INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2019 Examinations

Subject SP4 – Pensions and other Benefits Specialist Principles

Introduction

The Examiners' Report is written by the Chief Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and 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. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the later subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision

Mike Hammer
Chair of the Board of Examiners
July 2019

A. General comments on the *aims of this subject and how it is marked*

1. The aim of the Pensions and Other Benefits Specialist Principles subject is to instill 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.

2. This subject examines the ability of candidates to apply core actuarial techniques and concepts, together with specific knowledge of pensions and other benefit arrangements to simple, but practical situations.

3. The Examiners therefore look for candidates to apply their knowledge of the Core Reading to the specific situation that the Examiners asked, having read the question carefully. Many candidates write around the subject matter of the question in more general fashion, or focus on one aspect of the issue at great length, in either case gaining few of the marks available.

4. Good candidates demonstrate that they have used their time well - an attempt to get a logical flow 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. Candidates who give well-reasoned points, not in the marking schedule, are awarded marks for doing so.

B. Comments on *student performance in this diet of the examination*

This was a well-balanced exam paper and the better prepared candidates passed.

It is very important that candidates consider all aspects of the question, and read the preamble fully. By using all of the information available, candidates can ensure they give a full answer. Giving just a little more to clearly show depth can turn a close fail into a pass. The questions are set so that it should take approximately twice as long to answer a 10 mark question as a 5 mark one. Answers should therefore be similarly proportionate.

Questions that were less well answered in this paper were Q4 and Q6. Both these questions contained a significant amount of marks for application and higher order skills. Candidates are reminded to pay attention to the command verbs and practice these types of questions as part of their preparation. A list of what is expected for each command verb is available on the IFoA website.

C. Pass Mark

The Pass Mark for this exam was 60.

Solutions for Subject SP4 – April 2019

Q1

(i) Invest in riskier assets with higher expected returns [½]

Adopt a less prudent funding strategy [½]

Increase member contributions [½]

Reduce past service benefits [½]

Reduce future service benefits [½]

Close the Pension Scheme to accrual [½]

Close the Pension Scheme to new entrants [½]

Replace with an alternative lower cost arrangement, for example a defined contribution scheme or a CARE scheme [½]

Liability management (e.g. Pension Increase Exchanges, Enhanced TV's) [½]

Tighten eligibility criteria [½]

Review administration, adviser or insurance costs [½]

[Max 3]

(ii) Riskier assets

Investing in riskier assets will reduce expected costs [½]

…but increases the risks of larger contributions being required in future [½]

Funding strategy

Funding less prudently will only impact on the timing of costs rather than the overall level of costs [½]

It may therefore lead to smaller costs in the short term but these will be offset by future costs [½]

Increasing member contributions / reducing benefits / closing scheme

Increasing member contributions, reducing benefits or closing the scheme to accrual could result in a deterioration in employee relationships [½]

Reducing benefits could lead to higher staff turnover [½]

Particularly if competitor firms continue to offer final salary schemes [½]

May be difficult due to legislation or trustee powers [½]

Closing the scheme to new members only will be less effective at reducing costs in the short term but will reduce the impact on employee relationships [½]

Closing to new entrants may make it harder to hire staff [½]

<u>Replacement scheme</u>

Cost reduction is dependent on what is offered as a replacement scheme [½]

<u>Liability management</u>

Liability management exercises may be difficult to manage / administer [½]

…could result in adverse selection [½]

…effectiveness depends on take up rate [½]

<u>Eligibility</u>

Tighter eligibility criteria could lead to a reduction in administration costs from members who leave the scheme with short service [½]

…but could be seen to be discriminative [½]

<u>Reviewing administration / adviser / insurance costs</u>

Unlikely to result in significant cost reduction [½]

Cost of a review and/ or transitional costs may be larger than any savings gained [½]

[Max 4]

[Total 7]

(i) Generally very well answered. Some candidates struggled to generate distinct points and gave multiple examples along the same lines – e.g. different types of benefit reduction. Very rarely did candidates explicitly comment on the difference between reducing past/future benefits separately.

