Institute
and Faculty
of Actuaries

SP2 – Life Insurance Principles

Syllabus

for the 2021 exams

June 2020

SP2 – Life Insurance Principles

Aim

On completion of SP2, students should be able to demonstrate an understanding of:

- the market and business environment for life insurance products.
- the main principles and techniques of actuarial management and control that are relevant to life insurance.
- the economic uncertainties and associated risks that underlie life insurance business.

The life insurance products covered exclude those covered by the Health and Care Principles subject.

Syllabus topics

1 Life insurance products and general business environment (15%)

2 Product design and specific features (25%)

3 Risks and risk management (30%)

4 Models and valuation (15%)

5 Monitoring experience and setting assumptions (15%)

These weightings are indicative of the balance of assessment of this subject between the syllabus topics, averaged over a number of examination sessions.

Assessment

Exam questions are designed to test the following:

- Knowledge (demonstration of a detailed knowledge and understanding of the topic),
- Application (demonstration of an ability to apply the principles underlying the topic within a given context) and
- Higher Order (demonstration of an ability to perform deeper analysis and assessment of situations. This includes the ability to develop proposals and recommendations utilising actuarial judgement, i.e. taking into account different points of view, comparing and contrasting situations, clearly communicating any limitations and elements of uncertainty in the approach).

In the SP subject exams, the approximate split of assessment across these three skill types is 25% Knowledge, 50% Application and 25% Higher Order skills.

The use of a specific command verb within a syllabus objective does not indicate that this is the only form of question that can be asked on the topic covered by that objective. The Examiners may ask a question on any syllabus topic using any of the agreed command verbs, as are defined in the document ‘Command verbs used in the Associate and Fellowship written examinations’.

Detailed syllabus objectives

0 Introduction

0.1 Define the principal terms used in life insurance.

1 Life insurance products and general business environment (15%)

1.1 Describe the main types of life insurance products.

1.1.1 Describe the main types of life insurance products that provide benefits on death, survival to a specified point in time or continued survival.

1.1.2 Describe the following life insurance product bases:

- conventional without profits.
- with-profits.
- unit-linked.
- index-linked.

1.1.3 Outline typical guarantees and options that may be offered on life insurance products.

1.2 Assess the main types of life insurance products in terms of:

- the needs of consumers and key risks for the insured.
- the purpose and key risks for the insurer.

1.3 Assess the effect of the general business environment on the management of life insurance business, in terms of:

- propensity of consumers to purchase products.
- local culture.
- methods of sale.
- remuneration of sales channels.
- types of expenses and commissions, including influence of inflation.
- economic environment.
- legal environment.
- regulatory environment.
- taxation regime.
- professional guidance.

2 Product design and specific features (25%)

2.1 Demonstrate an understanding of life insurance product design, including:

2.1.1 Describe the factors to consider in determining a suitable design, in terms of premiums, benefits and charges, for a life insurance product.

2.1.2 Determine a suitable design for a product in a given situation.

2.1.3 Discuss the relative merits of different product designs.

2.2 Demonstrate an understanding of with-profits business management.

2.2.1 Describe methods of distributing profits to with-profits policyholders.

2.2.2 Explain the main uses of asset shares and how they may be built up using a recursive formula.

2.3 Describe the principles of unit pricing for internal unit-linked funds.

2.4 Determine discontinuance and alteration terms for without-profits contracts.

2.4.1 State the principles of setting discontinuance and alteration terms.

2.4.2 Describe different methods of determination of discontinuance and alteration terms.

2.4.3 Assess the extent to which these methods meet the principles in 2.4.1.

2.4.4 Calculate surrender values and alteration terms for conventional without-profits contracts using reserves or by equating policy values.

3 Risks and risk management (30%)

3.1 Assess how the following can be a source of risk to a life insurance company:
- Policy and other data
- Mortality rates
- Investment performance
- Expenses, including the effect of inflation
- Persistency
- Mix of new business
- Volume of new business
- Guarantees and options
- Competition
- Actions of the board of directors
- Actions of distributors
- Failure of appropriate management systems and controls
- Counterparties
- Legal, regulatory and tax developments
- Fraud
- Aggregation and concentration of risk.

