INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

23 April 2014 (pm)

Subject SA6 – Investment 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 before 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.

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 large pension scheme has traditionally held a large allocation of government bonds ("gilts") as part of its investment strategy. Due to the government's policy of reducing the supply of gilts and buying back stock at certain maturities, the yield on gilts has steadily declined and the trustees of the scheme believe that gilts have become too expensive. As the trustees' investment adviser, you have been asked to review alternative ways in which the scheme could manage its interest rate risk, particularly given that the recent actuarial valuation has revealed a 20% funding deficit and the trustees are considering increasing the exposure to return-seeking assets to make up the shortfall.

(i) Explain how gilts can be used to build an interest rate hedge for the scheme's liabilities, and the role that gilt repo can play. You should assume that the liabilities have no inflation sensitivity. [8]

(ii) Explain why a bank may scale back its provision of repo financing in preference to other activities, and the risk that this poses to a pension fund. [6]

(iii) Discuss the advantages that the ability to use swaps in addition to gilts and gilt repos would provide to the scheme – your answer should cover hedge profile, risk and return. [12]

One of the trustees recalls that pension funds have lost money in the past from derivative trades that were supposed to reduce risk, but admits that he doesn't really understand how they work in practice. As part of a trustee training session, you outline a scenario where the scheme has £5m market value of 10 year zero coupon gilts and needs to hedge a £15m fixed liability payable in 10 years' time, given the following market data:

Zero coupon yield (pa)	*Gilt*		*6 month Libor swap*	
	Now	*After 1 Year*	*Now*	*After 1 Year*
9 year	3.10%	3.50%	3.00%	3.30%
10 year	3.15%	3.53%	3.05%	3.33%
11 year	3.19%	3.55%	3.09%	3.35%
Financing rate over next year	Repo rate = 0.5%		6m Libor = 0.55%	
Haircuts	2% on gilt collateral		Nil on cash collateral, 5% on gilt collateral	

(iv) Describe the potential risks for a pension fund from using derivatives for risk management. [6]

(v) (a) Determine the additional transactions required to hedge the example liability separately using:

(1) additional unfunded gilts (using repo financing); or
(2) interest rate swaps.

(b) Specify the collateral requirements for each of the two hedges.

(c) Calculate the return on each of the two portfolios (including the existing gilts) over the year. [12]

(vi) Give reasons why an active liability-driven investor might not switch £5m from 10 year gilts to swaps, even if they expect swaps to rise in value relative to gilts. [6]

[Total 50]

2 You are the head of marketing for a life insurance company in a small country. Having noted the increased awareness of issues regarding climate change, you believe that the company should launch an "eco" investment fund.

The chief investment officer has suggested that, due to a lack of alternatives available in the country, the fund should mainly invest in forestry.

(i) Outline other "eco" investments that the fund might consider if it looked beyond the borders of the country. [8]

Although small, the country is very rich and has a large funded national pension fund that was set up due to the country's aging population. You believe that securing the national pension fund as the first investor for the "eco" investment fund will encourage other potential investors to commit.

(ii) Discuss the suitability of this fund as an investment for the national pension fund to obtain exposure to forestry, including any issues arising. [11]

(iii) Outline the practical issues that the investment team will face in managing the new "eco" fund. [7]

[Total 26]

3 After a protracted recession, a new government has been elected in Actuaria. The austerity programme followed by the previous administration was not popular with the electorate and so the incoming finance minister has proposed a package of measures designed to inflate the economy by improving general confidence from restoring the "feel good" factor.

Whilst the proposals are popular with the tabloid press, you have been approached by an economic journal to write an open letter to the government that sets out the consequences of the measures in a more balanced manner.

Outline the points that you would make on the consequences for the financial markets and for the economy of a high inflation environment and the implications for assets and liabilities of both insurance companies and pension funds. [24]

END OF PAPER