EXAMINATION

13 May 2010 (pm)

Subject F203 — General Insurance Specialist Applications

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*

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 booklet until instructed to do so by the supervisor.*

4. *Mark allocations are shown in brackets.*

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

6. *Candidates should show calculations where this is appropriate.*

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet, with any additional sheets firmly attached, and this question paper.

In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator from the approved list.

Question 1

You are a newly appointed actuary at Company ABC, a medium sized general insurance company that writes private motor, private property and passenger liability products. You have been asked to review the IBNR reserves. For the last few years the IBNR reserving has been done by a student who used a standard chain ladder method for all lines of business. The tables below depict the results of the reserving exercise as at the end of 2009 for each of the three lines of business. The claim figures are net of reinsurance, salvage and recoveries. All incurred claim amounts are expressed in R'000.

Private Motor Net Incurred Claims

Accident Year	1 (12m)	2 (24m)	3 (36m)	4 (48m)	5 (60m)	6 (72m)
Cumulative Incurred Claims						
Data:						
2004	35,468	44,548	46,330	46,607	46,700	46,700
2005	38,954	48,883	50,729	51,069	51,186	
2006	42,394	53,704	55,896	56,300		
2007	80,326	110,938	125,312			
2008	85,722	113,572				
2009	97,706					
Dev't Factors:						
2004	1.25601	1.04000	1.00598	1.00200	1.00000	
2005	1.25489	1.03776	1.00670	1.00229		
2006	1.26678	1.04082	1.00723			
2007	1.38110	1.12957				
2008	1.32489					
2009						
Average Factors:						
Volume - all	1.31386	1.07825	1.00668	1.00215	1.00000	
Cumulative Value	1.42920	1.08778	1.00884	1.00215	1.00000	

Private Property Net Incurred Claims

Accident Year	1 (12m)	2 (24m)	3 (36m)	4 (48m)	5 (60m)	6 (72m)
Cumulative Incurred Claims						
Data:						
2004	99,853	110,437	114,192	117,047	118,334	118,335
2005	116,259	128,466	132,963	136,287	137,649	
2006	159,392	176,288	182,105	186,476		
2007	195,269	283,140	314,285			
2008	257,890	330,099				
2009	298,301					
Dev't Factors:						
2004	1.10600	1.03400	1.02500	1.01100	1.00001	
2005	1.10500	1.03501	1.02500	1.00999		
2006	1.10600	1.03300	1.02400			
2007	1.45000	1.11000				
2008	1.28000					
2009						
Average Factors:						
Volume - all	1.24107	1.06475	1.02458	1.01046	1.00001	
Cumulative Value	1.36807	1.10233	1.03530	1.01047	1.00001	

PLEASE TURN OVER

Passenger Liability Net Incurred Claims						
Accident Year	**1 (12m)**	**2 (24m)**	**3 (36m)**	**4 (48m)**	**5 (60m)**	**6 (72m)**
Cumulative Incurred Claims						
Data:						
2004	0	4,925	7,390	11,265	14,285	15,060
2005	6,926	11,164	12,922	18,076	16,760	
2006	856	856	9,335	11,352		
2007	11,952	12,762	13,849			
2008	24,715	49,145				
2009	3,070					
Dev't Factors:						
2004		1.50051	1.52436	1.26809	1.05425	
2005	1.61190	1.15747	1.39885	0.92720		
2006	1.00000	10.90537	1.21607			
2007	1.06777	1.08517				
2008	1.98847					
2009						
Average Factors:						
Volume - all	1.66319	1.46417	1.37258	1.05808	1.05425	
Cumulative Value	3.72848	2.24177	1.53109	1.11548	1.05425	

During your discussions with managers and claims administrators you learn that the following issues have not been taken into account in the IBNR calculation:

