INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

September 2017

Subject ST4 – Pensions and other Benefits Specialist Technical

Introduction

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 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.

Luke Hatter
Chair of the Board of Examiners
December 2017

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

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

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. Too 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 the planning 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.

5. Candidates who give well-reasoned points, not in the marking schedule, are awarded marks for doing so.

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

1. This paper was less challenging than some recent ST4 papers, in particular April 2017's paper, and this was reflected in the pass mark.

2. It is very important that candidates consider all aspects of the question, and read the preamble fully. There is never superfluous information in the question, and by using all of the information available, candidates can ensure they give a full answer.. 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.

3. In addition, candidates should carefully consider the command verbs used to guide the depth given in their answers (a list of what is expected for each verb is available on the IFoA website).

4. Taking care in these points of technique will help students score better.

C. Pass Mark

The Pass Mark for this exam was 64.

Solutions

Q1(i)

Under flexible benefit schemes employees are offered the option to revise the level of an existing benefit [½]

or to choose different benefits which the employee "buys" either by reducing their pay or be giving up part of their existing benefits [½]

Flexible benefit schemes recognise that employees' needs change over time by allowing them to adjust their package each year [½]

The choices offered by flexible benefit schemes can help meet the different needs of the employees. [½]

[Max 1]

(ii)

Holiday [½]

Pension accrual [½]

Life cover [½]

Options in respect of dependants' benefits [½]

Childcare vouchers [½]

Medical care [½]

Critical Illness [½]

Disability Insurance [½]

Dental Care [½]

Optical Care [½]

Cycle scheme [½]

Company car [½]

Travel or shopping vouchers [½]

Travel Insurance [½]

Home PCs [½]

Mortgage subsidy [½]

Sports facilities [½]

Benefits for dependants [½]

(any other reasonable suggestion) [½]

[Max 5]

(iii)

The employer will probably want to make sure that employees have certain minimum levels of "important" benefits such as life cover, holidays and pension [1]

This reflects paternalistic approach [½]

There may be a legislative requirement [½]

Take advantage of economies of scale in the pension scheme [½]

Can help with insurance costs [½]

e.g. if health insurance optional and all healthy people opt out then premiums will increase so have core level to reduce selection [½]

[Max 2]

(iii)

(a) **Advantages**

Can give competitive edge for recruiting and retaining staff [½]

Reinforce cultural change [½]

Appreciated by workforce [½]

Increase employees' sense of participation [½]

Different and new benefits can be offered at little or no extra cost [½]

Helps illustrate value/cost of certain benefits [½]
Can help reduce the risk to the employer, for example if the new pension benefits are DC in nature. [½]

Disadvantages

Increased administration costs [½]

Cost of initial implementation [½]

Tax issues [½]

Selection against scheme could increase actual costs compared to expected costs [½]

The employer has less control over benefit provision and this may result in less ability to influence manpower planning [½]

Communication is more complex and advice may need to be provided which will increase costs [½]

There may be an increase in reputational risk to the employer if employees make poor choices [½]

(b) Advantages

Can tailor benefits as circumstances change [½]

E.g. child care vouchers for those with children [½]

Can be tax efficient for certain benefits [½]

Can specify a range of benefits that align with the individual's priorities and values [½]

May be able to secure benefits cheaper than if had to purchase them directly [½]

Disadvantages

More complicated to understand [½]

May make "bad" decisions that are regretted later [½]

e.g. reducing pension accrual to minimum [½]

Advice may be needed and, if not paid for by the employer, this cost will fall on the employee [½]

[Max 8]
[Total 16]

Qu 1

(i) Most candidates answered this well.

(ii) Candidates either showed knowledge of flexible benefit schemes and gave a good list, or assumed that the answer related only to options at retirement, such as cash lump sum or varying increases in payment.

(iii) Better candidates gave examples of important core benefits and explained why they might be important. Few candidates described the selection effect on insurance premiums.

(iv) Most candidates made a good attempt at this question. Some focussed on a comparison of the old DB scheme with a supposed new DC scheme. The question does not state that the DB benefits cease; some candidates assumed that it did and focussed their answers on DB vs DC.

