INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

20^{th} May 2014

Subject CA1 – Actuarial Risk Management (Paper I)

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 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 restrictions that may be imposed by a regulator on a general insurance company which is facing financial difficulties. **[5]**

Q. 2) **i)** Explain the terms 'Anti selection' and 'Moral hazard'. (4)

ii) Using examples highlight the difference between these two terms (3)

[7]

Q. 3) **i)** Explain the key differences between a proprietary and mutual company. (6)

ii) List different financial tools available to a mutual for capital management. (2)

[8]

Q. 4) A charitable institution provides the following benefits to female children from weaker sections of the society.

- A benefit of INR 5,000 when a girl child completes class V
- A benefit of INR 10,000 when a girl child completes class VIII
- A benefit of INR 25,000 when a girl child completes class X and XII
- A benefit of INR 50,000 at the time a girl gets married

The government funds 50% of the estimated costs of these benefits. It pays the estimated costs in cash to the institution within 30 days of a female child's birth provided the child's birth is registered with the appropriate authority of the Municipality. The balance amount is funded by the institution.

i) State the main areas of risks to the above benefits. (4)

ii) Discuss the key issues to be considered by the charitable institution when setting its investment strategy. (8)

[12]

Q. 5) The trustees of a large defined benefit scheme are reviewing transfer values available to individual members leaving the scheme. The basis was last reviewed three years ago.

You are an actuary working in a consultancy firm. You have been asked to review the basis used for determining transfer values for members.

i) What factors should you take into account in your review? (7)

The pension regulator in the country is looking into prescribing assumptions to be used for determination of transfer values instead of leaving it to individual schemes to decide. One of the trustees of the scheme, to which you are an advisor, has asked you to prepare a report explaining the advantages and disadvantages of a prescriptive approach over the current approach where the transfer values are based on actuarial advice.

ii) Discuss the key points that you would cover in you report. (7)

[14]

Q. 6) A medium sized health insurance company introduced regular premium individual income protection contracts on 1st January 2013. The benefits are paid if the insured falls sick. The product has a deferred period of 3 months and a waiting period of 6 months. All benefits are payable monthly starting from the end of the deferment period. Benefit payable each month is 1/12th of the annual benefit.

Deferred period is the length of time a policyholder must be out of work due to sickness before the income protection policy pays out.

i) Define the term waiting period in the context of this product. (1)

ii) Describe how the company would have determined assumptions for claim inception and termination rates for pricing the product. (4)

The insurer has purchased 50% quota share treaty for this block of income protection policies.
You are given the following extract from the insurer's claims records as at 31st March 2014 for this product:

Claim ID	***Date of falling sick***	***Date of claim intimation***	***Date of recovery***	***Annual Benefit in INR***
A	July 7, 2013	August 12, 2013	January 6, 2014	30,000
B	May 12, 2013	July 17, 2013	March 11, 2014	30,000
C	August 11, 2013	September 18, 2013	November 10, 2013	20,000
D	August 25, 2013	October 13, 2013	December 24, 2013	50,000
E	October 21, 2013	January 6, 2014	March 20, 2014	50,000
F	April 14, 2013	May 12, 2013	March 13, 2014	20,000

All the above mentioned policies were issued on 1st January 2013.

iii) State, with reasons, whether the insurer would have been required to make claim payments for each of the above claims. (3)

iv) Calculate the total amount of claim payments made by the reinsurer in respect of each of the above claims. (3)

v) Discuss the appropriateness of the existing reinsurance strategy for this block of business. (5)

[16]

Q. 7) A general insurance company wishes to review its premium rates.

i) List the types of policy and claims data that would be required for this purpose. (5)

ii) Explain the problems that may occur as a result of using inaccurate data for determining the risk premium rates. (3)

iii) Outline why it may be necessary to make adjustments to the base data before it can be used in a rating exercise. (10)

[18]

Q. 8) A life insurance company sells regular premium and single premium contracts through several insurance intermediaries. The management of the company is concerned about new business strain in its product portfolio.

i) Explain the term “New Business Strain”. (2)

ii) List few examples of contract features that could be used to reduce new business strain. (2)

iii) Explain why new business strain will occur for single premium policies? (3)

The Sales Director of the company has commented that new business strain is not a concern provided the company makes reasonable profits by increasing its sales volume. He has suggested that in order to increase sales, the company should introduce additional sales incentives which will be payable along with the initial commission, to certain intermediaries that satisfy the following criteria:

- The persistency of business sourced from these intermediaries has been better than average in the past.
- The profitability of business sourced from these intermediaries has been higher than average because of a significantly higher than average case size.

iv) Discuss the Sales Directors suggestion. (13)

[20]

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