

# *Subject A311*

## 2023 Study Guide

### ***Introduction***

This Study Guide has been created to help guide you through Subject A311. It contains all the information that you will need before starting to study Subject A311 for the 2023 exams and you may also find it useful to refer to throughout your Subject A311 journey.

**Please read this Study Guide carefully before reading the Course Notes**, even if you have studied for some actuarial exams before.

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## 1 The Subject A311 course structure

There are ten parts to the Subject A311 course. The parts cover related topics and have broadly equal marks in the exam. The parts are broken down into chapters. The following table shows how the parts, the chapters and the syllabus items relate to each other. We have also given you a broad indication of the length of each chapter. This table should help you plan your progress across the study session.

<i><b>Part</b></i>	<i><b>Chapter</b></i>	<i><b>Title</b></i>	<i><b>No of pages</b></i>	<i><b>Syllabus objectives</b></i>
<b>1</b>	0	What is Subject A311 all about?	29	3
	1	Actuarial advice	33	1
	2	External environment	31	9.2
	3	Regulation	37	9.1
	4	Introduction to financial products & customer needs	26	2.2 (part), 2.3, 2.4
<b>2</b>	5	Benefits overview & providers of benefits	33	2.1, 14 (part)
	6	Life insurance products	39	2.2 (part), 14 (part)
	7	Health insurance products	27	2.2 (part), 14 (part)
	8	General insurance products	31	2.2 (part), 14 (part)
<b>3</b>	9	Bond and money markets	30	9.3.2 (part)
	10	Equity and property markets	29	9.3.2 (part)
	11	Other investment classes	36	9.3.2 (part)
	12	Behaviour of the markets	50	9.3.2 (part), 9.3.3 – 9.3.5
	13	Valuation of investments	35	11.6.2, 11.6.4
<b>4</b>	14	Relationship between returns on asset classes	15	11.6.3
	15	Choosing an appropriate investment strategy	34	11.6.1 (part)
	16	Asset-liability management	39	9.3.1, 11.8.1, 11.8.2
	17	Investment management	28	11.6.1, 11.6.5, 11.8.3 – 11.8.5, 12.2.2

<b>Part</b>	<b>Chapter</b>	<b>Title</b>	<b>No of pages</b>	<b>Syllabus objectives</b>
<b>5</b>	18	Modelling	33	11.1
	19	Data	42	10.2
	20	Setting assumptions	33	11.2
<b>6</b>	21	Mortality and morbidity	27	11.3
	22	Expenses	22	11.4, 13.1 (part)
	23	Contract design	51	10.1, 12.5 (part)
	24	Pricing and financing	27	11.5
<b>7</b>	25	Risk governance	29	4.1 – 4.4
	26	Risk identification & classification	42	5.1, 5.2, 5.5 (part)
	27	Financial product and benefit scheme risks	35	5.3, 5.5 (part)
	28	Accepting risk	27	4.5, 5.4, 7.2, 7.3
<b>8</b>	29	Risk measurement & reporting	39	6, 12.3.2, 12.3.3
	30	Risk transfer	51	7.1 (part), 7.4, 7.7 (part), 14 (part)
	31	Other risk controls	46	7.1 (part), 7.5, 7.6, 7.7 (part), 7.8, 12.5 (part)
<b>9</b>	32	Provisions	28	11.7.1, 11.7.2 (part)
	33	Valuation of liabilities	30	11.7.2 (part), 11.7.3 – 11.7.6
	34	Reporting results	19	12.3.1
	35	Insolvency and closure	24	12.4

<b>Part</b>	<b>Chapter</b>	<b>Title</b>	<b>No of pages</b>	<b>Syllabus objectives</b>
<b>10</b>	36	Capital management	30	8.1 – 8.3, 12.1.3
	37	Capital requirements	29	8.4 – 8.7, 12.1.2
	38	Surplus & surplus management	44	12.1.1, 12.2.1, 12.2.3 – 12.2.6
	39	Monitoring	34	13
	40	Glossary	26	14 (part)
	A1	Banking Overview*	20	2.2, 14

*\* An addendum has been made to the course, the inclusion of chapter A1, Banking Overview. This chapter forms part of the main course materials and can be tested as such.*

## 2 The Course and the Profession

### 2.1 Course Notes

The Actuarial Society has based the Subject A311 syllabus very closely upon the syllabus of the UK Profession's Subject CP1 but have included syllabus objectives and content specifically relevant for the South-African context. The relevant individual Syllabus Objectives are included at the start of each course chapter and a complete copy of the Syllabus is included in Section 6 of this Study Guide. We recommend that you use the Syllabus as an important part of your study.

