Answers Exam Finance dd 21 December 2016 (preliminary)

MULTIPLE CHOICE QUESTIONS (72 points)

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

1./11. Answer: d

C_1 = OF + CF_1 – (amount borrowing plus interest) ⇒
CF_1 = C_1 – OF + (amount borrowing plus interest) = 25,50 – 102,00 + 140,00 × 1,02 = 66,3

2./12. Answer: a

OG = C_0 + C_1/(1+r) = 0 + 244,80/1,02 = 240,00
OG = CF_0 + CF_1/(1+r) + NCW = 100,00 + 102,00/(1,02) + NCW
OG = 240,00 = 200,00 + NCW ⇒ NCW = 40,00

3./13. Answer: c

Enterprise value = market value of equity + interest bearing debt – cash
= (12,5 mln × €18) + €57 mln – €6,5 mln = €275,5 mln

4./14. Answer: c

In nominal terms			
Corporate tax	25.00%		
r real	8.00%		
inflation	2.00%		
r nom	10.16%		
Year	**0**	**1**	**2**
Nom.CF. before tax	(10,000.00)	12,000.00	6,000.00
Depreciation		5,000.00	5,000.00
Profit before tax		7,000.00	1,000.00
Tax		1,750.00	250.00
Nominal CF aftertax	(10,000.00)	10,250.00	5,750.00
Discount-factor	1.00	0.91	0.82
PV	(10,000.00)	9,304.65	4,738.27
NPV	**4,042.92**		

5./15. Answer: b

NPV =
-650.000 + 70.000/(1,05) + 85.000/($1,05^2$) + 90.000/($1,05^3$)+ 400.000/($1,05^4$) = – 99.409

6./16. Answer c

1+EAR = (1+APR/k)k = $(1+2,75000\%/12)^{12}$
⇒ EAR = 2,7849%

7./1. Answer: b

Since the term structure is flat, the yield of B is equal tot he yield of A.

modified duration = duration / (1+y)
modified duration A = 5,00 / (1,06) = 4,717

8./2. Answer: a

X_{Rf} = 0,5 en X_{Rm} = 0,5 en
Risk portfolio is: X_{Rf} × Sigma (Rf) = 0,5 × 8% = 4%

9./3. Answer: a

$${}_2f_3 = (1+r_3)^3/(1+r_2)^2 - 1 = (1{,}007)^3/(1{,}006)^2 - 1 = 0{,}90\%$$
$${}_4f_5 = (1+r_5)^5/(1+r_4)^4 - 1 = (1{,}007)^5/(1{,}008)^4 - 1 = 0{,}30\%$$

10./4. Answer: c

$P_A = 1.010/(1+r_1) = 1.010 \Rightarrow r_1 = 0{,}00\%$
$P_B = 20/(1+r_1) + 1.020/(1+r_2)^2 = 1.000{,}39 \Rightarrow (1+r_2)^2 = 1.020/(1.000{,}39 - 20) \Rightarrow r_2 = 2{,}00\%$

11./5. Answer: d

Price $_{t=0}$ /EPS $_{t=1}$ = k / (r-g) = 0,3/(0,05-0,03) = 15

12./6. Answer: a

$P_0 = DIV_1 / (r-g)$
$P_{0,A} = 2{,}00 / (0{,}04 - g) = 100 \Rightarrow g = 2\%$
$P_{1,A} = 2{,}00 \times (1{,}02) / (0{,}04 - g) = 102$

$P_{0,B} = 2{,}00 / (0{,}06 - g) = 200 \Rightarrow g = 5\%$

The return is equal to the discount rate. This implies that the return of A is lower than the return of B.

13./7. Answer: a

$$x_A^* = \frac{\sigma_B^2 - \sigma_A\sigma_B\rho}{\sigma_A^2 + \sigma_B^2 - 2\sigma_A\sigma_B\rho} = \frac{0{,}40^2 - 0{,}30x0{,}40x0{,}5}{0{,}30^2 + 0{,}40^2 - 2x0{,}30x0{,}40x0{,}5} = 0{,}7692$$

$E(R) = x_A \times E(R_A) + x_B \times E(R_B) = 0{,}7692 \times 8\% + (1\text{-}0{,}7692) \times 12\% = 8{,}92\%$

14./8. Answer: b

a. True. E is on the efficient frontier (CF).
b. False. $E(R_P) = 1{,}1 \times 15\% - 0{,}1 \times 5\% = 16\%$
c. True. Deze portefeuille ligt op de efficiënte grenslijn (CF).
d. True .

15./9. Answer: d

a. True. In a semi strong efficient market it is not possible to systemically beat the market.
b. True. But it is not possible to earn systematically abnormal returns.
c. True. Diversification leads to a lower level of idiosyncratic risk.
d. False. This is only possible in a market that is efficient in the strong form.

16./10. Answer: d

The value of B after the acquisition of T is:
value of equity and debt of B and T plus synergy =
500 mln + 250 mln + 400 mln + 100 mln = 1.250 mln

Value of equity of B after the aquisition of T is:
Total value of B after the acquisition of T – value debt of B = 1.250 mln – 260 mln = 990 mln

Open questions

17.
a.
The Bèta of the assets is:
$0,8 \times 1,4 + 0,2 \times 0,0 = 1,12$
According to the CAPM the required return is:
$R = Rf + \beta \times (MRP) = 1\% + 1,12 \times 6\% = 7,72\%$

b.
The required return will be higher.
The Bèta of the assets then is:
$0,8 \times 1,4 + 0,2 \times 0,2 = 1,16$
According to the CAPM the required return is:
$R = Rf + \beta \times (MRP) = 1\% + 1,16 \times 6\% = 7,96\%$

18.
a.
$Bèta = covariance_{RCoogle,\ RMarkt} / (variance_{Markt})$
waarbij,
$covariance_{RCoogle,\ RMarkt} = \rho_{RCoogle,RMarkt} \times \text{standard deviation}_{RCoogle} \times \text{standard deviation}_{RMarkt}$

$Bèta = (0,4 \times 0,35 \times 0,25) / 0,25^2 = 0,56$

b.
Total risk = systematic risk + non-systematic risk
$\text{Systemtic risk} = Bèta \times \text{standard deviation}_{RMarkt} = 0,56 \times 0,25 = 0,14$

Non systematic risk = 0,35 – 0,14 = 0,21

19.
If the project succeeds, the NPV at t=2 is: -10 mln + 1,5 mln / 0,1 = 5 mln

At t= 0 the NPV of the proejct is:
$-0,4 \text{ mln} + (0,7 \times 5 \text{ mln} + 0,3 \times 0 \text{ mln}) / 1,25^2 =$
$-0,4 \text{ mln} + (3,5) / 1,25^2 = 1,84 \text{ mln}$