INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

14th September 2016

Subject SA6 – Investment

Time allowed: Three hours (14.45* - 18.00 Hrs)

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. *Please read the instructions inside the cover page of answer booklet and instructions to examinees sent along with hall ticket carefully and follow without exception.*
2. ** You have 15 minutes at the start of the examination in which you are required 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 answer sheet until instructed to do so by the supervisor.*
4. *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 is 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 Candidate should answer the question with reference to Indian environment.*
5. *Attempt all questions, beginning your answer to each question on a separate sheet.*
6. *Mark allocations are shown in brackets.*
7. *Please check if you have received complete Question Paper and no page is missing. If so, kindly get new set of Question Paper from the Invigilator.*

AT THE END OF THE EXAMINATION

Please return your answer book and this question paper to the supervisor separately.

Q. 1) You are the Chief Investment Officer of a large Life Insurance Company, with Assets under management exceeding Rs.10000 crores and New Business Volumes exceeding RS.1000 crores. The Company achieves year-on-year persistency of approximately 80% across all business lines. The Company operates the following lines of businesses:

- Traditional Participating
- Traditional Non-Participating
- Unit Linked – both Endowment and Pensions
- Annuities

The participating products include long term endowment, whole life plans and money back plans. The participating products distribute excess earning over the minimum guaranteed rate in form of reversionary bonus, cash bonus and terminal bonus. The non- participating products include term and endowment plans. The endowment plans offer better guarantees as compared to the competitors.

The Management proposes to launch an attractive non-par endowment contract, which would offer policyholders a payout equal to double the amount of premiums paid. The policy term is 24 years, with a premium payment term of 12 years and a payout term for the subsequent 12 years. The product offers a customer IRR of 5.95% p.a. The current 12 year government bond yield (Gross Redemption yield) is around 7.5% p.a. Only annual mode of premiums is offered. Surrender Values are available after payment of three premiums (i.e. from third policy year onwards). The Management also proposes to use a mix of Corporate Bonds and Government bonds in order to increase the yield that can be earned.

i) Briefly highlight the investment risks that arise and mention the plausible mitigating actions that can be taken against each of these risks, given the proposal of the Management as aforesaid. For your suggestions on risk mitigation options you may assume that there is no regulatory restriction on the use of derivatives. (10)

ii) Risk appetite is the main driver of the investment policy, please explain the factors that influence the risk appetite of institutions? How will your answer on factors influencing risk appetite be different if you work for General Insurance company or Pension provider. (10)

iii) The Head of marketing wishes to introduce a “guaranteed” surrender option that would refund 85% of premiums paid on withdrawal (lapse or surrender), starting from the first year. Currently, Surrender Values accrue only after payment of 3 annual premiums. Describe briefly the additional exposure to investment risks that arise. Note that the target asset duration (modified duration) of the fund is expected to be 9 years and past data reveals that yields have been very volatile and may fluctuate +/- 2% per annum. (3)

The life office is required to treat the customers fairly and satisfy the policyholder’s reasonable expectations (PRE). For Participating products PRE is the one of the key considerations for framing an investment policy.

iv) Please explain the factors that determine the investment policy of the participating fund, and how does PRE influence the policy. (5)

The Company presently writes more than 100 crores of Life Annuity business (without return of premium) each year. A Life Annuity contract is where the investor pays a lump-sum amount and receives a fixed monthly pension amount, as long as the investor is alive. The company offers two variants in this space – a fixed pension version and another version where the pensions in payment increases in line with a published inflation index.

v) How can the company manage its longevity risk? Discuss briefly including additional considerations, if any, for the hedging mechanism proposed. (4)

The Chief Risk Officer has recently mentioned in a meeting that it is important for the Company to do liability hedging for non-participating fund and annuities in the falling interest rate scenario. He has suggested looking into cashflow matching strategy using bonds/g-secs.

vi) Briefly describe what this strategy means and outline the limitations/difficulties that can arise with such a strategy? (8)

An investment bank has approached you to offer customized derivative solutions using swaps to help address your problem with respect to cashflow matching.

vii) Explain (briefly) how interest rate/inflation swaps along with bonds/g-secs would be useful for matching in current context? (4)

viii) Mention the limitations/additional concerns with respect to swaps that need to be taken into account? (3)

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Q. 2) You are the Chief Investment Officer of an independent investment management firm in India, having significant exposure to UK and some parts of Europe. Ahead of the Brexit vote, what are the actions you would take on the following circumstances? You may assume that the required currency derivatives are available in India.

i) Given that pound denominated earnings are significant, how would you address the impact of a fall in the Pound Sterling on the firm's revenues? How would you use derivative strategies if you were unsure about direction of movement, but feel a fall in pound sterling is more likely than a rise, relative to the Rupee? How would your answer change if a rise was more likely than a fall? Kindly explain with the help of relevant clear examples and payoff diagrams. (10)

ii) Your investment management firm has an overseas corporate bond fund which only invests in UK Corporate Bonds. Explain the hedging options that you would recommend to manage the underlying credit risk and the rationale for the same. Explain why usage of index based derivatives could be advantageous. (6)

iii) It is certain now that UK will leave the European Union. Given that your firm has a good exposure to UK equities, what would be your response to the following :

a) Which portolfio (large-cap as comprised in the FTSE-100 or mid-cap stocks as comprised in FTSE 250) is expected to have a bigger downside risk? Give two examples of typical sectors that would be affected within the index. (3)

b) What strategy can be adopted to “profit” from such a fall. Give an example and a suitable payoff diagram. (6)

iv) Post Brexit, there is a widespread expectation that there would be a fall in the GDP of UK and it is expected that the Bank of England will adopt a Quantitative Easing Policy. Your CEO has requested you :

a) To explain to him what QE means briefly and how it is carried out? (4)

b) The firm has significant exposure to fixed interest long term bonds, index linked government bonds and equities in the UK. Explain the effect of QE on each of these in detail. (12)

v) Financial repression is used by government to help the borrowers including the government itself to reduce their debt burden. In Financial repression the government deliberately brings down the interest rates below the inflation levels (negative real rates). This is like an indirect tax on the savers since they earn lower than inflation rate.

a) How does the government carry out the Financial Repression? (2)

Please state the impact of Financial repression on the following:

b) Pension Business (6)

c) Life Insurance (4)

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