

# **EXAMINATIONS**

April 2001

**Subject 304 — Pensions and Other Benefits**

**EXAMINERS' REPORT**

- 1** This question was well answered by most candidates. Most seemed to draw upon their experience of UK legislation, although few mentioned uniform accrual of benefits.
- 2** This question was well answered by most.
- 3** Most candidates got (near to) full marks
- 4** (i) Most candidates got full marks.

(ii) There was a wide spread of marks on this question. Those who did less well didn't generate enough ideas and tended to focus on the "additional cost" to the company. A number of candidates didn't comment on cost vs pace of funding issue or comment on the impact on the terms of early retirement etc.
- 5** There was a wide spread of marks on this question. Successful candidates tended to discuss the pros and cons under each heading. Poorer candidates tended to over expand on the points they did make (discussions rather than outlines). Overall, many candidates showed employer bias and were keen to mention that the assumptions should be set on the cautious side so that the employer didn't lose out from adverse experience.
- 6** (i) Most candidates did well on this part.

(ii) Poorer candidates didn't mention enough points, others discussed rather than outlined. Those who did less well under 6(i) also tended to do less well under 6(ii).
- 7** (i) There were two main approaches to calculating the lump-sum discounted present value and undiscounted. Most candidates did well. Those who did less well tended to have misread the question e.g. ill health started at wrong age, and hence their calculation method was incorrect. A few candidates didn't fully set out their assumptions. Candidates who did not score highly tended to have brief explanations of their workings out and so few method marks could be awarded.

(ii) Those who scored well compared the proposal with both the ill health benefits and the pension. Those who did less well focused on the proposal compared with the existing salary continuation only and so missed out on half the marks.

(iii) Candidates tended to focus on the relative cost saving for the employer at the expense of generating other ideas. Many candidates did not consider that the proposals might be difficult for the member to understand.

- 8** (i) Very poorly answered by most candidates. Some discussed PU/AA etc. approaches, which left them without an answer for the next part of the question. Others discussed method of funding e.g. advanced, terminal, book reserving etc. A number of candidates wrote notes in their script to the examiner saying that they were confused by the question and didn't understand which "models" the examiner was expecting them to describe despite being in the core reading.
- (ii) A book work question which was well answered by many candidates. Those who did poorly here tended to produce a poor paper overall.

## **Overall Comment**

Generally, candidates performed well over the first 25% of the paper and less well over the rest. Candidates who performed less well overall tended to struggle most on Q5, 6, 7(ii) and 7(iii).

Those who scored highly generated lots of ideas, set out in a neat punchy style. They set out calculations clearly and set out their discussions under the relevant headings.

Those who did less well did not generate enough ideas under the "outline" questions. They tended to focus on a few core ideas and open them out into a discussion.

- 1** The current system is open to abuse by employers and is unfair to scheme members who do not remain with their employers until the day before they retire  
Companies can keep costs low by making employees leave service before retirement age  
Individuals in this position could find it impossible to build up an adequate pension between the date of leaving service and retirement  
The government should specify a preservation period i.e. number of years' service after which a benefit must be preserved in the scheme  
The period should not be too short or the scheme would have to provide many small benefits  
which would result in very high admin costs for relatively little benefit  
The period should not be too long or the current abuses / inequities could continue  
Need to also consider what benefits, if any, are paid before the end of vesting period.  
The fairest way to calculate the preserved benefit would be to assume that the normal retirement benefit accrues uniformly over scheme service  
If there is inflation then the benefit would lose value over time  
To offset this there should be some form of revaluation required  
The revaluation would best be linked to the increase in consumer price inflation or earnings  
So as not to impose too great a cost on schemes, it would be possible to place an upper limit on the rate of revaluation  
But if this is done and inflation is higher, the value of benefits could be seriously eroded  
The same terms and conditions for benefits should be available to leavers as are available to stayers  
e.g. commutation, spouses benefits (as a right or in exchange for pension), pension increases  
Beware of affect on costs and implications for employers introducing protection for leavers may reduce security for other members  
May reduce reliance on means tested benefits – benefitting state.

- 2** Cost of wage continuance benefit = claims cost + expenses + loading (profit/contingencies)

Amend the terms of the wage continuance benefit:

- shared cost insurer/employer arrangement
- extend the waiting period beyond 13 weeks
- reduce initial level of benefit
- stop paying benefit at age 60 — when can pension plan benefit be taken?
- stop paying benefit after fixed payment period, e.g. 5, 10 years
- change insurer / commission basis if applicable
- reduce 5% escalation rate
- introduce more stringent definition of sickness to reduce incidence of claims
- stop benefit altogether
- restrict membership

Pay ill-health pensions through plan:

- need to decide level of pension
- consider retaining life cover from retirement until age 65
- review/stop benefit if start work or recover
- although may not achieve a cost saving

Manage absence more effectively

- (more frequent) medical reports
- credit for anything sensible

3	Retirement benefits	Lump sum Member pension Spouse or other dependant pension
	Death benefits	Lump sum Spouse or other dependant pension
	Retirement & death bens	Pension increases
	Sickness benefits	Income replacement Medical expenses (before and after retirement)
	Other benefits	Living accommodation Housing loans Marriage grants Funeral expenses Loans for other purposes Car or other transport facilities Subsidised food Subsidised living expenses Subsidised work clothing or uniform Subsidised tools

Plus anything else sensible.

