Answers Exam Finance dd 20 December 2017 (preliminary_v1)

MULTIPLE CHOICE QUESTIONS (72 points)

Number of points mc questions = (number of correctly answered questions – 4) × 6

1./11. Answer: d

a. $C_1 = CF_1 + OF$ + amount lent plus interest = 91,52 + 62,40 + 45,00 × 1,04 = 200,72
b. Interest received: 4,00% × 45 = 1,80
c. AG = -EA + EG = -35,00 + 62,40/1,04 = 25,00
d. OH = OG × (1+r) en OG = OA + AG
   $OA = CF_0 + CF_1/1,1$ = 93,60 + 91,52/1,04 = 181,60 → OG = 181,60 + 25,00 (zie c.) = 206,60

   Note: $C_0 = CF_0$ – EA – amount lent = 93,60 – 35,00 – 45,00 = 13,60
   Check: $OG = C_0 + C_1 / (1+r)$ = 13,60 + 200,72 / (1,04) = 206,60

2./12. Answer: b

Interest received 12 → Marcus lends at t = 0: 12,00/0,03 = 400.
$C_0 = CF_0$ – EA – amount lent = 1.400 – 1.000 – 400 = 0

C_1 = 2.369,00
$OA = CF_0 + CF_1 / (1+r)$ = 1.400 + 618 / 1,03 = 2.000
$OG = C_0 + C_1 / (1+r)$ = 0 + 2.369,00 / 1,03 = 2.300
OG = OA + AG = 2.000 + (-1.000 + OF/1,03) = 2.300 → OF/1,03 = 1.300 → OF = 1.339

Check:
C_1 = CF_1 + amount lent plus interest + revenue investment
= 618 + 412 + 1.339 = 2.369

3./13. Answer: b

a. False. NPV = -30.000 + 16.500 / (1+irr) + 24.200 $(1+irr)^2$ = 0
b. True. NPV = -30.000 + 16.500 / (1,1) + 24.200 $(1,1)^2$ = 5.000
c. False. The NPV is positive → irr > r.
d. PI = (present value of expected cash flows CFs) / I = 35.000 / 30.000 = 1,17

4./14. Answer: c

NPV = - 100 + ((72,00 – 50)(0,75)+50)/1,1 + ((96,00 – 50,00)(0,75)+50,00)/$1,1^2$
= -100,00 + 66,50 / 1,1 + 84,50 / $1,1^2$ = 30,29

5./15. Answer: a
Maximum amount that could be borrowed at t = 0 is:
1.000 / $1,03^2$ + 2.500 / $1,03^3$ + 2.500 / $1,03^4$ = 5.452

6./16. Answer: a

r nominal = (1+r real)(1+ inflation) – 1 = 1,10 × 1,02 – 1 = 12,20%

Year	**0**	**1**	**2**
Operationele CF before tax	(30.000,00)	20.000,00	25.000,00
Depreciation machine		15.000,00	15.000,00
Profit before tax		5.000,00	10.000,00
Corporate tax		**1.250,00**	**2.500,00**
Profit after tax		3.750,00	7.500,00
CF after tax	**(30.000,00)**	**18.750,00**	**22.500,00**
Discount-factor	1,00	0,89	0,79
PV	(30.000,00)	16.711,23	17.872,97
NPV	**4.584,20**		

7./1. Answer: a
MRP is M. The level of risk is appr. 11%.

8./2. Answer: d
NPV project A = -100 + 300 / $(1+irr)^4$ = 0 $\Rightarrow$ irr = 31,61%
NPV project B = -100 + 200 / (1+irr) = 0 $\Rightarrow$ irr = 100,00%

9./3. Answer b

P = promised payment / (1+ yield) = 1.040 / 1,12 = 928,57
Default spread or credit spread is the yield to maturity minus spot rate =
12,00% - 4,00% = 8,00%

10./4. Answer: a

The yield of A is r_1, since P_A = 1.050 / 1+r_1 = 1.050 / 1+y.

Since the price of B is determined by r_1 t/m r_{10} and the term structure is downward sloping, yield of B < yield van A.

11./5. Answer: a

$_1f_2 = (1+r_2)^2/(1+r) - 1 = (0,9928)^2/(0,9922) - 1 = - 0,66\%$

12./6. Answer: d

D modified duration (= duration / (1+y)) gives an approximation of the change in the price as a result of a change in the yield. If the yield decreases from 3,00% to 2,00%, the price of the bond increases by appr. 5%.

