INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2012 examinations

Subject SA4 – Pensions and other Benefits Specialist Applications

Purpose of Examiners' Reports

The Examiners' Report is written by the Principal Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and who are using past papers as a revision aid, and also those who have previously failed the subject. The Examiners are charged by Council with examining the published syllabus. Although Examiners have access to the Core Reading, which is designed to interpret the syllabus, the Examiners are not required to examine the content of Core Reading. Notwithstanding that, the questions set, and the following comments, will generally be based on Core Reading.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report. Other valid approaches are always given appropriate credit; where there is a commonly used alternative approach, this is also noted in the report. For essay-style questions, and particularly the open-ended questions in the later subjects, this report contains all the points for which the Examiners awarded marks. This is much more than a model solution – it would be impossible to write down all the points in the report in the time allowed for the question.

T J Birse
Chairman of the Board of Examiners

July 2012

General comments on Subject SA4

This subject examines the ability of candidates to apply actuarial practice and concepts, together with specific knowledge of the UK pensions and employee benefit environment to potentially complex problems, integrating their analysis into a coherent whole, and evaluating and interpreting results to draw explicit conclusions.

The examiners therefore look for candidates to demonstrate their understanding of the syllabus by applying their knowledge and core actuarial skills to the specific situation that the examiners asked, having read the question carefully. Too many candidates write around the subject matter of the question in more general fashion, reproduce core reading that appears to them be relevant without linking it to the question context, or focus on one aspect of the issue at great length, in each case gaining few of the marks available.

Good candidates demonstrate that they have used the planning time well – an attempt to create a logical structure to solutions is a big advantage in making points clearly and without repetition. This also enables candidates to use the latter parts of questions to generate ideas for answers to the early parts (or use their solutions to earlier parts of questions to create a structure for latter parts). Time management is important so that candidates give answers to all questions that are roughly proportionate to the number of marks available.

Comments on the April 2012 paper

The overall standard of scripts was similar to previous sittings. Candidates generally scored well on the valuation process, assumption setting and numerical analysis parts of the paper – parts (i) to (v) and (ix) to (xiii). Candidates performed less well, however on the more open-ended elements, particularly parts (vi) to (viii), and (xvii), with answers often either too short for the marks available, or focusing on only one aspect of the issue at hand. Answers to part (xvii) also showed a lot of evidence of time pressure, on an area that has been examined before, and which might have therefore been a more productive use of limited time. Once again, the Examiners encourage future candidates to remind themselves of what they learned in the Core Technical subjects, and to use past paper questions to practice applying these skills to specific scenarios.

(i)

- The trustees must instruct the Scheme Actuary to carry out a valuation in accordance with the scheme specific funding requirement;
- In accordance with the Pensions Act 2004;
- On an accrued benefits funding method (not prospective);
- Schemes must be valued in accordance with a Statement of funding Principles;
- In consultation with the sponsor (subject to scheme rules);
- Setting out the policy for meeting the Statutory Funding Objective;
- Which requires schemes to have appropriate adequate assets to meet their technical provisions;
- Which is the Scheme Actuary's estimate of the funds required to meet liabilities as they fall due;
- With an appropriate margin for prudence;
- Having due regard to the investments of the scheme;
- And the covenant of the sponsor.
- The valuation should result in an agreed Recovery Plan to meet any deficit;
- And a Schedule of contributions setting out the required contributions from the sponsor and, if applicable, members.
- Must also include an estimate of the solvency of the scheme;
- Together with a neutral estimate of the funding position in accordance with actuarial guidance *(or any other relevant reference to a TAS)*;
- The valuation must be completed and submitted to the Regulator within 15 months of the effective date.

Candidates generally performed well on part (i), which was a relatively straightforward reflection of the core reading.

