Faculty of Economics and Business Administration

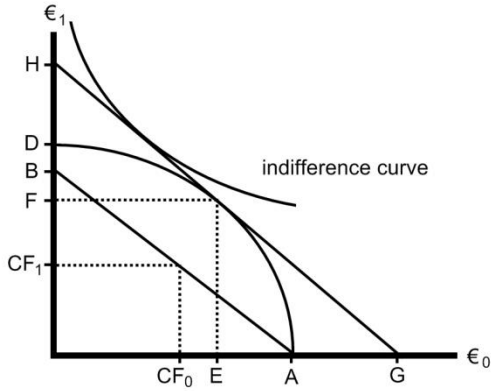
Exam:	Finance (Exam)	Version A
Code:	E_IBA2_FIN	
Examinator:	Dr. M.B.J. Schauten	
Co-reader:	Dr. M.J. van den Assem	
Date:	16 December 2015	
Time:	15:15-17.15 am	
Duration:	2 hours	
Calculator allowed:	Yes	
Graphical calculator allowed:	No	
Number of questions:	19	
Type of questions:	16 multiple choice and 3 open	
Answer in:	English	
Remarks:	Indicate the answers of the **multiple choice questions** by filling in the corresponding box on the mc-answering form. Only one answer is correct (a, b, c or d). If you give more than one answer or no answer then your response is counted as wrong. The answers to the **open questions** should be given in the space below the open questions. There is more than enough space to write your answers. Numbers are written in European (Dutch) format with decimal commas, and points separating thousands (e.g. 1.234.567,89). **Write your name on the mc-answering form as well as on this exam form. At the end of the exam you hand in the mc-answering form as well as the exam form with the supervisor**.	
Credit scores:	The maximum score for the mc questions is 72 points. To determine the score we take into account the expected number of correct answers when answers are given randomly. The maximum score for the open questions is 18 points. The final grade for this exam is: [total number of points + 10] / 10.	
Grades:	The grades will be made public at the latest on 13 January 2015.	
Inspection:	Will be announced via Blackboard.	
Number of pages:	13 (including front page)	

Name : _____

Student number : _____

Part A: Multiple Choice questions (72 points)

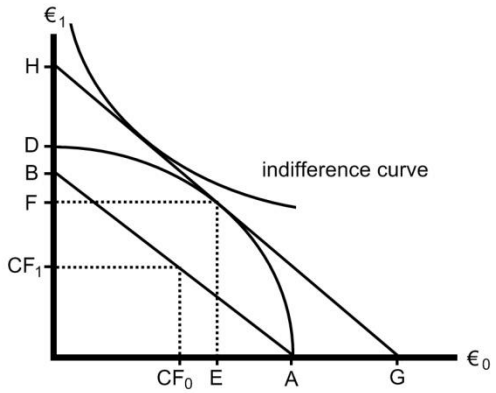
1.
Assume a world according to the Hirshleifer model. The income of Maximilien at t = 0 and t = 1 is equal to €50,00 (CF_0) and €60,00 (CF_1) respectively. The present value of the revenue of the investment is €155,00 (EG). At t = 0 Maximilien consumes €25,00 (C_0) and borrows €75,00.The risk free interest rate is 2%. The figure below is not drawn to scale.



Question: The net present value of the investment (AG) is closest to

a. €40
b. €45
c. €50
d. €55

2.
Assume a world according to the Hirshleifer model. The income of Josephine at t = 0 is equal to €150,00 (CF_0). At t = 0 Josephine consumes €39,00 (C_0) and at t = 1 €255,00 (C_1). The net present value of the investments is €65,00 (AG).The risk free interest rate is 2%. The figure below is not drawn to scale.



Question: The income of Josephine at t = 1 (CF_1) is closest to

a. €50
b. €75
c. €100
d. €125

3.
On 30 June 2015 the number of outstanding shares of Aholt is equal to 924 million. The price per share then is €17, the amount of cash €1,6 billion, the amount of interest bearing debt €7 billion, and the value of the inventories € 1,7 billion.

Question: The enterprise value of Aholt is closest to

a. €21,1 billion
b. €22,7 billion
c. €24,3 billion
d. €17,3 billion

4.
Company Mangoo considers to invest €6.000 (at t = 0) in a new project. The expected cash flows before corporate tax (measured in real terms) at the end of year 1 and 2 are €6.000 and €8.000 respectively. The investment of €6.000 will be depreciated in 2 years straight line to zero on the basis of historical cost. The corporate tax rate is 25,00%. The real cost of capital is 10,00%. The expected inflation is 2,00%.

Question: The net present value of the project is closest to

a. €3.050
b. €4.050
c. €4.314
d. €6.066

5.

Bay properties Ltd is considering opening a set of new retail stores. It has prepared the following three-year forecast of cash flows for this division (in millions of euros):

t	0	1	2	3
Expected cash flow	-50	5	7	8

Assume cash flows after year 3 will grow at 2% per year, forever. E.g. the expected cash flow at t = 4 is €8 million × 1,02 and at t = 5 €8 million × $1{,}02^2$. The cost of capital is 10%.

