INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

20th October 2009

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.*

AT THE END OF THE EXAMINATION

Please return your answer book and this question paper to the supervisor separately.

Q 1) You are the actuary of a large general insurance company XYZ in India writing all types of insurance cover. The chief underwriter of your company has requested you to assist with designing and rating of all insurance risks to an agriculture company AGRI Foods & Flowers. The agriculture company owns a very large farm land wherein it cultivates all kinds of vegetables, fruits and flowers. The company distributes flowers, fruits and vegetables to major cities in India; part of the produce is also processed, packaged and sold.

(i) Describe all the insurance needs of AGRI Foods & Flowers. (10)

(ii) Identify appropriate exposure measure and all the rating factors for each of the insurance products. (8)

(iii) Outline the risks and uncertainties to your company by association with/providing insurance cover to AGRI Foods & Flowers and how would you mitigate those risks. (3)

(iv) The AGRI Foods and Flowers has provided you with the following past claims history for their commercial property (buildings, contents, stock of their food processing units) up to 30/06/2009:

Underwriting Year	**Gross Premium (Rs 000s)**	**Gross Incurred Claims (Rs 000s)**
2005	1,210	814
2006	1,240	858
2007	1,320	937
2008	1,310	986
2009 Projected	1,290	895

Assuming an inflation rate of 5% per annum, and that the case estimates of the company is adequate, estimate what would you expect to be the burning cost for the commercial property cover for 2010 underwriting year based upon the company's historic data. State all the assumptions that you make. (6)

(v) (a) What other information/adjustments would you ask/make to determine the actual burning cost acceptable to your company? (3)

(b) What other factors need to be included for determining the technical premium? (3)

(vi) Your company currently has a quota share reinsurance of 10% to GIC and 20% to PQR Re. You are recommending an excess of loss contract of Rs.10 lakhs excess of Rs.5 lakhs.

Individual claims above Rs.5,00,000 up to 30/06/2009 were as follows:

Underwriting Year	Year of Event	Gross Paid (Rs)	Gross Outstanding(Rs)	Gross Incurred (Rs)
2005	2005	6,76,526	0	6,76,526
2005	2005	12,56,769	0	12,56,769
2005	2005	14,52,876	0	14,52,876
2007	2007	7,45,343	0	7,45,343
2007	2007	9,87,654	0	9,87,654
2007	2007	24,87,645	0	24,87,645
2008	2008	4,24,425	1,41,475	5,65,900
2008	2008	7,17,360	1,79,340	8,96,700
2008	2008	6,82,550	1,20,450	8,03,000
2009	2009	4,25,000	4,25,000	8,50,000

Assuming an inflation rate of 5% per annum, and that the case estimates of the company is adequate, estimate what would you expect to be the burning cost for the excess of loss contract for the 2010 underwriting year based upon the company's historic data. State all the assumptions that you make. (8)

(vii) Describe how would you monitor this kind of business along with the rationale for those steps. (9)

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Q2) The following information about XYZ general insurance company in India has been provided. XYZ started writing business from 01/04/2003 and writes only Commercial Fire class of business.

Paid claims to end of development year (Rs Lakhs):

AY	0	1	2	3	4	5
2003	88	118	139	153	160	161
2004	98	133	158	176	186	
2005	96	134	151	163		
2006	115	169	197			
2007	124	168				
2008	130					

Gross written premium (Rs Lakhs)

Year starting 01/04	
2003	505.5
2004	521.2
2005	554.9
2006	540.8
2007	545.6
2008	549.1

Rate changes are:

Year starting 01/04	
2004	-5%
2005	-3%
2006	1%
2007	2%
2008	5%

At 31/03/2008, the ultimate losses (Rs Lakhs) for each accident year was estimated as:

Accident Year starting 01/04	
2003	162.3
2004	190.7
2005	180.2
2006	244.9
2007	266.0

(i) Estimate the ultimate losses for each of the last 6 accident years for this business using BF method. (8)

(ii) The following information is also available:

- ? At 01/04/2008, the shareholders' funds amounted to Rs.20 crores.
- ? Acquisition costs amount to 15% of written premium.
- ? Additional expenses are 12% of written premium incurred evenly throughout the year.
- ? Claims handling costs are 4% of claims amounts.
- ? Claims are paid on average half way through the year.
- ? Technical reserves are invested in a mixture of fixed-interest and government securities, with an estimated investment return of 7% p.a.
- ? Shareholders' funds at the beginning of the year are invested in a mixture of fixed-interest, government securities and equities, with an estimated investment return of 9% p.a.
- ? A gross dividend of Rs.1 crore is payable to the company shareholders.
- ? The company pays tax at 30% on its profits.

Construct the Revenue and Profit & Loss Accounts for the year ending 31/03/2008. State all the assumptions that you make. In India. Financial year is April 1 to March 31. Desirable for questions to incorporate this structure. (13)

(iii) Calculate the solvency ratio of XYZ as at 31/03/2008. (3)

(iv) Explain why an Indian general insurance company might hold a solvency margin in excess of the Statutory Minimum Solvency Margin Requirement. (8)

(v) The claims department indicates 5% increase in claim frequency and 1% increases in claims cost, estimate the projected loss ratio for 2009. State any assumptions you make. (2)

(vi) The management of XYZ is aiming for similar levels of dividend distribution and a 2% increase in shareholders' funds during the year 2009. Use the loss ratio calculated in 2 (v) above and assume that the overall expenses are 29% of the earned premium during the year. Determine the level of written premium required to achieve this target. (6)

(vii) Describe the valuation of asset requirements for the Statutory Returns of an Indian general insurance company. (10)

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