INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

29th April 2016

Subject ST2 — Life 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 not expected to be any country or jurisdiction specific. However, if Examples/illustrations are required for any answer, the country or jurisdiction from which they are drawn should be mentioned.***
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) A new life insurance company intends to offer a joint life endowment product, targeting couples where both are working. The benefits under the product would be as follows:

- Death Benefit on first death: Monthly amount (selected at inception of the policy) payable to the second life as long as the second life is alive
- Waiver of Premium benefit: all future premiums will be waived if either of the lives is diagnosed with one of the specified critical illnesses
- Surrender Benefit: Equal to 70% of the premiums paid till date of surrender
- Maturity Benefit: Equal to Sum Assured

The company would be using a cash flow approach to price the product.

i) List the assumptions that would be required for pricing this product. (5)

ii) Describe how the company can set the Risk Discount Rate for the product. (5)

The product was launched three years back and the company wrote significant volumes of business. Global and local factors indicate an economic downturn in near future which is expected to last for the next few years. The CEO has asked for a report on how the economic downturn is likely to impact the future experience under the product, both demographic and economic.

iii) Discuss the points which you would include as part of the report to the CEO. (5)

[15]

Q. 2) A life insurance company sells a level premium term insurance product in a highly competitive market. There are no options or benefits other than payment of the sum insured on death within the specified term.

In order to improve the sales under this product, it has been suggested that for future new business, the policyholder would have the option to increase the sum insured under the product without undergoing any further underwriting. Any increase in sum insured under the option would be on the same rates as would apply to a healthy life of the same age, gender and smoker status at the time the option is exercised.

i) Explain the additional risk arising from providing this option and outline how the company can manage this additional risk. (5)

ii) Describe how the extra premium for the option might be calculated. You can either provide the formulae where required, or the logic used within the formulae. (12)

iii) Discuss the factors to be considered before introducing this option. (9)

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Q. 3) A company has been writing regular premium with-profits products for many years now.

i) Define "asset share" and list the components which the company may be using in the asset share calculation. (6)

ii) Comment on how the following might affect the prospective individual [per-policy] asset share of the policies. The company's participating fund has large accumulated estate.

a) Regulator increases the maximum limit of investments in the government bonds in the participating fund from current 50% to 60%. The limits for corporate bonds and equity have not been revised.

b) The shareholders' required rate of return on capital increases.

c) Regulator prescribes the maximum reserving interest rate for the participating policies.

The impact of each of the above needs to be considered independently. (10)

iii) Describe the practical difficulties, other than those which relate to investment return and tax, that the company may face in calculating the asset shares. (8)

[24]

Q. 4) **i)** Define the appropriation price of units in an internal linked fund and explain how the appropriation price is calculated. (5)

ii) Describe the principal sources of risk for an insurance company which are associated with the unit pricing in an internal linked fund. (4)

A life insurance company writes a variety of unit-linked products investing in internal linked funds run by the company. Some products have annual fund management charges (AMC) which may be varied by the company at its discretion, though the company has never varied the AMC. In some products, there are monetary expense charges which may be increased by not more than the increase in the retail price index. Over the years, the company has at times, but not regularly, increased this expense charge.

iii) Discuss the ability of the company to vary the charges with respect to the Policyholders' Reasonable Expectations. (7)

[16]

Q. 5) A life insurance company has until now sold only non-underwritten unit-linked business through its tied agency channel. The company now wishes to enter new markets. The marketing director has proposed to introduce the following new products to achieve this and which would be sold through its existing agency channel and through insurance intermediaries:

- Immediate annuity product
- With-profits pensions product
- Term assurance product

i) Discuss the marketing and business development risks associated with the proposal (5)

You are not required to discuss the risks under the products

ii) Discuss the effects on the company's capital which would arise from the proposal (6)

iii) Discuss the investment strategy in respect of each of the proposed products (8)

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