

## SOLUTIONS

**A) MULTIPLE CHOICE QUESTIONS (1 point each, no penalties, at least 5 to pass)**

- 1 The main source of income for a commercial bank is represented by...  
(b) the interest margin
- 2 The main monetary policy tools of a central bank are more effective in influencing...  
(a) short term rates
- 3 In the semi-strong version of the efficient market hypothesis...  
(b) stock prices reflect public information
- 4 Which of the following is not priced in the short-term interbanking market?  
(c) EURIRS
- 5 Other thing being equal, a callable bond, compared to one without this clause, presents a yield to maturity:  
(c) that is greater
- 6 A quick and substantial increase in interest rates has typically the following impact on stock markets:  
(d) decrease of prices for growth stocks
- 7 If tariffs increase, the exchange rate foreign versus domestic...  
(a) goes up
- 8 The main source of capital for insurance companies is represented by...  
(a) technical provisions
- 9 When analysing mutual funds, indexes such as Sharpe, Sortino and Traynor portray...  
(d) the return premium adjusted for risk
- 10 A pension fund differs from a mutual fund...  
(d) for a lower exit liquidity

**B) OPEN QUESTION (10 points, check your handwriting and don't exceed the space below)**

Briefly describe the main assets and liabilities of a Central Bank, ranked by volumes.

Assets: bonds (above all: sovereigns), used in open market transactions; loans to banks, used for rescuing illiquid but solvent entities
Liabilities: bank reserves, arising from reserve requirements and from interbanking transactions; currency in circulation, printed to facilitate economic transactions between market players
Equity is present, but is typically very limited in size, and does not play the same role as in other firms (f.i., it can be negative in particular circumstances)

**C) EXERCISE (10 points, briefly explain your calculations and don't exceed the space below)**

Today I bought two bonds, both at 99, due in one year. The first is a zero-coupon, the other pays a 5% annual coupon. 1) What is the duration and the yield to maturity of this portfolio? 2) After six months I sell the first bond for 99,5, and deposit this money for 6 months at 1% (annual). Did I make a deal?

Both bonds and the PTF have only 1 flow left in 1 year, hence they all have a duration of 1
The PTF combines two bonds valued 99 (total: 198) and delivers $100 + 105 = 205$ at the maturity date. Hence: $205 / 198 - 1 = 3,54\%$
At the maturity date I'll get $99,5 \times 1,1200 = 112,00$ , instead of the $1\% + (100/99 - 1)$ return on the bond. I have less credit risk and more liquidity, though.