(ii) Generally well answered. Candidates were required to state how the action would be effective at reducing cost, not just that it would, and to provide a suitable comment regarding the impact of the action. Some candidates repeated the same points (e.g. would be unpopular with members) across multiple answers, which were only credited once.

Q2

(i) <u>Cost</u> [½]
The expected cost will be a factor of:

Level and form of benefits [½]

Size of member contributions [½]

Higher contributions from employees reduce costs but may limit take-up [½]

Investment strategy [½]

Overheads / administration costs [½]

Funding method affecting the timing of contribution requirements [½]

<u>Risk</u> [½]

Defined Benefit scheme is highest risk strategy [½]

Defined Contribution is less risky [½]

Hybrid approach may be between these two approaches [½]

e.g. Defined Benefit with a salary cap with Defined Contribution after this or CARE [½]

May be able to share risk with members through some form of cost control mechanism [½]

<u>Other</u>

Legislative restrictions [½]

Opportunity cost [½]

Paternalism / meeting needs of members / targeting [½]

Incentives e.g. tax concessions [½]

Competitors' schemes [½]

[Max 6]

(ii) Introduce a Defined Contribution scheme [½]

This will reduce any risk associated with investment returns [½]

And post-retirement mortality [½]

These risks are all transferred to the members of the pension scheme [½]

Introduce a hybrid scheme [½]

e.g. a combination of Defined Contribution and Defined Benefit scheme

(DB up to a set value with DC after this / CARE / longevity adjustment factors [½]

Limit benefits - caps on benefits / benefit increase caps / not providing spouse or dependent benefits [½]

A way of sharing costs between members and employers [½]

Use of discretionary elements [½]

so that the value of benefits can be varied depending on the scheme's funding position [½]

Introducing an element of flexibility around member contributions so that they can be increased if needed [½]

Paying a lump sum at retirement instead of fixed pension income [½]

…which would remove post-retirement risk [½]

Offering a benefit that is relatively similar to investment returns available in the market [½]

Offering benefits that can be easily insured with a third party [½]

Not providing many options to members / penal option terms [½]

Not providing any underpins or guarantees [½]

Restrict eligibility [½]

Reduce liquidity risk by insuring lump sum death in service benefits [½]

[Max 8]

(iii) Affordable member contributions or value for money [1]

Guarantees for members [½]

Adequate benefits [½]

Security of benefits / risk taken by members [½]

Comparisons with similar small engineering firms [½]

Choice for employees over whether they join or not / availability for all to join [½]

Flexibility for members [½]

e.g. various tiers of membership with different levels of contributions [½]

Risk benefits, i.e. ill-health and death in service benefits [½]

Needs of employees met [½]

Inflation protection [½]

Integration with state / other benefits [½]

[Max 4]

[Total 18]

(i) Generally well answered. The question asked for key issues, in particular cost and risk, whereas a significant number of candidates provided a more general answer and didn't go into sufficient detail on the key issues.

(ii) Generally very poorly answered. The question asked about how the risks could be managed ***through the benefit design*** *whereas many candidates provided a more general answer regarding risk management (for example reducing investment risk) and provided points that were not relevant to the question. Also, some candidates talked about costs not risks, missing the emphasis of the question.*

(iii) Generally very well answered.

