School of Business and Economics

Exam:	Finance (Midterm test 1)	Version A
Code:	E_IBA2_FIN	
Examinator:	Dr. M.B.J. Schauten	
Co-reader:	Prof. Dr. M.J. van den Assem	
Date:	13 November 2018	
Time:	8:45 – 10:15 hrs	
Duration:	1,5 hours	
Calculator allowed:	Yes	
Graphical calculator allowed:	No	
Number of questions:	16	
Type of questions:	multiple choice	
Answer in:	English	
Remarks:	Answer the **multiple choice questions** by filling 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. Numbers are written in European (Dutch) format with decimal commas, and dots 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:	To determine the score we take into account the expected number of correct answers when answers are given randomly. Number of points = (number of correctly answered questions – 4) × 7,5. The final grade for this exam is: [number of points + 10] / 10.	
Grades:	The grades will be made public at the latest on 27 November 2018.	
Inspection:	Will be announced via Canvas.	
Number of pages:	9 (including front page)	

Name : _____

Student number : _____

1.
Assume a world according to the Hirshleifer model. At t = 0 Theo consumes €40,00 (C_0). The income of Theo at t = 0 and t = 1 is equal to €100,00 (CF_0) and €56,10 (CF_1), respectively. The risk-free interest rate is 2,00%. At t = 1 the revenue of the investment in real projects is €120,00 and the internal rate of return of these projects is 20,00%.

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

a. At t = 0 Theo borrows €40,00 and at t =1 he pays €0,80 interest.
b. At t = 0 Theo lends €40,00 and at t = 1 he pays €0,80 interest.
c. At t = 0 Theo borrows €40,00 and at t =1 he receives €0,80 interest.
d. At t = 0 Theo lends €40,00 and at t = 1 he receives €0,80 interest.

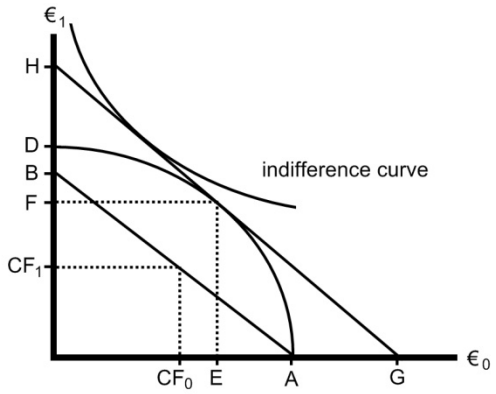
2.
Assume a world according to the Hirshleifer model. The income of John at t = 0 and t = 1 is equal to €40,00 (CF_0) and €40,80 (CF_1), respectively. The total wealth at t = 0 (or the maximum consumption at t = 0) is €120,00. The risk-free interest rate is 2,00%.

Question: The net present value of the real projects John will invest in is closest to

a. €38,00
b. €40,00
c. €42,00
d. €44,00

3.

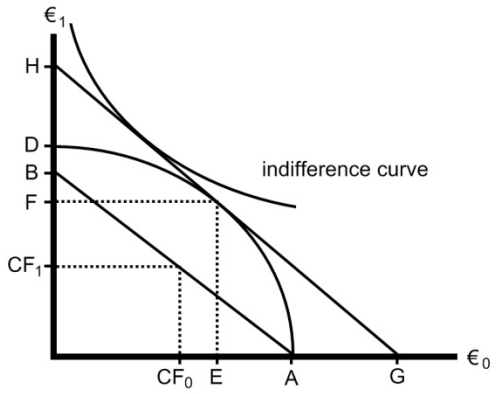
Assume a world according to the Hirshleifer model. The income of Oliver at t = 0 and t = 1 is equal to €30,00 (CF_0) and €35,70 (CF_1), respectively. The investment in real projects at t = 0 (EA) generates a revenue at t = 1 of €61,20 (OF). The internal rate of return of this investment is 25,00%. The risk-free interest rate is 2,00%. At t = 0 Oliver consumes €45,00 (C_0). Consider the figure below (not drawn to scale).



Question: At t = 1 the consumption of Olivier (C_1) is closest to

a. €30,66
b. €31,66
c. €32,66
d. €33,66

4.
Assume a world according to the Hirshleifer model. At t = 0 the income of Maggie is €75,00 (CF_0) respectively. The risk-free interest rate is 2,00%. The net present value of the investment in real projects is 40,00 (AG). At t = 0 the consumption is €115,00 (C_0). Consider the figure below (not drawn to scale).



Question: The length of line segment BH is closest to

a. €39,20
b. €40,00
c. €40,80
d. €41,20

5.
Question: In the context of Hirshleifer's model, which of the following statements is **true**?

a. The consumption possibilities line represents the collection of combinations of current and future consumption.
b. The consumption possibilities line represents the collection of combinations of current investments in real projects and future consumption.
c. The consumption possibilities line represents the collection of combinations of current consumption and future interest rates.
d. A feature of the real investment opportunities curve is the constant marginal return on investment opportunities.

6.
Assume a certain world. You will receive €1.000 in each of the next 5 years, for the first time at t = 1 and for the last time at t = 5. The risk-free interest rate is 2,00%.

Question: At t = 0 the present value of this series of cash flows is closest to

a. €4.713
b. €4.716
c. €4.719
d. €4.722

7.
The table below summarizes two risky assets whose cash flows extend over three periods. At the three different points in time, there are two possible states ('states of nature'), each with a probability of 50%.