3.2 Demonstrate an understanding of reinsurance as a risk management technique.

3.2.1 Describe the purposes of reinsurance.

3.2.2 Describe the different types and structures of reinsurance.

3.2.3 Discuss the factors that should be considered before taking out reinsurance.

3.3 Demonstrate an understanding of underwriting as a risk management technique.

3.3.1 Outline the purposes of underwriting.

3.3.2 Describe the different approaches by which underwriting is applied.

3.3.3 Discuss the factors that should be considered when determining the level of underwriting to use.

3.4 Demonstrate an understanding of asset-liability matching as a risk management technique.

3.4.1 State the principles of investment for a life insurance company.

3.4.2 Analyse life insurance liabilities into different types for asset-liability matching purposes.

3.4.3 Propose an appropriate asset-liability matching strategy for different types of liability.

3.5 Propose further ways of managing the risks in 3.1, including:
- policy data checks.
- choice of with-profits bonus method.
- capital management.
- expense control.
- policy retention activity.
- management of new business mix and volumes.
- management of options.
- systematic risk assessment and management strategies.

4 Models and valuation (15%)

4.1 Describe the main features of a life insurance model.

4.1.1 Outline the objectives and basic features of a life insurance model.

4.1.2 Compare stochastic and deterministic approaches.

4.1.3 Explain the use of sensitivity analysis.

4.2 Demonstrate an understanding of the different uses of actuarial models for decision making purposes in life insurance, including:

- pricing products.
- developing investment strategy.
- projecting solvency.
- calculating embedded value.

4.3 Demonstrate an understanding of the methods used for determining the cost of options and guarantees.

4.3.1 Describe the use of stochastic simulation and the use of option prices to determine the cost of an investment guarantee.

4.3.2 Describe the assessment of the cost of simple mortality options.

4.4 Discuss the determination of supervisory reserves and solvency capital requirements for a life insurance company.

4.4.1 Describe how supervisory reserves and solvency capital requirements may be determined, including:

- market consistent valuation.
- non-unit reserves.
- Value at Risk (VaR) capital assessment.

4.4.2 Discuss the interplay between the strength of the supervisory reserves and the level of solvency capital required.

4.4.3 Compare passive and active valuation approaches, including the valuation of assets.

5 Monitoring experience and setting assumptions (15%)

5.1 Describe the principles of setting assumptions for life insurance business.

5.1.1 Describe the principles of setting assumptions for pricing life insurance contracts, including profit requirements.

5.1.2 Describe the principles of setting assumptions for determining liabilities.

5.1.3 Explain why the assumptions used for supervisory reserves may be different from those used in pricing.

5.1.4 Outline the principles of setting assumptions for determining embedded value.

5.2 Demonstrate the relevance of experience monitoring to a life insurance company.

5.2.1 Explain why it is important for a life insurance company to monitor its experience.

5.2.2 Describe how the actual mortality, persistency, expense and investment experience of a life insurance company should be monitored, including the data required.

5.3 Demonstrate the relevance of analysis of surplus or profit.

5.3.1 Give reasons for undertaking an analysis of surplus and an analysis of embedded value profit.

5.3.2 Suggest ways in which the results of such analyses can be used.

6 Solving problems

6.1 Develop proposals and recommendations, with justification where required, in relation to hypothetical scenarios reflecting the management of life insurance business.

6.1.1 Analyse these scenarios, demonstrating an understanding of the syllabus including the following factors (profitability, capital management, risk, regulatory and customer demand).

6.1.2 Suggest possible reasons why certain proposals and recommendations have been made.

6.1.3 Assess the implications of adopting the proposals and/or recommendations within a given scenario.

6.1.4 Discuss the advantages and disadvantages of suggested proposals and recommendations, taking into account different perspectives.

6.1.5 Demonstrate an understanding of any limitations and elements of uncertainty inherent in the proposals or recommendations made.

Assessment

Three-hour and fifteen-minute written examination.

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