Q3

(i)	Assume duration of 15 years from age 65	[1]
	…and 18 years from age 60	[1]
	16.45 * (1.021/1.023) ^ 18 = 15.88	[1]
	12.3 * (1.021/1.023) ^ 15 = 11.94	[1]
	Commutation factors lower due to higher discount rate	[½]
		[Max 4]

(ii)	Prevailing Legislation, i.e. what are the legal requirements	[½]
	What, if any, guidance is provided by professional bodies	[½]
	Wording in Trust Deeds and Rules / scheme documentation	[½]
	What terms should be used for commutation factors, i.e. how strict is the requirement for actuarial neutrality	[½]
	Funding position of scheme	[½]
	If funding position is poor then it may be more important to update (reduce) the commutation factors / not updating factors may cause funding strain	[½]
	Importance of factors, what is the take-up for commutation factors / how important is the option to members	[½]
	Do the trustees have the power to set the factors?	[1]
	What are the views of the sponsoring company	[½]
	Are there any other changes expected shortly?	[½]
	e.g. new mortality analysis, or mortality improvement factors	[½]
	What has been done in the past, have the commutation factors been updated immediately following new valuation assumptions? / risk of setting (new) precedent	[½]
	What other firms / pension schemes are doing	[½]
	Materiality - how similar the new commutation factors are to the existing ones; in this case they are likely to be fairly similar	[½]
	If factors are not updated this is more generous to the members and therefore may be less likely to lead to a challenge	[½]
	Practicalities (communication and administration)	[½]
	Fairness to those members who take the option and those who do not	[½]
		[Max 6]
		[Total 10]

(i) Well prepared candidates scored well on this question but a lot of candidates were unable to provide an answer. Candidates who assumed other appropriate durations (or applied a different appropriate method) were given full credit.

(ii) Generally poorly answered with numerous candidates providing a narrow range of points. Well prepared candidates provided a broad range of ideas and scored well.

Q4

(i) Reduction in any State pension, e.g. reduction in the increase rate [½]

Higher taxation on pensioner income or benefits [½]

…but may be difficult to target pensioner income only [½]

Removal of subsidies, e.g. subsidised travel [½]

Means testing of subsidies / tighten eligibility [½]

Increase pension age [½]

…although this will affect future pensioners rather than current pensioners [½]

Increased inheritance taxes [½]

…although this impacts on the wealth of the younger generation [½]

Taxes that indirectly affect the elderly more, e.g. land taxes [½]

Reduce other state benefits e.g. housing [½]

Promote healthy living if benefit health dependent [½]

Increase/extend any contributions required for State benefits [½]

[Max 4]

(ii) Compulsion [½]

e.g. automatically enrol people in schemes [½]

require a minimum level of contributions paid by employers and employees [½]

Require employers to provide schemes to employees of a certain quality [½]

Advertising / Educational programs [½]

Provide a good quality State backed scheme e.g. provide central non-profit scheme run by state [½]

But likely to be expensive [½]

Provide incentives for pension saving [½]

e.g. income tax rebates for money saved into pensions [½]

Government Guarantees [½]

e.g. on investment returns [½]

Safeguards for benefits [½]

e.g. protection funds / regulation of providers / flexible legislative framework [½]

Removing administrative barriers / set maximum on fees charged [½]

[Max 7]

(iii) General:

Practicalities such as communication and administration are complex [½]

Financial planning (for State and individuals) may be difficult [½]

Politically unpopular [½]

First suggestion:

Cost / risk reduction depends on level of current increases [½]

Potentially reduces benefits to citizens /cost to state if increases lower than previously [½]

Helps to ensure that pensioners share in the prosperity of the country but not that their income will dramatically outstrip that of workers [½]

May ease concerns over intergenerational fairness [½]

Crude measure, does not say anything about the level of increases offered to pensioners [½]

Pensioners see pensions eroded by inflation if threshold not reached or increases not inflation linked [½]

There is a cliff edge, either earnings increases are over the threshold or not [½]

…and this leads to quite different outcomes for pensioners [½]

There may be many different measures of national earnings [½]

Second suggestion:

Reduces longevity risk to Government [½]

No change to costs immediately, same pensions in aggregate are paid [½]

But will help to manage the cost of state pensioner as pensioners living longer in future [½]

There may be large variances between life expectancy, for example [½]

- Geographical [½]
- Gender [½]
- Wealth [½]

These may lead to accusations of unfairness based on the above as groups whose life expectancy has not increased still suffer reduction if national life expectancy increases [½]

If pensions in payment are reduced this will hit pensioners very hard as they have no means of making up any shortfall [½]

Particularly if inflation is high [½]

The mortality experience may be occurring to a different cohort to the majority of the pensioner population [½]

Will pensions be increased if life expectancy reduces? [½]

[Max 9]

[Total 20]

(i) Generally quite well answered – the best scoring candidates considered other State benefits rather than just the pension.