The UK Core Reading appears in **bold Arial font**. The remaining text has been written either by:

- ActEd, to enhance it by giving examples and further explanation of key points
- ASSA to cover ideas specific to Subject A311.

Note that both the UK Core Reading and the additional text form part of the tuition material and are examinable for the Subject A311 exam.

### 2.2 Core Reading accreditation

The Institute and Faculty of Actuaries would like to thank the numerous people who have helped in the development of this material and in the previous versions of Core Reading.

### 2.3 Copyright

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### 2.4 Past exam papers

You can download the past papers and reports for Subject A311 (previously A301) from the Actuarial Society's website at [actuarialsociety.org.za](https://actuarialsociety.org.za).

Past papers and reports for UK Subject CP1/CA1, which covers similar material to Subject A311, are available at [actuaries.org.uk](https://actuaries.org.uk).

## **2.5 Recommended reading**

The exam will be based on the relevant Syllabus and Core Reading and the course material will be the main source of tuition for students.

## **2.6 Calculators**

Please refer to the profession's website for the latest advice on which calculators are permitted in the exams.

### 3 General information and support

#### Before you start

When studying for the exams, you will need:

- a copy of the **Formulae and Tables for Examinations of the Faculty of Actuaries and the Institute of Actuaries, 2nd Edition (2002)** – these are referred to simply as the *Tables*
- a **scientific calculator** and/or **software package** to help with calculations.

#### BPP learning support

BPP's Learning Support team offers a wide range of support for all students who disclose a learning difficulty or disability, including sensory difficulties, mobility difficulty, ADHD, Asperger Syndrome, mental health difficulties, dyslexia, dyspraxia and general health problems. This support is accessible to all ActEd students free of charge.

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Please be aware of:

- people sharing or accessing extremist materials
- homophobic, disability-related, religious or racist bullying
- expressions of hatred towards or incitement to harm particular groups
- use of derogatory language towards particular groups.

Please report any concerns to a tutor or email **[safeguarding@bpp.com](mailto:safeguarding@bpp.com)**.

More information is available at:

**[officeforstudents.org.uk/advice-and-guidance/regulation/counter-terrorism-the-prevent-duty](https://officeforstudents.org.uk/advice-and-guidance/regulation/counter-terrorism-the-prevent-duty)**



## 4 Further study support

### Queries and feedback

From time to time you may come across something in the study material that is unclear to you. The easiest way to solve such problems is often through discussion with friends, colleagues and peers – they will probably have had similar experiences whilst studying. If there's no-one at work to talk to then use ActEd's discussion forum at **ActEd.co.uk/forums** (or use the link from our home page at **ActEd.co.uk**). There is a forum specifically for students studying in South Africa.

Our online forum is dedicated to actuarial students so that you can get help from fellow students on any aspect of your studies from technical issues to study advice. You could also use it to get ideas for revision or for further reading around the subject that you are studying.

If you have any comments or concerns about the Syllabus or Core Reading, these can be sent to:

Christelle Mouton-Hicklin

Education Specialist

Email: [courses@actuarialsociety.org.za](mailto:courses@actuarialsociety.org.za)

Office: + 27 (0) 11 672 3114

### The ActEd website

The ActEd website at **ActEd.co.uk** contains much useful information on all aspects of ActEd's products and services, including:

- copies of the Study Guide in every subject
- the current *Student Brochure* and application forms
- a link to ActEd's online store
- a link to the ActEd discussion forum
- details of any minor corrections to the study material.

## 5 How to study to pass the exams

### *The Subject A311 exams*

It is important to recognise that the Subject A311 exam is very different from the earlier subject exams in both the nature of the material covered and the skills being examined.

Both the Core Reading and the exam papers themselves are generally much less numerical and more 'wordy' than the Core Principles subjects. The exam will primarily require you to explain a particular point in words and sentences, rather than to manipulate formulae or do calculations. If you haven't sat this type of exam for some time, you need to start practising again now. Many students find that it takes time to adjust to the different style of the Subject A311 exam questions. As ever, practice is the key to success.

