INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

8th November 2011

Subject CA1 – Actuarial Risk Management (Paper I)

Time allowed: 3 Hours (9.45* - 13.00 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) Describe the features of

i) Traditional discounted cash flow valuation method

ii) Market consistent liability valuation method **[4]**

Q. 2) List the parties who would be interested in the solvency position of an insurer **[4]**

Q. 3) The pension regulator in a developing country is proposing to take out a new regulation relating to asset classes that a defined benefit final salary occupational pension scheme can invest in. Currently this area is unregulated.

Asset Class	**Maximum allowed as % of total investments**
Government securities	100%
Corporate Bonds with rating AA and above	50%
Domestic listed equities	25%
Other investments	Nil

Discuss why the above proposed regulatory change may not be suitable for all existing occupational pension schemes.

[6]

Q. 4) A company is organizing a musical night, where a well-known international band will participate. Discuss the types of risks that the company might wish to insure itself against.

[8]

Q. 5) **i)** Describe how underwriting is used to manage a life insurance company's risks. (5)

ii) List the various sources of information that the underwriter uses to decide the mortality risk associated with an application for insurance. (3)

[8]

Q. 6) **i)** Outline why it is important for a benefit scheme to carry out an annual analysis of surplus. (4)

ii) Describe the steps involved in performing such an analysis (5)

[9]

Q. 7) **i)** Set out how market, credit and operational risk as envisaged under Basel II capital adequacy framework apply to banks generally. (3)

ii) A medium sized commercial bank has a loan portfolio comprising short and medium term loans given to small and medium sized enterprises. It now plans to diversify its product portfolio by offering residential mortgages to individuals. Discuss in terms of the above mentioned types the additional risks the bank may face when launching this new product, for each risk, you should outline how it could be mitigated. (8)

[11]

Q. 8) A life insurance Company selling a variety of savings and pure risk contracts has been experiencing very high lapse rates. The experience is not only worse than that assumed in the pricing but also compared to the industry average.

i) Describe why the company could be experiencing such high lapse rates (6)

ii) Discuss the steps the company can take to reduce policy lapses (6)

[12]

Q. 9) The finance department of a small rapidly growing life insurance company has come up with the total costs attributable to principal activities of acquisition, maintenance, investment and claim settlement. These costs are based on last year's expenses and business. From these, unit costs have been arrived at for each major product type.

Describe how this study could be used for

i) re-pricing a major product line and (7)

ii) How this approach would be changed when determining expense assumptions to be used in the year end valuation. (5)

[12]

Q.10) You are the actuary to a life insurance company that has been writing for many years life insurance business which includes endowment assurance, whole life assurance, term assurance, immediate and deferred annuity and critical illness cover. The Board has indicated that the company should offer indemnity type health insurance product. It will be sold as a yearly premium renewable product.

i) Outline the extent to which the existing data could be useful in pricing the new product. (5)

ii) Discuss the suitability of other possible sources of data for pricing the new product. (4)

iii) Describe the principal risks to the company in offering this kind of product. (8)

iv) The Board has also suggested hiring Third Party Administrators (TPAs) for managing the claims that will arise under the health insurance product- from claims admission to claim settlement.

Discuss the pros and cons of having a third party administrator for management of claims. (9)

[26]

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