(ii)

- Information to ensure the valuation reflects correct benefits and practice
    - Trust Deed and Rules
    - Member Booklets and Announcements
    - details of any special arrangement for particular members
    - details of policy on discretionary benefits (past practice /future intentions)
    - Scheme Factors (e.g. commutation, early retirement factors)

- Information to ensure appropriate checks and reconciliations can be carried out
    - Copies of previous actuarial report and subsequent updates
    - And accounts for period since last valuation
    - Including membership movements over period since last valuation
    - To ensure that consistency checks can be properly carried out

- Information to ensure valuation is carried out in line with the trustees requirements / to inform assumption setting
    - Statement of Funding Principles
    - ... assumptions and funding method
    - Purpose of valuation (e.g. technical provisions/solvency etc)
    - Statement of Investment Principles
    - Market data - gilt yields, index linked gilt yields and corporate bond yields
    - Current / future asset mix (if using asset based discount)

  - Longevity advice / guidance

- Information on membership
  - Detailed (individual) current membership data
  - Including dependants of current members
  - Perhaps also including post code data for longevity weightings
  - If significant, part-timer information etc.
  - For all categories (active, deferred and pensioners)

Other items (if not already mentioned)

- Market values of assets
- Details of any insurance policies / annuities held by the scheme
- Trustee meeting notes – benefits, decisions on funding, covenant advice/decisions
- Expense and levy policy – is this payable from scheme or directly from sponsor
- May therefore require estimates of long term expenses and levies

Given the instruction to "outline", then, if individual items were not logically grouped in some way which explained their relevance, then each item the candidates included needed to be accompanied by a (very) brief description / reason to gain maximum marks. Some candidates gave excessive amounts of detail, for instance listing at length the individual items of membership data records for each category – again, this is not consistent with instruction to "outline".

(iii) **Economic**

It appears from the vast majority of scripts that candidates read ahead and correctly understood that we were focusing on Technical Provisions. Credit was also given to the few candidates who highlighted that there are other measures of liabilities:

- Assumptions will depend on which valuation is being completed (scheme specific funding, solvency, neutral estimate)
- ... and may depend on funding method being used
- Gaps between assumptions may be more important than absolute amounts

Remainder of solution assumes candidate focused on SSF valuation

- **Key assumption is discount rate**
- For a valuation to satisfy SFO, then would expect to use a market discount rate

Credit was given for a description of a suitable approach ("asset-based" shown below, but explanation of either "mark-to-market" or "gilts plus risk premium" approaches scored as well).

  - e.g Using a market implied discount rate for each asset class being invested in;
  - With appropriate allowance for risk premium for real assets such as equities;
  - Which may be in the range 2-3% considering historic experience;
  - Possibly splitting the assumption for liabilities pre and post retirement if this reflects approach taken to investment;

- With an appropriate allowance for prudence;
- And with due consideration for the sponsor covenant.

Price inflation

- Critical for assessing pension increases
- Long term RPI assumption can be derived from difference between conventional and index linked gilt yields
- Possibly with adjustments for market supply or other considerations
- But given scheme increases are statutory minimum, also need assumption for CPI increases
- Which is typically 0.5–1% less than RPI in long term

- For actives, need an assumption for earnings growth
- Starting point is UK experience, e.g. 0.75 – 1.5% in excess of RPI over long term
- But may consider actual scheme experience, both for inflationary and promotional increases
- And employers' view of plans
- Over long term, not only recent experience

- Pension Increases - take account of inflation assumption above
- Together with any statutory cap (e.g. 2.5% LPI)
- Plus allowance for discretionary increases if applicable
- Need allowance for increases in payment and in deferment

Demographic

- **Key assumption is rate of (post-retirement) mortality**
- May ignore pre-retirement if no death benefit strain as a margin
- Separate assumptions for base mortality and future improvements
- Also required to be determined using prudent principles
- Consider standard table and whether applicable to membership
- Taking into consideration nature of membership – type of work, salary, location etc.
- May be able to test against scheme experience if large enough
- Although this scheme does not appear large enough to produce statistically significant experience

Other items:

- Options – e.g. number of members taking cash at retirement
- Other decrements (withdrawal, early / ill-health / normal / late retirement)
- Marital statistics (proportions married, age-difference)
- Promotional salary scales, if not accounted for in salary increases above.