- In the 2007 accident year the private motor reinsurance programme has changed from a proportional 50/50 treaty to a non-proportional treaty with a retention of R150,000 per claim. The new treaty operates on a losses occurring basis. One of the reinsurers participating on the non proportional treaty is non-approved.
- Company ABC negotiated a new salvage contract for all motor write-off claims that are reported from 1 July 2008 onwards. The new contract doubled the percentage of sum insured that the company can recover from salvage.
- Company ABC bought a property book from another insurer in March 2007. Only new business from March 2007 is underwritten by Company ABC while the run-off of the claims prior to accident year 2007 is handled by the previous underwriter. This book is administered by a broker while the rest of the property book is administered in-house by the claims department of company ABC. The property triangle incorporates both property books.
- The private motor premiums can not be split into the premium for passenger liability versus third party liability and own damage.
- Passenger liability claims have been covered by a non-proportional reinsurance treaty since 2004 but the retention on the treaty has been increasing steadily from year to year.
- Management has decided to change all new liability policies to 'Claims Made' policies from the 1st of January 2009.

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i. Define a risks attaching and a losses occurring reinsurance treaty stating the best way to group claims data to calculate IBNRs for each of these treaties.

[2]

You have been tasked to review the reserves calculated by the student.

ii. For each line of business discuss what adjustments to the data are required to incorporate the factors mentioned above and suggest alternative method/s if the chain ladder method is considered inappropriate. Ignore discounting and loss adjustment expenses in your answer.

[21]

After making all the adjustments that you have recommended you recalculate the IBNR reserve at 15% higher. The financial director is not happy with the required increase in reserves and suggests that you calculate the reserves based on the aggregate business for the whole company.

iii. Discuss the appropriateness of this suggestion.

[4]

iv. Both the accounting standards issued by SAICA and PGN401 give guidelines about applying discounting to IBNR reserves.

a. State under which circumstances the accounting standards issued by SAICA in 2001 allow discounting to be applied to the reserves and list the factors that should be taken into account when discounting.

b. List the factors that should be considered to arrive at an appropriate discount rate according to PGN401.

[6]

v. Explain how you would incorporate the following into a reserving exercise:

a. Discounting

b. Claims handling expenses. [6]

[TOTAL 39]

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Question 2

You are an actuary employed by a young, medium sized, direct insurance company writing personal lines motor business. The company is a wholly owned subsidiary of a large multi-line short term insurer. The parent company sells comprehensive motor insurance mainly through large broker networks. The only product sold by the company that you work for is basic motor insurance protecting the insured's vehicle against accidental damage only. When your company was launched, the product design and initial rating was based on data sourced from your parent company's large book.

The financial performance of your company has, to date, been poor, with underwriting profits yet to emerge since its launch 3 years ago. In order to address this, management applied a flat 7.5% premium increase to the base risk premium of the entire book, hoping to see a similar level of increase in the average premiums collected over the next year. However, a year later, the numbers reflected in the financial statements indicated that the average premium income per member over the year had remained level.

i. Discuss briefly possible reasons why the average premium remained level, despite the application of a 7.5% increase for all policies.

[5]

ii. Explain in detail the investigations that you would carry out to determine the underlying reasons for this apparent anomaly in average premium levels.

[16]

You have been asked to build a model to estimate the effect of future premium increases on the cash flows of the business.

iii. Explain in detail how you would do this modeling, highlighting the various key features that you would include in your model for both existing and new business.

[20]

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The current rating structure is as follows:

Base monthly risk premium: Males R350
Females R300

The following loadings apply:

Age loading	< 25 years 25 – 55 years 56 and older	25% 5% 10%
Excess level loading	R 500 R 1000 R 2000	7.5% 10% 15%
Vehicle purchase price	R 0 – 50,000 R 50,000 – 100,000 R100,000 – 200,000 R 200,000 and above	0% 10% 25% 30%
Claim Free Years	0 1 2	20% 15% 10%

The premium formula is: $$\text{Office Premium} = \frac{(\text{Risk Premium})(1+a)(1+b)}{(1-c)}$$

Loadings:
- a Solvency building margin
- b Cost of reinsurance loading
- c Expense loading

iv. Comment on the appropriateness of the rating structure and premium formula and suggest possible enhancements to both for the comprehensive motor product.

[10]

The management of your company is considering two initiatives. The first is to write fleet motor products. The second is to add third party protection as a standard component of the motor cover to all existing and new business.

v. Discuss the impact on pricing, operational and financial risks posed by the proposed initiatives.

[10]
[TOTAL 61]

END OF PAPER