

INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

14th March 2017

**Subject CA1 – Actuarial Risk Management
(Paper I)**

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

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. 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 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 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)** Outline the method used for valuation of a direct property investment and list the factors used in such valuation? [5]
- Q. 2)** i) Why is it important to fund the liabilities of a pension scheme? (2)
- ii) Outline why regular valuation of assets and liabilities of a pension scheme is necessary? (6)
[8]
- Q. 3)** The CFO of a general insurance company selling motor insurance has observed that the claims experience of the company in the last year was worse than its peers and the reasons are-
- Suspect fraudulent claims from a specific geographical location
 - Large one off motor third party liability claim
 - Motor pile ups due to unexpectedly bad winter
- i) Do you agree with the reasons cited by the CFO? (2)
- ii) Discuss how each of the risk events above could have been mitigated by the company. (6)
[8]
- Q. 4)** A medium sized commercial bank has decided to launch a vehicle loan product. Discuss the factors that the bank should take into account while designing the new product and pricing it. [12]
- Q. 5)** A health insurance company is developing an internal model for assessment of economic capital requirement. Outline the key risks that the company needs to consider when building the internal model. [12]
- Q. 6)** A group of fresh young engineers have decided to start a new company offering cloud services. However the group has no prior business experience and limited capital to start the venture. A retired IT professional has offered to finance the business for 60% equity stake in the start-up.
- i) Discuss the factors that the young engineers need to consider before accepting the offer of the IT professional. (8)
- ii) Discuss the risks to the retired IT professional from this investment. (4)
[12]
- Q. 7)** The City Club of Army Officers manages an investment fund, to which all its members make a small monthly contribution. Contribution made by each member accumulates with returns earned on the fund and the accumulated amount is payable to member on reaching age 60. Since this fund started, it has invested only in Government and corporate bonds. In the last Club meeting, the members decided to invest 10% of the fund in domestic property market with the aim to earn higher returns. They have two options:

Option A: Invest directly in properties

Option B: Invest in property company shares

- i) Discuss both the options in terms of investment characteristics and returns. (8)
 - ii) Discuss the factors that members need to consider before taking a decision. (4)
- [12]**

Q. 8) Mr X, a shop owner, has recently sold his ancestral property, from which he used to receive rental income. He now wants to invest the proceeds in the stock market.

- i) Why might Mr X find stock market investments more attractive than the property investment? (4)

A friend advises Mr X, to park his money in the “money market” for some time, given that in recent times the equity market has been highly volatile.

- ii) Describe briefly the “money market”. (2)
- iii) List the financial instruments that are traded in the money market. (3)
- iv) Comment on the investment advice given by Mr X’s friend? (3)

[12]

- Q. 9)** i) Define the term “Risk Budgeting”? (1)

An insurance company has been selling annuities and other vehicles of retirement income for the last 15 years in the domestic market. The risk manager in the company has proposed that a risk budget should be finalized for the annuity business.

- ii) Outline how this can help to control investment risks? (4)

You have to build an asset liability model for this business.

- iii) Explain the steps that you should follow to build an asset liability model. (6)
- iv) Outline how an asset liability model can be used to determine an investment strategy for the annuity business. (4)
- v) List the factors that should be considered while deciding the degree to which assets and liability mismatching can be allowed? (4)

[19]
