

**Subject CA1
Core Applications
Concepts**

Syllabus

for the 2008 Examinations

1 June 2007

**The Faculty of Actuaries and
Institute of Actuaries**

Subject CA1 — Core Applications Concepts Syllabus

Aim

The aim of the Core Applications Concepts subject is to instil in successful candidates the ability to apply a wide range of key actuarial concepts in simple traditional and non-traditional situations

Links to other subjects

Each of Subjects CT1–CT8 provides principles and tools that are built upon in Core Applications Concepts.

The Specialist Technical Subjects ST1–ST6 and the Specialist Applications Subjects SA1–SA6 use the principles developed in this subject to solve complex problems, to produce coherent advice and to make recommendations in specific practice areas.

Objectives

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

1 How to do a professional job

- 1.1 Describe how actuaries can contribute to meeting the business needs of their clients and other stakeholders.
- 1.2 Describe the statutory roles that may be required of actuaries.
- 1.3 Describe the factors and issues to be taken into account when doing a professional job.
- 1.4 Describe the Actuarial Control Cycle and explain the purpose of each of its components.
- 1.5 Demonstrate how the Actuarial Control Cycle can be applied in a variety of practical commercial situations.

2 Stakeholders

- 2.1 Identify the stakeholders actuaries advise.
- 2.2 Describe how stakeholders other than the client might be affected by any actuarial advice given.
- 2.3 Describe the functions of the clients and potential clients that actuaries can and may advise and the types of advice that actuaries might give to their clients.
- 2.4 Distinguish between the responsibility for giving advice and the responsibility for decisions.

3 General environment

3.1 Client needs and customer needs and implications for other stakeholders

3.1.1 Describe the main providers in the provision of benefits on future financial events.

3.1.2 Describe the risks and uncertainties affecting:

- the level and incidence of benefits payable on future financial events
- the overall security of benefits payable on future financial events

3.2 Managing risks

3.2.1 Describe the role of insurance and reinsurance.

3.2.2 Describe the principle of pooling risks.

3.3 Marketing

3.3.1 Describe how financial products, schemes, contracts and transactions can provide benefits on future financial events.

3.3.2 Describe the ways of bringing together stakeholder needs and the benefits on future financial events provided by financial products, schemes, contracts and transactions.

3.3.3 Describe the principles and aims of market conduct regulatory regimes.

3.4 External environment

3.4.1 Describe the implications for the following parties of:

- Legislation — Regulations
- State benefits
- tax
- accounting standards
- corporate governance
- competitive advantage
- commercial requirements
- changing social trends
- environmental issues
- lifestyle considerations

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- international practice
- technological changes

for the main providers of benefits on future financial events.

3.5 Investment environment

- 3.5.1 Discuss the cashflows of simple financial products, schemes, contracts and transactions and the need to invest appropriately to provide for benefits on future financial events.
- 3.5.2 Demonstrate a knowledge and understanding of the characteristics of the principal investment assets and of the markets in such assets.
- 3.5.3 Explain the principal economic influences on investment markets.
- 3.5.4 Describe the principal features of major investment indices.
- 3.5.5 Describe the main features of the behaviour of market price levels and total returns and discuss their relationships to each other.
- 3.5.6 Discuss the theoretical and historical relationships between the total returns, and the components of total returns, on equities, bonds, cash and price and earnings inflation.

3.6 Meeting investor needs

- 3.6.1 Discuss the principles and objectives of investment management and analyse the investment needs of an investor.
- 3.6.2 Discuss the different methods for the valuation of investments and demonstrate an understanding of their appropriateness in different situations.
- 3.6.3 Discuss the different methods for the valuation of portfolios of investments and demonstrate an understanding of their appropriateness in different situations.
- 3.6.4 Show how actuarial techniques may be used to develop an appropriate investment strategy.
- 3.6.5 Describe credit risk, liquidity risk and the use of credit ratings.

3.7 Capital

- 3.7.1 Discuss why the main providers of benefits on future financial events need capital need capital.
- 3.7.2 Describe how the main providers of benefits on future financial events can meet, manage and match their capital requirements.
- 3.7.3 Discuss the implications of the regulatory environment in which the business is written for provisioning and capital.

4 Specifying the problem

4.1 Interaction with the Client

- 4.1.1 Discuss the factors to be considered in determining a suitable design for financial structures e.g. products, schemes, contracts or transactions that will provide benefits on future financial events in relation to:
 - the characteristics of the parties involved
 - the level and form of benefits to be provided
 - any options or guarantees that may be included
 - the method of financing the benefits to be provided
 - the choice of assets when benefits are funded
 - the charges that will be levied
 - the capital requirements
- 4.1.2 State the characteristics of good design for a product, scheme contract or transaction including the benefits payable on discontinuance.
- 4.1.3 Describe how product, scheme, contract and transaction design can be used to help develop corporate human resource strategy.

4.2 Awareness of risk

- 4.2.1 Describe the risk management process for a business that can aid in the design of products, schemes, contracts, and transactions to provide benefits on future financial events.
- 4.2.2 Describe how risk classification can aid in the design of products, schemes, contracts and transactions that provide benefits on future financial events.
- 4.2.3 Describe attitude to and methods of risk acceptance, rejection, transfer and management for stakeholders.

