



Subject F102

Life Insurance Principles

Fellowship Principles Syllabus

For the 2023 Examinations

October 2022



Aim

The aim of the Life Insurance Principles subject is to instill in successful candidates principles of actuarial planning and control, and mathematical and economic techniques, relevant to life insurance companies. The student should gain the ability to apply the knowledge and understanding, in simple situations, to the operation, on sound financial lines, of life insurance companies.

Links to other subjects

Subject A213 (Part CM1) — Contingencies: introduces techniques that will be drawn upon and developed by this subject.

Subject A311 — Actuarial Risk Management: covers the general underlying principles affecting all specialisms.

Subject F202 — Life Insurance Applications: will use the principles and techniques in this, and the earlier subjects, to solve life insurance problems within a specifically South African context.

Objectives

On the successful completion of this subject the candidate will be able to:

- (a) Define the principal terms used in life insurance.
- (b) Describe the main types of life insurance, long term care insurance, critical illness and income protection products in terms of:
 - the needs of consumers versus the objectives of the insurer,
 - the benefits, guarantees, and options that may be provided,
 - the main types of products issued,
 - the purpose of the products for the insurer,
 - the purpose of the products for the insured,
 - the benefits, and the financial and other risks (including capital requirements), associated with these products to the insurer,
 - the benefits and risks of the products to the insured.

The products under this syllabus objective may provide benefits of the following types:

- single, or periodic, payments from the date of death, disability or critical illness,
- single, or periodic, payments on survival to a specified point in time,



- periodic payments on continued survival,

and the products may be written on the following bases:

- single or regular premium,
- without profits non-linked,
- unit-linked,
- index-linked,
- with profits,
- single, joint, or group life basis,
- with or without conversion options and options to change the level of benefits provided.

(c) Describe the following methods of distributing profits to with profits policyholders:

- cash bonus,
- premium reduction,
- benefit increase,
- “additions to benefits” method,
- “revalorisation” method,
- “contribution” method.

(d) Describe the technique of asset shares, explain how an asset share may be built up using a recursive formula, and explain the main uses of asset shares.

(e) Describe the effect of the general business environment, including the impact on level of risk to the insurer, in terms of:

- propensity of consumers to purchase products,
- methods of sale,
- remuneration of sales channels,
- types of expenses and commissions including influence of inflation,
- economic environment (including developing / volatile economies and risky markets),
- legal environment,



- regulatory constraints and opportunities,
- fiscal constraints and opportunities,
- professional guidance constraints and opportunities.

(f) Discuss how the following can be a source of risk to a life insurance company:

- policy and other data,
- mortality and morbidity rates,
- investment performance,
- expenses, including the effect of inflation,
- withdrawals,
- mix of new business by nature and size of contract, and by source,
- volume of new business,
- guarantees and options,
- competition,
- actions of the board of directors or staff,
- actions of distributors,
- failure of appropriate management systems and controls,
- counterparties,
- legal, regulatory, and fiscal developments,
- fraud,
- aggregation and concentration of risk including credit failure
- climate risk.

(g) Describe the roles of reinsurance and underwriting, including the managing of risk.

(h) Discuss further ways of managing the risks in (f) above:

- policy data checks,
- choice of with profits bonus method,
- capital management,



- asset-liability matching,
 - expense control,
 - policy retention activity,
 - management of new business mix and volumes,
 - management of options,
 - systematic risk assessment and management strategies.
- (i) Describe the use of actuarial models, including multi-state models, stochastic models and Monte Carlo simulation, for decision making purposes in life insurance in terms of:
- the objectives of, and requirements for, building a model for the management of life insurance products,
 - the basic features of a model required to project life insurance business,
 - choosing between stochastic and deterministic approaches,
 - the differences between traditional and financial economic approaches,
 - the use of sensitivity analysis or the assessment of variances,
 - the use of models for:
 - pricing,
 - assessing the return on capital,
 - assessing the profitability of existing business,
 - developing an appropriate investment strategy,
 - projecting future supervisory solvency position.
- (j) Describe for unit-linked life insurance contracts:
- the principles of unit pricing for internal unit-linked funds,
 - the technique of actuarial funding.



- (k) Demonstrate methods of determining the cost of guarantees and options.
- Describe the use of stochastic simulation and the use of option prices to determine the cost of an investment guarantee.
 - Describe the assessment of the cost of simple mortality options.
- (l) Describe methods of determination of discontinuance and alteration terms for without profits contracts, and calculate surrender values and alteration terms for conventional without profits contracts using reserves or by equating policy values.
- (m) Describe the factors to consider in determining a suitable design, in terms of benefits and charges, for a life insurance product.
- (n) Describe the principles of setting assumptions for pricing and valuing life insurance contracts, having regard to profit requirements and the management of risk and the return on capital, including how assumptions can be a source of risk.
- (o) Describe how supervisory reserves and solvency capital requirements may be determined for a life insurance company, including:
- the reasons why the assumptions used may be different from those used in pricing,
 - market consistent valuation, the calculation of non-unit reserves,
 - the interplay between the strength of the supervisory reserves and the level of solvency capital required,
 - Value at Risk (VaR) capital assessment,
 - Comparison of passive and active valuation approaches.
- (p) Describe the principles of investment and how they apply to a life insurance company.
- (q) Describe how the actual experience of a life insurance company should be monitored and assessed in terms of:
- the reasons for monitoring experience,
 - the data required,
 - the analysis of mortality, disability, withdrawal, expense and investment experience,
 - the analysis of surplus and embedded value profit,
 - the use of the results to revise the models used and assumptions.