

# INSTITUTE OF ACTUARIES OF INDIA

## EXAMINATIONS

20<sup>th</sup> June 2019

**Subject SP7 – General Insurance Reserving and  
Capital Modelling**

**Time allowed: 3 Hours 15 Minutes (14.45 – 18.00 Hours)**

**Total Marks: 100**

### INSTRUCTIONS TO THE CANDIDATES

- 1. Please read the instructions inside the cover page of answer booklet and instructions to examinees sent along with hall ticket carefully and follow without exception.*
- 2. 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.*
- 3. Attempt all questions, beginning your answer to each question on a separate sheet.*
- 4. Mark allocations are shown in brackets.*
- 5. 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. You are not allowed to carry the question paper in any form with you.

- Q. 1) i)** State the various accounting concepts that have been widely used in relation to the periodic financial accounts of all business including insurers. (3)
- ii)** An insurer in India writes long term home insurance product and incurs a substantial initial cost to procure the business. It is also given that there is no DAC concept in India.
- a)** Among all the accounting concepts stated in part **(i)** above, mention the accounting concept with reasons which is non-complied with in this case. (2)
- b)** If there is a choice given to the insurer to adopt either 1/365<sup>th</sup> or 50% accounting method for UPR, state the method with reasons which the insurer under the given circumstances would prefer to adopt for its accounting. (2)
- c)** For either of the methods adopted under part **(ii) (b)** discuss the implications on the financials of the insurer. (3)
- d)** Discuss any other arrangement through which such distortions, arising out of having no DAC concept, can be avoided and how. (3)
- e)** State how IFRS accounting would help in avoiding such distortions once they are implemented. (1)
- [14]**
- Q. 2) i)** Describe the key principles of investment strategy. (2)
- ii)** Discuss the suitable investment strategy for the three scenarios given below. Please state any assumptions you make.
- a)** A large insurance company writing long-term property insurance book in an insurance market, is going through a soft phase of the insurance cycle. The country where the insurance market is operating is also prone to earthquake events. (3)
- b)** A medium sized company writing long tailed Motor Third Party Liability business along with other short-tailed retail business which are mostly unprofitable. (3)
- c)** A newly capitalized insurance company just started its business operations with most of its business coming from its own group companies which are profitable. (3)
- iii)** Describe how the ALM challenges can be minimized through various reinsurance arrangements, if any. (3)
- [14]**
- Q. 3) i)** Describe the broad categories of Finite Risk Reinsurance. Also list down the specific types of Finite Risk Reinsurance. (3)
- ii)** A large old insurance company facing capital crunch has predominantly motor third party liability business in its book. Discuss the most suitable specific type of Finite Risk Reinsurance with reasons which the insurance company can purchase in order to optimize capital requirements. (5)
- iii)** Briefly discuss the reserving techniques, if any, which would be preferred to fix the limits (attachment limit, cover limit) of the finite risk reinsurance treaty identified for the insurance company in part **(ii)**. (4)
- [12]**

- Q. 4)**
- i) The chain ladder and other triangulation methods are not usually suitable for latent claims. State the reasons. (2)
  - ii) Briefly explain the term **Survival Ratio** and its use. (2)
  - iii) a) A large reinsurer had historically underwritten a large book of liability policies with exposure to US and UK asbestosis claims. Some of the reinsured players reinsured by this reinsurer have been offering commutation citing uncertainty of future claims. The first commutation offer was made in December 2010 for a total amount of Rs. 21,45,00,000 which was not agreed by the reinsurer. It was also learnt during Dec 2010 that the survival ratio benchmarks globally for such class of business is in the range of 14-16 years. From that time till Dec 2018, a total amount of Rs. 8,00,00,000 was paid against claims by the reinsurer for this book of business. In Dec 2018, once again a commutation offer of Rs. 13,45,00,000 was made but on further negotiations the commutation offer was revised down to Rs. 9,09,00,000. The details of the two commutation offers made in Dec 2018, are given below.

1<sup>st</sup> Commutation Offer in Dec 2018

Category	Gross Value	Indicative Discount	Net Value
Unpaid Balances	2,00,00,000	100%	2,00,00,000
Loss Reserves	4,00,00,000	95%	3,80,00,000
IBNR	9,00,00,000	85%	7,65,00,000
<b>Total Commutation Value</b>	<b>15,00,00,000</b>		<b>13,45,00,000</b>

2<sup>nd</sup> Commutation Offer in Dec 2018

Category	Gross Value	Indicative Discount	Net Value
Unpaid Balances	2,00,00,000	100%	2,00,00,000
Loss Reserves	4,00,00,000	85%	3,40,00,000
IBNR	9,00,00,000	41%	3,69,00,000
<b>Total Commutation Value</b>	<b>15,00,00,000</b>		<b>9,09,00,000</b>

Please make suitable recommendations to the reinsurer on whether to accept the commutation offer. Also state the assumptions made, if any. (4)

- b) Discuss the various other options the reinsurer has against the commutation arrangement. (2)

[10]

**Q. 5)** ABC is an insurance company selling personal lines product in Siliconia. Due to some recent changes in the Government of Siliconia, it is considering a proposal for a new financial, legal and regulatory systems.

- i) Suggest with examples possible changes as a result of new regulator which might be relevant to ABC insurance company. (5)

The Government is considering a simplified approach to insurance regulation. They claim that the risk based capital regime used by Siliconia is too complicated and inefficient as each company has to maintain a capital model. The government is considering to implement a new proposal as follows:

- Motor and home insurance to be made compulsory products.
- Insurance companies writing these products do not need individually to hold any additional funds over and above best estimate claims reserves.
- Capital will be held in a central statutory fund and paid for by a per policy levy on insurance companies.

ii) Discuss the advantage and disadvantage of this proposal from the point of view of Siliconia regulator. (10)  
[15]

**Q. 6)** You are an actuary for a medium sized general insurance company writing personal and commercial motor. You are currently working on preparing claims data for the purpose of establishing reserve requirement for the personal motor business.

i) Discuss the likelihood of occurrence of large individual claims and catastrophes in personal and commercial motor, give examples of how they may arise (3)

ii) Explain why you think it is necessary to adjust claims data for reserving in respect of large individual claims and catastrophes. (4)

iii) Describe different ways of defining and treating large individual claims while extracting them from the claims triangle for the purpose of conducting reserving exercise, stating advantage and disadvantage of each approach. (12)  
[19]

**Q. 7) i)** Define the term “Latent claims”. (2)

ii) Give some examples of latent claims and the insurance product affected. (4)

iii) Describe why and how would you consider and reflect latent claims in the modelling of the capital requirements? (10)  
[16]

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