INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

17th November 2011

Subject ST1 - Health and Care Insurance

Time allowed: Three 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. ** 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 three hours to complete the paper.*

3. *You must not start writing your answers in the answer sheet until instructed to do so by the supervisor*

4. *The answers are not expected to be any country or jurisdiction specific. However, if Examples/illustrations are required for any answer, the country or jurisdiction from which they are drawn should be mentioned.*

5. *Attempt all questions, beginning your answer to each question on a separate sheet.*

6. *Mark allocations are shown in brackets.*

7. *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) You are an actuary with a health insurance company which writes many types of business in both individual and group form. A newly joined CEO remarked in a meeting that she read somewhere that one of the major issues encountered by health insurers world-wide is that of anti-selection caused by inadequate disclosure or other behavioral tendencies of the insurance buyers, also known as adverse selection or negative selection. She was interested in understanding more about the issue of anti-selection. You are asked to draft a note to the CEO describing in detail how the phenomenon occurs and how they are addressed and mitigated.

Describe the points you would include in the report.

[15]

Q. 2) A health insurance company that has been selling large volumes of yearly renewable individual PMI contract over the last 5 years is planning to launch a Family Floater contract. 'Family floater' is a PMI contract that covers all members of the family up to a pre-defined fixed limit so that the cover is shared by all members. Hence one member or any number of members in that family can make cumulative claims up to that fixed limit within the given period, which is usually a year. This product is first of its kind in the market.

a) Outline the advantages and disadvantages to a family of this contract compared to buying an individual PMI contract that has a separate limit for each member of the family. (3)

b) Discuss the main risks to the insurer that would arise from launching this product (4)

A marketing trainee in the company has suggested the premium for the family floater cover can simply be the premium under the individual PMI cover that corresponds to the average age of the family multiplied by the number of members in the family.

c) Comment on the suggestion. (3)

[10]

Q. 3) A health insurer has been offering individual income protection products over the last 5 years which pay a regular income, linked to retail price inflation, commencing after a chosen deferred period and payable as long as the person is disabled up to maximum age 60 in return for a regular level premium. The premium is waived during periods of disability. The product has a reviewability clause which allows the insurer to revise the terms every 5 years but the insurer should continue to offer cover with a minimum income replacement ratio of 50%.

a) Define the term 'income replacement ratio' and discuss the principles of setting an appropriate level for the ratio (3)

b) Describe the analyses to be carried out to form recommendations for revision of terms at the end of 5 years (14)

c) Outline the factors other than the results of the experience analyses that the insurer should take into consideration before deciding on the revision of terms

(3)

[20]

Q. 4) A health insurance company has been offering a yearly renewable Stand-alone Critical Illness (CI) product. The renewability is guaranteed till 80 years of age but the insurer can review the policy terms every year. The policy terminates on payment of a critical illness claim. Due to increased competition the company's market share has been declining over the past few years. The company's marketing department suggested that the product design be revised by adding a provision of reinstating the CI benefit after a claim has been made in order to make the product more attractive. The reinstatement provision currently does not exist in the market.

a) Describe the customer needs meet by a CI product (3)

b) Explain the gap in the current product that the new design is attempting to fill in (2)

c) Outline the additional risks to the insurer of adding the reinstatement provision and how they can be mitigated (5)

[10]

Q. 5) **a)** Define Embedded value (1)

b) State how the assumption setting for embedded value may differ from that of pricing (2)

c) On 31st March 2011 the following details were given by the company.

- Company has to pay 200 Cr next year as the liability on its non-par business
- The current net asset of the company is 250 Cr
- The valuation interest rate used is 6% pa
- The interest rate assumed on reserves is 8% pa
- Shareholder's required rate of return is 15% pa

Calculate the embedded value of the company as of 31st March 2011. (6)

[9]

Q. 6) A small health insurance company writes a number of different lines of business.

a) Describe briefly the factors it should consider when deciding upon its investment policy (4)

b) Describe briefly the key factors that the insurance company should take into consideration in selecting a reinsurer? (5)

[9]

Q. 7) FinDoc (FD) is a PMI healthcare insurer in the country of 'Omanda'. Omanda has been witnessing increased prevalence of diabetics over the last two decades. FM has been offering a product with the following design over the last five years.

- All medical expenses relating to treatment of diabetes will be reimbursed up to the chosen sum insured per year
- Offered to individuals who are currently not diabetic
- Maximum age at entry is 60 years and Maximum age at exit is 70 years
- Yearly guaranteed renewable.
- Premium payable yearly in advance
- The policyholder will have the option to increase the sum insured every year by the RPI (Retail Price Inflation)
- No Claim Discount (NCD) system: 20% discount on premium applicable for the attained age for every prior claim-free year up to maximum 50%; any claim in a given year will bring the discount back to 0%

a) Discuss the advantages and disadvantages of the NCD system to both the insurer and the insured. (6)

The company recently reviewed the product performance. While the sales volumes have been as expected the product's profitability has been steadily declining and it was loss making in the last two years.

b) Describe the possible reasons for the declining profitability and the measures that the company could take in order to restore the profitability. (13)

FitMan (FM) is a health management company offering a program that assists its members with prevention and management of diabetes in return for a monthly fee. The FM claims that the medical expenses relating to diabetes incurred by its members reduce by 10% every year. FD is considering tying up with FM and offering membership of FM to its policyholders.

c) Discuss the factors that FD should take into consideration before deciding to tie-up with FM. (8)

[27]

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