The aim of the two Subject A311 exam papers is to test your ability to apply your knowledge and understanding of the key principles described in the Core Reading to specific situations presented to you in the form of exam questions. Therefore your aim should be to identify and understand the key principles, and then to practise applying them. You will also need a good knowledge of the Core Reading to score well and quickly on any bookwork questions.

### **Study skills**

#### *Overall study plan*

We suggest that you develop a realistic study plan, building in time for relaxation and allowing some time for contingencies. Be aware of busy times at work, when you may not be able to take as much study leave as you would like. Once you have set your plan, be determined to stick to it. You don't have to be too prescriptive at this stage about what precisely you do on each study day. The main thing is to be clear that you will cover all the important activities in an appropriate manner and leave plenty of time for revision and question practice.

Aim to manage your study so as to allow plenty of time for the concepts you meet in this course to 'bed down' in your mind. Most successful students will probably aim to complete the course at least six weeks before the exam, thereby leaving a sufficient amount of time for revision. By finishing the course as quickly as possible, you will have a much clearer view of the *big picture*. It will also allow you to structure your revision so that you can concentrate on the important and difficult areas of the course.

You can also try looking at our discussion forum, which can be accessed at **ActEd.co.uk/forums** (or use the link from our home page at **ActEd.co.uk**). There are some good suggestions from students on how to study.

#### *Study sessions*

Only do activities that will increase your chance of passing. Try to avoid including activities for the sake of it and don't spend time reviewing material that you already understand. You will only improve your chances of passing the exam by getting on top of the material that you currently find difficult.

In particular, you may already be familiar with the content of some of the chapters from your previous studies. Try to cover these chapters quickly to give yourself more time on the material with which you are less comfortable. Also, some chapters refer back to material from the Core Principles subjects. You don't have to follow these links up unless you are feeling curious or clueless.

Ideally, each study session should have a specific purpose and be based on a specific task, eg *'Finish reading Chapter 3 and attempt Practice Questions 3.4, 3.7 and 3.12'*, as opposed to a specific amount of time, eg *'Three hours studying the material in Chapter 3'*.

Try to study somewhere quiet and free from distractions (eg a library or a desk at home dedicated to study). Find out when you operate at your peak, and endeavour to study at those times of the day. This might be between 8am and 10am or could be in the evening. Take short breaks during your study to remain focused – it's definitely time for a short break if you find that your brain is tired and that your concentration has started to drift from the information in front of you.

### **Order of study**

We suggest that you work through each of the chapters in turn. To get the maximum benefit from each chapter you should proceed in the following order:

1. Read the Syllabus Objectives. These are set out in the box at the start of each chapter.
2. Read the Chapter Summary at the end of each chapter. This will give you a useful overview of the material that you are about to study and help you to appreciate the context of the ideas that you meet.
3. Study the Course Notes in detail, annotating them and possibly making your own notes. Try the self-assessment questions and Core Reading example questions as you come to them. As you study, pay particular attention to the listing of the Syllabus Objectives and to the Core Reading.
4. Read the Chapter Summary again carefully. If there are any ideas that you can't remember covering in the Course Notes, read the relevant section of the notes again to refresh your memory.
5. Attempt (at least some of) the Practice Questions that appear at the end of the chapter.

It's a fact that people are more likely to remember something if they review it several times. So, do look over the chapters you have studied so far from time to time. It is useful to re-read the Chapter Summaries or to try the Practice Questions again a few days after reading the chapter itself. It's a good idea to annotate the questions with details of when you attempted each one. This makes it easier to ensure that you try all of the questions as part of your revision without repeating any that you got right first time.

To be really prepared for the exam, you should not only know and understand the Core Reading but also be aware of what the examiners will expect. Your revision programme should include plenty of question practice so that you are aware of the typical style, content and marking structure of exam questions. You should attempt as many past exam questions as you can.

**Active study**

Here are some techniques that may help you to study actively.

