INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

6th September 2018

Subject CA1 – Actuarial Risk Management (Paper II)

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. You are not allowed to carry the question paper in any form with you.

Q. 1) List the key areas where actuaries may give advice in the management of with profit business of a life insurer? **[6]**

Q. 2) There is a requirement to model the reinsurance cash flows for a long term fixed benefit protection plan in the actuarial software model for a health insurer. The reinsurance is on surplus basis with guaranteed reinsurance premium rates.

i) Mention the information which will be required to project the reinsurance cash flows? (3)

ii) Post modelling the cash flows it was observed that the present value of future reinsurance recoveries was higher than the present value of future reinsurance premiums payable. Discuss the reasons why this might occur? (4)
[7]

Q. 3) A medium sized proprietary life insurer has been seeing a steady drop in sales over the last few years. As a result it has decided to stop writing new business. Discuss how the expenses of the insurer would be impacted as a result of closure to new business. **[10]**

Q. 4) A General Insurance Company specializes in providing dental insurance. Discuss the areas of risk and uncertainty inherent in the claims experience of this insurance company

i) From business already written and (7)

ii) Related to future re-pricing (5)
[12]

Q. 5) You are working in the actuarial team of a large life insurance company in charge of providing quotations for one-year term insurance plans to employers who seek to provide such benefits to their employees. You had recently given a quote for a large IT company with 15000 employees. Your sales head has informed you that the quote given by you is at least 25% higher than the quote given by a competitor.

i) Briefly discuss the likely reasons for the difference in pricing. (5)

Your sales head has proposed that the company should offer a profit sharing arrangement to the client by which "profits" from the scheme at the end of policy year will be shared.

ii) Explain how profit sharing arrangement could work for this plan? (4)

iii) Explain the advantages and disadvantages of offering group term policies with profit sharing arrangement? (3)
[12]

Q. 6) A life insurance company has just performed lapse experience analysis. The Chief actuary wants to know what data checks and results validations have been performed as the analysis indicates a sharp deterioration in the lapse experience.

i) Describe the data checks and result validations that can be performed for the lapse analysis? (7)

ii) What steps could the insurer take to improve lapse experience? (8)
[15]

Q. 7) A property developer is planning to start an old age community living for individuals above age 60. Individuals can enrol into the facility by paying lump sum at the outset to take on lease flats or villas until their death. The facility will provide a range of services from just basic community living to full assisted living with support from helpers. The individuals are also required to pay monthly rentals for utilising the facilities available. The investor is also planning to develop a high-class speciality hospital in the complex to help the community.

i) Outline the capital needs for this venture? (5)

ii) What are the advantages to individuals in joining this facility? (2)

iii) What is the risk to the developer in starting and running this community? (6)

iv) What are the insurance needs for the developer in managing this facility? (5)

[18]

Q. 8) A large manufacturing company 'A' is having a defined benefit pension scheme for its employees. The pension benefit is calculated as $1/60^{th}$ of basic salary at exit for each year of service. The pension is payable from the normal retirement age irrespective of date of exit. The employees are eligible for pension benefit only after completion of 10 years of service with the company.

You are an actuarial consultant helping the company in valuation of the scheme and other related matters.

i) The HR manager has approached you saying that the scheme needs modification as it is not attractive to newly joined employees.

a) Discuss the reasons why the scheme may not be attractive for the new employees. (3)

b) What could be the reasons for the employer keeping such a design? (2)

ii) Outline the design changes that can be made to the scheme design to make it attractive to new employees.

a) Without change in the overall cost (3)

b) With change in the overall cost (2)

iii) The company 'A' is carrying out major restructuring of its business whereby one of its units will be merged with another company 'B'. There is a proposal to offer transfer value of the pension cost for the employees being transferred to company 'B'. There is a difference between the transfer value quoted by the actuary of the company 'B' and that quoted by you.

a) Briefly explain the reasons for the difference. (5)

b) Discuss the issues that could arise for company 'B' in integrating the pension benefits of transferee employees with its existing scheme. (5)

[20]

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