(iv) *Note that full credit was given for other reasonable approaches, particularly for setting the discount rate, provided candidates showed their reasoning.*

Discount Rate

- Allow for actual investments, and potential changes
- Assume strategy is to match pensioners with approx 50/50 gilts/bonds split
- Assume that pre retirement liabilities approx 90/10 equity or property/bond
- With appropriate allowance for covenant (assumed strong in example below)

Other assumptions consistent with current investment split merited marks

- Pre retirement assume equity/property similar long term (or other reasonable assumption)
- Risk premium of, say, 2.5% allowing for prudence
- Allow for 0.1% reinvestment risk on bonds
- Give preretirement of 0.9 * (4.5 + 2.5) + 0.1 * 5.6 = 6.85% to nearest 5bps

Other reasonable assumptions merited marks (e.g. higher post-retirement rate to allow for 3:1 ratio of corporate bonds)

- Post retirement assume 50/50 split
- Gives 0.5 * 4.5 + 0.5 * 5.6 (with reinvestment risk) = 5.05%

Inflation

- RPI = 4.5 – 1.2 = 3.3% p.a.
- Allowance for supply issues?
- CPI = 3.3 – 0.75 = 2.55% p.a. say

Earnings Growth

- Set at RPI + 1.5%, say = 3.3 + 1.5 = 4.8% p.a.

Pension Increases

- Set at CPI = 2.55%, unless capped.
- If capped at 2.5% assume 2.4%, say, to allow for top slicing.

(v) **Mortality**

- Set a standard table (SAPS unless good argument for another)
- Consider actual membership – are they significantly low skill workers
- May then consider SAPS heavy, or other adjustment for other tables
- Need to allow for mortality improvements
- Marks for sensible proposal, say long cohort
- With underpin, say 1%
- Mark for reference to regulator guidance/ requirements for prudence

Options

- Set assumption at either low % take cash – cautious, or high % take cash – realistic (mark either way, or other argued point)
- Need to note point that cash tends to lead to small scheme profit
- Consider other significant options that may not be cost-neutral (e.g. early retirement terms)

(vi) *A range of answers was acceptable, but answers needed to make reference to the following, with reasonable and consistent comments on each point:*

- Recovery period – define a length
- Reason for length
- Mention possibility of trigger points with Regulator
- Initial rate of recovery contributions
- Rates of increase or level
- stressing level most attractive as higher % of deficit paid off sooner
- mention desire to avoid back end loading
- Consider discount rate to apply to calculation with regard to investments and covenant
- Is it valuation rate, pre retirement rate, fully equity rate without prudence etc.
- 50% of profits equal to approx a 6 year recovery plan so this may be a good starting point
- Or may allow a longer period if covenant assessed as appropriate and/or relatively good assessed funding status

Calculation of rate e.g.

- Discount rate = 7%
- Rate of increase = 3%
- Deficit = £15m
- Recovery Period = 8 years
- Recovery contributions = approx 15/ (1 – (1/1.04)^8)/0.04) annually in arrears = £2.3m p.a.

- Discuss single contribution option initially either in part or full
  - The deficit is only 6.25% of the turnover
  - And equal to approx 3 years of profits
- Refer to contributions relative to turnover
  - Recovery contributions above only about 1% of turnover so should not be unaffordable
- Refer to company covenant
  - Low margin
  - High creditors relative to cash
  - Trustees might therefore require shorter recovery period
  - But needs to consider affordability
  - No value in risking survival of company

- Consider contingent asset
    - There is a property available
    - Use of HO property may allow a longer recovery period
    - And is of similar value to the deficit
- May be pressure to keep rate low
    - cash only about 1 month's costs for company
    - Possible pressure on cashflow
- Trustees may want faster payment because of low margin
- May wish to agree contingent contributions which trigger under certain financial conditions (e.g. reduction in turnover, profit etc.)

A number of candidates did not seem to notice either or both of the instructions to "calculate possible contribution requirements" or to "make reference to the financial information available ...). For a borderline candidate, the several straightforward marks on offer may well make the difference between passing or failing, not because of a lack of knowledge, but through not reading the question carefully. Similarly, many candidates did not cover alternatives to contributions, even though the examiners had provided a strong hint to do so in listing some of the assets available (and also by moving on to covenant issues in the remainder of the paper).

