

**Subject ST4**  
**Pensions and other Benefits**  
**Specialist Technical**

**Syllabus**

for the 2008 Examinations

1 June 2007

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

## **Subject ST4 — Pensions and Other Benefits Specialist Technical Syllabus**

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### **Aim**

The aim of the Pensions and Other Benefits Specialist Technical subject is to instil in successful candidates the ability to apply, in simple situations, the mathematical and economic techniques and the principles of actuarial planning and control needed for the operation on sound financial lines of providers of pensions or other employee benefits.

### **Links to other subjects**

The Core Technical subjects provide principles and tools that are necessary in the actuarial planning and control of the provision of pensions and other benefits.

Subject CA1 — Core Application Concepts: covers the general underlying principles affecting all specialisms.

Subject SA4 — Pensions and other Benefits Specialist Applications: uses the principles in this subject to solve complex problems, produce coherent advice and recommendations within a specifically United Kingdom context.

### **Objectives**

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

- (a) Define the principal terms used in the provision of pensions.
- (b) Describe the role that each of the following parties may play in the provision of pensions and other benefits:
  - the State
  - employers or groups of employers
  - individuals or groups of individuals
- (c) Compare alternative systems of social security, mandatory individual accounts, occupational pension schemes and personal pensions.
- (d) Describe the ways in which the parties in (b) may meet their needs in relation to:
  - the forms and levels of benefits that may be needed by individuals
  - the financing and non-finance related needs of different sponsors
  - the regulation of non-State provision

## **Subject ST4 — Pensions and Other Benefits Specialist Technical Syllabus**

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- (e) Discuss the implications, for the parties in (b), of the environment in which benefits are provided in terms of the effect of:
- different presentation and reporting of benefits and contributions
  - any professional guidance for actuaries or other professionals
- (f) Describe the ways in which providers may be able to finance the benefits to be provided in terms of:
- the alternatives that may exist relating to the timing of contributions relative to benefit payments
  - the forms and characteristics of investment that may be available if contributions are made before benefits are due for payment
- (g) Discuss the issues surrounding sponsor covenant in terms of:
- what is meant by sponsor covenant
  - how to measure the willingness of the sponsor to contribute
  - how to measure the ability of the sponsor to contribute
  - when the other parties involved should consider the sponsor covenant
- (h) Discuss the factors to consider in determining a suitable design, in terms of benefits and contributions, in relation to:
- the level and form of benefits to be provided
  - the method of financing the benefits to be provided
  - the choice of assets when benefits are to be funded
- (i) Describe the risks and uncertainties affecting:
- the level and incidence of benefits
  - the level and incidence of contributions
  - the level and incidence of return on capital
  - the overall security of benefits
- (j) Describe the process of population projection and its main determinants.
- Describe the use of simple mathematical models of population projection and their shortcomings.
  - Describe the component method of population projection.

## **Subject ST4 — Pensions and Other Benefits Specialist Technical Syllabus**

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- List the socio-economic factors that affect fertility and describe how fertility rates might be projected.
- (k) Discuss the use of actuarial models for decision making purposes in non-state pensions, in terms of:
- the objectives of and requirements for building a model for the management of the provision of pensions and other benefits
  - the basic features of a model required to project income and outgo
  - the use of these models for setting contributions and assessing the return on capital
  - how sensitivity analysis of the results of the models can be used to help decision making
- (l) Discuss the application of actuarial methods and techniques to the financial management of a social security scheme in:
- evaluating the liabilities in terms of emerging costs using a collective method
  - analysing the yield from a given contribution structure
  - showing how contribution levels can be assessed on a pure pay-as-you-go basis and using an average premium to smooth contributions over time
- (m) Discuss the principles behind the determination of assumptions for valuing future benefits and contributions, having regard to the management of risk and the return on capital, in terms of:
- 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 possible objectives of the various parties involved
- (n) Discuss the principles behind the determination of discontinuance terms in respect of benefits, in relation to how the following may be taken into consideration when determining discontinuance terms:
- rights of beneficiaries
  - other benefit expectations
  - the availability and selection of a method of provision of discontinuance benefits
  - the level of available assets

## **Subject ST4 — Pensions and Other Benefits Specialist Technical Syllabus**

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- (o) Discuss how to determine values for assets, future benefits and future contributions, in terms of:
- the data requirements
  - the need for placing values on assets, future benefits and contributions 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 reserves 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
- (p) Discuss the application of actuarial methods and techniques to the financial management of defined contribution pension schemes in:
- establishing the fairness, viability and robustness of the pricing structure
  - setting annuity rates for conversion of individual accounts into pension
  - establishing provisions and managing the finances of the annuity provider
  - advising members on their retirement income planning and scheme sponsors on establishing appropriate levels of contribution
  - evaluating the costs of minimum pension guarantees
  - establishing provisions for financial guarantees and future operating expenses
- (q) Analyse the asset-liability matching requirements of a provider of pensions and related benefits in relation to the trade-off between risk and reward, and describe how projection models may be used to develop appropriate strategies.
- (r) Discuss the principles underlying the use of re-insurance, and the choice of re-insurance contract, as a means of reducing some of the risks and uncertainties associated with the provision of pensions or other benefits.
- (s) Identify the sources of surplus/deficit for a benefit provider and discuss the factors that affect the application of this surplus/deficit.

## **Subject ST4 — Pensions and Other Benefits Specialist Technical Syllabus**

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- (t) With reference to the Actuarial Control Cycle, explain why and describe how the actual experience, should be monitored and assessed, in terms of:
- the reasons for monitoring
  - the data required
  - the process of analysis of the various factors affecting the experience

**End of Syllabus**