(ii) Generally quite well answered – again, the best scoring candidates gave a breadth of different solutions. Some candidates provided a lot of detail regarding incentives which was not required.

(iii) Generally very poorly answered. Candidates struggled to think broadly around the impact of the two suggestions and tended to focus on the general points rather than the specific features of each proposal. Only a small handful picked up on the unfairness of the second suggestion given variations in life expectancy.

Q5

(i) Examples of such benefits might be:

Lump sum death in service [½]

Ill health benefits [½]

Early retirement benefits [½]

Dependants benefits [½]

Death in service lump sum can be large and volatile [½]

…or large costs may result from a high earner taking ill-health retirement [½]

A small company will be less able to withstand these liquidity risks [½]

Therefore it makes sense to insure this risk [½]

Over-insure lump sum on death to cover partner's pension, as lump sum often on more competitive terms [½]

Could purchase annuities to remove risks in relation to death in service dependants pensions [½]

Catastrophe insurance may also be useful to a small company [½]

[Max 3]

(ii) The following risks are all removed from the employer and transferred to the insurer in respect of the members for whom annuities are purchased [½]

- Investment returns [½]
- Longevity of members [½]
- Expenses [½]
- Inflation risk [½]

This includes the removal of upside aspects to these risks [½]

Liquidity risk introduced – cash required to purchase annuities [½]

The scheme will likely have to pay significantly higher than the expected benefit cost for the pensions sold in order to cover a risk margin, profits and expenses for the insurer [1]

The member benefits will have a different level of security as they are now backed by an insurance company rather than the sponsoring employer [½]

…covenant, funding and legal protection different [½]

…but may reduce the security of benefits for remaining members by negatively impacting on the funding position [½]

They may also lose the possibility of any future discretionary payments [½]

[Max 4]

(iii) The primary reason for offering these options is to reduce the risks of the scheme [1]

An offer to provide transfer values will crystallise the cost of the member's benefits at the point of transfer [½]

…so that any risks following this (e.g. longevity, investment) will no longer be borne by the company [½]

Pension increase exchange will reduce or remove the risk associated with inflation [½]

will require the company to pay a fixed cost that is likely to be less than the expected value of the increases being surrendered by members [½]

A lower variance around the costs will provide additional certainty to the company in terms of financial planning and knowing how much to set aside to cover the costs of paying pension benefits [½]

Additionally these options may make it easier to subsequently pass the liabilities on to a third party [½]

There may be a favourable impact on funding or accounting positions depending on terms [½]

Could meet members' needs (flexibility) [½]

Options may make it easier to match investment strategy [½]

There may be lower administration costs in the long term [½]

Arguments against undertaking the exercise include:

Low take-up rate and/or effects of selection (e.g. only members in poor health take the option) may mean risks not significantly reduced [½]

…and may even increase costs overall [½]

Reputational risk: if members lose out and feel they have been pressurised into the offer [½]

Cost: There will be administrative costs associated with the exercise possibly including the costs of providing members with financial advice [½]

Legal restrictions: which may limit the benefits to the point where the exercise is not cost effective [½]

Trustees may not back offer [½]

[Max 4]

[Total 11]

(*i) Generally well answered. Candidates scoring less well tended to go into the details of the insurance products themselves rather than how insurance in general can help in the specific circumstances. Only a few picked up the relevance of the small employer relative to size of scheme.*

(ii) Well answered by most candidates.

