



# **Institute of Actuaries of India**

Statutory body established under an Act of Parliament

Unit No. F-206, 2nd Floor, F Wing, Tower II, Seawoods Grand Central,  
Plot no R-1, Sector 40, Nerul Road, Navi Mumbai - 400706  
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## **Institute of Actuaries of India**

### **Subject**

## **F3 - Actuarial Theory and Practice of General Insurance**



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## Aim

The aim of this subject is to ensure successful candidates can suitably apply the main principles of actuarial theory, mathematical and economic techniques and practice relevant to [a] the provision of general insurance; and [b] management of general insurance companies -with particular reference to the Indian context.

## Syllabus Topics and Expected Learning Outcomes

### Introduction

Define the principal terms used in general insurance provision in India.

### 1. Business Environment and Product Landscape

- Understand and explain the general insurance business landscape of the general insurance industry, the products and the value chain of how these products are bought and sold, including the competitive environment.
- Outline and explain the legal, taxation and regulatory framework as applicable to Indian general insurance and be able to apply how that influences the product cycle and risk management.
- Describe the stakeholders in the value chain and explain their role as applicable to the Indian general insurance landscape
- Outline the main types and features of general insurance products in India and how they meet customer needs.
- Apply the principles and practices of the Indian general insurance landscape to specific situation such as evaluation of a new company launch, overseas markets, merger and acquisition of a company
- Describe how macro economic, technological, demographic, social and climate factors impacts the general insurance industry.

### 2. Regulatory and Professional Environment

- Describe and apply the requirements of Actuarial Professional Standards and guidance relevant to actuaries practicing in Indian general insurance operations. In particular that of the Appointed Actuary in India.
- Have a knowledge of, and apply, the legal, taxation and regulatory framework as applicable to Indian general insurance



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- Acquire a working knowledge of specific provisions of IRDAI Regulations covering relevant aspects of general insurance business, including product regulations, reporting and solvency measures. In particular, that of the Appointed Actuary in India.
- Explain different internal controls that may be required for suitable operational and financial reporting in an Indian general insurance company, given certain circumstances.

### 3. Product Development and Design

- Outline the main determinants of a general insurance contract that meet the needs various stakeholders in the value chain and advise on an appropriate design for a product given a situation
- Compare, contrast and analyse the main types of products both globally and in the Indian context
- Discuss the relative merits of different product designs against a variety of attributes and for a situation.
- Design and price general insurance products to be sold in India, given the various stakeholder's interests and regulations in India

### 4. Risks and risk management

- Describe and assess the various sources of risk to a general insurance company specifically with respect to pricing, profitability and solvency.
- Outline the various types of data, data uses, risks of data and their errors for the Indian general insurers.
- Outline the application of Individual and Collective risk models in the general insurance business in India
- Describe process, data requirements, and different techniques used to price the various type of reinsurance contracts.
- Outline influence of different reinsurance structures on a general insurer's profitability, reserves and capital modelling.
- Evaluate and recommend appropriate reinsurance structures in specific situations for a general insurer in India
- Outline the types of catastrophe perils that can be modelled, along with a broad description of models that used, including credibility models.



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- Demonstrate the application of underwriting as a risk management technique in different circumstances.
- Demonstrate the principles and application of asset-liability matching as a risk management technique for general insurers in India.
- Demonstrate the importance of experience monitoring to a general insurance company and the role it plays in setting assumptions.
- Describe the assumptions and how may go about analysing their experience, including the data required.
- Define “Emerging Risks” and discuss a framework for identifying & assessing “Emerging Risks” in the context of a general insurance company.
- Discuss the significance of extreme event management; and the application of scenario analysis & extreme value theory in modelling extreme events

## 5. Pricing and Rating Models

- Describe the main components of a general insurance premium and the basic methods used in rating general insurance business.
- Outline the relevant rating factors to be used when pricing a general insurance products, and evaluate them under certain situations.
- Describe, evaluate and apply the burning cost approach to pricing.
- Describe, evaluate and apply the frequency/severity approach to pricing.
- Describe, evaluate and apply Original Loss curves
- Describe, evaluate and apply other generalized linear and multivariate models approaches to pricing.

## 6. Reserving

- Recommend approaches to setting reserves for various purposes in a specific situation
- Recommend different actuarial models for decision-making purposes in specific situations for general insurance
- Describe, analyse and evaluate different triangulation techniques for the purpose of reserving suitable for general insurance business in India



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- Describe the appropriate reserving bases for general insurance business having regard to their purpose, type of assumptions, differences from rating bases, other economic factors.
- Describe, evaluate and apply different types of stochastic reserving methods.
- Communicate the different types of reserving bases and discuss the influence of the method and bases used on the reserving result.
- Describe the factors and considerations an actuary should assess when evaluating the reasonableness of reserves in a given situation, including how an experience analysis may be performed.

## 7. Capital Modelling

- Recommend different actuarial capital models for decision-making purposes in specific situations for general insurance
- Describe, analyse and evaluate different approaches techniques for the purpose of reserving suitable for general insurance business in India
- Describe the appropriate capital modelling assumptions for general insurance business.
- Describe, evaluate and apply different types of methods appropriate for assessing capital requirements for various different risks in general insurance business in India.
- Describe the practical considerations an actuary should keep in mind when undertaking capital modelling.
- Discuss the applications of data science in actuarial modelling for general insurance applications

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