INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

19th November 2013

Subject SA2 - Life Insurance

Time allowed: Three hours (14.45* - 18.00 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 candidate 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.*
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) Company A is a well-established large life insurance company writing participating non linked assurance contracts, non-participating non linked assurance contracts, unit linked contracts, and without profit annuity contracts in a single fund. The existing proportions of business are 85% for Participating non linked assurance contracts and 5% each for other lines of business.

Company B is a medium sized life insurance company writing mainly participating non linked assurance contracts and a small proportion of non-participating non linked assurance contracts in a single fund.

Both the companies are operating in India. They are open to new business and are declaring the bonuses regularly using the "additions to benefits" method.

The Board approved bonus policy of the company A requires that 90% of the surplus emerging from all lines of business shall be allocated to the with profit policyholders while that of company B requires that 95% of the surplus emerging from all lines of business shall be allocated to the with profit policyholders. The remaining surplus is paid to the shareholder.

The Boards in their recent meetings have agreed that the company B will be merged with company A to form a single entity. It is further agreed that post merger there will be a single fund in which all lines of business will be written.
The management of the company has sought your advice as the Appointed Actuary of the company in relation to the decision of the Board of Directors

i) Discuss the issues that the merged entity will have to deal with relating to the distribution of profits post merger by maintaining a single fund. You are not required to discuss merger issues. (15)

One of the Board members of the company A has suggested that the decision may be unfair to the policyholders of company B as it may adversely impact policyholders' reasonable expectations (PRE) and has further suggested that treating customers fairly should be included in company's corporate strategy post merger.

ii) **a)** List the sources generating policyholders' reasonable expectations. (2)

b) List the items which may be included in the company policy of treating customer fairly. (4)

Another member of the Board of company A has suggested that though the existing company A was not using asset share for valuation to determine bonus, the merged entity should use asset shares in valuing the policy liabilities as a guide to determine bonus. The management of the company has invited your opinion on this suggestion which will be discussed in the next Board meeting.

iii) Describe the practical difficulties that the company may face in determining the asset shares used in valuing the policy liabilities as a guide to determine bonus. Your reply should include any regulatory and professional guidance notes provisions in this regard. (12)

As the use of asset shares in valuing the policy liabilities to determine bonus is to be included in the bonus policy of the company, it has been suggested that to manage the policyholders' reasonable expectations properly, the company should send to each eligible policyholder an annual notice of asset share of his/her policy including a statement on the declaration of reversionary bonus rates based on the smoothed asset share.

iv) Discuss the implications arising out of this suggestion. (6)

One of the risk committee members has been informed about the Guidance notes issued by the Indian Actuarial Profession (GN 6) on Management of participating life insurance business with reference to distribution of surplus. He has asked you explain the some of the provisions contained in the guidance notes

v) **a)** Explain the provisions in the guidance note of treatment of over or under distribution of surplus relative to reserves. (2)

b) Explain the provisions in the guidance note about treatment of any non- participating business written in the participating fund (2)

c) Explain the provisions in the guidance note about Shareholders' transfer computation and tax (3)

Government of the country in which the companies operate is planning to issue inflation linked bonds. The coupon rates of the proposed bonds would be specified in real terms. Such real rate would be applied to the inflation adjusted principal to calculate the periodical semi-annual payments. The principal repayment at maturity would be the inflation adjusted principal amount. The company does not at present have any inflation linked bonds in its investment portfolio. The Risk management committee is meeting in the next month to discuss on the asset liability management of the company.

vi) In the context of asset liability management, comment on the nature and utility of this inflation linked bond and discuss the issues you would like the risk management committee to consider before purchasing the inflation linked bonds to match the existing liabilities. (4)

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Q. 2) Company ABC Ltd is a large private Life Insurance Company which is a joint venture between one of the multinational Life Insurance Company and a leading financial institute of India. Company is in process of implementing the Economic Capital. The Market Value Margin (MVM) i.e. risk margin of non- hedgeable risks needs to be added to the expected Present Value of future liabilities cash flow to determining the market consistent value of liabilities. The Appointed Actuary, Chief Financial Officer (CFO) and Chief Risk Officer (CRO) discussed the following 2-apparaoches for determining the MVM of non-hedgeable risks:

1) Percentile approach and

2) Market Cost of Capital (MCoC) approach

The idea behind both the approaches is that the company should hold sufficient capital to meet a large loss event in the year following the valuation date. The difference between two approaches lies in the assessment of how much capital is needed. The Percentile approach takes the perspective that sufficient capital is needed to ensure that the liabilities can be met with a pre-defined confidence level. On the other hand, the Market Cost of Capital (MCoC) approach takes the perspective that sufficient capital is needed to be able to run-off the business.

i) During the discussion CRO strongly preferred the Market Cost of Capital (MCoC) approach.

a) Define the hedgeable and non-hedgeable risks. (2)

b) Analyse the need for computing the explicit MVM for hedgeable risks? (1)

c) Describe the key advantages of MCoC approach over percentile approach to compute MVM for non-hedgeable risks? (5)

d) Outline the key steps involved in calculating the MVM for non-hedgeable risks by using MCoC approach? (2)

The Company is currently considering making an application to the IRDA for issuance of the Capital.

ii) Outline the key criterions that IRDA is likely to consider while approving the application. (4)

The Company approached you with a proposal to appoint you as Reviewing Actuary for the purpose of Actuarial Practice Standard (APS-10).

iii) Outline the key aspects you will consider before accepting the proposal/appointment? (6)

In a recent meeting, the Finance director mentioned that the profit margins of the company are under pressure and in order to improve the profitability, the company should increase the sales of riders.

iv) Discuss the key regulatory considerations applicable for offering riders in Indian market? (3)

You are currently advising two Indian Life Insurance companies, company A and Company B as consulting actuary. You are reviewing reinsurance arrangement for their Term insurance business. Both company A and company B write a full range of products including conventional with profits, conventional without profits, unit-linked, pension, term insurance and health business.

Currently Company A has in place an original terms reinsurance arrangement under which it retains 40% of the sum assured up to Rs 2,000,000, with everything above Rs. 2,000,000 being ceded to the reinsurer. Company B has a similar type of arrangement for its term assurance business, but it retains 20% of the sum assured up to Rs 1,000,000, with everything above Rs. 1,000,000 being ceded to the reinsurer. Each of the company A and Company B believes that their reinsurance arrangement is appropriate.

v) Discuss the factors that might have led to this different reinsurance arrangement being appropriate for the two companies. (10)

Company A is considering offering impaired life annuity under which better rates can be offered to those who either smoke or have a medical condition which shortens life expectancy.

vi) Discuss the key additional risks in offering the impaired life annuity. (6)

The CFO of the company A believes that the current reserving methodology and assumptions used by the company are very prudent and have engaged you as review actuary to comment on the valuation assumptions and methodology.

vii) State the considerations that an actuary needs to take into account in determining Margins for Adverse Deviations (11)

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