Q2 (i)

Make it compulsory [½]

Introduce a compulsory minimum member rate above 2%, although this may lead to reduced participation [½]

Or at least make members have to opt out [½]

Match any contributions made by employees [½]

So that if members pay in 5% so does employer [½]

Ensure members are aware of the scheme [½]

Educate members on benefits of saving [½]

Including tax breaks [½]

Include some guarantees [½]

E.g. investment returns [½]

Or annuity rates [½]

Provide greater choice in terms of benefit / investment options [½]

Improve scheme benefits to make it more attractive, although this will increase costs [½]

Pay administration/investment costs [½]

[Max 5]

(ii)

An asset allocation strategy used mainly in defined contribution schemes [½]

whereby a member's investments are gradually adjusted depending on age and term to retirement. [1]

In order to protect against volatility [½]

Lifestyling is adopted so that a return-seeking investment strategy can be implemented when the member is younger therefore increasing the likely size of the fund [½]

gradually switching into matching assets as retirement approaches to reduce risk and volatility [½]

The aim is to match retirement benefits [½]

So changes in annuity costs in period close to retirement is matched by change in investments [½]

And any cash lump sum (if available at retirement) is protected [½]

Avoids the needs for members to have to make the decision on how to shift their investments [½]

[Max 3]

(iii)

Personal details [½]

E.g. name, date of birth, retirement date etc. [½]

Fund value [½]

Transfer value [½]

Investments [½]

Contributions paid [½]

In total and in last year [½]

Split by employer and employee contributions [½]

Investment gain in last year [½]

Analysis of changes in the last year [½]

Charges [½]

Expected fund at retirement [½]

Based on different scenarios [½]

Details of assumptions used [½]

E.g. investment returns [½]

Possible pensions at retirement based on different scenarios [½]

Benefits payable on death [½]

The effect of inflation [½]

Changes in contribution rates [½]

Information about current funds [½]

And other possible funds to invest in [½]

Contact details for help [½]

Including external websites for guidance [½]

[Max 5]

(iv)

Members will make decisions based on information which will affect rest of life [½]

Poor information may cause unrealistic expectations for members [½]

And make bad decisions [½]

Such as contributions that are too low or too high [½]

To limit the risk of members seeking compensation from the company in respect of misleading information [½]

which may be a source of reputation risk to the company [½]

[Max 2]

(v)

arrangement that allows beneficiary to receive investment income from retirements and defer or avoid purchasing an annuity. [Max 1]

(vi)

The member will seek whichever option is likely to provide the largest benefits to them given their characteristics [½]

or that best meet their needs in terms of form and timing benefits [½]

within an acceptable level of risk to the member [½]

What are the member's requirements [½]

What is the guaranteed pension from annuity conversion [½]

What investment returns would be expected under income drawdown [½]

and what investment return could be achieved each year [½]

Are there any legislative restrictions, [½]

for example what is the max pension that can be taken under drawdown [½]

is there a maximum age where drawdown has to stop and annuity purchased [½]

A member in poor health may benefit from income drawdown as they may be able to access more funds [½]

If live a long time then fund might run out [½]

There is more flexibility in the form and timing of benefits in income drawdown including annuity purchase [½]

for example a single member may benefit from income drawdown as they use all the funds for themselves [½]

Can any residual fund under income drawdown be left to dependents on death [½]

The member's need for an inflation-linked income [½]

Are they prepared to manage fund year on year [½]

How are the fees met [½]

Consider mortality drag on eventual annuity purchase under income drawdown [½]

as members are effectively charged for their survivorship and lose the subsidy from those annuitants who die early [½]

Income from drawdown could be volatile [½]

What are the tax implications [½]

[Max 4]

(vii)

Current strategy is lifestyling which will probably move from equities into bonds and cash leading up to retirement [½]

The bonds element is to protect against change in annuity rates. If member is planning to use drawdown then this may not be appropriate [½]

Similarly the cash element is there to provide cash lump sum on retirement. If intention is still to take lump sum (if this is provided) then this is still appropriate [½]