(vii)

- Trustees should reconsider assessment of covenant
- Discuss the implications in further detail with the company
- Is ability to pay compromised?
    - Consider implications for turnover&profits
    - cashflows
    - staff numbers/membership
- need to see management business plan reforecasts
- review the impact on the company's financial metrics
- review impact on company's quoted stock
- review analysts' reviews of the business and published credit ratings
- consider obtaining an independent covenant review, or IBR, by an expert
- consider the impact of the changes on the quality of the sponsor's underlying assets (e.g. the 344m debtors)

Many candidates included detail here that would have been more relevant to the remaining parts of the paper, in particular part (viii) – this emphasises the need to read the whole paper and plan ahead. Similarly, some candidates were very accepting of the company's assurances about its continuing strength without considering whether/how the Trustees might verify this independently. Finally the question asked how the Trustees should react, not what the alternatives to contributions (and their characteristics) include.

(viii) **Investments**

- **Consider a move to a more matched position to reduce risk**
- e.g reducing equity weighting in favour of fixed interest
- Depending upon degree of raised concern, may continue to invest in corporate bonds
- Or move to gilts/index linked gilts entirely

- Unless very serious concern, may not wish to alter property investment because of costs/margins on direct property changes
- Should seek advice on timing of any switches to minimise market effects
- May wish to consider use of insurance solutions for some benefits (e.g. pensioner liabilities) to reduce exposure (and reduce other risks)
- Making such a change will alter the assessment of the Technical provisions, however
- Resulting in potential need to carry out a valuation on revised assumptions.
- Which will result in a higher deficit and hence greater contribution requirement

Benefits

- What the trustees can do will depend upon the scheme rules and legislation (e.g. no reduction to accrued benefits)
- If situation of great concern, may wish to cease accrual to limit liabilities
- Although this may trigger wind up unintentionally
- Alternatively might close to new entrants
- Or alter accrual to career average or similar
- Might introduce or increase member contributions so that more of employer funds go to deficit recovery
- Might put an end to any discretionary increases where they apply
- May make a change to early retirement or transfer value policies to limit impact on cashflows/strains

Funding Objectives

- Current Statement of Funding Principles may provide specified actions in the circumstances.
- Likely to carry out revisions to valuation on alternative assumptions.
- Likely to build in greater margins for prudence
- And/or consider a contingent asset
- Key changes will be to remove some or all of allowance for outperformance to reflect actual investment changes and/or to set a higher target for technical provisions
- Might consider move to wind up
- Or target wind up over, say, 5 years if significant concern

The examiners were a little surprised that candidates did not generally score well on this question. Many candidates failed to mention some of the more straightforward marks available, particularly in relation to benefits and funding objectives. Candidates should note that where an instruction is given to cover specific aspects, this is often intended to help them give a broad answer – full credit will only then be given to candidates who cover each to a reasonable degree given the marks available.

(ix) *Credit was given for any well-reasoned example that was consistent with the candidate's attempt to part (iv). This was generally answered well, but a few candidates who did not state their reasoning missed out on straightforward marks.*

Discount Rate

- Allow for changes to investment and/or reduction in prudence
- Assume strategy is to match pensioners with approx 100% gilts
- Assume that pre retirement liabilities approx 20/80 equity or property/fixed interest, say

Other assumptions consistent with answer to previous question merit marks

- Pre retirement assume equity/property similar long term (or other reasonable assumption)
- Risk premium of, say, 2.0% allowing for additional prudence
- Assume 50/50 gilts/bonds for fixed interest
- Give pre retirement of 0.2 * (4.5 +2 .0) + 0.4 * (5.6 + 4.5) = 5.35% p.a. to nearest 5bps

Other reasonable assumptions merit marks

- Post retirement assume all gilts = 4.55% p.a.
- No changes to other assumptions
- Unless change to accrual means change to allowance for salary increases

