.07

* **P3 = 58.57**

Solve for P0

P0 = D1/ (1 + R) + D2/ (1 + R)2 + D3/ (1 + R) 3 + P3/ (1 + R) 3

P0= 2.5/1.12 + 3.125/ (1.12)2 + 3.906/ (1.12)3 + 58.58/(1.12)3

P0 = 2.23 + 2.49 + 2.78 + 41.70

* P0  = 49.2

Q5. You are serving on a jury and the plaintiff is suing the city for injuries sustained after falling down an uncovered manhole. In the trial, the doctors testified that it will be 3 years before the plaintiff is able to return to work. The jury has already decided in favor of the plaintiff and decided to grant him the following:

The present value of three years’ **future salaries**. You assume the salaries will be for the following three years $40,000, $43,000 and $45,000, respectively.

Assume that the salary payments are equal amounts paid at the end of each **month**. If the interest rate you choose is 9% **EAR**, what is the size of the settlement today?

1. Get APR

Calculator:

2nd ICONV

EFF = 9

C/Y =12

CPT NOM

* **APR = 8.65%**

Formula:



APR = 12 (1+0.09)1/12 -1

* **APR = 8.65%**

1. PV of first year monthly salaries

N= 12

I/Y = 8.65 /12

PMT = 40,000/12 =3,333.33

CPT PV

**PV0 = -38,187.17**

1. PV of second year monthly salaries

N = 12

I/Y = 8.65/12

PMT = 43,000/12 = 3583.33

CPT PV

* PV1= -41,051.22

Discount back to today at the EAR

* PV0 = 41,051.22 / 1.09
* **PV0 = 37,661.67**

1. PV of third year monthly salaries

N = 12

I/Y = 8.65/12

PMT = 45,000/12 = 3,750

CPT PV

* PV1= -42,960.61

Discount back to today at the EAR

* PV0 = 42,960.61/ (1.09)2
* **PV0 = 36,159.09**

1. The size of the settlement today:

38,187.17 + 37,661.67 + 36,159.09= **112,007.93**

Q6. **Consider the following statements:**

1. **A 20 year, 10 percent coupon bond has more price risk than a 20 year, 20 percent coupon bond.**
2. A 20 year, 10 percent coupon bond has more reinvestment risk than a 20 year, 20 percent coupon bond.
3. A 20 year, 10 percent coupon bond has more price risk than a 30 year, 10 percent coupon bond.
4. **A 20 year, 10 percent coupon bond has more reinvestment risk than a 30 year, 10 percent coupon bond.**

Of the preceding statements, the following are *most* accurate:

1. I only
2. **I and IV**
3. II and III
4. III and IV
5. None of the above