# INSTITUTE AND FACULTY OF ACTUARIES

# EXAMINATION

13 October 2015 (am)

## Subject SA5 – Finance
## Specialist Applications

*Time allowed: Three hours*

***INSTRUCTIONS TO THE CANDIDATE***

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*

2. *You have 15 minutes at the start of the examination in which to read the questions. You are strongly encouraged to use this time for reading only, but notes may be made. You then have three hours to complete the paper.*

3. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*

4. *Mark allocations are shown in brackets.*

5. *Attempt all three questions, beginning your answer to each question on a new page.*

6. *Candidates should show calculations where this is appropriate.*

*AT THE END OF THE EXAMINATION*

*Hand in BOTH your answer booklet, with any additional sheets firmly attached, and this question paper.*

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| *In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator from the approved list.* |

 

**1** A multi-national financial services group (the group) is considering the impacts of banking and insurance regulation on its business activities. Its banking subsidiary conducts both retail and investment banking whilst its insurance subsidiary offers a full range of life and general insurance products.

(i) State the fundamental differences between the balance sheets of the banking subsidiary and the insurance subsidiary. [3]

(ii) Describe the key risks apart from operational risk that the banking subsidiary and the insurance subsidiary accept. [4]

(iii) Describe the key considerations that the group should take when allocating risk to either the banking subsidiary or the insurance subsidiary. [5]

(iv) Describe the factors that might cause the group to move risk from the insurance subsidiary's balance sheet to the banking subsidiary's balance sheet or vice versa. [5]

(v) Describe three areas where the Modigliani and Miller proposition may fail for these subsidiaries. [3]

Under Basel III there is a proposal to utilise "Bail-In" capital. These are debt instruments that convert to equity or trigger a write-down when a stress event occurs. A stress event is defined in the debt documents and will include events deemed by the regulator to be a stress event.

(vi) Set out the issues that the insurance subsidiary's board should consider when deciding whether to invest in "Bail-In" capital bonds. [8]

(vii) Discuss whether regulators would recommend the use of "Bail-In" capital. [4]

(viii) Comment on the impact of "Bail-In" capital on shareholders of a company which has issued "Bail-In" capital. [3]

The group is considering the launch of an equity-release product. This product will allow a homeowner to borrow a sum of money against their home which will be repaid when the home is sold.

(ix) Set out the issues that the group should consider when deciding whether to issue this product from the banking subsidiary or the insurance subsidiary or both. [10]

(x) Explain why the insurance subsidiary's economic capital model may produce a different capital requirement to that produced by the regulator approved internal capital model. [4]

[Total 49]

**2** (i) Define the financial term "Currency Carry Trade". [1]

(ii) Explain why the volume of currency carry trades has been much reduced since the 2008 global financial crisis. [1]

"Hot money" is the flow of funds from one country to another in the pursuit of short-term profits from interest rate differentials and/or anticipated exchange rate movements.

(iii) State with reasons five sources of hot money. [5]

(iv) Discuss the circumstances that are likely to give rise to hot money flows. [3]

(v) Describe the impact that significant amounts of hot money flowing into and out of a country can have on its economy. [10]

A country's government has decided to take action to discourage and possibly prevent hot money from entering its economy.

(vi) Discuss the actions that the government could take. [5]

Hot money has started flowing into a large developing country. More hot money flows seem likely until the government takes action or until the current investment opportunity ends.

(vii) Describe the impact of the hot money on the risks facing a large domestic investment fund which invests in a wide range of different types of investment. [12]

(viii) Describe ways in which the fund in part (vii) could try to profit from or alternatively mitigate or avoid these risks. [3]

[Total 40]

**3** (i) Outline the reasons why credit default swap spreads may be different from bond yield spreads. [5]

The structural approach to evaluating credit derivatives is based on the Merton model. The model states that the probability that the company will default is equal to $N(-d_2)$ where $d_2$ is equal to:

$$d_2 = \frac{\ln\left(\frac{V_0}{D}\right) + \left(\mu - \frac{\sigma^2}{2}\right)T}{\sigma\sqrt{T}}.$$

(ii) (a) Define each symbol in the above formula.

(b) Explain what each of the components of this formula represents and how they combine to calculate the probability of default. [Hint: Explain in words why the formula is intuitively sensible.]

(c) State the assumptions that need to be made for the formula to be valid.

[6]

[Total 11]

# END OF PAPER