1. Don't believe everything you read. Good students tend to question everything that they read. They will ask 'why, how, what for, when?' when confronted with a new concept, and they will apply their own judgement. This contrasts with those who unquestioningly believe what they are told, learn it thoroughly, and reproduce it (unquestioningly?) in response to exam questions.
2. Another useful technique as you read the Course Notes is to think of possible questions that the examiners could ask. This will help you to understand the examiners' point of view and should mean that there are fewer nasty surprises in the exam room. Use the Syllabus to help you make up questions.
3. Annotate your notes with your own ideas and questions. This will make you study more actively and will help when you come to review and revise the material. Do not simply copy out the notes without thinking about the issues.
4. As you study each chapter, condense the key points (not whole chunks of text) on to a double side of A4 or less. This is essential as otherwise, when you come to revision, you will end up having to re-read the whole course again, and there won't be time.
5. Try to use memory aids, such as mind maps and acronyms, to help remember the material when you come back to it later.
6. Attempt the questions in the notes as you work through the course. Produce your answer before you refer to the solution.
7. Sit a mock exam four to six weeks before the real exam to identify your weaknesses and work to improve them.

## 6 Frequently asked questions

**Q:** *Has Subject A311 changed since last year?*

**A:** Yes. ASSA has based the Subject A311 syllabus very closely upon the syllabus of the UK Profession's Subject CP1 but have included syllabus objectives and content specifically relevant for the South-African context.

**Q:** *What knowledge of earlier subjects should I have?*

**A:** The Course Notes are written on the assumption that students have studied the ASSA equivalent of pre-2019 UK Subjects CT1-CT8 (A1 and A2 series subjects). However, the key areas that you need (eg a knowledge and understanding of the principal characteristics of the main asset classes and of the key macroeconomic variables and their inter-relationships) are revisited at the relevant points in this course.

**Q:** *What are the equivalent subjects in the UK syllabus?*

**A:** Subject A311 contains largely the same material as the UK Subject CP1 (formerly Subject CA1).

**Q:** *What calculators am I allowed to use in the exam?*

**A:** Please refer to the Profession's website for the latest advice.

## 7 Subject A311 – Syllabus

### Syllabus

The Syllabus for 2023 ASSA Subject A311 is the same as the syllabus for UK Subject CP1.

#### *Aim*

The aim of the Actuarial Risk Management subject is to use the technical and business skills learnt in the Actuarial Statistics, Actuarial Mathematics, Modelling and Business subjects combining them with new material on how the skills are applied to solve real world problems.

The subject provides the essential knowledge of risk management techniques and processes required by all actuaries and is an essential introduction to Enterprise Risk Management, Subject F106 and the Chartered Enterprise Risk Actuary qualification.

The subject also underpins the F100 (Fellowship Principles) and F200 (Fellowship Application) subjects, covering essential background material that is common to a number of specialisms.

#### *Competences*

On successful completion of this subject, a student will be able to:

1. understand strategic concepts in the management of financial institutions and products
2. understand the risks faced both by individuals and groups who might effect financial products and also by the providers of such products
3. explain the principles and techniques used to manage these risks
4. understand the key techniques used by the providers of financial products to ensure that promised liabilities can be met
5. apply this knowledge, together with the skills learned from other subjects, to analyse the issues and formulate, justify, and present plausible solutions to business problems.

### ***Syllabus topics***

Note: In this syllabus the phrase ‘financial products’ is used to encompass all types of financial product, scheme, contract or other arrangements.

1.	Actuarial advice	(2.5%)
2.	Meeting the needs of stakeholders	(2.5%)
3.	The actuarial control cycle	(2.5%)
4.	Risk Governance	(5%)
5.	Risk identification and classification	(5%)
6.	Risk measurement and monitoring	(5%)
7.	Responses to risk	(7.5%)
8.	Capital management and monitoring	(5%)
9.	The general business environment	(20%)
10.	Specifying the problem	(5%)
11.	Producing the solution	(30%)
12.	Living with the solution	(7.5%)
13.	Monitoring	(2.5%)
14.	Principal terms	(0%)

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

The weightings also correspond with the amount of learning material underlying each syllabus topic. However, this will also reflect aspects such as:

- the relative complexity of each topic, and hence the amount of explanation and support required for it
- the need to provide thorough foundation understanding on which to build the other objectives
- the extent of prior knowledge which is expected
- the degree to which each topic area is more knowledge or application based.

## Detailed Syllabus Objectives

### 1 Actuarial advice

- 1.1 Identify the clients that actuaries advise in both the public and private sectors and the stakeholders affected by that advice.
- 1.2 Describe how stakeholders other than the client might be affected by any actuarial advice given.
- 1.3 Describe the functions of the clients that actuaries advise and the types of advice that actuaries might give to their clients.
- 1.4 Explain why and how certain factual information about the client should be sought in order to be able to give advice.
- 1.5 Explain why subjective attitudes of clients and other stakeholders – especially towards risk – are relevant to giving advice.
- 1.6 Distinguish between the responsibility for giving advice and the responsibility for taking decisions.
- 1.7 Discuss the professional and technical standards that might apply to actuarial advice.

