

INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

21st May 2013

Subject CA1 – Actuarial Risk Management (Paper II)

Time allowed: 3 Hours (14.45* - 18.00 Hrs)

Total Marks: 100

INSTRUCTIONS TO THE CANDIDATES

1. *Please read the instructions on the front page of answer booklet and instructions to examinees sent along with hall ticket carefully and follow without exception.*
2. *Attempt all questions, beginning your answer to each question on a separate sheet.*
3. **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 3 hours to complete the paper.*
4. *You must not start writing your answers until instructed to do so by the Supervisor.*
5. *Mark allocations are shown in brackets.*
6. *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)** Briefly describe the terms Stress Testing, Scenario Analysis and Stochastic Modeling in the context of evaluation of risks. [6]
- Q. 2)** The senior management team of a general insurance company writing largely commercial lines of business is considering a proposal to buy a large shopping mall cum office complex.
Discuss the factors the Company needs to consider before taking a decision. [7]
- Q. 3)** Recent expense analysis conducted by a medium sized life insurance company selling traditional endowment contracts, reveals a sudden increase in claim expense per claim compared to last few years.
- i)** List the main components of claims expense in a life insurance company (3)
 - ii)** List probable reasons for the actual claims expense per claim for current year being higher compared to last few years. (3)
 - iii)** For each of the reasons mentioned above, outline what would be the impact on future claims expense assumption to be used for statutory valuation. (3)
- [9]
- Q. 4)** In a small self-managed defined benefit pension scheme pensions are currently paid out from the trustee managed funds. One of the trustees has recommended that pension pay outs be managed by purchasing suitable annuities from the market.
Set out the advantages and disadvantages of purchasing annuities from the market. [9]
- Q. 5)** The government of a country has recently introduced inheritance tax under which, on transfer of estate from parents to children on the death of the parents, the children will be required to pay inheritance tax at the rate of 5% of the amount of the estate to be transferred. You are the product actuary of a life insurance company. The sales director of the Company has requested you to develop a new product which aims to provide the need of financing the inheritance tax as per the recently introduced legislation.
Discuss the factors you need to consider while designing a suitable product to meet the above needs. [10]
- Q. 6)** A pension scheme provides final salary based pension benefits on retirement.
- i)** Outline briefly two replicating portfolio based market-related approaches to value the benefits. (6)
 - ii)** List the advantages and disadvantages of using the market value of assets compared to discounted value of assets for the purpose of determining funding level of the scheme. (4)
- [10]

- Q. 7)** You are an actuary, recently married, aged 30 years and working in a multinational actuarial consultancy firm operating in number of countries. You are developing your personal long term investment strategy.
- i)** List the key factors you need to consider while making your own investment planning. (6)
 - ii)** There is a clear sign of domestic economy slowing down and the GDP has been declining for the last two quarters. Outline the attractiveness of each asset class available for investment. (5)
- [11]
- Q. 8)** A life insurance company has been selling pure protection and unit linked (with & without investment guarantee) life insurance products and critical illness benefits as riders for many years.
- i)** Describe the business risks that the company may be exposed to? (10)
 - ii)** List different ways in which the life insurance company can diversify its business to reduce the risk it faces. (4)
- [14]
- Q. 9)** Employer of a heavy engineering industry currently provides a defined benefit pension scheme to all confirmed employees. The employer is considering extending the scope of the pension scheme to provide benefits to the dependants on the death of an employee. The benefits are payable only on death in service and are as follows:
- lump sum benefit of 5 times monthly basic salary at the time of death; plus
 - pension for spouse equal to 50% of monthly basic salary of the employee at the time of death.
- i)** List the principal assumptions required to determine the cost of these new benefits (3)
 - ii)** Discuss factors the employer should consider before extending the scope of the scheme. (8)
- The HR Head has recommended that the death in service benefits could be introduced, provided the same are insured. He has approached 3 life insurance companies for premium quotations for insuring the death benefits. The three quotations vary considerably.
- iii)** Outline the factors that should be considered when deciding whether or not to insure some or all of the death in service benefits. (8)
 - iv)** Explain with reasons why the premium quotations could be so different. (5)
- [24]