Question: The net present value of the new stores is closest to

a. €43 million
b. €53 million
c. €65 million
d. €73 million

6.

NICBBANK advertises savings accounts with an interest rate of "5,2000% annual percentage rate (APR = 5,2000%) with weekly compounding".

Question: The effective annual rate (EAR) of these savings accounts is closest to

a. 5,2007%
b. 5,2676%
c. 5,3257%
d. 5,3348%

7.

Question: Which of the following statements is **true**?

a. Depreciation is a cash expense that is paid by the firm.
b. Net working capital is equal to current liabilities – current assets.
c. The depreciation tax shield is equal to the depreciation times the (marginal) corporate tax rate (depreciation × τ_c).
d. Capital expenditures have no impact on the free cash flow.

8.

Consider a world that satisfies the assumptions of the CAPM. In this world, only three risk-bearing securities are traded, A, B and C, as well as a risk-free security F, with a return of 2,00%. The following is known:

Security	**A**	**B**	**C**
E(R)	8,00%	12,00%	10,00%
Number of shares outstanding	40.000	20.000	20.000
Current price per share	€ 20	€ 20	€ 40

An investor X, who operates optimally in this world, has a wealth of € 300.000. Investor X short sells € 200.000 worth of F (she borrows € 200.000).

Question: The expected return of the optimal portfolio of investor X is closest to

a. 9,60%
b. 12,64%
c. 14,67%
d. 15,64%

9.

Assume an efficient capital market. Bond A is a default-free bullet bond with a nominal value of €1.000. The maturity of this bond is 4 years, the coupon is 0% and the price is €871,44. In addition, assume that r_1 = 2,00%, r_2 = 3,00% and ${}_2f_3$ = 3,20%.

Question: The one-year forward rate for year four (${}_3f_4$) is closest to

a. 3,32%
b. 3,50%
c. 3,59%
d. 4,81%

10.
Assume an efficient capital market. Consider three bonds in this world. Bond A has a coupon of 0,0%, bond B has a coupon of 10,0%, and bond C has a coupon of 5,0%. The maturity of bond A is 1 year, the maturity of bond B is 2 years and the maturity of bond C is 3 years. The bonds are bullets and have no default risk. All bonds have a nominal value of €1.000. The 1-year spot rate (r_1) is 2,5%, the 2-year spot rate (r_2) is 5,0% and the 3-year spot rate (r_3) is 7,5%.

Question: Which of the following statements is **false**?

a. The yield to maturity of bond B is higher than that of A.
b. The yield to maturity of bond C is higher than that of B.
c. The price of bond B is higher than the price of bond A.
d. The price of bond C is higher than the price of bond B.

11.
Assume a perfect capital market under certainty. Company SCOUT growths at a perpetual rate of 10% per annum (g = 10%). Every year, 10% of the earnings is being paid out as dividend. The dividend policy will remain unchanged. The price of a share of company SCOUT at t = 0 is €110. (This is the price just after the payment of the dividend: P_{ex} at t = 0 is €110.) The earnings per share at t = 2 is €12,10.

Question: The interest rate is closest to

a. 10%
b. 11%
c. 12%
d. 13%

12.
Assume a perfect capital market under certainty. For firm A and B, the following data is given:

	A	B
Earnings per share at t = 1 (EPS_1)	€4,00	€6,00
Dividend payout ratio (constant)	50%	25%
Annual growth rate (g)	4,0%	6,0%

For both firms the discount rate is 7,0%. We assume that the payout ratio and growth rate of both firms remain constant.

Question: At t = 0, the value of a portfolio that consists of one share A and one share B is closest to

a. €142
b. €183
c. €217
d. €733

13.
Consider a world in which the assumptions of portfolio theory hold. In this world only two securities are traded, security A and B. Security A has an expected return of 10% and a standard deviation of the return of 20%. Security B has an expected return of 20% and a standard deviation of the return of 40%. The correlation coefficient between the returns of A and B is 0,0.

For the utility maximizing investor Harry M. it holds that for any portfolio P:

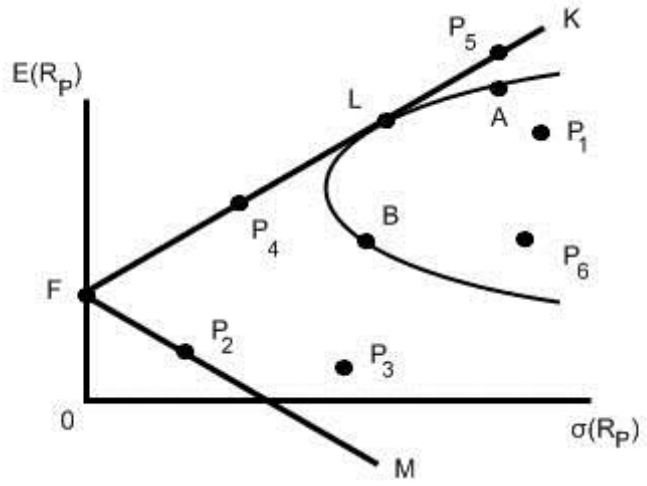
$E(U) = E(R_P) - 2\,\sigma^2\,(R_P)$

Question: The fraction of wealth invested **in security A** by Harry M. is closest to

a. 0,625
b. 0,675
c. 0,725
d. 0,875

14.
Consider a world in which the assumptions of the portfolio theory hold. In this world only the two risk-bearing securities, A and B, and the risk-free security F are traded. Short selling is allowed.

The curve through A and B in the figure below represents the minimum-risk frontier of the risk-bearing securities. The line through K, L, F, P_2 and M is the minimum-risk frontier for this world. The line is tangent to the above-mentioned curve in point L.
In addition, $E(R_B) = E(R_{P6})$, $\sigma(R_A) = \sigma(R_{P5})$, and $E(R_B) - r_f < r_f - E(R_{P3})$.



Question: Which of the following statements is **false**?

a. Portfolio P_6 is being constructed as follows: short A, long B, short F.
b. The correlation coefficient between the returns of the portfolios P_1 and P_3 is negative.
c. Portfolio P_2 has the lowest possible Sharpe Ratio.
d. The correlation coefficient between the returns of the portfolios P_4 and P_5 is -1.

15.
The equation of the market model that is used in event studies is:

$R_{j,t} = a_j + b_j R_{MI,t} + U_{j,t}$

where MI denotes the market index that is being used and $U_{j,t}$ represents the error term; j denotes the security and t denotes time. Suppose that from our regression analysis we obtain $b_1 = -1{,}0$ and $\sigma(U_1) \neq 0$ for security 1 and $b_2 = 1{,}0$ and $\sigma(U_2) = 0$ for security 2. Portfolio P is long in both securities 1 and 2: $x_1 = 50\%$ and $x_2 = 50\%$.

Question: Which of the following statements is **true (or the most credible one)**?

Considering the information above, we may conclude (by approximation) that…
a. … portfolio P is MV efficient.
b. … portfolio P is perfectly correlated with the market index MI.
c. … portfolio P has no unique risk.
d. … portfolio P has no systematic risk.

16.
There are many studies into the announcement effect of takeovers. A large body of empirical research has examined the stock price patterns of the acquiring and/or the target company in the period around the announcement of a takeovers.

Question: Which of the following statements about stock price movements surrounding takeover announcements is **false (or the least credible one)**?

a. The correlation between the stock returns of the target company and the acquiring company is, on average, stronger after the date of the announcement than before the date of the announcement.
b. On the trading day after the announcement, the stock price of the target company is mostly higher than the bid price offered by the acquirer.
c. In most cases, the stock price of the target company increases on the day of the announcement of the takeover bid.
d. In about half of the cases, the stock price of the acquiring company declines on the day of the announcement of the takeover bid.

Part B: Open questions (18 points)

17.

Question: Describe the Efficient Market Hypothesis (EMH), and discuss the differences between the three forms of the EMH. (3 points)

18.

You are given the following facts of firm A and B as separate entity:

	A	**B**
Price / earnings ratio (trailing)	12	6
Earnings per share	€5	€4
Number of outstanding shares	200.000	100.000
Market value equity	€12.000.000	€2.400.000
Price per share	€60	€24

Firm A prepares to acquire firm B. A will pay €2,6 million in cash (by reducing its excess cash reserve) for all shares of B. The synergy (or gain) of the acquisition is equal to €500.000.

Questions:

a. Determine the net present value of the acquisition for the shareholders of A. (4 points)

b. Determine the net present value of the acquisition for the shareholders of B. (3 points)

19.

MARCUS N.V. consists of three different divisions. MARCUS has identified a comparable firm to estimate the cost of capital of its division Food. MARCUS has estimated the beta of the equity and debt of comparable firm PATRICK'S FOOD PALACE N.V. The beta of the equity of PATRICK'S FOOD PALACE is equal to 1,5. The debt of PATRICK'S FOOD PALACE N.V. is free of risk. The comparable firm is 40% debt financed and the amount of its level of excess cash is equal to 25% of the sum of its market value of equity and debt. The risk free rate is 1,00% and the market risk premium 6,00%. Ignore corporate tax. In order to determine the cost of capital the management of MARCUS applies the CAPM.

Questions:

a. Calculate the required return on equity of PATRICK'S FOOD PALACE N.V. (R_E). Show your calculation. (2 points)

b. Calculate the required return on debt of PATRICK'S FOOD PALACE N.V. (R_D). Show your calculation. (2 points)

c. Calculate the cost of capital of the division Food of MARCUS N.V.
Show your calculations. (4 points)