However, if intention is to invest to provide income in retirement then this needs to change [½]

Will need to offer range of "lifestyling" funds dependent on member's plans for retirement [½]

such as funds which invest in more return seeking assets such as equities up to retirement on the assumption that this strategy will continue after retirement [½]

in the lead up to retirement switch to invest in assets which will provide the necessary investment income (liquidity) after retirement [½]

are less volatile and risky for the more risk adverse members by continuing to switch to bonds [½]

[Max 3]

(viii)

Could take whole or part of fund as cash [½]

Which could have tax issues [½]

Could offer different annuity options [½]

Such as flat pension [½]

Or fixed increases [½]

Or no dependant's pension [½]

Retirement age could be variable [½]

So member could retire before or after 65 [½]

Member could take transfer value [½]

To another approved pension fund [½]

Provide dependants pensions to dependants other than spouse. [½]

The providers of the annuities could be extended [½] to within the scheme if not currently available [½]

to additional insurance companies and other providers [½]

[Max 5]
[Total 28]

Qu2

(i) Mostly answered well.

(ii) This was generally well answered.

(iii) Most candidates answered this well and suggested various projections and details of contributions and investments. Better candidates included personal details, contact details and charges levied.

(iv) Some candidates did not justify why information should be clear and relevant. Better candidates explained the impact upon important decision making, the outcome of which could affect the member's retirement and the employer's reputation.

(v) Better candidates explained that drawdown was instead of, or delayed, annuitisation.

(vi) Most candidates scored well. Better candidates discussed possible legislative constraints, mortality drag, costs of drawdown and taxation. Few candidates stated the obvious point: which method gives the largest income?

(vii) Answers were varied; not all candidates explained that some return-seeking assets might be required after retirement. Better candidates mentioned matching for a cash lump sum and why a range of "lifestyling" funds might be appropriate.

(viii) Better candidates included details of options outside of the scheme.

Q3 (i)

The actuary will be a member of the IFoA [½]

(And also have a scheme actuary certificate) [½]

As such they will conform to the Actuaries' Code [½]

And Actuarial Professional Standards [½]

Specialist pension standard P1 will apply which sets out the ethical obligations for pensions actuaries [½]

Standards APS X2 will also have applied for a peer review of the report [½]

The report and work involved in it will have had to comply with Technical Actuarial Standards [½]

Specifically TAS R, TAS D, TAS M and pensions TAS(or TAS100 and TAS300) [½]

The Financial Reporting Council has developed an Actuarial Quality Framework which is designed to support effective communication [½]

[Max 3]

(ii) **Closing to new entrants**

SCR for scheme open to new entrants may be based on Projected Unit Method [½]

Which normally has control period of between 1 and 5 years [½]

Closing to new entrants could mean a move to Attained Age method [1]

In general this will produce higher contribution rate as a % of salary [½]

if discount rate assumption is higher than salary increase assumption [½]

should have no effect on Actuarial Liability [½]

unless other assumptions change as result [½]

e.g. investment return due to change in policy or withdrawal assumption [½]

The scheme membership is likely to age in the longer term for a closed scheme [½]

which will increase the SCR in the future under all funding methods(except possibly the EAM) [½]

Ceasing accrual

active members may become deferred [½]

so benefits may now have deferred revaluation rather than being linked to salary [½]

deferred revaluation will probably be linked to price inflation [½]

so could decrease Actuarial Liability if inflation assumption less than salary one [½]

but could increase if higher or scheme has fixed revaluation higher than salaries [½]

SCR will be zero as there is no future accrual [½]

[Max 7]

(iii)

Assumptions changed [½]

So using weaker base table/improvements [½]

Age adjustments removed [½]

A weakening basis could be justified due to a stronger covenant [½]

or a better funding position, perhaps as a result of closure [½]

or a better matched investment policy [½]

Use of different models, e.g different future mortality projections [½]

The scheme could have performed a mortality analysis [½]

Which showed heavier mortality than previously expected [½]

And heavier mortality than the general population [½]

So tables have been loaded [½]

This could be as a result of occupational factors [½]

and / or postcode factors [½]