(x) Assume no changes to accrual

- Assume no allowance for withdrawals etc.
- Assume scheme relatively mature with a mix of ages
- Assume weighted average term of non-pensioner liabilities = 20 years
- Assume all members retire at age 65
- Estimated weighted term of retiree at age 65 = 13
- Estimated average term of pensioners = 10
- Change to non-pensioner liabilities = (1.0685/1.0535)20 = 1.327 (pre-retirement)
- Change to non-pensioner liabilities = (1.0505/1.0455)13 = 1.064
- Revised liability for actives/deferreds = (82m + 53m) × 1.327 × 1.064 = £191m
- Change to pensioner liabilities = (1.0505/1.0455)10 = 1.049
- Revised liability for pensioners = 75m × 1.049 = 79m
- Revised liability = £270m
- Revised deficit = (270 − 195)m = £75m

The key to gaining marks here was demonstrating an understanding of how changes to the assumptions affect valuation results. Alternative assumptions / results gained equivalent credit. This was generally answered well, with the most common failing being the failure of some candidates to make clear which assumptions underpinned simplified calculations.

Credit for further assumptions was NOT given if the candidate embedded an assumption into their formula without separate explanation.

Marks were given for other well argued results – e.g. calculate changes with a suitable rule of thumb (past exams have used 14% increase for a 1% increase in post-retirement discount rate for non-pensioners, 12% for current pensioners).

(xi)

- This deficit is clearly significantly higher
- The covenant of the company is clearly somewhat weaker
- the trustees assessment of an acceptable recovery period will likely change
- The deficit is now greater than balance sheet net assets so in a very different situation
- Over an 8 year recovery period, required contributions would now be of the order of £11m p.a. (or other assessment consistent with approach taken in part vi)
- Which is higher than profits
- And probably unaffordable given low cash holdings
- So will need to extend recovery period to meet affordability requirements
- May require a long recovery period of perhaps 15–20 years (subject to regulator's views)
- Or may decide to allow back end loading of contributions
- There will be significantly more pressure to seek an initial contribution
- As well as pressure to obtain contingent assets e.g. the property/parental guarantee
- And would want to build in contingent contributions based on any increases in profitability

Part (xi) was generally answered well.

(xii) The documents required are:

- Statement of Funding Principles
- Recovery Plan
- Schedule of Contributions
- Formal Valuation Report/Scheme Funding Report
- Certification of Schedule of Contributions (SoC) where required
- Regulation 7 Certificate/Actuary's certificate on Technical Provisions (or as part of certified SoC)
- *any other RELEVANT documents*

(xiii)

- The key actuarial standard is TAS-R (Reporting)
- The key aim is to ensure reliability of reporting
- That sufficient information is included to enable users to judge the relevance of the contents of the reports
- That sufficient information is included to enable users to understand the implications of the contents of the reports
- That information is presented in a clear and comprehensible manner
- That the required information is communicated before key decisions are made (rather than in documents of record completed at the end of the process)
- All subject to materiality and proportionality
- Reports should describe the sources of the data used

- ... and all assumptions used
- Describing any areas where judgement has had to be applied
- With details of the methods and measures used in the calculations
- It should outline the nature and objectives of all calculations
- And discuss the nature and significance of any risks

Straightforward bookwork which, reassuringly, most candidates demonstrated they were aware of and understood.

(xiv)

- A legal document covering all aspects of the sale
- This will include the pensions aspects, often as a distinct schedule
- There will be specific pension related warranties and indemnities
- The warranties usually consist of disclosure of scheme documents and any outstanding complaints
- If the disclosures are incorrect the Purchaser may have a right to financial redress
- Where the purchase price has an adjustment for pensions and where there is a transfer of benefits there will be an Actuary's Letter
- Sometimes countersigned by the purchaser's actuary
- This will set out the basis of the transfer of accrued benefits
- It is from the Vendor's to the Purchaser's actuary setting out details pre-agreed assumptions and methods for the calculation
- And is countersigned by the Purchaser's Actuary
- There will be clear definitions of all terms used
- E.g. the completion and transfer dates
- Any participation period and the dates payments are due
- The members affected
- It will set out the obligations of the vendor and the purchaser
- And give details of the adjustments that will apply to calculations between relevant dates of completion and payments
- It will set out how disputes will be resolved
- And the manner in which assets will be invested and transferred
- There may also be shortfall/excess clauses

