INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

12th May 2008

Subject SA3 – General Insurance

Time allowed: Three Hours (09:45* – 13.00)

INSTRUCTIONS TO THE CANDIDATE

1. *Do not write your name anywhere on the answer scripts. You have to write only your Candidate Number on every answer script.*

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 have then three hours to complete the paper.*

3. *Mark allocations are shown in brackets.*

4. *You must not start writing your answers in the answer papers until instructed to do so by the Supervisor.*

5. *Attempt all questions, beginning your answer to each question on a separate sheet.*

6. *Fasten your answer sheets together in the numerical order of the questions.*

7. *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.*

8. *In addition to this paper you should have available Actuarial Tables and your own calculator.*

Professional Conduct:

"It is brought to your notice that in accordance with provisions contained in the Professional Conduct Standards, if any candidate is found copying or involved in any other form of malpractice, during or in connection with the examination, disciplinary action will be taken against the candidate which may include expulsion or suspension from the membership of IAI."

Candidates are advised that a reasonable standard of handwriting legibility is expected by the examiners and that candidates may be penalized if undue effort is required by the examiners to interpret scripts.

AT THE END OF THE EXAMINATION
Hand in BOTH your answer script and this question paper to the supervisor separately.

Q. 1) You are the actuary of a large insurance company, which is looking at acquiring one of the following 3 companies. The following financial information has been provided for the insurance companies X, Y and Z for the accounting year 2007. Amounts are given in Lakhs of Rupees.

		Company	
	X	Y	Z
Gross Written Premium (GWP)	420	1,000	800
Additional provision for unexpired risks c/f	140	0	0
Gross outstanding claims b/f	70	500	2,720
Gross claims paid	280	600	400
Gross outstanding claims c/f	210	400	2,800
Non-acquisition expenses	35	125	120
Investment income	35	150	120
Current assets (at year end)	35	50	100
Current liabilities (at year end)	84	60	120
Total investments (at year end)	700	1,700	3,800
Share capital (at year end)	70	200	360
Acquisition costs as a % of GWP	70	10	60

(i) Construct the balance sheet for each of the three companies as at 31/12/2007, stating any assumptions that you make. (5)

(ii) Based on the data provided calculate the following statistics for each of the companies, stating any additional assumptions not made in part (i).

- Solvency ratio
- Claim ratio
- Return on capital employed (5)

(iii) Compare the results derived in part (ii) for the three companies, and discuss briefly possible reasons for their differences. (5)

(iv) Define other insurance related ratios (i.e. in addition to those in part (ii)), which may be used when comparing the companies' published accounts and state their objectives. (8)

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Q. 2) You are working for a general insurer partly owned by a bank. The Board of Directors of the company is proposing to enter the Mortgage Indemnity Guarantee (MIG) business. The Finance Director is new to the general insurance industry and asking you to explain the salient features of MIG business including:

- Cover provided
- Exclusions and other policy conditions
- The major risk and rating factors
- Claim characteristics
- Main risks and uncertainties faced by the company
- Reinsurance requirement

[25]

Q. 3) You have recently joined a medium-sized commercial property general insurance company. The CEO of the company asks you to review the reinsurance arrangements and the following information has been provided to you.

- The business is geographically located in an area which is prone to cyclical storms and floods.
- The insured value of buildings range from Rs.1,00,000 to Rs.25,00,00,000.
- The ceding company's loss retention is 40% and the surplus is Rs.50,00,000.
- The per risk and occurrence limits are Rs.5,00,000 and Rs.2,00,00,000 respectively.
- The ceding company also gets ceding commission which is 20% at present.

i) Describe the potential concerns for your company under this arrangement. (2)

ii) What are your recommendations to address these concerns? (2)

iii) The CEO believes that the company has the capacity to retain exposure on smaller risks. However, he is worried that the larger insured values pose too much risk to fully retain and he also wants to maintain the ceding commission levels. What are your proposed reinsurance recommendations? Explain how each of your recommendations will address them. (2)

You are also given the following information:

Policy Year	Losses Incurred in Rs.5 Lakhs excess of Rs.5 Lakhs layer	Cumulative loss development factor for losses in layer	Subject premium	Rate level adjustment factor to 2008 policy year	Loss trend to 2008 policy year
2003	25,000	1.100	100,000	1.200	1.300
2004	35,000	1.200	120,000	1.100	1.150
2005	30,000	1.300	130,000	1.050	1.070
2006	15,000	1.500	140,000	1.000	1.000

iv) Calculate the 2008 policy year experience rate for the layer Rs.5,00,000 excess of Rs.5,00,000. (2)

v) The primary insurer is also interested in purchasing an excess of loss cover for the layer Rs.1,00,00,000 excess of Rs.1,00,00,000. Some members of the management team believe that because they have experienced no losses in this layer, no premium should be charged for this layer. How would you respond to this assertion, and how would you price this layer? (2)

vi) Discuss the issues that an insurer should consider when assessing the security of a reinsurer. (5)

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Q. 4)

i) List the principal rating factors for employers' liability insurance. (2)

ii) A large industrial company with 3,000 employees is seeking quotations for the renewal of its employers' liability cover. Describe how to calculate the renewal premium using a prospective experience-rating approach. (18)

iii) Compare prospective and retrospective methods of experience rating. (2)

iv) It has been suggested that the company should have a modified coverage with an aggregate deductible whereby the deductible is applied to the sum of all losses occurring within the policy period. Discuss the approach you would use when quoting a premium rate for a given aggregate deductible amount and any other factors to be considered. (5)

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Q. 5) You are the actuary of a large insurer writing household, travel, commercial property and liability insurance. The Finance Director decides to discount reserves for its published accounts and makes the following recommendations:

(i) Fixed rate of 10%

(ii) Base rate set by RBI on 31/03/2008

(iii) Return on high coupon long term government securities

(iv) Actual return achieved during the financial year

(v) Return expected by investment manager over next year

What are the pros and cons of each of the bases above for determining the rate of interest? **[10]**

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