INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

16th November, 2011

Subject SA3 – General Insurance

Time allowed: Three hours (9.45* - 13.00 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 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 have been hired by a consortium of general insurance companies that focus on the motor book. The company managements have an intuitive sense that the Sarla Verma award will lead to a rate need for TP exposures. Your task is to provide an actuarial analysis to quantify the rate impact of the award. You can assume that the companies will open their books to you. Describe in detail how you would quantify this impact. Remember that your report will form the backbone of the companies' representation in requesting rate relief.

Your answer should include descriptions of the data you would collect, the analyses you would undertake, and the conclusions you are likely to arrive at. You should cite typical numbers from your experience. For simplicity, you can consider the impact in the form of an "Add ON", and assume that the rest of the product has been priced appropriately.

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Q. 2) There is a conflict between the sales team and the risk management team in your company, with respect to the pricing of a long tail exposure. The following questions are with respect to this conflict.

i) The sales team is citing the relatively low incurred to date loss ratios in the latest accounting periods and is demanding a rate decrease. Discuss the conditions under which such a strategy will be optimal. You should define the relevant factors that you include in your optimization function and discuss the necessary control measures that should be in place in order to make this strategy succeed. (5)

ii) In contrast, the risk management team is requesting an immediate rate increase. Based on the following data, estimate the needed rate change. Like in the real world, the data provided may be incomplete. You need to augment the data with relevant actuarial information from your experience. Your assumptions should be reasonable per the prevailing market conditions. Show the details of your calculations and document all your assumptions and their support. State clearly the purpose of each step in your calculations.

Please note that a 5% rate increase was implemented on 1/4/2010 and a 3% decrease was implemented on 1/4/2011. The "as of" date of the data provided is 31/3/2011. (30)

AY	Qtr	Gross Written Premium	Written Policies	Earned Exposures	Gross Earned Premium	Gross Incurred Loss
2008-09	**Q1**	810,000,000	245,000	191,500	702,000,000	1,510,000,000
	Q2	975,000,000	291,000	222,000	817,000,000	1,285,000,000
	Q3	965,000,000	310,000	242,000	885,000,000	1,440,000,000
	Q4	1,330,000,000	310,000	270,000	980,000,000	1,550,000,000
2009-10	**Q1**	1,080,000,000	280,000	291,000	1,105,000,000	1,930,000,000
	Q2	1,175,000,000	295,000	303,000	1,150,000,000	1,660,000,000
	Q3	1,350,000,000	300,000	297,500	1,220,000,000	1,820,000,000
	Q4	1,490,000,000	325,000	298,000	1,215,000,000	1,660,000,000
2010-11	**Q1**	1,500,000,000	360,000	426,000	1,725,000,000	1,980,000,000
	Q2	1,530,000,000	345,000	420,000	1,710,000,000	1,170,000,000
	Q3	1,440,000,000	336,000	405,000	1,650,000,000	750,000,000
	Q4	1,560,000,000	390,000	390,000	1,500,000,000	150,000,000

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Q. 3) You are the Appointed Actuary of a medium sized general insurance company in India. The insurance regulator has recently introduced Economic Capital calculation for the general insurance industry. The key features in the Economic capital calculation, amongst others are

a) One year horizon

b) Value at risk (VaR) as the risk measure

c) Formula based

d) Risks considered are Underwriting , Market and other

e) Assets and liabilities estimates have to be taken from the balance sheet

i) Discuss the concept of Economic Capital and its difference from the statutory capital calculation in India. (10)

(You should include in your discussion the benefits and weaknesses of both EC and SCR)

A reserving assistant in your department suggests that for liabilities best estimate value has to be taken for calculation of Economic Capital instead of Balance sheet value.

ii) Discuss this suggestion. (4)

iii) Discuss the techniques you will consider when estimating best estimate IBNR reserve (Include examples whereever required) (12)

iv) Discuss any other issues that you will consider while estimating best estimate of IBNR provisions. (8)

The CFO of the company is concerned that the Economic Capital would replace the statutory solvency capital regime in India.

v) Discuss the concerns that the general insurance industry might have if such a proposal is implemented. (10)

vi) Discuss the factors that the regulator has to consider before changing the solvency capital regime to Economic capital. (6)

You have been asked by the Board of Directors to present an alternate calculation of Economic Capital which reflects the ‘true capital’ requirement of the company taking into consideration the company’s experience.

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