[Max 3]

(iv)

Need to investigate why profits are lower [½]

Is it because of a change in accounting methodology? [½]

Is it possibly just a one-off due to a significant event [½]

Or is it expected to continue [½]

Need to speak to FD of company [½]

A one-off fall may not make any difference to valuation [½]

But long term change will [½]

Will the scheme closure improve the position? [½]

Should engage a full covenant review [½]

for example by considering changes in credit ratings, (financial metrics or calling for an Independent Business review) [½]

The result of which should be taken into account for valuation [½]

If large surplus then not as important [½]

But if there is a deficit then covenant is more important [½]

The assumptions may need to be reviewed if covenant strength has changed [½]

As will scheme investments [½]

Which could also lead to change in assumptions [½]

Any recovery plan will also need to be reconsidered [½]

Ideally should be shorter for weaker covenant [½]

But need to take into account employer's ongoing ability to do business [½]

And therefore ability to fund scheme long term [½]

Invest in assets that pay out in the event of a sponsor default, such as derivatives including credit default swaps [½]

Consider alternatives to cash payments if the sponsor is unable to afford them, such as a charge on the sponsor's fixed assets [½]

Include 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]

[Max 9]
[Total 22]

Qu3

(i) *Most candidates mentioned the TAS requirements, but few could list all the relevant UK standards.*

(ii) *Many candidates discussed all the possible funding methods, and did not mention that the change in the scheme might necessitate a change to the funding method (which thus limits the methods to be discussed). Better candidates explained the impact of active members becoming deferred.*

(iii) *Many candidates discussed one-off events which might have impacted past experience, but which were unlikely to reduce future life expectancy. Better candidates explained that an analysis might have led to changing assumptions; some understood that assumptions might weaken with a change of circumstances, such as stronger employer covenant.*

(iv) *Most candidates made a number of valid points, though many tended to focus on more extreme outcomes and solutions, such as ratchets in contributions (which tend to take time and money to negotiate and secure), with less focus on initially establishing whether there was an ongoing, significant problem for funding of the scheme.*

Q4 (i)

Expenditure is likely to decrease [½]

Mortgage is hopefully paid off [½]

No work-related expenses – e.g. travel [½]

But may be higher utility costs as more time spent at home [½]

No longer saving into pension [½]

Health costs may increase though [½]

And may be more spending on leisure [½]

Income will also decrease [½]

As no longer getting paid [½]

Costs in respect of children and childcare likely to decrease in retirement [½]

Goods and services may be subsidised in retirement [½]

Total pension is likely to be lower than salary [½]

[Max 3]

(ii)

In general, higher paid workers need a lower NRR than lower paid ones [1]

This is because there are certain fixed requirements that all people need to pay [½]

Such as food, utilities etc. [½]

And that don't vary significantly with income [½]

This means that a low-paid worker may need an NRR of nearer 100% [½]

Whilst a highly paid worker could survive on an NRR of 30%–40% [½]

Other factors may also affect the requirement, e.g. a member who is renting still needs to pay this after retirement [½]

Whereas somebody who has bought a house should have paid off their mortgage pre-retirement so will not need that income [½]

[Max 4]

(iii)

People do not save for retirement through pensions [½]

Or, average pay is particularly high, so a low NRR is sufficient [½]

People may be supported in retirement in a different way [½]

E.g. the family looks after the elderly so they don't need their own income [½]

Or state benefits are particularly generous, such as cheap housing [½]

So people do not need much income after retirement [½]

[Max 2]

(iv)

The State and employers can both help by encouraging saving for retirement [½]

Both can do this through education [½]

And publicity [½]

State

The state can help by making savings tax efficient [½]

This can be though tax-relief on contributions [½]

From both employer and employees [½]

Investment income/growth not subject to tax [½]

Benefits not subject to tax [½]

Including income [½]

And any lump sums that are payable [½]

The state could also provide a higher state pension for whole population possibly related to need or income [½]

Or make saving compulsory [½]

Or bring in auto-enrolment [½]

So people have to opt out of saving [½]

