## **FUNDAMENTALS OF FINANCE**

**Evaluation:** Exam **Date:** 4th June 2014

**Duration:** 120 minutes

Name: \_\_\_\_

School ID Number: \_\_\_\_\_ GAi

### GRADE

GROUP 1	
GROUP 2	
GROUP 3	
GROUP 4	
GROUP 5	
TOTAL	

### Please pay attention to the following information:

The test may be done with pen or pencil;

For supporting additional calculations you should use the existing sheet for that purpose;

We do not clarify any doubts during the test, so if you need to take some assumption, please do so (in writing) and respond accordingly;

It is possible to use calculators;

With the exception of the formulas sheet, the rest of the test cannot be unstapled;

The rounding should be carried out to 4 decimal places to interest rates, foreign exchange rates and intermediate calculations (ex: 0.1234) and 2 decimal places for values (ex: 1, 234.12 Euros).

In multiple-choice questions the answer will only be considered if written on the square on the right, given for that purpose. Each wrong answer corresponds to a loss of 0.5 points on the final grade of the test (0.25 on the TRUE/FALSE ones).

1. (1.5 points) A Portuguese investor has exchanged 800 euros for dollars and then these dollars for pounds. At the end he got 520 pounds. Knowing the USD/GBP exchange rate is 0.625, determine the USD/EUR exchange rate.

2. (0.75 points each) Indicate whether the following statements are true (T) or false (F):
a. The ECB's reference rate is usually higher than the interest rates charged by banks between each other.
b. Every day occur changes on the primary market regarding the prices of bonds and stocks.



### **GROUP 2**

3. (1.5 points) In case the stated annual rate is of 6% with a compound frequency of four, the corresponding effective annual rate will be:

- A. 2.02%.
- B. 6.12%.
- C. 2.00%.
- D. 6.00%.
- E. 6.14%.

4. (1.5 points) The EGAR of a deposit is always ...

- A. less than the EAR because it considers the tax cost.
- B. higher than the EAR because it considers the tax cost.
- C. the same as the EAR if there are no fees on that deposit.
- D. a value between 1% and 10%.
- E. none of the above.

5. (1.5 points) A company is in financial distress mainly due to the delay in receiving the amounts of revenues owed by a governmental customer. This entity has offered guarantees to pay within two years. Thus, the firm needs to change the payment terms of the loan contracted with its bank, as follows:

- Stop paying the 11 capital and interest quarterly installments, amounting to 155 thousand euros each.
- Make a one-time payment in precisely two and a half years.
- Accept the change of the former 8% stated annual rate into an effective annual rate of 9%.

Which is the single amount to be paid to the Bank in two and a half years in order to completely liquidate the debt?

6. (2 points) A bank wants to give credit to an SME by approving a two year term funding. According to the seasonality of the company's revenues, the constant installment of capital and interest will occur every six months. In each installment, the Bank will charge a fixed fee of 400 euros. Knowing that:

- The capital loan (principal) is 200 thousand euros.
- The Bank doesn't want to exceed an EGAR of 9.3215%.
- Immediately after the payment of the first installment, the company's debt will be reduced to 76.5385% of the loan contracted.

What is the stated annual interest rate that the Bank is willing to charge the SME?

7. A company has its Assets (amounting to 1,000) financed in 60% by Debt. Knowing that the EBT obtained was of 50 and that the corporate income tax rate was 20%:

a. (0.75 points) Determine the ROE for that year.

b. (0.75 points) Knowing that the NOPLAT was 88 and the Turnover was equal to 1, determine the Operating Margin.

8. (1.5 points) The improvement of the ROIC can be obtained through (keeping everything else constant):

- A. liquidation of financial investments.
- B. contracting a new bank loan.
- C. reduction of the payables average term.
- D. reduction of the receivables average term.
- E. none of the above.



9. The company Examini obtained, in its first year of activity, revenues of 1,000, with a Gross Margin of 40%. The External Supplies were of 50, without being subject to VAT. The company does not have inventories in storage. Knowing that the Receivables Average Term (RAT) is of 3 months, the Payables and Tax Payables Average Term are 1 month, and that the average rate of VAT (paid and deductible) is 23%:

a. (2 points) Calculate the value of the Working Capital for that year.

b. (0.5 points) Knowing that the Operating Free Cash Flow was negative in 50, determine the value of the EBITDA (in case you didn't reach any outcome on the previous question, consider the value of 235 for the Working Capital).

10. (3.5 points) Consider the following investment project (amounts in thousands of euros) at constant prices:

- EBIT: 250 in the first year and 400 in the following.
- CHANGE in the Working Capital: -60 in the first year and 80 in the following.
- Investment:
- Equipment X: 300; depreciation rate of 33.33%; and selling price of 50.
- Equipment Y: 500; depreciation rate of 50%; and selling price of 30.
- Corporate tax rate: 20%.
- Consider the residual value in Working Capital and the value of the disinvestment in CAPEX in the year following the end of the activity.
- Consider that the Yield of the Treasury Bonds is 2.5%, the risk premium of the project is 7.5% and the expected annual inflation rate is of 2.8037%.

Calculate the VAL of the investment project (in constant prices).

11. (1.5 points) An investment project with a single initial investment of 300 thousand euros, and a life of 4 years, has a DPP of 3 years. Knowing that the discounted Cash Flows of years 1 and 3 are respectively of 100 and 80 thousand euros, the discounted Cash Flow of year 2 shall be equal to:

- A. 80 thousand euros.
- B. 120 thousand euros.
- C. 140 thousand euros.
- D. 160 thousand euros.
- E. none of the statements is correct.



# **Supporting Additional Calculations**

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**FORMULAS** 

Simple Interest	Compound Interest
$M = C + C \times n \times r$	$\mathbf{M} = \mathbf{C} \times \left(1 + r\right)^{\mathbf{n}}$
$C = \frac{M}{1 + n \times r}$	$C = \frac{M}{(1+r)^n}$ or $C = M \times (1+r)^{-n}$
$\mathbf{r} = \mathbf{m} \times \mathbf{r}_{\mathbf{m}}$	$1 + r = (1 + r_m)^m$
	$1 + r = (1 + \frac{r_{(m)}}{m})^m$ , where $r_m = \frac{r_{(m)}}{m}$
	$A_{\overline{n}} _{r} = \frac{1 - (1 + r)^{-n}}{r}$
	PV Perpetuity = $\frac{T}{r}$
	PV Growing Perpetuity = $\frac{T}{r - g}$
r – effective annual rate $r_{(m)}$ – stated rate with a frequency of m $r_m$ – effective rate for the sub-period (can be repeated m t n – number of compounding times (periods) using the give	imes per year) ven interest rate
g – growth rate	77105
$Gross ROA = {Assets} = {Revenues} x {Ass}$ $Asset Turnover = {Assets}$ $Net ROA = {Assets} = {Revenues} {Revenues} x {Assets}$	ets
$ROE = \frac{Net Income}{Equity} = \left(GrossROA + (GrossROA + (GrossROA$	$oss  ROA - r  )x \frac{Debt}{Equity}  \Big) x  (1-t)$
$ROIC = \frac{NOPLAT}{Invested Capital}$	
Working Capital = Permanent Capital – Net non-cur	rrent Assets
Net Working Capital = Operating Needs – Operating	g Resources

