

# INSTITUTE OF ACTUARIES OF INDIA

## EXAMINATIONS

12<sup>th</sup> November 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) i)** What do you mean by underwriting risk and how can an insurance company manage its underwriting risk? (5)

**ii)** Define the term 'lifestyle underwriting' in the context of a life insurance policy. (2)

[7]

**Q. 2) i)** Explain Systematic Risks and Diversifiable risks with reference to equity investments? (3)

**ii)** Discuss various approaches to managing Systemic risk and Diversifiable risks within an equity portfolio. (5)

[8]

**Q. 3)** A medium sized insurance company is planning to expand its product portfolio by launching a long term disability insurance product.

Explain how reinsurance arrangement can help the insurer in managing risks arising from this product.

[8]

**Q. 4)** A national commercial television channel which produces and telecasts various entertainment programs, has successfully telecasted six seasons of a very popular quiz show. In each of the six seasons it had high viewership figures and met its commercial objectives. The television channel had employed one of the top film actors to anchor the show in all the past six seasons which amongst other factors was one of the main reasons for high viewership and commercial success.

After a break of two and half years, the channel is planning to launch the 7<sup>th</sup> season of the show in the same format and with the same anchor for a period of 52 weeks. Besides other aspects of the show, each participant may get a cash prize, depending upon how many questions the participant answers correctly, as per the prize scheme given below:

- There are maximum 15 questions for a participant to answer.
- Each correct answer increases prize money to the participant.
- On answering any question incorrectly, the participant has to leave the show and take away any prize won, if any.
- Correct answers to the first 5 questions gets a participant a minimum prize money of Rs 10 lacs and Nil otherwise.
- Correct response to the next 5 questions gets each participant a minimum prize money of Rs 1 Crore otherwise a participant takes only Rs10 lacs as prize money

If a participant answers all 15 questions right, he gets a prize of Rs. 10 Crore otherwise the participant takes prize money of Rs 1 Crore only for answering the first 10 questions right.

**i)** Outline the insurable risks specific to this show and possible type of insurance cover to mitigate such risks. (7)

**ii)** Discuss the risks and the benefits to the insurance company if it underwrites the risks outlined above. (6)

[13]

- Q. 5)** i) State the uses of a claims control system for an insurance company? (1)
- ii) Outline claim control systems that the following companies can implement at claim stage:
- a) Life insurance company
  - b) General insurance company
  - c) Health insurance company
- (5)
- iii) Discuss items that an insurance company should include in its management control system to reduce financial risk (8)
- [14]
- Q. 6)** You are working in investment department of a finance company and plan to invest in an Initial Public Offering (IPO) of a bond issue in local currency of ABC Company which has its operations in many countries. The issue has been rated by a reputed rating agency.
- i) Discuss the factors which the rating agency would have considered while rating the bond issue. (5)
- ii) The yield on the bonds issued by ABC Company is 2% higher than the yield on a Government bond of similar duration. Explain the reasons for the difference in the gross redemption yields of the two bonds. (3)
- iii) Alternatively you could invest in Government bond of similar duration or invest in another corporate bond IPO issue of Company XYZ open for subscription in the market. Company XYZ operates only locally. Explain the factors you would consider in deciding which of the three bonds to invest in. (6)
- [14]
- Q. 7)** A large company has a funded defined benefit scheme operational for several years. Benefits on retirement are in the form of guaranteed pensions at the rate of 5% of final salary for each year of service with an option to commute  $1/3^{\text{rd}}$  of the pension on exit. You are the consulting actuary to the scheme and responsible for calculating the provisions required for various purposes. Provisions are the amounts that need to be set aside to meet future liabilities in the scheme.
- i) Outline reasons why the provider of the pension scheme may need to calculate provisions. (5)
- ii) Explain why there might be a need to hold global provisions? (5)
- iii) Discuss how the purpose of a provisioning exercise affects the assumptions used. (5)
- iv) Describe how the provisions should take into account of any guarantees and options. (3)
- [18]

- Q. 8)** In a developing country, due to rapidly changing socio economic environment, joint families are giving way to nuclear families. A marketing survey done by your company shows that people tend to save little for their retirement but spend most of their savings / earnings on purchasing property for living.

You are working in product department of a large life insurance company in that country. Chief Marketing Officer has discussed the above survey results with you and asked you to design a product which would satisfy the need for income post retirement while keeping in mind the current savings pattern.

- i)** Discuss 2 possible approaches to establishing customer needs. (4)
- ii)** Suggest a suitable product design to fulfill the need of regular income on retirement, highlighting reasons why the product would be attractive to potential customers. (8)
- iii)** Discuss the main risks to the insurance company from the suggested product design. (6)

**[18]**

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