Table 1: overview of cash flows in euros of one security A and one security B at time *t*

	Security A		Security B	
Point of time	State 1	State 2	State 1	State 2
1	150	30	50	10
2	150	30	50	10
3	150	30	50	10

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

a. If the price of one security A is equal to the price of three securities B then it is possible to make an arbitrage profit.
b. If the price of one security A is equal to the price of three securities B then it is possible to make an arbitrage profit by going long in one security A and long in three securities B at t = 0.
c. If the price of one security A is higher than the price of three securities B then it is possible to make an arbitrage profit by going long in one security A and short in three securities B at t = 0.
d. If the price of one security A is higher than the price of three securities B then it is possible to make an arbitrage profit by going short in one security A and long in three securities B at t = 0.

8.

On December 31th 2017 the number of outstanding shares of Netfliks is 430 million. On that day the price per share is $200,00; the book value of the non-current assets $9,0 billion (bn); the book value of net working capital $10,0 bn; the market value of interest bearing debt $6,5 bn; the book value of equity $3,5 bn; the book value of the accounts receivable $0,5 bn and the book value of the accounts payable $0,4 bn. The enterprise value is $90,5 bn

Question: On December 31th 2017, the amount of cash and cash equivalents is closest to

a. $0,0 bn
b. $2,0 bn
c. $4,0 bn
d. $6,0 bn

9.

Entrepreneur Jan van der Meule has the opportunity to invest in three projects. The projects are mutually exclusive and can only be implemented once. The following is known about the three projects:

Project	**A**	**B**	**C**
Required return	16%	10%	14%
Pay back period	1 year	2 year	2 year
Internal rate of return	16%	17%	18%
Investment outlay	€900	€1.500	€1.200
Net present value	€0	€3.500	€2.400

The goal of entrepreneur Jan van der Meule is to maximize shareholder value.
Assume a perfect capital market (i.e. there is no capital rationing).

Question: Entrepreneur Jan van der Meule will …

a. invest in project A.
b. invest in project B.
c. invest in project C.
d. not invest.

10.
At t = 0, project X requires an investment outlay of €500. Starting at t = 1, the project generates an annual cash flow of €80 up to infinity. The required return is 10%

Question: The internal rate of return is closest to

a. 10%
b. 12%
c. 14%
d. 16%

11.
At t = 0 you are considering to invest in a parking lot. At t = 0 the investment outlay is €80.000. Because it is expected to take some time to find suitable tenants, it is assumed that the parking garage will only be let from the end of year two. The expected net cash flow at the end of the first year is €0,00 (expected CF_1 = € 0) and at the end of the second year € 2.400 (expected CF_2 = €2.400). The expected cash flow increases by 3,00% every year (e.g., the expected CF_3 is equal to € 2.472). Use a discount rate of 6,00%.

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

a. - €42.264
b. - €40.000
c. - € 4.528
d. €0

12.
Company Orangina is considering the implementation of a new project that now (t = 0) requires an investment in a machine of € 50.000. The expected operational cash flows before corporate tax (measured in nominal terms) at the end of year 1 and 2 are equal to €35.000 and €88.000 respectively. The investment of €50.000 is depreciated on a straight line basis based on historical cost in 2 years to €10.000 (in nominal terms). It is assumed that the machine will be sold for €12.000 (in nominal terms) at t = 2. The corporate tax rate is 25,00%. The nominal cost of capital is 6,00%. For the coming years a constant annual inflation of 2,00% is expected.

Question: At t = 2 the nominal cash flow after tax is closest to

a. €52.500
b. €70.000
c. €82.500
d. €88.000

13.
Entrepreneur VANDOLDER considers investing in project REDMOON. In addition to an investment in fixed assets, at t = 0 the project requires an investment in working capital. The size of the working capital can be determined by the items of accounts receivable, inventories and accounts payable. The table below gives an overview of the size of these items.

Table 2: size in euros of accounts receivable, inventories and accounts payable at time *t*

t	**Accounts receivable**	**Inventories**	**Accounts payable**
0	0	40.000	40.000
1	120.000	110.000	80.000
2	150.000	140.000	105.000
3	60.000	50.000	40.000
4	0	0	0

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

a. During year 3 the working capital decreases by €70.000.
b. During year 3 the working capital decreases by €115.000.
c. During year 3 the working capital increases by €150.000.
d. During year 3 the working capital increases by €185.000.

14.
At NICB BANK the annual percentage rate (APR) of a savings account is 3,0000%. The bank account pays interest weekly.

Question: The effective annual rate (EAR) is closest to

a. 3,0000%
b. 3,0446%
c. 3,0652%
d. 3,0966%

15.
Suppose you put €1.000 into a savings account each year, with the exception of year 3. In that year you put €750 instead of €1.000 into the savings account. You start saving at the end of year 1 (t = 1) and stop after four years (t = 4). So at t = 0 you do not invest anything, at t = 1 €1.000, at t = 2 € 1.000, at t = 3 € 750 and at t = 4 €1.000. So in total you deposit €3.750. Assume an interest rate of 2,00% on an annual basis. The interest is credited annually. In the meantime, you do not withdraw money.

Question: The amount you have saved including interest is up to and including t = 4 closest to

a. €3.752
b. €3.776
c. €3.780
d. €3.866

16.
Grontmij was a listed engineering consultancy firm based in the Netherlands. In 2012 the company was in dire need of additional capital. At the shareholders meeting on the 9th of May that year, it was decided that a rights issue would be implemented to raise the necessary funds.

On May 9, 2012 Grontmij had 21,3 million shares outstanding at a closing price of €4,87. For each share held, shareholders received the right to purchase 2 additional shares at an issue price of €1,87 each. In total, 42,6 million new shares where thus issued this way. The rights issue was underwritten by banks and major shareholders.

Question: On May 9, 2012, the theoretical ex-right price (TERP), or the expected price of a Grontmij share after the rights issue, is closest to?

a. €1,87
b. €2,25
c. €2,87
d. €3,37

End of test