

# INSTITUTE OF ACTUARIES OF INDIA

## EXAMINATIONS

30<sup>th</sup> October 2009

### Subject CA1 – Core Application Concept (Paper II)

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

**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.*

#### AT THE END OF THE EXAMINATION

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

- Q 1)** An insurance company is proposing to introduce an investment product with the following features:
- Single premium  
Term = 3 years
- At maturity = return of premium or premium plus 90% of the growth in the Sensex Index, whichever is greater.
- a) Outline the options the insurer has to manage the investment risks involved in this product. (3)
- b) Explain how the costs of this guarantee are met in each case. (2)
- [5]
- Q 2)** The life insurance industry in a certain country is still developing. The market mainly has simple conventional endowment, term assurance and simple unit linked contracts. Government has been encouraging the companies to come up with Critical illness benefits.
- a) Outline the risks involved to the insurers of developing this new product. (7)
- b) List ways in which the risks can be reduced. (3)
- [10]
- Q 3)** Describe the investment and risk characteristics of an investment that involves the building, owning and operating of an Inter city Expressway. [7]
- Q 4)** List the characteristics of a well run project. [6]
- Q 5)** Outline the steps involved in determining a suitable stochastic model. [5]
- Q 6)** Your insurance company's new CEO has come from a non-insurance background. He has asked you to explain the various profit criteria used by the company with their relative merits and demerits.
- Write a report that explains the various profit criteria. [14]
- Q 7)** a) Explain the financially significant assumptions that need to be considered in setting premium rates for employers' liability insurance. (7)
- b) Describe how you would determine the values of these assumptions. (12)
- [19]
- Q 8)** The discontinuous terms are being set for a life insurance contract.
- Describe the criteria you should keep in mind. [14]

- Q 9)** Outline the factors that will affect the amount of surplus distributed by a mutual life insurance company. [13]
- Q 10)**
- a) Outline the main features of surplus reinsurance. (3)
  - b) Give with reasons the type and extent of reinsurance that would be most suitable for:
    - 1. a general insurance company writing motor insurance;
    - 2. a large general insurer writing industrial property fire insurance. (4)
- [7]

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