



EXAM Quantitative Finance (11/09/2013)

1.

1. $i_A^{(12)} = 9\% \Rightarrow i_M = 0,75\%$

$$n = 120$$

$$s_{\overline{120}|0,75\%} = 193,5143$$

$$100 \cdot s_{\overline{n}|i} = 19.351,43$$

Correct answer: c)

2. $i_A^{(4)} = 15\% \Rightarrow i_T = 3,75\% \Rightarrow i_T = 15,8650\%$

Correct answer : c)

3. $C_n = 18.042,98; C_0 = 15.000,00$

$$\left(\frac{C_n}{C_0}\right) = 1,202865333 \Rightarrow \ln\left(\frac{C_n}{C_0}\right) = 0,184706488$$

$$\ln(1,08) = 0,076961041$$

$$n = \ln\left(\frac{C_n}{C_0}\right) / \ln(1,08) \Leftrightarrow 0,184706488 / 0,076961041 = 2,4$$

2 anos + 0,4 anos, ou seja, 2 anos + 144 dias ($0,4 \cdot 360$), ou seja, 2 anos, 4 meses (120 dias ($4 \cdot 30$ dias)) e 24 dias

Correct answer : b)

4. $i_A = \sqrt[3]{(1,03 + 1,05 \cdot 1,05) - 1} \Leftrightarrow 1,043291 - 1 = 0,043291 = 4,3291\%$

Correct answer : a)

5. $C_0 = C_n / (1 + ni) \Leftrightarrow C_0 = 2.000 / (1 + 0,75 \cdot 0,08) \Leftrightarrow C_0 = 1.886,79$

Resposta certa: Alínea b)

6. $i_M = 0,75\%; n = 36;$

$$\ddot{a}_{\overline{36}|0,75\%} = 31,68265629$$

$$T = 30.000 / 31,68265629 = 946,89$$

Correct answer : c)

$$7. \delta_S = 0,05 \Rightarrow C_n = 36.000 * e^{10*0,05} \Rightarrow C_n = 59.353,97$$

Correct answer : a)

$$8. 3.000 = 3.000 \cdot 0,07 \cdot (1 + 0,0816)^{-0,5} + V \cdot (1 + 0,0816)^{-1,25} \Rightarrow V = 3.086,335$$

Correct answer : c)

Grupo 2.

9. Truth for $n > 1$ year.

10. Correct when interest rate > 0 .

Grupo 3.

$$i_s^{(6)} = 4,5\% \Rightarrow i_M = 0,75\%$$

$$i_s^{(6)} = 6\% \Rightarrow i_M = 1,0\%$$

$$PV = 10 + 20 \cdot a_{\overline{4}|0,75\%} +$$

$$+ \left[(40 - 20) \cdot a_{\overline{7}|1,0\%} + 20 \cdot \frac{\ddot{a}_{\overline{7}|1,0\%} - 7 \cdot (1 + 0,01)^{-7}}{0,01} \right] \cdot (1 + 0,075)^{-4}$$

Grupo 4.

$$i_A^{(4)} = 8,0\% \Rightarrow i_T = 2,0\%$$

$$12.000 = T \cdot a_{\overline{36}|2,0\%} \cdot (1 + 0,02)^{-1} \Rightarrow T = 480,21$$

Amortization table

(valores em euros)

Period	Debt at beginning of the period	Interest	Payment	Amortization	Accumulative Amortization	Debt at end of the period
1	12000,00	240,00				12240,00
2	12240,00	244,80	480,21	235,41	235,41	12004,59
36	932,36	18,65	480,21	461,56	11769,21	470,79
37	470,79	9,42	480,21	470,79	12240,00	0,00

Grupo 6.

Period	Debt at beginning of the period	Interest	Payment	Amortization	Accumulative Amortization	Debt at end of the period
1	9600000	576000	0	0	0	576000
2	9600000	576000	0	0	0	576000
3	9600000	576000	0	0	0	576000
4	9600000	576000	400000	4800000	160000	5536000
5	4800000	288000	0	0	0	288000
6	4800000	288000	400000	4800000	320000	5408000

$$400 * PA = 288 \cdot (1 + 0,065)^{-1} + 5.408 \cdot (1 + 0,065)^{-2} \Rightarrow PA = \frac{5038,44}{400} = 12,596$$