INSTITUTE OF ACTUARIES OF INDIA

EXAMINATIONS

23rd May 2012

Subject ST7 - General Insurance: Reserving & Capital Modelling

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 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)** Define Unearned Premium Reserve (1)

b) How would you account for Earned Premium for the following types of policies? Also provide the rationale for the method adopted.

i. Annual Insurance Cover with uniform Risk Spread

ii. Marine Policies – Specific Cargo policies

iii. Marine Policies – Open policies and open covers

iv. Erection All Risk (4)

[5]

Q. 2) Your company has been approached by the country's largest wedding organizers "MARRY" to provide insurance cover against cancellations for all the weddings they organize across India for next 5 years. Weddings organized by MARRY are generally for high net worth people including celebrities and politicians for wedding budgets exceeding INR 2 Crores. Describe the characteristics of claims that the insurer can expect to receive.

[3]

Q. 3) The IT department of a company is in the process of designing a new policy & claims database. Identify errors which might be made in entering data into a computer claims system and suggest checks that can be built in to reduce the chances of such errors occurring.

[5]

Q. 4) You are an actuary to a local general insurance company "MOTO" with significantly large cash reserves writing only motor insurance. The company has decided to diversify its business both geographically and by product type.

To be able do so quickly it has decided to acquire a large multinational general insurance company called "GIANT" which writes all types of insurance products.

The acquisition has been approved by GIANT's board and MOTO has complete access to GIANT's claims and financial data.

Discuss in detail the actuarial investigations that you will carry out to understand Giant's underlying risks and assess its financial strength.

[10]

Q. 5) As a senior actuary you are part of the ALM committee of Nav Bharat Berkshire General Insurance Ltd, a large and well capitalized general insurance company operating in India which has a fair amount of equity exposure in its investment portfolio. In the light of poor equity performance as compared to competition, the company has hired Mr Prashant Buffett, for whom this is a first GI stint. He is a star equity fund manager in the country.

a) In his first ALM committee meeting he mentions that equity investments are very volatile. Also while they are liquid, the company is very unlikely to be able to sell them in large quantities without adversely affecting their price. Outline the kind of problems that Mr Buffett would face as the company's new investment manager, especially, if large amounts would be invested in equity. (5)

b) Suggest the investment objective and investment principles that a general insurance company needs to have, indicating how equity, as an investment class would score on each component of the suggested principles. (12)

[17]

Q. 6) The financial market in INLAND was, till now, completely free and there was no guidance on how much capital a company in the country needs to hold except a minimum of 10 Million IN [currency of INLAND].

(i) Explain what regulatory capital is and how it is different from the economic capital? (1)

(ii) Explain the concept of free or surplus capital and how it differs on an economic basis as compared to a regulatory basis? (2)

After the collapse of two of the biggest general insurance companies as a result of high credit risk, the financial services regulator of INLAND has decided to introduce a new solvency regime where insurers are required to assess the risk through dynamic financial capital models and hold sufficient capital to have a probability of ruin less than 0.5% in a year.

(iii) Describe credit risk, outlining the factors that an actuary needs to consider while assessing the credit risk. (7)

The approach adopted by one of the very large insurance companies is to hold as much capital as possible to avoid insolvency under any circumstances which is good for both shareholders and policyholders of the company. This approach has been highly appreciated by the “Association of Policyholders”

(iv) Suggest the advantages and disadvantages of the above approach (10)

[20]

Q. 7) “INSURE PLC” is a general insurance company based in GAGALAND. INSURE is fairly new [15 Years old] compared to its peers in the market and is planning to get listed on the GAGA Stock Exchange [GSE] in order to expand its operations globally. GAGALAND is the world’s largest general insurance market with a 10% share in the country’s GDP. GAGALAND has a history of a volatile economic market due to its rapid growth.

INSURE writes all types of property insurance both personal and commercial lines and these account for more than 75% of INSUREs net written premium and underwriting profit.

a) Explain the term underwriting profit and how it is different from Insurance profit (1)

In the last 3-4 years, the profitability has been very volatile and INSURE’s underwriting performance has been below market. This is due to the increased number of natural disasters worldwide in the last few years.

Insurance brokers (BBM) for INSURE have suggested purchasing reinsurance to the newly appointed CFO of the company who has no prior insurance experience. You are an actuary to INSURE and the CFO of the company has approached you for your views

b) List the advantages and disadvantages of reinsurance purchase for INSURE and its impact on the profitability of the company. (6)

c) Describe the various types of reinsurance products that may be available in the market and suggest how they might be suitable for INSURE? (5)

[12]

Q. 8) You are the reserving actuary of a general insurance company. There is an industry wide pool which covers third party motor liability risk (participation is mandatory for each general insurance company). The policies are underwritten and claims are serviced by each Member Company and subsequently policy and claims data is uploaded to the pool servers. The pool works out the loss share of each company from the motor pool based on each companies total market share.

a) Your company has the highest reported loss ratio (paid and outstanding excluding IBNR claims) in the market as compared to all other companies for this class of business. The market share of your company is 5% of the entire pool.

i. Discuss in detail, what issues are likely to have caused the above (4)

You have estimated the ultimate claims cost pertaining to the policies underwritten by your company and ceded to the pool for the accident year 2011-12. As a part of your exercise you have worked out the ultimate loss ratio (ULR) for the accident year 2011-12 by various standard reserving methods. The results are as follows

Accident year	Ultimate Loss Ratio				
	CL - Paid	CL –Incurred	BF - Incurred	ACPC	ELR
2011-12	135%	201%	210%	244%	251%

CL: Basic chain ladder method

BF: Bornhuetter Ferguson method

ACPC : Average claim cost per claim method

ELR: Expected loss ratio method

ULR: Ultimate loss ratio (i.e ultimate claims estimate by each method / earned premium for 2011-12)

Discuss the following

ii. The results of the reserving exercise (10)

iii. How you would communicate the uncertainty with respect to reserve estimates. (5)

b) After being in existence for 5 years the pool has been dismantled this year. The pool liabilities have been transferred to each member companies, based on their market share of motor business. Each general insurance company is now subject to the risk of runoff liability of the risks being ceded back to them. Your company is considering purchasing an adverse development cover to cover the run off liability from the pool.

i. Describe what is meant by an adverse development cover. (2)

ii. Describe the risks the insurer will transfer in purchasing an adverse development cover. (2)

iii. Suggest what risks are retained and what additional risks will the insurer accept in purchasing an adverse development cover. (3)

iv. Explain how these additional risks can be overcome. (2)

[28]

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