INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

27th May 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) You are the Appointed Actuary of a life insurance company in India. Your Company's portfolio consists of individual and group unit linked, conventional and accumulating with profit, group term and individual term life contracts both in-force and open to new business. During the last financial year the Company's new business consisted of 20% individual conventional with profit and accumulating with profit, 55% unit linked, 15% participating group gratuity and leave encashment business and the remainder from group term and rider benefits.

Certain regulatory changes had been introduced by the regulator in the market in recent past leading to lower margins and significantly lower commissions to the distributors resulting into lower sales of the Unit Linked Business. In order to deal with this, the company wishes to diversify and increase the share of non-participating business.

In a recent meeting, the marketing head suggested a regular premium paying non-participating product with term ranging from 15-25 years. He has suggested that death benefit in the contract should at least be 125% of the total premiums payable under the contract. He further suggested that regular guaranteed simple additions as percentage of cumulative premiums already paid, accruing annually in arrear, be provided in the contract. In order to avoid any discretion in deciding the guaranteed additions, he suggested that the annual guaranteed additions may be linked to the Repo rate or may have a minimum floor of 5%. On Maturity, the sum assured along with cumulative guaranteed additions is payable.

You have been asked to prepare a memorandum on risks inherent in the proposed product structure and what are the options available to company to mitigate or reduce the level of risk.

i) Outline the key risks in the proposed product from the company perspective. (6)

ii) Describe what you would propose to reduce the level of risks in this product. (6)

Recent prescriptive product regulations introduced in the market require that for a non-par non linked product, the benefit assured payable on the occurrence of a specified event including regular additions shall be explicitly stated at the outset and not linked to any index or benchmark. The CEO of your company is concerned about possible impact of this regulation.

iii) Outline the advantages and disadvantages of prescriptive products regulations. (5)

iv) Explain how this regulation can affect risk profile of your company writing the non-par non-linked products. Outline the pro and cons of this regulation from the policyholder's perspective. (7)

One of the product regulations suggests that for regular premium paying policies the minimum death benefit for the conventional products shall be higher of the following:

a) 10 times the annual premiums if age is less than 45 years, otherwise 7 times

b) 105% of the Premium paid on the date of death

c) Minimum guaranteed SA on maturity

d) any absolute amount assured to be paid on death

v) Outline the pro and cons of this minimum death benefit regulation (from the company and policyholder's perspective) and the challenges it brings to future management of products of the insurance company. (5)

The CFO of your company is concerned that the operating expenses incurred by the company may exceed the maximum management expenses allowed as per the legislative provisions and the product team needs to ensure that an appropriate level of expenses is allowed by the design of the contract.

vi) Outline the legislative provisions on limitation on management expenses and commission of a life insurance company and how could they apply to the pricing of products. (7)

The life insurance company required to calculate the economic capital annually by the Multinational JV partner, such that the company needs to hold to survive the following year with a probability of 99.5%. The company has an internal control framework that allows it to identify and quantify the risks to which it is exposed.

The last economic capital calculation was performed a year ago, since then there has been a downturn in the economy. The equity value in the market have fallen by 30–40%, the excess yields on corporate bonds over equivalent government backed bonds have widened by 2.5% or more and yields on government backed bonds have dropped to historically low levels.

A year ago assets were invested 15% in equities, 30% in corporate bonds and 55% in a mixture of government bonds and cash.

vii) Discuss how the credit risk to which the life insurer is exposed is likely to have changed during the year. (7)

The company uses one year stress tests in the calculation of market risk economic capital at each year end.

viii) Discuss the factors that the insurer would take into account when setting the stress tests. (7)
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Q. 2) You are the Appointed Actuary of a life Insurance Company which is operating in India for more than 10 years. Company has been continuing writing significant volume of participating, non-participating and unit -linked business both under life insurance and pension category. Company also writes some amount of group business. The Company offers a wide range of with-profits participating products under both life insurance as well pension business category. Under these participating products policyholders are entitled to share in the surplus of the participating funds. Participating products are classified into 3-category depending on type and the method of surplus distribution i.e Products with Reversionary Bonuses and Terminal Bonuses, Products with only Reversionary Bonuses and products with Cash Dividend.

