

INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

29th October 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 IAI.”

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.

AT THE END OF THE EXAMINATION

Hand in BOTH your answer script and this question paper to the supervisor separately.

Q. 1)

a) 'Dhanvanthri Health Care Company Ltd.,' (DHCC) is a long term health and care insurance company having assets of Rs. 5000 crores. It offers income protection, critical illness, private medical insurance and long term care products. In the recent Board Meeting, Directors expressed their concerns regarding asset-liability mismatch. You have been appointed as a Consultant Actuary to address all related issues. In particular you have been asked to draft a memorandum on the following:

- i. How would you proceed to construct an asset-liability model for this Company and what steps are involved in this context? (3)
- ii. Describe the salient aspects of the claim and expense liabilities of DHCC's portfolio of business? (6)
- iii. One of the Directors suggested that claim amounts under each product type must be linked to either consumer price index or wholesale price index. Explain to what extent this suggestion is feasible? (5)
- iv. What type of assets you would recommend to cover the Minimum Capital Requirement? (5)
- v. In deciding the choice of assets to take care of asset liability mismatch for the entire portfolio, what factors one must consider and their effect on asset selection? How your choice would differ if you have to address only MCR ? (5)
- vi. Assuming that DHCC had very low free reserves, what asset categories and types of assets you will recommend and how your recommendation would differ if DHCC had huge free reserves. (6)
- vii. Assuming that DHCC's portfolio predominantly consists of private medical insurance business, which types of assets you may not recommend and how your recommendation would change if it has a balanced product portfolio. (5)

Draft a memorandum on the above (i to vii) and wherever required give reasons supporting your recommendations.

b)

- i) DHCC wants to conduct analysis of experience with reference to lapses. Briefly explain how you would conduct this analysis and how would you analyze the lapses at renewal for short-term business vis-à-vis lapses of long-term business. While conducting the lapse analysis, how would you consider various steps to differentiate the new business rate from that of lapse rate. (10)
- ii) For DHCC the following table gives the past experience regarding lapses: Proportion of lapses processed by end of month:

Month	0	1	2	3	4
Proportion	37%	68%	89%	97%	100%

The number of policies with renewal date in each month and the number of lapses are as follows:

	Sep 2005	Oct 2005	Nov 2005	Dec 2005	Jan 2006	Feb 2006	Mar 2006	Apr 2006	May 2006
Renewals Invited	795	806	853	602	945	791	812	880	853
Lapses	158	163	159	101	163	223	218	177	104

Using the above data, estimate monthly lapse rates for September 2005 to May 2006 and also the factors contributing to these lapse rates. (10)

- c) Discuss various types of reserves that are held by DHCC. If, DHCC decides to sell only PMI, state with reasons the likely relative sizes of claim reserves it has to hold. (5)
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Q. 2) Moonlight Bank is a leading public sector bank in India having about 75% market share. It does not offer any insurance products directly to its customers. But, one of its subsidiaries, viz., Moonlight Life Insurance Company (MLIC) offers both traditional and unit linked insurance products, but, MLIC does not offer any income protection or critical illness products. MLIC is considering a proposal to offer to the customers of Moonlight Bank income protection and critical illness products, as stand alone products.

- a. Describe how income protection and critical illness products could be used to meet the needs of the Bank's customers. (5)
- b. MLIC is considering a proposal outsource to a specialist (a TPA) to issue these policies and to undertake all policy processing and claims administration. Discuss the advantages and disadvantages of this arrangement to MLIC. (5)
- c. What type of information is required by MLIC for pricing these products? Describe the investigations usually carried out for pricing these products highlighting the differences in approach between critical illness and income protection covers. (15)
- d. If MLIC offers with profit contracts, describe the potential impact on its profits distribution to both policyholders and shareholders if it also offers income protection and critical illness products. (5)
- e. One of the directors suggested that MLIC could establish a claim management department within the company so as to handle income protection and critical illness business. Discuss the advantages and disadvantages of this approach to MLIC. (5)
- f. One of the directors pointed out that companies have very poor claim experience on income protection business and hence, he asked MLIC to take care of all the relevant issues. Discuss possible reasons that could have given rise to this poor experience. (5)
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