

# Actuarial Society of India

## EXAMINATIONS

14<sup>th</sup> May 2007

Subject SA1 – Health and Care Insurance

Time allowed: Three Hours (09:45\* – 13.00)

### *INSTRUCTIONS TO THE CANDIDATE*

- 1. Do not write your name anywhere on the answer scripts. You have to write only your Candidate Number on every answer script.*
- 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 have then three hours to complete the paper.*
- 3. Mark allocations are shown in brackets.*
- 4. You must not start writing your answers in the answer papers until instructed to do so by the Supervisor.*
- 5. Attempt all questions, beginning your answer to each question on a separate sheet.*
- 6. Fasten your answer sheets together in the numerical order of the questions.*
- 7. 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.*
- 8. In addition to this paper you should have available Actuarial Tables and your own calculator.*

### **Professional Conduct:**

“ It is brought to your notice that in accordance with provisions contained in the Professional Conduct Standards, if any candidate is found copying or involved in any other form of malpractice, during or in connection with the examination, disciplinary action will be taken against the candidate which may include expulsion or suspension from the membership of ASI.”

**Candidates are advised that a reasonable standard of handwriting legibility is expected by the examiners and that candidates may be penalized if undue effort is required by the examiners to interpret scripts.**

<p><b><i>AT THE END OF THE EXAMINATION</i></b> <b><i>Hand in BOTH your answer script and this question paper to the supervisor separately.</i></b></p>
--

- Q.1** “Mahasuraksha” is a long term care company operates in India. The company sells immediate needs long term care policies which provide a benefit of Rs. 50,000 each year, payable on March 31 of the year (The Company assumes year as April to March). No death benefit is payable. The Company incurs an expense of Rs. 200 per benefit payment increasing at the rate of 2.97 % per annum. Total assets held as on 1<sup>st</sup> April 2005, are Rs. 75 crores. The Company uses an interest rate of 4 per cent in its valuation of liabilities as at 1<sup>st</sup> April 2005. There are 1000 male policy holders on that date and all are exactly aged 62.
- a) The company wants to perform an analysis of surplus for her portfolio. Explain the reasons for this analysis and estimate the surplus as at 1<sup>st</sup> April 2005. (8)
- b) During the year (April 2005 – March 2006) while the assets showed a return of 5%, 22 policyholders died before 31<sup>st</sup> March 2006. Benefit payment expenses increased to Rs.220 and 500 new policies for a benefit of Rs.60,000 per annum were sold on 1<sup>st</sup> October 2005, to men who were aged exactly 61.5, with the premium of Rs.8.6 lakhs each. The benefit payment of the new policyholders will be paid on 31<sup>st</sup> March 2006. The expenses for these policies will also be incurred on 31<sup>st</sup> March 2006 with an escalation of 2.97% mentioned earlier. Calculate the surplus as at 31<sup>st</sup> March 2006. (10)
- c) Explain the method you will use to analyse the surplus into the following categories, working from actual to expected
- Interest
  - Surplus carried forward
  - New Business
  - Expenses
  - Mortality
- You may assume that no deaths are expected before 31<sup>st</sup> March 2006, from the 500 new policyholders. (10)
- d) Explain how an analysis of profit for a short term health insurer would differ from the analysis of surplus for a long term health insurer. (8)
- e) Explain briefly the reasons for studying the movements of the business and their trends in the case of health insurance company. Also discuss the problems with movement rates due to the delays in reporting and possible solutions to address these delays. (14)

PMA92mortality table is used. For the sake of convenience, relevant data are given below as ready reference.

$$\begin{aligned}
 a_{62} \text{ at } 4\% &= 13.87 \\
 a_{62} \text{ at } 1\% &= 19.42 \\
 a_{63} \text{ at } 4\% &= 13.47 \\
 a_{63} \text{ at } 1\% &= 18.68 \\
 q_{62} &= 0.002451016
 \end{aligned}$$

[50]

**Q.2** Recently you have been appointed as a consultant actuary for a private medical insurance company, which writes a range of health insurance products in mainly south India. The company has been very successful for many years but in the last few years both profits and volume of in-force business have been significantly lower than expected.

a) The marketing department has come out with two specific suggestions to address this development:

- A discount to the premium for personal customers based on loyalty. This may or may not be based on previous claim experience.
- Start selling products through the internet in addition to the current practice of selling through direct sales force.

Discuss the possible reasons for the recent poor performance and your comments on the marketing department's suggestions. (12)

b)

- Explain the concept of the persistency in context of a port-portfolio of PMI policies and describe how it could be measured.
- The results of the investigations of persistency rates of PMI business of this company have shown that the rates have fallen in each of the last five quarters. Outline briefly the possible reasons for these results. Also give a brief account of the likely impact on the company. (12)

c) One Director suggested that the company could consider providing free health checkup to give a boost to sales. Briefly outline the problems associated with this suggestion. (6)

In the recent Board Meeting, the Chief Financial Officer mentioned that the company should pay attention in asset liability matching.

d) What are the main principles of investment of a company like this, having predominant PMI business. (7)

e) Chief Financial Officer also indicated that the free assets available to the company is decreasing. Briefly discuss the factors that might have contributed to the declining level of free reserves and what steps are required to mitigate the same. (7)

f) From the regulator's view point, what prescriptions could be suggested regarding the investment strategy of companies having predominant PMI business. (6)

**[50]**

\*\*\*\*\*