INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

28 September 2011 (pm)

Subject ST5 — Finance and Investment
Specialist Technical A

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 nine questions, beginning your answer to each question on a separate sheet.*

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 (i) Outline the principal characteristics of credit default swaps. [3]

(ii) Outline the characteristics of structured products. [8]
[Total 11]

2 (i) Describe the process used for pricing forward currency deals. [2]

The two year zero coupon interest rates in Countries A and B are currently 2% and 3% respectively. The spot exchange rate between the currencies is 1.15 units of Country A's currency for one unit of Country B's currency.

(ii) Calculate the two-year forward exchange rate. [2]

(iii) State how forward currency rates are usually presented. [1]
[Total 5]

3 (i) Describe the differences between Exchange Traded Funds and Index Funds. [3]

(ii) Outline why an Exchange Traded Fund will not exactly replicate an index benchmark. [3]
[Total 6]

4 (i) State the assumptions about investor behaviour that underpin mean-variance portfolio theory. [2]

(ii) Determine the minimum variance portfolio made up of two assets A and B, given the following asset characteristics:

Asset	*Expected return*	*Standard deviation of return*
A	5%	5%
B	9%	8%

The correlation between the two assets (ρ_{AB}) is +0.3. [3]

(iii) Determine the expected return and the standard deviation of return of the minimum variance portfolio. [2]
[Total 7]

5 A UK pension fund has assets in excess of £4bn, managed across multiple asset classes using a number of investment managers. Following the disposal by the sponsoring company of one of its subsidiaries, the pension fund is required to pay a bulk transfer of approximately £200m to another pension fund in six weeks' time. The amount to be paid will be determined as at the date of sale and then adjusted to the date of payment by the total return for the FTSE All Share Index. Under the terms of the sale agreement, the pension fund is obliged to settle the payment by transferring stock representing a reasonable cross-section of the fund.

(i) Explain the investment risk for the pension fund which is introduced by the liability for this payment, illustrating your answer with a simple example. [3]

(ii) (a) Explain how derivatives may be used to mitigate this risk.
(b) List the problems that may occur.

[5]
[Total 8]

6 (i) Outline the principal characteristics of fundamental share analysis. [2]

A private equity firm that specialises in turning around failing firms has recently raised $500m. One potential investment is a bed manufacturer (HotSleep) whose main market is supplying independent hotel chains in its local country. HotSleep is a family owned partnership which has been running for over 100 years. The company has not made a profit for the last three years.

(ii) List the financial and qualitative factors the private equity firm will have considered to establish the valuation of HotSleep. [5]

(iii) Discuss what changes the private equity firm could make to improve the financial position of HotSleep. [5]
[Total 12]

7 (i) Discuss the advantages and disadvantages of the four main methods used by passive fund managers to match the investment performance of a benchmark. [7]

(ii) Suggest reasons why investors might prefer a passive rather than an active approach to bond fund management. [6]
[Total 13]

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8 A portfolio manager who worked at Only Investment Management had a successful track record over a number of years. A highly successful rival, QTRM Investment Managers, persuaded the portfolio manager to work for them instead two years ago. Since moving employment, the portfolio manager has underperformed the benchmark index by 3% each year.

(i) Suggest reasons for the portfolio manager underperforming in the last two years. [4]

QTRM are interested in understanding more about what drives performance in their portfolios and hire a specialist firm to look at each portfolio manager's track record. The specialist firm finds the following:

(1) On average, portfolio managers hold onto underperforming stocks for six months longer than they should.

(2) Portfolio managers often ignore investment analysts' reports when choosing which stocks to buy and sell.

(3) The underlying stock analysis is often changed by portfolio managers to justify holding onto stocks.

(4) Some portfolio managers sell stocks as soon as any bad news on the stock is published in the market.

(5) When given a choice of several stock recommendations, portfolio managers tend to choose the first recommendation on the list.

(ii) Explain the type of behaviour exhibited by the portfolio managers for each of the five points above. [7]

(iii) Suggest actions that could be taken to stop some of the behaviours identified in (ii). [5]

[Total 16]

9 You are the investment advisor to the trustees of a pension scheme. The trustees terminated the mandate of one of the scheme's equity investment managers (Super Return Inc) and replaced them with a new equity investment manager (Thinking Portfolio Managers) over the course of the year. At the end of the year the trustees review the scheme's performance and have questioned the actual scheme return relative to the benchmark. The trustees have asked you to produce a report on the performance.

	Period 1	*Period 2*	*Transition Period*	*Period 4*	*Period 5*
Domestic Equities value	3,500,000		3,000,000		
Domestic Equities return	9.0%	8.0%	7.0%	6.0%	8.0%
Benchmark return	11.0%	7.0%	7.0%	6.0%	5.0%
Overseas Equities value	4,000,000		3,000,000		
Overseas Equities return	4.0%	7.0%	6.0%	5.0%	7.0%
Benchmark return	5.0%	7.0%	5.0%	5.0%	8.0%
Small Cap Equities	2,000,000		1,000,000		
Small Cap Equities return	3.0%	6.0%	6.0%	4.0%	5.0%
Benchmark return	3.0%	6.0%	8.0%	4.0%	3.0%
Cash	500,000		3,000,000		
Cash return	1.0%	1.5%	2.0%	1.0%	3.0%
Benchmark return	1.0%	1.0%	2.0%	1.0%	2.0%

The values in the table above represent the values at the start of the period. The trustees adjusted the allocation to equities and cash to $10 million at the start of the transition as shown in the table above.

Both managers were measured against the same benchmark:

- Domestic Equities 50%
- Overseas Equities 30%
- Small Cap Equities 15%
- Cash 5%

Assets are rebalanced at the discretion of the investment manager. Following the transition, Thinking Portfolio Managers' asset allocation was in line with the benchmark. No other rebalancing took place apart from during the transition period.

(i) Calculate the benchmark return and the portfolio return for the following:

(a) Super Return Inc (Periods 1 and 2 separately)
(b) Assets during transition (Period 3)
(c) Thinking Portfolio Managers (Periods 4 and 5 separately) [7]

(ii) Calculate:

(a) The cash value taken out of the scheme at the start of the transition period.

(b) Total scheme portfolio return and benchmark return over the entire period. [3]

(iii) Calculate for each period the returns attribution from:

- Stock performance for each asset class
- Stock performance at the total fund level
- Sector performance at the total fund level

showing whether the effect had a positive or negative impact on the performance of the portfolio relative to the benchmark. [8]

(iv) Discuss how transition management could have been used during the portfolio switch to improve performance. [4]

[Total 22]

END OF PAPER