(xv) The main interests of the Purchaser are:

- Their main concern is to achieve a satisfactory overall deal, of which pensions is only one part
- They will be interested in the Trustee powers under the Trust Deed and Rules
- And the views and practices of the Trustees themselves
- They will want the transfer value for any transferred liabilities to be as big as possible
- To reduce risk of additional funding requirements for accrued liabilities for transferred members
- Will want to ensure that transferred employees are content with new terms on offer (within total reward strategy)
- And will want to ensure that any terms agreed to are sustainable

- And not inconsistent with those for existing employees or have any inconsistencies explained.
- The purchaser will want to ensure there are no unnecessary administrative complexities introduced

The question is about the purchaser's interests. Comments relevant to the trustees of the purchaser's scheme, or other parties, were not given credit, unless the candidate also explained why the issue was in turn important to the purchaser.

(xvi)

- The risk based levy calculation is $U \times P \times 0.8 \times c$, where
  - U is Underfunding Risk
  - P is PPF assessed probability of one year insolvency
  - C is levy scaling factor (2.07 for 2011/12)

- For this scheme Protected liabilities = 0.72 * £391m = £281.52m
  - So funding level = 385/281.52 = 136.8%
  - So U = Protected Liabilities * 1.00% = £2.8152m
  - So Levy = £2.8152m × 0.25% × 0.8 × 2.07 = £11,655

A few candidates appeared to be completely unfamiliar with this calculation, but most scored highly.

(xvii)

- The Purchaser could cease accrual of DB benefits and replace with DC
  - This would stop the overall liability growing
  - And give much greater certainty about costs of future accrual
  - But in itself it would not have a significant impact on the costs and volatility of accrued liabilities (except some cessation profit from loss of salary link)
  - And may have a negative impact on employee relations

- The Purchaser could seek to secure all liabilities with an insurer
  - This would result in absolute certainty going forward
  - With no volatility risk going forward
  - But the cost may be prohibitive
  - If indeed an insurer can be found to take on the precise benefits
  - Could consider partial buy out or buy in of pensioners only at less of a premium
  - Although there is potentially greater volatility on no-pensioner liabilities
  - And must be done with regard to employees' contracts

- The purchaser could ask the Trustees to consider a review of assets to invest in less volatile fixed interest funds
  - Investing in corporate bonds would be best match to the balance sheet assessment
  - This would potentially lead to a greater correlation between the movements in assets and liabilities
  - Hence addressing the concerns over volatility
  - But lower expected long term returns would result in higher expected contributions in return for that lower volatility

  - As for buyout option could consider partial match for pensioners say
  - Although this will similarly not address volatility for non-pensioners
  - There are potentially other assets such as absolute return funds that may help
  - Although there is uncertainty about their long term performance

- The purchaser could consider an enhanced transfer exercise where deferred members are offered enhancements to transfer away
  - This can be an effective way or removing liabilities completely
  - Although there is no certainty about levels of success
  - And there are risks of selection where the scheme is left with the liabilities that have greatest uncertainty
  - The cost will be greater than the long term expected cost of meeting the liabilities in return for the reduction in volatility
  - And the process can be time consuming and fraught with risk
  - As well as being subject to significant regulator scrutiny

- Other lower level changes could be considered
  - Such as renegotiation of rates of pension increase to give more certainty and reduce volatility
  - Amendment of future accrual rather than cessation – e.g. to Career average

Credit was given for a valid discussion of application of accounting rules for each option.

As mentioned in the summary for this paper, many candidates appeared to be under time pressure for this final part, and did not give complete answers to this question, often listing points very briefly without discussing them, or just covering one or two possible actions. The examiners suspect that some candidates who were close to passing overall, might have scored the few more marks they needed either by setting aside more time for this part (20 minutes or so), or by spending time at the beginning of the examination considering what areas they would cover.

END OF EXAMINERS' REPORT