### 2 Meeting the needs of stakeholders

- 2.1 Describe the main providers of benefits on contingent events.
- 2.2 Describe the main types of social security benefits and financial products and explain how they can provide benefits on contingent events which meet the needs of clients and stakeholders.
- 2.3 Explain the main principles of insurance and pensions that impact on these benefits and products.
- 2.4 Describe the ways of analysing the needs of clients and stakeholders to determine appropriate financial products.

### 3 The Actuarial Control Cycle

- 3.1 Describe the Actuarial Control Cycle and explain the purpose of each of its components.
- 3.2 Demonstrate how the Actuarial Control Cycle can be applied in a variety of practical commercial situations, including its use as a Risk Management Control Cycle.



## **4 Risk Governance**

- 4.1 Describe the risk management process for a business that can aid in the design of financial products.
- 4.2 Discuss the differences between risk and uncertainty and between systematic and diversifiable risk.
- 4.3 Describe how enterprise risk management can add value to the management of a business.
- 4.4.1 Discuss the roles and responsibilities of various stakeholders in the management of risk.
- 4.4.2 Evaluate the elements and structure of a successful risk management function.
- 4.5 Discuss risk appetite and the attainment of risk efficiency.

## **5 Risk identification and classification**

- 5.1 Describe the techniques that can be used to identify the risks associated with financial products or with the providers of benefits on contingent events.
- 5.2 Discuss how the risks of a project are taken into account in project management.
- 5.3 Describe the risks and uncertainties affecting:
  - the level and incidence of benefits payable on contingent events
  - the overall security of benefits payable on contingent events.
- 5.4 Describe how risk classification can aid the design of financial products that provide benefits on contingent events.
- 5.5 Show an awareness and understanding of the risk categories that apply to businesses in general, and particularly financial services businesses.

## **6 Risk measurement and monitoring**

- 6.1.1 Describe the various methods used to quantify risk.
- 6.1.2 Demonstrate the properties of risk measures (e.g. VaR and TVaR) and their limitations.
- 6.2 Discuss the uses of scenario analysis, stress testing and stochastic modelling in the evaluation of risk.
- 6.3 Describe different methods of risk aggregation and explain their relative advantages and disadvantages.
- 6.4 Explain the importance of risk reporting to managers and other stakeholders.

- 6.5 Discuss the methods of measuring and reporting risk that can be used by the main providers of financial products.

## **7 Responses to risk**

- 7.1 Describe attitudes to and methods of risk acceptance, rejection, transfer and management for stakeholders.
- 7.2 Distinguish between the risks taken as an opportunity for profit and the risks to be mitigated.
- 7.3 Describe the principle of pooling risks.
- 7.4 Describe the methods of transferring risks.
- 7.5 Analyse the risk management aspects of a particular business issue and recommend an appropriate risk management strategy.
- 7.6 Describe the tools that can be used to aid the management and control of risk.
- 7.7 Discuss the issues surrounding the management of risk for financial product providers.
- 7.8 Describe how risks with low likelihood but high impact might be managed.

## **8 Capital management and monitoring**

- 8.1 Discuss the interrelationship between risk and capital management.
- 8.2 Explain the implication of risk for capital requirement, including economic and regulatory capital requirements.
- 8.3 Describe how the main providers of financial products can meet, manage and match their capital requirements.
- 8.4 Discuss the implications of the regulatory environment in which the business is written for provisioning and capital requirements.
- 8.5 Discuss risk-based capital and compare with other measures of capital needs.
- 8.6 Discuss the merits of looking at an economic balance sheet in order to determine the risk-based capital requirements of a provider financial products.
- 8.7 Discuss the use of internal models for assessment of economic and regulatory capital requirements.
- 8.8 Demonstrate how to use risk measures and capital assessment.
- 8.9 Propose techniques of allocating capital to business units in order to gauge performance.

- 8.10 Demonstrate a conceptual understanding of economic measures of risk-adjusted value and capital requirements and their uses in decision-making processes."