(iii) Well answered by most candidates with a good variety of points being picked up.

Q6

(i) Actuarial liabilities equal under both methods so balance sheet position the same [½]

Actuarial liability provides realistic assessment of cost – tallies with realism accounting concept [½]

PUSCR represents cost of accrual over control period [½]

Tallies with realism accounting concept [½]

Control period of one year can be used to tie in with annual accounts [½]

Tallies with accounting accruals concept [½]

AASCR represents future service cost so implicitly allows for ageing [½]

Could tally with prudent accounting requirements as provides higher contributions (assuming i>e) [½]

[Max 3]

(ii) Base tables

Need to consider the extent to which schemes should use their own experience to set mortality assumptions rather than general experience across the population [1]

In general it would be preferable for schemes to use their own experience as there are likely to be significant differences across schemes depending on factors such as:

- Geography [½]
- Wealth [½]
- Occupation [½]

Alternatively standard tables may be used [½]

With or without adjustment to allow for scheme specific factors [½]

The board may wish schemes to consider the following in making the decision over whether to use their own tables or adjusting standard tables

- The amount of data available for the scheme [½]
- How recent is the period covered by the data [½]
- The reliability of the data [½]
- Any reasons why the data may not be appropriate to use [½]
- Abnormal fluctuations [½]
- Changes of the experience with time / trends [½]
- Random fluctuations [½]
- Changes in the way in which the data was recorded [½]
- Potential errors in the data [½]

- Changes in the balance of any homogeneous groups underlying the data [½]
- Heterogeneity with the group to which the assumptions are to relate [½]
- General population mortality, in particular any recent changes since the last time the basis was set [½]

Accounting on realistic basis so no general allowance for prudence [½]

Different considerations for pre-retirement and post-retirement mortality, particularly as frequency of event lower pre-retirement so less data [½]

Mortality improvements

Unlikely to be any scheme specific information on this unless the scheme is large and has data going back into the past [½]

So probably need to use population based projections of mortality improvements [½]

Choice of projection e.g. process based / extrapolation methods / stochastic approaches [½]

[Max 6]

(iii) A common approach to setting discount rates might be desirable in order to compare companies pension accounts across different sectors [½]

…and remove the investment strategy from the cost of the scheme [½]

However it does mean that the stated cost of the scheme may not bear much relation to the expected cost disclosed in any valuation reports [½]

Mark to market method [½]

Implicit assumption that a set of bonds can be found that could be used to replicate

each type of benefit [½]

e.g. Government bonds / inflation linked government bonds / corporate bonds [½]

From each set of bonds it is possible to derive a yield curve [½]

Yield curves can be applied to the corresponding projected benefits of each type to place a value on the benefits that is consistent with the value of the replicating portfolio [½]

Could approximate by using 'average' yield instead of the yield curve [½]

Government bonds would be the most prudent approach [½]

…as it would assume that the investment return was only equal to that gained on Government bonds [½]

…and no allowance would be made for outperformance [½]

This approach could lead to unintended consequences [½]

…in particular if it overstates the costs of pension provision this may lead to significant pressure on the company to reduce / remove the pension provision [½]

Bond yield plus risk premium method [½]

Based on bond yields but increased to take account of additional returns on other asset classes [½]

Risk premium could be fixed or change over time [½]

Method fits in middle of mark to market and asset based methods [½]

This would allow for some risk outperformance (depending on the credit rating selected for the investment) [½]

[Max 6]

[Total 15]

(i) Overall, the least well answered question. Candidates found it hard to pull together their knowledge of the funding methods and accounting principles, often writing at length about the two funding methods without comment on the suitability for accounting valuations.

(ii) Generally quite well answered.

(iii) Generally candidates were aware of the different approaches but did not go into sufficient depth to score well. The question command was to "Discuss" and so depth was required to score well.

