Actuarial Society of India

EXAMINATIONS

14th November 2005

Subject SA6 – Investment

Time allowed: Three Hours (10.15*am – 1.30 pm)

INSTRUCTIONS TO THE CANDIDATE

1. ***Do not write your name anywhere on the answer scripts. You have to write only your Candidate Number on every answer script.***
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 have then three hours to complete the paper.***
3. ***Mark allocations are shown in brackets.***
4. ***You must not start writing your answers in the answer papers until instructed to do so by the Supervisor.***
5. ***Attempt all questions, beginning your answer to each question on a separate sheet.***
6. ***Fasten your answer sheets together in the numerical order of the questions.***
7. ***The answers are expected to be India Specific application for the syllabus and corresponding core reading. However, substantially the core reading material is still taken from material supplied by Actuarial Education Company which are meant for UK Fellowship examination. The core reading also contains some material which is India Specific, mostly the IRDA regulation. In view of this, it should be noted that focal point of answers is expected to be India Specific application. However if application specific to any other country is quoted in the answer the same should answer the question with reference to Indian environment.***
8. ***In addition to this paper you should have available Actuarial Tables and your own calculator.***

Professional Conduct:

"It is brought to your notice that in accordance with provisions contained in the Professional Conduct Standards, If any candidate is found copying or involved in any other form of malpractice, during or in connection with the examination, Disciplinary action will be taken against the candidate which may include expulsion or suspension from the membership of ASI."

Candidates are advised that a reasonable standard of handwriting legibility is expected by the examiners and that candidates may be penalized if undue effort is required by the examiners to interpret scripts.

AT THE END OF THE EXAMINATION
Hand in BOTH your answer script and this question paper to the supervisor.

Q.1) You are the newly appointed manager of the investment division of a large life office which has both with profit and unit-linked business. The assets are invested in line with current industry averages. While soundly financed, the company has an uninspiring reputation and Marketing Manager is critical of this factor.

(a) In suggesting that the investment policy is overly cautious, he suggested that "the company must take some risks, investing heavily in tomorrow's companies and markets, not the same old mix of gilts and blue chip as everyone else".

(i) Discuss the risks that the office faces if you were to implement the suggestion made by the Marketing Manager, with specific reference to both the with profit and unit linked portfolios. **(8)**

(ii) Indicate the likely existing distributions of portfolio in various asset classes and other one that would be an ideal investment allocation in the long term **(3)**

(iii) Discuss the short run factors that may currently cause you to move away from the long term ideal investment allocations indicated in (ii). **(4)**

(b) One of the Directors suggested passive investment management and in this context he mentioned about the use of "synthetic funds".

(i) Briefly explain how "synthetic funds" work. **(2)**

(ii) Explain why the performance of an index tracking fund tracking (say) Mumbai All Share Index ought in fact to be better than that of the underlying index. **(3)**

(c) Another Director suggested commodity futures.

(i) How do you consider commodity future as a real asset? **(2)**

(ii) What are the risks involved in buying commodity futures? **(3)**

(d) Another Director suggested investment in derivatives to improve the performance. When the investment department approached a trader he offered the following :

The following are the price of "Sunshine Company Ltd., "traded options on the Mumbai Stock Exchange. The current share price is Rs. 1.21 per share.

	Calls		**Puts**	
Strike price	**1.10**	**1.30**	**1.10**	**1.30**
Delivery date				
End March	**0.22**	**0.09**	**0.11**	**0.18**
End June	**0.26**	**0.12**	**0.15**	**0.21**

The trader believes that shares represent good value and would like an option strategy that would benefit from a rising share price.

(i) Explain how he could produce the following option positions and draw a diagram that shows the profit or loss the investor will make as a function of the Sunshine share price at expiry.

- A bull spread using calls
- A bull spread using puts
- A strap using calls and puts

(ii) Explain in words how to produce a diagonal spread

(iii) Describe what "flex options " are and why they might be useful for option traders and investors.

(15)

(e) Another Director suggested investing in hedge funds, as the performance of hedge funds in recent period is better than any high class investments. But another Director voiced serious concern over this recommendation. In this context:

(i) explain in detail the reasons why hedge funds are allowed to build up high level of financial gearing.

(ii) explain why hedge fund performance data can be misleading

(iii) describe various types of hedge funds including "market-neutral funds".

(20)

Total [60]

Q.2) The Trustees of a pension fund are analysing the performance of their investment manager over the five years 1998 to 2002. The manager is set a benchmark based 50% on the Mumbai All-Share Index and 50% on the over 15 Years Gilt Index rebased on the 1st of January each year. However, during the period the manager has maintained a policy of investing 40% in equities and 60% in long-dated gilts, rebasing the portfolios on the 1st January each year. The manager has also received Rs. 100,000 of new money on the 1st of January each year. Dividend and interest payments are reinvested in the relevant asset categories as they are received. Expenses may be ignored throughout.

The values of the funds under management are as follows (Rs. in '000s)

	Equities	**Long gilts**	**Total**
31 Dec 97	400.0	600.0	1000.0
31 Dec 98	404.8	686.4	1091.2
31 Dec 99	567.0	838.4	1405.4
31 Dec 00	722.6	1056.8	1779.4
31 Dec 01	947.2	1490.7	2437.9
31 Dec 02	974.6	1370.5	2345.1

The total returns on the indices, including reinvested income, over the first four years were as follows:

	All-Share	Over 15 Years
1998	+9.7%	+4.3%
1999	+20.7%	+18.8%
2000	+20.5%	+16.9%
2001	+28.4%	+34.5%

(a) Analyze fully the manager's performance over the period including reference to both asset allocation and stock selection. **(15)**

(b) A trustee has suggested that the fund should hold a proportion of the assets in index-linked gilts.

(i) Show how actuarial techniques can be used to compare the long-term value of index-linked gilts to the long-term value of Government of India fixed interest securities. **(5)**

(ii) Discuss the relative investment outlook over the next three years for index-linked gilts compared to Government of India fixed interest securities. **(7)**

(iii) Describe the factors that the pension fund trustees need to take into account when formulating their investment strategy. **(7)**

(iv) Discuss the problems involved in making any significant changes to the investment allocation, if this proposal is approved. **(6)**

Total [40]

****