INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

17th May 2010

Subject SA1 — Health and Care Insurance

Time allowed: Three hours (9.45* - 13.00 Hours)

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 expected to be India Specific application for the syllabus and corresponding core reading. However, substantially the core reading material is still taken from material supplied by Actuarial Education Company which are meant for UK Fellowship examination. The core reading also contains some material which is India Specific, mostly the IRDA regulation. In view of this, it should be noted that focal point of answers is expected to be India Specific application. However if application specific to any other country is quoted in the answer the same should answer the question with reference to Indian environment.*

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

6. *Mark allocations are shown in brackets.*

AT THE END OF THE EXAMINATION

Please return your answer book and this question paper to the supervisor separately.

Q1) **a)** You are a pricing actuary of an Indian Insurance company and requested to forecast the burning costs for the short term reimbursement product portfolio for the current year using the current and last 3 years experience. Describe the important aspects you need to consider in your estimation. (5)

b) What may have been the purpose for this estimation? (1)

c) The portfolio in question also includes products with high excess. Which aspect now becomes more important in your estimation? (2)

[8]

Q2) "Cross Health" is a start-up stand-alone health insurance company in India and plans to launch a new product where the company has not collected experience so far.

a) Please describe the six most common reasons for reinsurance. (3)

b) Please describe briefly how "start up" and "experience" may affect the decision on reinsurance protection. (4)

c) Please describe how the level of reinsurance can influence product design and pricing of Cross Health. Please describe concrete product features affected. (4)

[11]

Q3) You are a pricing actuary and participate in a product development project related to the development of an Indian inpatient reimbursement product.

a) During one of the project meetings you are requested to provide your quick assessment of how much cheaper the risk premiums of a Rs 4 lac family floater (sum insured floating across the whole family) for a couple would be as compared to the existing single 4 lac sum insured product. You know that the average claim size is about Rs 30000 and the annual claims frequency is about 8%. What would be your answer? (6)

b) During another meeting you are requested to assess the impact on price in case the company guarantees the premium rates of its reimbursement inpatient product for longer than 1 year. What would be your thoughts and advice to the project team? (6)

[12]

Q4) **a)** Please describe briefly the term IBNR. (1)

b) An Indian Insurer with a large health portfolio has recently changed his TPA and is now observing a considerably improved 12 month loss ratio. What could possibly be the reason for this improvement? (4)

c) Another Insurer with large group health portfolio has removed the cashless facility from his product provided by an TPA and sees the loss ratio improve substantially? (1)

[6]

Q5) **a)** Please describe the reputational risk a health insurer is facing. (2)

b) How does the chosen underwriting approach of an insurance company impact the reputational risk of the company? (2)

c) Please describe all types of risks related to counter parties and governmental bodies to which a health insurer may be exposed. Which of these risks is especially high for health insurers? (6)

d) Which other risk is very important to be considered and highly specific for health insurance? Please provide examples for such risks. (4)

[14]

Q6) **A)** You are the actuary of a private insurer that has a significant health portfolio. The health portfolio makes up 40% of the total business (by premium) of the insurer. The company has a fairly weak solvency position and has been instructed by the insurance regulator to improve its solvency position quickly.

The health portfolio includes three main product types –

- The dominant health product is a Mediclaim type medical expense product named Product A. The average SI is 1.3 lac and was launched over 5 years ago. The minimum sum insured is 1 lac. About half the business is group business with a loss ratio (incurred claims as a proportion of earned premium) of around 140%. The remainder is retail business and has a loss ratio (incurred claims as a proportion of earned premium) of 65%.

As is fairly common in the industry the retail component of Product A has various categories of exclusions. These include:

- Exclusions for claims that result from treatments for pre existing conditions for a period of 4 years
- All non-accident claims are excluded for the first 30 days
- Some specified claims types are excluded for 1 year

- A "high end" retail version of Product A (described above) that is named Product B. This product was launched approximately 4 months ago for the insurer's more wealthy clients. It also has a savings component.

  It is the same as Product A except it has a SI of 5 lac, a pre-existing condition exclusion period of 2 years and a 6 month exclusion period for the benefits that were subject to the 1 year exclusion period. It is not medically underwritten as the product manager believed that a premium product would only attract better lives and there would be limited anti selection compared with main stream products.

  So far its sales are a lot lower than expected. Paid claims as a proportion of written premium is 40%.

- A critical illness product that has acceptable profitability:

a) The Sales Manager is under pressure to increase sales. He states that he believes if premiums where cheaper new business volumes would increase significantly. He believes that the premiums are too high as there have been no reductions for several years and in fact premiums where increased 2 years ago. He believes that medical advances in treatment methods should have reduced the claims cost.

Briefly describe the different effects of medical advances on (i) claim frequency, (ii) claim size (where applicable) and (iii) claim escalation or trend over time for:

i. Critical illness
ii. Fixed benefit major surgery
iii. Medical expense reimbursement products

Give a simple example for each scenario. Where the impact or is not clear depends on a product feature give a brief example. (14)

B) The Sales manager notes that the paid claims on written premium of the new health product (Product B) is only 40%. He requests that you reduce the premiums as this is lower than the loss ratio of the retail version of Product A.

i. List three major reasons why the performance figures of Product A and Product that are being compared may not be comparable. (3)

ii. What would you expect to happen to the loss ratio over time. (1)

iii. List 2 features of Product B that might lead to higher than industry claims experience as product matures. (3)

C) The Product Development manager is under pressure to develop new innovative product ideas. He has just been to an international health conference. He mentioned that he has heard about "QALY's". He is excited by the concept as maybe it can be used in product development. He explains that he heard the following about QALY's "it is a term sometimes used in health economics and health policy development. A "QALY" is an acronym for "Quality Adjusted Life Years". It can be thought of as a measure of expected life expectancy taking into account quality of life. An expected life year spent in full health would have a higher rating than an expected life year spent in very poor health. When used in health modeling it can be used to help access the relative effectiveness of a medical treatment or intervention".

i. List 2 practical applications of the use of QALY's. (2)

ii. Give 2 examples of how the QALY concept could conceptually be used in the design or management of state health schemes. (4)

iii. Briefly describe 3 practical difficulties or limitations involved with using QALY's. (8)

Illustrate these by giving a practical hypothetical example in terms of State health scheme, a micro scheme or a medical expense product. Suggest ideas of how the problems or limitations could be solved or what would need to change in the environment to help overcome the problems.

D) List 5 or more actions that this insurer can take to improve its financial and solvency position as requested by the regulator, including a health specific example.

- Provide a very brief explanation for how the action will help.
- Give either a significant disadvantage or advantage for each of these (14)

[49]

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