Q7

(i) Sponsor covenant is

…the willingness [½]

…and ability [½]

…of the sponsor to pay (or the ability of the trustees to require the sponsor to pay) [½]

…sufficient contributions to ensure that the scheme's benefits can be paid as they fall due. [½]

OR

The degree to which the employer is willing [½]

…and able [½]

…to meet the funding requirements of the scheme. [1]

(ii) Reviewing publicly available financial metrics [1]

…such as the sponsor's published accounts [½]

…taking into account any risk-based measure [½]

e.g. the sponsor's credit rating if this is available [½]

…or their share price [½]

…or any risk-based levies payable [½]

Reviewing management accounts (more up to date, detailed) [½]

Business outlook [½]

Implied market default risk [½]

Merton-type credit risk model [½]

Initial discussion with company / Finance Director to discuss its financial position [½]

[Max 5]

(iii) Changing the scheme's investment strategy to lower risk investments such as bonds [1]

Investing in assets that pay out in the event of sponsor default, such as derivatives [1]

…including credit default swaps [½]

Considering alternatives to cash payments if the sponsor is unable to afford them such as a charge on the sponsor's fixed assets or parental guarantee [½]

Including ratchets in contributions so that if the sponsor's financial position improves then the scheme shares in this improvement [½]

Set up contingent contributions so the sponsor has to make up the deficit more quickly if the scheme's financial position deteriorates [½]

May consider hiring covenant specialists to review the strength of the covenant [½]

Discuss the financial position of the company with the Finance Director [½]

Alert members if appropriate [½]

Review terms of the Trust Deed and Rules [½]

Review funding strategy [½]

…e.g. strengthen basis / review recovery plan / call for a fresh valuation [½]

Imposing covenants on the sponsor for notifying the trustees of circumstances that could materially affect the security of members' benefits [½]

…such as profit warnings [½]

Undertake regular reviews of the strength of the sponsor's covenant with reference to qualified professionals [½]

Seek to make the scheme less costly for employer e.g. incentive exercises / options review / scheme design changes (if Trustee has power) [½]

[Max 6]

(iv) This approach will likely increase the expected return on investments [½]

…and if this feeds through to discount rate may be generally expected to improve the funding level of the scheme [½]

However there is a large risk that the assets will lose significant value and the weakness of the sponsor covenant means that it is unlikely the sponsor would be able to put any money in to the scheme [1]

Additional risk may lead to the introduction of a mismatching reserve which may increase the funding requirement [½]

The approach normally taken when there are doubts over the sponsor covenant is to move out of risky assets and into lower risk investments [½]

This proposal is to do the complete opposite of this [½]

The end result may be the scheme not having enough money to pay benefits as they fall due [½]

…and the need to fall back on any insurance arrangements in place [½]

and it is likely that any regulators would look unfavourably on such an approach, particularly if it led to wind up [½]

The impact of the approach on member benefits will depend on the position of the scheme on wind-up [½]

Members benefits may be paid in full by a central discontinuance fund [½]

But any levies to a central discontinuance fund may increase due to the increased risk [½]

Or if the pension scheme has first call on company assets (and the company is asset rich) then the risk may also be low [½]

High risk growth assets may not be very liquid leading to liquidity risk [½]

Investing in one type of asset introduces diversification risk [½]

[Max 6]

[Total 19]

(*i) Most candidates scored full marks – overall the most well answered question.*

(ii) Most candidates scored well, but didn't consider initial investigations, and often wrote a lot more than was required to get the marks.

(iii) Most candidates scored well and covered a good range of options.

(iv) Generally poorly answered. Only the best scoring candidates provided a broad range of ideas with depth. Whilst a significant number of candidates were able to point out the immediate implications, very few were able to provide points on wider implications or sufficient depth, as per that required as a "Discuss" question.

[Paper Total 100]

END OF EXAMINERS' REPORT