

INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

27th May 2014

Subject SA1 – 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 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 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 candidate 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.*
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)**
- i)** What is the meaning of “Combi Product”? (1)
 - ii)** You are the Appointed Actuary of “Healthy Insurance Company”. Company intends to introduce the Combi Product to its prospective policyholders. Your CEO has asked you to prepare the note for the Board members covering the applicable regulations for this type of product. In particular, your note should discuss the following points covered by the Health regulations.
 - a)** Scope of Combi Product class (3)
 - b)** Tie up between insurers (5)
 - c)** Lead insurer (1)
 - d)** Underwriting (1)
 - e)** File and Use (5)
 - f)** Distribution Channel (2)
 - g)** Mandatory Minimum Disclosures (5)
 - iii)** Describe four major risks involved in designing and pricing such type of products? (4)

Note: Wherever relevant please refer to the various regulations issued by IRDA from time to time related to “Combi Products” to answer this question. [27]

- Q. 2)**
- i)** Describe “Quality Adjusted Life Years (QALYs)” (2)
 - ii)** Describe uses of QALYs. (4)
 - iii)** What are advantages and disadvantages of QALYs? (6)
 - iv)** Medical interventions are required to treat metastatic (advanced) breast cancer. It is required to estimate the extra cost and health gain associated with treatment with Drug-1 compared with two other drugs - Drug - 2 and Drug - 3. (These are chemotherapy drugs.)

Chemotherapy Drug->	Drug-1	Drug-2	Drug-3
Treatment Cost per patient (in Rs)	7,81,700	7,64,500	4,26,800

Using Drug-1, patient’s expected life expectancy will be two years - first one year with 23.47% of perfect health (normal) and subsequent one year with 50% of perfect health (normal).

Using Drug-2, patient’s expected life expectancy will be two years - first one year with 25% of perfect health (normal) and subsequent one year with 39.85% of perfect health (normal).

Using Drug-3, patient's expected life expectancy will be two years - first six months with 10% of perfect health (normal), subsequent one year with 25% of perfect health (normal) and the last 6 months with 36.44% of perfect health (normal).

Please estimate the:

- a) Quality Adjusted Life Years (QALYs) under Drug-1, Drug-2 and Drug-3. (3)
- b) Cost per Quality Adjusted Life Years (QALYs) per patient under Drug-1, Drug-2 and Drug-3. (3)
- c) Incremental cost per Quality Adjusted Life Years (QALYs) of Drug-1 versus Drug-2. (2)
- d) Incremental cost per Quality Adjusted Life Years (QALYs) of Drug-1 versus Drug-3. (2)
- e) Interpret above numerical results in a non-technical way. (4)

[26]

Q. 3) You are working as the Product Actuary of your organization. Your Distribution Head is excited about the untapped opportunity that lies with senior citizen segment.

He has requested your help with regard to designing & pricing of the product pertaining to the senior citizen segment.

- i) What are the broad steps will you follow to develop this product? (6)
- ii) What are the main needs of senior citizen segment in the context of Health indemnity products available in the Indian market? (3)
- iii) What are the challenges with regard to addressing some or all of those needs and how do you plan to address them? (12)
- iv) Explain the special provisions for senior citizen segments as mentioned in the Health Regulation, 2013. (2)
- v) Discuss the two major risks, a product actuary is expected to deal with, in terms of product design and pricing, post implementation of Health Regulation, 2013. (5)
- vi) How those risks can be mitigated? (5)

[33]

Q. 4) You are the pricing Actuary of your organization. You have been asked to price a large (5000 lives) Corporate quote (Group – Employer's employee) for the upcoming renewals where participation is on compulsory basis. You have been provided client's current year's claim experience of Private Medical Insurance (PMI) at a summary level.

- i) Discuss the main steps you will follow to determine the final premium. (4)
- ii) Will your approach be different for a small corporate (e.g. 300 lives)? If yes, discuss the merits and demerits of that approach. (4)
- iii) You have been asked to design a policy contract of PMI with a corporate client (Employer's employee) along with determination of premium rates, where participation is on voluntary basis. Discuss the associated risks with reasons and control measures you would consider before designing such contract. (6)

[14]