Company follows the Asset Share methodology for reserving as well as surplus distribution for participating business. Company aims to smooth the pay-outs in a range of 75% to 125% of Assets share for the maturing policyholder. Currently company maintains significant level of Estate. The size of estate is higher than the capital injection/support made by the shareholders in the participating fund(s) during the start up. Company believes that Policyholder's Reasonable Expectation primarily relates to the payment of benefits broadly in line with Asset Shares and therefore, the company does not aim to distribute the estate to the participating policyholders – Shareholders wanted to transfer the excessive estate entirely to the shareholder fund in future.

While computing the Asset Share, the company makes a high level allowance for the cost of guarantees.

Company declares reversionary bonuses, cash dividends and terminal bonuses annually as part of annual actuarial investigation. The company declared bonuses in line with the Bonuses declared in the previous financial year. However, company currently does not have any formal written bonus and dividend policy approved by the Board. In the previous meeting, Board of Directors has asked you to prepare a detailed bonus and dividend policy.

i) Draft a detailed Bonus and cash dividend distribution policy covering the key governing principles and practices. The Bonus and cash dividend distribution Policy should also cover company view on approximation, if any currently being used. (14)

ii) Describe the practical difficulties that you may face in calculating the asset shares used for statutory Valuation. (9)

Following is an extract from the draft revenue Account for the financial year ended 31st March 2013 (Current Year)

Particular	**Schedule**	**Current Year**	**Previous Year**
		(Rs. Lacs)	**(Rs. Lacs)**
Surplus during the year before transfer to/from Shareholders		-500	1,660
Transfer to shareholders' account		940	1,140
Transfer to shareholders' account			
Balance being transferred to Fund for Future Appropriation		-1,440	520

One of the Statutory Auditors made following comments:
"Given there is a deficit of Rs 5.0 crores in the fund a transfer of Rs 9.4 crores to the shareholders accounts may not be in line with Para 9 of Schedule A of IRDA (Preparation of Financial Statement and Auditors reports of Insurance Companies) Regulations, 2002 and Generally Acceptable Actuarial Practices (GAAP)".

iii) Explain how the shareholder Transfer is appropriate. (5)

Following is the extract of Actuarial Valuation Reports for valuation as on 31st March 2013 for two participating products which are entitled for reversionary and terminal bonuses. (Amount in Rs. lacs)

Item	**Product 1**	**Product 2**
NOP	1197	547
Sum Assured (SA)	1,66,244	1,10,853
Vested Bonuses (VB)	27,243	27,333
Present Value (PV)of Sum Assured	56,682	27,183
Present Value (PV) of Vested Bonuses	11,935	7,885
Ratio 1=PV (SA)/SA	0.34096	0.24521
Ratio2 =PV (VB) / VB	0.43810	0.28849

iv) Outline the possible reasons for difference between Ratio 1 and Ratio 2 within the product and across the product. (3)

v) New Finance Director of the company who has recently joined the company with significant banking experience is concerned about the prudence used by the Appointed Actuary and believes that the reserves have been overestimated leading to lower revenue profits.

a) Outline the points that you will make to justify why Appointed Actuary is required to use Margins for Adverse Deviation (MAD) while finalising the valuation parameter (s) for statutory reserving and solvency purposes. (4)

b) Describe the key considerations that you as an Appointed Actuary need to take into account in determining the Margin for Adverse Deviation (MAD) for the statutory Valuation. (8)

vi) In the last meeting, the Risk and Assets and Liability Management (Risk and ALM) Committee has asked you and Chief Risk Officer to jointly develop a comprehensive Asset - liability management (ALM) Policy for the company. In this regards state the following:

a) What is meaning of ALM with reference to the Life insurance Business? (1)
b) Outline the objectives of ALM Policy (1)
c) List key roles of Risk and ALM Committee (1)
d) Outline the key risk covered by the ALM policy. (4)

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