They could also increase retirement age [½]

So people have to work longer [½]

So save more [½]

And pension paid for less time so should be higher [½]

Ensure security of benefits that people accrue through legislation [½]

And something like a central discontinuance fund [½]

Employer

Provide better pensions for staff possibly related to need and / or income [½]

Encourage employee contributions by matching them or introduce the ability for employees to accrue additional benefits by paying additional contributions [½]

Provide a good vehicle for pension [½]

Maybe pay all expenses [½]

Provide free advice for members [½]

[Max 10]
[Total 19]

Qu4

(i) Answered well by most candidates

(ii) Many candidates focused on factors influencing an actual NRR for individuals, rather than looking at an "appropriate" NRR.

(iii) Most candidates explained that retirement saving might not have been insufficient. But only the better candidates were able to come up with sufficiently broad answers.

(iv) Very few candidates discussed the option of increasing NRA to, in theory, increase the NRR. Better candidates discussed opt-outs, ensuring security of pension savings and employers paying for advice for staff.

Q5 (i)

Contribution rate appropriate to a particular funding method before taking into account any Actuarial Surplus. Normally expressed as a percentage of pensionable pay.

OR

Under each funding method, there is an "ideal" contribution rate or Standard Contribution Rate (SCR) to cover the cost of future benefit accrual [Max 1]

(ii)

Formula is:

$$\frac{1}{60}.1.S.r_{65}\,/\,l_{40}(1+e)^{25}.v^{25}.a_{65}\,/\,S$$ [1]

where:

S is current salary (not actually needed as cancels out) [½]

e is assumed earning increases [½]

$v = 1/(1 + i)$ where i is the interest rate used [½]

a_{65} is an annuity payable from 65 with 50% spouse's pension and inflation-linked increases [½]

r_{65}/l_{40} is the probability of surviving to age 65 (can be ignored on grounds of materiality in most cases) [½]

1 year control period [½]

No in-service decrements [½]

Contributions paid annually in advance [½]

assume i = 5%, e = 3%, a_{65} = 25 [1]

[1 mark awarded for any reasonable set of assumptions]

answer should be around 25% – number should be right for assumptions – 1 mark if correct and not too high/low i.e. an answer of 5% or 70% should not get a mark [1]

[Max 5]

(iii)

reduce accrual rate [½]

increase retirement age [½]

cap earnings at low level [½]

cap earnings increases at low level, possibly even zero [½]

averaging final salary over a longer period [½]

removing elements of earnings from pensionable salary definition [½]

remove spouse's pension [½]

don't have pension increase increases in payment [½]

or have lower/different index [½]

change option terms e.g commutation terms to be less generous [½]

[Max 3]

(iv)

The effectiveness of a reduction in accrual rate depends on what it changes to, if this is yths for example benefits will reduce by (1-60/y) x 100% [½]

an increase in NRA may be worth around 5% for each change in age [½]

reducing earnings increase may be effective, as the member long way from retirement [½]

removing spouse's pension not likely to have a major effect [½]

no pension increase may have a large impact [½] effect of changing option terms will depend on member behaviour [½]

[Max 3]

(v)

close scheme to new members [½]

replace with DC scheme on lower contribution rate [½]

cease accrual [½]

introduce greater eligibility restrictions [½]

review fees and expenses to improve efficiency and reduce cost [½]

invest in more risky assets to seek higher returns [½]

change to CARE scheme [½]

again only saves money if earnings > revaluation [½]

increase members' contributions [½]

merge with another scheme [½]

[Max 3]
[Total 15]

Qu 5

(i) *Some candidates struggled, although this is bookwork.*

(ii) *Better candidates gave a general formula, defined the terms and then calculated a suitable SCR. Many candidates struggled to define the SCR or produce a sensible answer.*

(iii) *Generally answered well; some candidates gave suggestions in this part that were not changes to scheme benefits per se, e.g. eligibility.*

(iv) *Many candidates did not discuss how effective each benefit change might be, or discuss why it might be more or less effective than other changes.*

(v) *Most candidates gave a wide range of points.*

END OF EXAMINERS' REPORT