## **9 The general business environment**

### **9.1 Regulatory environment**

- 9.1.1 Describe the principles and aims of prudential and market conduct regulatory regimes.
- 9.1.2 Discuss the role that major financial institutions can play in supporting the regulatory and business environment.
- 9.1.3 Explain the concept of information asymmetry.
- 9.1.4 Explain how certain features of financial contracts might be identified as unfair.
- 9.1.5 Discuss the implications of a requirement to treat the customer fairly.
- 9.1.6 Describe the aims of policy developments with respect to climate risks and sustainability.

### **9.2 External environment**

Describe the implications for the main providers of benefits on contingent events of:

- legislation and regulations;
- State benefits;
- tax;
- accounting standards;
- capital adequacy and solvency ;
- corporate governance;
- risk management requirements;
- competitive advantage;
- commercial requirements;
- changing cultural and social trends;
- climate change;
- demographic changes;
- environmental issues;
- lifestyle considerations;
- international practice; and
- technological changes.

### **9.3 Investment environment**

- 9.3.1 Discuss the cashflows of simple financial arrangements and the need to invest appropriately to provide for financial benefits on contingent events.
- 9.3.2 Demonstrate a knowledge and understanding of the characteristics of the principal investment assets and of the markets in such assets.
- 9.3.3 Describe how the risk profile of the principal investment assets affects the market in such assets.
- 9.3.4 Explain the principal economic influences on investment markets.
- 9.3.5 Describe other factors affecting supply and demand in investment markets.

## **10 Specifying the problem**

### **10.1 Contract design**

Discuss the factors to be considered in determining a suitable design for financial products that will provide benefits on contingent events in relation to:

- the characteristics of the parties involved;
- the risk appetite or risk aversion of the parties involved;
- the regulatory environment;
- the market for the product;
- competitive pressures;
- the level and form of benefits to be provided;
- any options or guarantees that may be included;
- the benefits payable on discontinuance or transfer of rights;
- the method of financing the benefits to be provided;
- the choice of assets when benefits are funded;
- administrative issues;
- the charges that will be levied; and
- the capital requirements.

### **10.2 Data**

- 10.2.1 Explain the ethical and regulatory issues involved in working with personal data and extremely large data sets.
- 10.2.2 Describe the risks involved with storing and processing personal data
- 10.2.3 Explain the main issues to be addressed by a data governance policy and its importance for an organization.

- 10.2.4 Explain the risks associated with use of data (including algorithmic decision making).
- 10.2.5 Discuss the data requirements for determining values for assets, future benefits and future funding requirements.
- 10.2.6 Identify the main sources of data and the specific considerations to be taken when deciding on using these data
- 10.2.7 Describe the checks that can and should be made on data.
- 10.2.8 Describe the circumstances under which the ideal data required might not be available and discuss ways in which this problem may be overcome.
- 10.2.9 Describe how to determine the appropriate grouping of data to achieve the optimal level of homogeneity.
- 10.2.10 Discuss the use of data to analyse risk factors and set rating factors.

## **11 Producing the solution**

### **11.1 Modelling**

- 11.1.1 Describe the approaches available to produce the solution to an actuarial or financial problem.
- 11.1.2 Describe the construction of actuarial models to produce solutions in terms of:
  - the objectives of the model
  - the operational issues that should be considered in designing and running models.
- 11.1.3 Describe the use of models for:
  - pricing or setting future financing strategies
  - risk management: assessing the capital requirements and the return on capital or the funding levels required
  - assessing the provisions needed for existing commitments to provide benefits on contingent events
  - pricing and valuing options and guarantees.
- 11.1.4 Describe how sensitivity analysis of the results of the models can be used to help decision making.

## **11.2 Assumption setting**

11.2.1 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; and
- the level of prudence in the assumptions required to meet the objectives of the client.

11.2.2 Describe the key assumptions of the main financial products.

## **11.3 Mortality and morbidity**

11.3.1 Describe the principal forms of heterogeneity within a population, the ways in which selection can occur, and how the use of risk classification can address the consequences of selection.

11.3.2 Explain why it is necessary to have different mortality tables for different classes of lives.

11.3.3 State the principal factors which contribute to the variation in mortality and morbidity by region and according to the social and economic environment, specifically:

- occupation
- nutrition
- housing
- climate/geography
- education
- genetics

11.3.4 Explain how various types of selection (e.g. temporary initial selection, class selection) can be expected to occur among individuals or groups effecting financial products.