13./7. Answer: a

$$x_A^* = \frac{\sigma_B^2 - \sigma_A \sigma_B \rho}{\sigma_A^2 + \sigma_B^2 - 2\sigma_A \sigma_B \rho} = \frac{0{,}30^2 - 0{,}20x0{,}30x0{,}5}{0{,}20^2 + 0{,}30^2 - 2x0{,}20x0{,}30x0{,}5} = 0{,}85714$$

$E(R) = x_A \times E(R_A) + x_B \times E(R_B) = 0{,}85714 \times 10{,}00\% + (1\text{-}0{,}85714) \times 20{,}00\% = 11{,}43\%$

14./8. Answer: d

$R_A = R_F + \text{beta} \times (R_M - R_F) = 2\% + 0{,}8\ (8\%\text{-}2\%) = 6{,}8\%$
$R_B = R_F + \text{beta} \times (R_M - R_F) = 2\% + 1{,}2\ (8\%\text{-}2\%) = 9{,}2\%$

$P_{A,0} = P_1 / 1{,}068 = 10{,}00$
$P_{B,0} = P_1 / 1{,}092 = 5{,}00$

If the investor has invested €1.000 in shares A, the investor also holds for €250 (5/20 × €1.000) shares B. This is equivalent to €250 / €5 = 50 shares B.

15./9. Answer: c

The return will be lower than that of the market, but that does not mean that negative abnormal returns are systematically earned.

16./10. Answer: d
Beta risky asssets =
(Net Debt / Enterprise value) × beta debt + (Equity / Enterprise value) × beta debt = (15 / 90) × 0 + (75 / 90) × 1,5 = 1,25

R risky assets = $R_F + \text{beta} \times (R_M - R_F) = 1{,}0\% + 1{,}25 \times 6{,}00\% = 8{,}50\%$

Open questions

17.
a. (1 point)
P_0 = div / r-g = 100,00 = 10 / r $\Rightarrow$ r = 10%

b. (1 point)
$R_i = beta_i \times (R_M - R_F) = 10\% = 1\% + beta \times 6\% \Rightarrow beta = 1,5$

c.
Investment per share:
Plow back ratio × EPS_1 = (1 – pay out ratio) × EPS_1 = 40% × 10 = 4
Total:
2 mln × 4 = 8 mln

d.
g = plow back ratio × roic = 40% × 15% = 6%

e.
P = 6 / (0,1 – 0,06) = 150

f.
No value, in that case roi is required return.

18.
Number of new shares A:
400.000 / 10 × 7 = 280.000

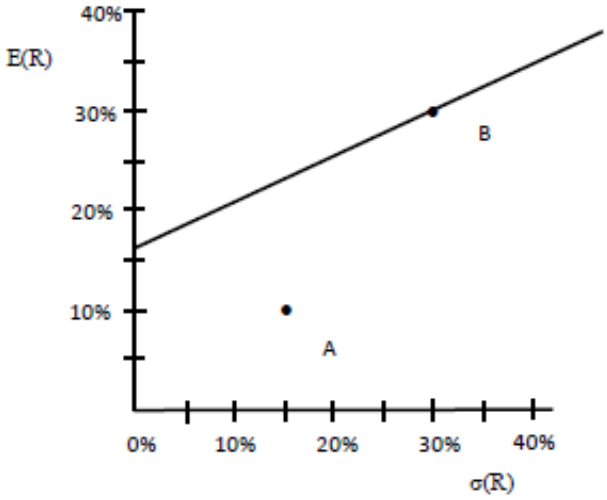
Total number of shares A after the acquisition:
800.000 + 280.000 = 1.080.000

Total value of A after the acquisition = €44,8 mln + €12,0 mln + €4,0 mln = €60,8 mln

NPV for B = wealth after acquisition – wealth before the acquisition
= 280.000/1.080.000 × €60.800.000 – €12.000.000 = €3.762.963

19.
$X_{a\ MRP}$ = 30% / (15%+30%) = 2/3

$E(R_{MRP}) = 2/3 \times 10\% + 1/3 \times 30\% = 16,7\%$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