

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

4 October 2012 (pm)

Subject SA4 – Pensions and other Benefits Specialist Applications

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details as requested on the front of your answer booklet.*
2. *You have 15 minutes before the start of the examination in which to read the questions. You are strongly encouraged to use this time for reading only, but notes may be made. You then have three hours to complete the paper.*
3. *You must not start writing your answers in the booklet until instructed to do so by the supervisor.*
4. *Mark allocations are shown in brackets.*
5. *Attempt all three questions, beginning your answer to each question on a separate sheet.*
6. *Candidates should show calculations where this is appropriate.*

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet, with any additional sheets firmly attached, and this question paper.

<p><i>In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator from the approved list.</i></p>
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1 A funding valuation of a large UK defined benefit pension scheme is currently being carried out. The scheme has been closed to new entrants for some years and the sponsoring company has plans to close the scheme to future accrual in due course and secure the liabilities with an insurer.

(i) Outline the principal checks on membership data that would be carried out as part of the funding valuation. [8]

(ii) Discuss how and why the membership data required by an insurer in order to accept the liabilities of the scheme may differ from that required by the trustees of the scheme for ongoing valuation purposes. You should consider:

(a) data quality; and

(b) the data items held, giving examples. [12]

[Total 20]

2 A developed economy has a substantial occupational defined benefit pension scheme market. The market is mature. For some years, the trend has been for schemes to close to new entrants, or close to all future benefit accrual. Relatively few new schemes are established. Schemes tend to invest in a mixture of equities and bonds. Typically, a scheme's ongoing funding target will be to hold reserves of 70%–80% of what is required to fully secure members' benefits with insurance policies.

The ABC Motor Corporation Pension Scheme has been closed to new entrants and no further pension is being accrued. An actuarial valuation was carried out as at 1 December 2011. The Scheme has the following benefit structure and membership:

Normal Retirement Age:	65
Benefits payable at Normal Retirement Age:	Pension for life based on salary and length of service
Spouse's pensions:	None
Revaluation of pensions in deferment:	Nil
Pension increases in payment:	3% per annum

<i>Deferred pensioners at 1 December 2011:</i>	<i>Deferred Pension p.a.</i>	<i>Liability</i>
Age less than 60	£40 million	£600 million
Age 60 to 64	£10 million	£200 million
<i>Pensioners at 1 December 2011:</i>	<i>Pension in payment p.a.</i>	<i>Liability</i>
Age 60 to 64	£12 million	£264 million
Age 65 and over	£30 million	£540 million
Total liability		£1,604 million
Scheme assets		£1,100 million
Funding level		69%

The liability represents the cost of securing the benefits with an insurance company. A discount rate of 4% per annum is used in this calculation. A simplified mortality

assumption is adopted of 1% per annum mortality post-retirement and nil pre-retirement for deferred pensioners.

Over the five years to 1 December 2016 the Scheme continues to be operated as a closed fund. Its assets achieve a return of 4% per annum. Contributions of £20 million per annum are paid during the period. No members retire before age 65.

- (i) Estimate, as at 1 December 2016, the value of the Scheme's assets, liabilities and hence funding level. You may assume that the actuarial basis for calculating liabilities does not change, i.e. a 4% per annum discount rate continues to apply. State any other assumptions that you make. [8]

The government has established a Central Discontinuance Fund (CDF) designed to provide a minimum level of benefits to members of underfunded defined benefit pension schemes with insolvent employers. The CDF is modelled loosely on the Pension Protection Fund in the UK. The benefits provided by the CDF are:

- For members under age 65 when the sponsoring employer becomes insolvent, 90% of the scheme pension accrued to date or in payment.
- For members aged 65 or over when the sponsoring employer becomes insolvent, 100% of the scheme pension accrued to date or in payment.
- No future increases to pensions in payment are made after the sponsoring employer becomes insolvent.
- In other respects, full scheme benefits are provided.

As at 1 December 2011, the funding level relative to CDF benefits was 102%. The Scheme Actuary estimates that the funding level relative to the Scheme's CDF liabilities has fallen to 100% as at 1 December 2016.

- (ii) Explain why the funding level relative to the Scheme's CDF liabilities has not changed in the same way as the funding level relative to the Scheme's full liabilities. [4]

On employer insolvency, if a scheme has insufficient assets to secure the CDF benefits with an insurance company, the scheme's assets are transferred to the CDF which then provides CDF benefits to the members.

The CDF is funded on a buyout basis. It requires an additional source of funding when the liability of the CDF benefits provided in respect of each scheme accepted in is greater than the amount of scheme assets inherited. The government is considering two ways of financing the shortfall:

- by general taxation, or
- by an up-front tax or "levy" payable by employers who sponsor defined benefit pension schemes.

- (iii) Discuss the advantages and disadvantages of each method.

[16]

The government decides to adopt the levy method and will introduce a levy calculated to reflect the financial risk that each scheme poses to the CDF. The levy will be calculated every 1 January as:

$$\text{Levy} = s * P * (120\% * L - A),$$

where:

- s = a variable scaling factor used to ensure an appropriate overall levy is collected over time
- P = the probability of the sponsoring employer becoming insolvent over the next 12 months
- L = the liability of the CDF benefits
- A = the scheme's assets

- (iv) Suggest reasons why the government has used a 120% factor rather than having the levy proportional to the deficit ($L - A$). [5]

- (v) Discuss the shortcomings of this levy formula and improvements that could be made. [7]

[Total 40]

- 3** A UK company sponsors a defined benefit pension scheme, the rules of which provide for annual pension increases based on price inflation to be awarded to pensions once in payment.

The company is proposing to offer current pensioners the option to forfeit all future increases to their pensions in exchange for a one-off uplift to their pensions. Members who accept the offer would not receive any further increase to their uplifted pensions. Any dependant's pension payable in the event of the member's death would be based on the member's uplifted pension and would not receive any further increases.

- (i) Describe the legal or practical obstacles that the company might face in implementing this offer. [8]
- (ii) Discuss how the uplift factors might be determined. [8]
- (iii) Explain the support and information that the trustees would expect the company to provide to the pensioners, in order to help them make an informed decision. [10]

- (iv) Discuss the factors which might affect the take-up rate of the offer, considering both:
- (a) members' personal circumstances, and
 - (b) the design of the offer and the way in which it is implemented.
- [10]

The company is considering extending the offer to active and deferred members at the point of retirement.

- (v) Explain how the support and information required by active and deferred members might differ from that provided to pensioners.
- [4]
[Total 40]

END OF PAPER