11.3.5 Explain the concept of mortality convergence.

11.3.6 Describe how decrements can have a selective effect on the remaining business.

**11.4 Expenses**

11.4.1 Describe the types of expenses that the providers of benefits on contingent events must meet.

11.4.2 Describe how expenses might be allocated when pricing financial products.

**11.5 Developing the cost and the price**

11.5.1 Discuss how to determine the cost of providing benefits on contingent events.

11.5.2 Discuss the factors to take into account when determining the appropriate level and incidence of contributions to provide benefits on contingent events.

11.5.3 Discuss the factors to take into account when determining the price or the contributions to charge for benefits on contingent events.

11.5.4 Discuss the influence of provisioning, or regulatory capital requirements on pricing or setting financing strategies.

**11.6 Investment management**

11.6.1 Discuss the principles and objectives of investment management and analyse the investment needs of an investor, taking into account liabilities, liquidity requirements and the risk appetite of the investor.

(Investors to consider are individuals, groups or financial services/product providers)

11.6.2 Discuss the different methods for the valuation of individual investments and demonstrate an understanding of their appropriateness in different situations.

11.6.3 Discuss the theoretical relationships between the total returns and the components of total returns, on equities, bonds and cash, and price and earnings inflation.

11.6.4 Discuss the different methods for the valuation of portfolios of investments and demonstrate an understanding of their appropriateness in different situations.

11.6.5 Discuss methods of quantifying the risk of investing in different classes and sub-classes of investment.

**11.7 Provisioning**

11.7.1 Discuss the different reasons for the valuation of the benefits from financial products and the impact on the choice of methodology and assumptions.

11.7.2 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 principles of 'fair valuation' of assets and liabilities and other 'market consistent' methods of valuing the liabilities;
- 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 accounting 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.

11.7.3 Describe different methods of allowing for risk in cash-flows.

11.7.4 Discuss different methods of allowing for uncertainty in present values of liabilities.

11.7.5 Discuss the purpose of and uses for equalisation reserves.

11.7.6 Describe the influence of comparisons with market values.

## **11.8 Relationship between assets and liabilities**

11.8.1 Describe the principles of investment and the asset/liability matching requirements of the main providers of benefits on contingent events.

11.8.2 Show how actuarial techniques such as asset/liability modelling may be used to develop an appropriate investment strategy.

11.8.3 Describe the use of a risk budget for controlling risks in a portfolio.

11.8.4 Describe the techniques used to construct and monitor a specific asset portfolio.

11.8.5 Discuss the need to monitor investment performance and to review investment strategy.



## **12 Living with the solution**

### **12.1 Maintaining profitability**

12.1.1 Describe how the main providers of benefits on contingent events can control and manage the cost of:

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

12.1.2 Discuss how regulatory capital requirements impact on a provider's profitability.

12.1.3 Describe the tools available for capital management.

### **12.2 Determining the actual results**

12.2.1 Describe how a provider can analyse actual performance against expected performance.

12.2.2 Describe how a provider can analyse performance of an investment portfolio against a benchmark.

12.2.3 Discuss the possible sources of surplus / profit and the management actions that can control the amount of surplus / profit.

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

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

12.2.6 Discuss the issues surrounding the amount of surplus / profit that may be distributed at any time and the rationale for retention of surplus / profit.

### **12.3 Reporting actual results**

12.3.1 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 contingent events.

12.3.2 Describe the reports and systems that may be set up to monitor and manage risk at the enterprise level.

### **12.4 Insolvency and closure**

Discuss the issues that need to be taken into account on the insolvency or closure of a provider of benefits on contingent events.

### **12.5 Options and guarantees**

Discuss the issues surrounding the management of options and guarantees.

## **13 Monitoring**

### **13.1 Describe how the actual experience can be monitored and assessed, in terms of:**

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

### **13.2 Describe how the results of the monitoring process in the Actuarial Control Cycle or the Risk Management Control Cycle are used to update the financial planning in a subsequent period.**

## **14 Have an understanding of the principal terms used in financial services, investments, asset management and risk management.**

### **Assessment**

The assessment will consist of two unseen written / typed papers held in an invigilated environment that need to be passed together. Each paper will cover bookwork, applications and higher-order skills.

In the examination questions may be set on any area of work in which actuaries participate, including wider fields such as banking, environmental issues, management of natural resources, and other topics. Questions will not require technical knowledge of the subject context beyond the material covered in this and the A1 and A2 subjects, but a general understanding of the business, commercial, social and natural environment will be assumed.