



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
+91 22 6243 3333 +91 22 6243 3322



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Subject

F1 - Actuarial Theory and Practice of Life 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 and practice relevant to[a] the provision of life insurance ;and [b] management of life insurance companies -with particular reference to the Indian context.

Syllabus Topics with Expected Learning Outcomes

Introduction

Define the principal terms used in the provision of life insurance in India.

1. Business Environment and Product Landscape

- Understand and explain the general business landscape of the life insurance industry, the products and the value chain of how these products are bought and sold, including the competitive environment.
- Explain the typical legal, taxation and regulatory framework as applicable to life insurance industry and be able to apply how that influences the product lifecycle and risk management.
- Explain how policyholders' reasonable expectations are measured and incorporated into the management of life insurance products.
- Describe the stakeholders in the value chain and explain their role as applicable to the Indian life insurance landscape
- Describe the main types of Life insurance products and evaluate these products from the standpoints of meeting consumer needs ;and risks presented to both the insured & insurer
- Understand the unique aspects of the business environment and product landscape in the Indian context

2. Regulatory and Professional environment -With Particular Reference to the Indian Context

- Describe and apply the requirements of Actuarial Professional Standards and guidance relevant to actuaries practicing in Indian life insurance industry-particularly the role and responsibilities of the Appointed Actuary
- Have a knowledge of, and apply, the legal, taxation and regulatory framework as applicable to Indian life insurance



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- Acquire a working Knowledge of specific provisions of IRDAI Regulations covering relevant aspects of life insurance business, including product regulations, reporting and solvency measures and the Appointed Actuary Regulations.
- Have knowledge of the key principles of Indian contract and trust law as they relate to specific aspects of the life insurance business, most notably customer interest protection and addressing grievances.
- Explain different internal controls that may be required for suitable operational and financial reporting in an Indian life insurance company, given certain circumstances.

3. Product Development and Design

- Outline the main determinants of a life 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 life insurance products
- Discuss the relative merits of different product designs against a variety of attributes and for a situation.
- Design and price life insurance products to be sold in India, given the various stakeholder's interests and regulations in India
- Product areas to cover (not limited to...)
 - ✓ term assurance
 - ✓ income protection insurance
 - ✓ critical illness insurance
 - ✓ conventional with profits
 - ✓ accumulating with profits
 - ✓ unit-linked
 - ✓ index-linked
 - ✓ conventional and variable annuities
 - ✓ group term insurance
 - ✓ Group gratuity and group superannuation
- In particular be able to outline methods and principles of designing and pricing with profits business and unit-linked funds in India.
- Outline the principles, design considerations and methods of surrender/discontinuance terms and alteration terms for without profit contracts with particular reference to the Indian environment.



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4. Identification, Assessment and Management of Risks

- Identify and assess the key sources of risk to a life insurance company -insurance risks, market risk, credit risk and operational risk
- Understand and evaluate the key risk responses such as underwriting, reinsurance and asset -liability matching strategies.
- Understand the sources of operational risks for a life insurance company and propose ways of mitigating these risks:
- Understand the role of capital management and its linkage to risk management
- Define Economic Capital and understand the risk optimization approaches based on economic capital
- Define “Emerging Risks” and discuss a framework for identifying & assessing “Emerging Risks” in the context of a life insurance company.
- Discuss the significance of extreme event management; and the application of scenario analysis & extreme value theory in modelling extreme events.
- Demonstrate an understanding of the global best practices related to risk management in the context of life insurance companies.
- Understand the risk management practices and capital management strategies adopted by Indian Life Insurance Companies.

5. Actuarial Models

- Describe the main purposes and features of actuarial models used in a life insurance company - with particular reference to product pricing; calculation of reserves; estimating economic & solvency capital requirements; and calculation of embedded values
- Compare the different modelling approaches (e.g. deterministic/stochastic approaches ; formula versus cashflow approaches; passive versus active valuation approaches); and evaluate different types of model for a given purpose
- Discuss the applications of data science in actuarial modelling for life insurance applications.
- Demonstrate an understanding of model risk and parameter risks; and discuss ways of addressing these risks in the context of life insurance actuarial models



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- Outline the various methods of measuring solvency, including dynamic solvency testing and risk based measures -.
- Understand and apply the techniques used in pricing life insurance products in India
- Outline the principles, considerations and methods of determining the cost of options and guarantees
- Understand the different types of economic capital models ; and the approach for designing an Economic Capital Model for a Life Insurance Company
- Understand the risk based solvency frameworks in the global life insurance landscape (e.g. Solvency II)
- Explain how supervisory reserves and solvency capital requirements of a life insurance company are determined in the Indian context; and the emerging risk based solvency capital framework in the Indian context

6. Assumption Setting Process and Experience Analysis

- Describe the principles of setting assumptions for life insurance business.
- Recommend approaches to setting assumptions for various purposes in a specific situation
- Highlight how different assumptions may be set for different purposes in the Indian context
- Demonstrate the importance of experience monitoring to a life insurance company and the role it plays in setting assumptions.
- Describe the typical approaches used for monitoring actual experience with reference to mortality, lapses, expenses and investment performance.
- Describe the purpose, benefits and uses of analysis of surplus or profit.