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- 4.2.4 Discuss the circumstances in which risk can be seen as an opportunity rather than a constraint.

4.3 Management of provisions for liabilities

- 4.3.1 Discuss the different methods for the valuation of the benefits from financial products, schemes, contracts and transactions.
- 4.3.2 Describe the different methods of allowing for risk in cashflows.
- 4.3.3 Describe the influence of comparisons with market values.

4.4 Project planning and management

- 4.4.1 Describe the process of project management.
- 4.4.2 Show how actuarial techniques can be used in the assessment of capital investment projects.

5 Input validation

- 5.1 Discuss the data requirements for determining values for assets, future benefits and future funding requirements.
- 5.2 Describe the checks that can be made on data.
- 5.3 Describe the circumstances under which the ideal data required might not be available and discuss ways in which this problem may be overcome.
- 5.4 Describe how to determine the appropriate grouping of data to achieve the optimal level of homogeneity.

6 Producing the solution

6.1 Methodology and techniques

- 6.1.1 Describe the approaches available to produce the solutions.
- 6.1.2 Describe the use of actuarial models to support the methodology used in terms of:
- the objectives of and requirements for building a model

- the basic features of a model required to project future cash and revenue flows
- the use of these models for:
 - pricing
 - assessing the capital requirements and the return on capital
 - assessing the provisions needed for existing commitments to provide benefits on future financial events
 - pricing and valuing options and guarantees
- how sensitivity analysis of the results of the models can be used to help decision making.

6.2 Assumption setting

Describe the principles behind the determination of assumptions as input to a model relevant to producing a specific solution having regard to:

- the types of information that may be available to help in determining the assumptions to be used
- the extent to which each type of information may be useful, and the other considerations that may be taken into account, in deciding the assumptions
- the level of prudence in the assumptions required to meet the objectives of the client

6.3 Design

6.3.1 Discuss how to design financial products, schemes, contracts and transactions which meet clients' needs.

6.3.2 Discuss how to determine that all eventualities are considered.

6.4 Expenses

6.4.1 Describe the types of expenses that the providers of benefits on future financial events must meet.

6.4.2 Describe how expenses might be allocated when pricing contracts or schemes

6.5 Developing the cost and the price

- 6.5.1 Discuss how to determine the cost of providing benefits on future financial events.
- 6.5.2 Discuss the factors to take into account when determining the appropriate level and incidence of contributions to provide benefits on future financial events.
- 6.5.3 Discuss the factors to take into account when determining the price to charge for benefits on future financial events.

6.6 Provisioning

Discuss how to determine values for provisions in terms of:

- the need for placing values on provisions and the extent to which values should reflect risk management strategy
- the reasons why the assumptions used may differ in different circumstances
- the reasons why the assumptions and methods used to place a value on guarantees and options may differ from those used for calculating the provisions needed
- how sensitivity analysis can be used to check the appropriateness of the values

and be able to perform calculations to demonstrate an understanding of the valuation methods.

6.7 Relationship between assets and liabilities

- 6.7.1 Describe the principles of investment and the asset liability matching requirements of the main providers of benefits on future financial events.
- 6.7.2 Discuss the use of portfolio theory as extended to take account of an investor's liabilities.
- 6.7.3 Discuss the need to monitor investment

7 Living with the solution

7.1 Maintaining profitability

Describe how the main providers of benefits on future financial events can control and manage the cost of:

- payments arising on financial events
- expenses associated with the payment of benefits on financial events

7.2 Determining the expected results

7.2.1 Describe how a provider's expected results can be projected.

7.2.2 Discuss the possible sources of surplus/profit and the levers that can control the amount of surplus/profit.

7.3 Reporting actual results

Describe the reports and systems which may be set up to control the progress of the financial condition of the main providers of benefits on future financial events.

7.4 Risk management

7.4.1 Discuss the issues surrounding the management of risk.

7.4.2 Describe the tools that can be used to aid the management of risk.

7.4.3 Describe the different types of reinsurance protection available to manage risk.

7.5 Asset management

Describe the principles of asset management and allocation

7.6 Capital management

Describe the principles of capital management

7.7 Surplus management

7.7.1 Describe why a provider will carry out an analysis of the variance in its surplus/profit.

7.7.2 Describe how any surplus/profit arising may be distributed.

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7.7.3 Discuss the issues surrounding the amount of surplus that may be distributed at any time.

7.8 Mergers and acquisitions

Discuss the issues which need to be taken into account on the merger or acquisition of providers of benefits on future financial events.

7.9 Insolvency and closure

Discuss the issues which need to be taken into account on the insolvency or closure of a provider of benefits on future financial events.

7.10 Options and guarantees

Discuss the issues surrounding the management of options and guarantees.

8 Monitoring

8.1 Describe how the actual experience can be monitored and assessed, in terms of:

- the reasons for monitoring experience
- the data required
- the process of analysis of the various factors affecting the experience
- the use of the results to revise models and assumptions

8.2 Describe how the results of the monitoring process in the Actuarial Control Cycle are used to update the financial planning in a subsequent period.

9 Define the principal terms used in financial services

End of Syllabus