- 4
- (i)
- Employer
  - Shareholders of company
  - Members — existing and former employees
  - Their dependants
  - Trade unions / other recognised body
  - State/regulators
  - Trustees
  - Advisers
- (ii)
- Assumptions do not affect actual cost of scheme, just pace of funding.
  - Cost depends upon actual experience both financial and statistical.
  - Who grants pension increases?  
trustees/employer, depends upon funding level — check rules
  - Option of employer paying discretionary increases on pay as you go basis
  - Potentially, volatile cost in future
  - Who chooses contribution rate, trustees, employer, actuary?
  - Allowance in transfer value calculations for pension increases
  - Amend letters for future retirements might be prudent
  - Consider members' expectations
  - What about commutation terms?
  - Any other terms, e.g. AVC purchase?  
surrender?
  - External practice / best practice, e.g. accounting rules
  - What is current policy / practice
  - Can the company afford to prefund
  - Prefunding may result in requirement at a later date to pay these increases or other benefits if legislation changes

- 5 Extra administration/costs, communication, can aid recruitment (tidying up process).

*Pros*

*Cons*

- |  |  |
|--|--|
| <p>(a)</p> <ul style="list-style-type: none"> <li>• option not available elsewhere</li> <li>• in keeping with other scheme benefits, easy for member to understand</li> <li>• inflation protection before retirement for member</li> <li>• member might gain from discretionary pension increases</li> <li>• good for the employee if salary increase better than expected and vice-versa</li> </ul> | <ul style="list-style-type: none"> <li>• financial risk to company</li> <li>• assumptions needed in particular individuals salary progression</li> <li>• cost of pension increases in excess of those allowed for</li> <li>• longevity risk to company</li> <li>• care if leave service before NRA usual to re-calculate to ensure value for money</li> <li>• members might feel aggrieved as service granted likely to be less than completed in previous scheme</li> </ul> |
|--|--|

- (b)
- can be definite to member — i.e. tell exactly what they will get at age 65
  - member might gain from discretionary pension increase
  - first 4 points as (a) but no salary increase assumption (no additional marks)
  - harder to estimate interest rate than gap between interest/salaries
  - if assumptions too cautious then member loses out and vice versa
- (c)
- simplistic
  - no financial risk to the company
  - no longevity risk to the company
  - flexibility with annuity purchase
  - dependants
  - indexation
  - may be available elsewhere
  - difficult to predict level of benefit in advance
  - employee does not gain from discretionary practice

**6** (i) Continuation of the scheme without any further accrual of benefits

- benefits may continue to be linked to (future) final salary or
- may increase in line with average price or earnings inflation or
- may increase in line with other statutory basis

Transfer of liabilities to another pension scheme operated by the same (or another) employer

on an individual or bulk basis

Transfer of funds to the scheme members and other beneficiaries

- as a cash sum
- with a requirement to invest to provide retirement benefits

Transfer of funds to an insurance company to invest and provide benefits

Transfer of liabilities to an insurance company to guarantee some or all of the benefits

Transfer of the liabilities to a central discontinuance fund to guarantee some or all of the benefits

Legislation or order of scheme may restrict/determine options

(ii) Continuation

Avoid, reduce, postpone the costs associated with disinvesting and transferring assets

No guarantees that benefits will be met

- depend on future investment and demographic experience
- and on whether the company is able / prepared to pay more to the scheme if necessary

Future beneficial experience may result in surpluses

- only likely to benefit those still alive when the surplus arises

Transferring the liabilities to another scheme: same employer

Will only be an option if there is such a scheme available

The situation is similar to (temporary) continuation except that any surplus or deficit may belong to a larger group of individuals.

Because of the risk that the funds will be used for the benefit of others or will be supported by funds that should be providing benefits for others, this option may not be available

Transferring the liabilities to another scheme: other employer

Will only be an option if there is such a scheme available

Benefits provided will depend on what the scheme offers

- could be better or worse than the accrued benefits
- could be of a very different form to the accrued benefits

Transfer of funds to the scheme members

In many countries it will not be possible to pay the capital value of benefits to a beneficiary so this option may not exist

If it is allowed then the benefits are likely to be very different from the discontinuance benefits

and the funds could be used for a different purpose entirely

It would normally be very difficult to ensure that the funds are used to provide retirement benefits

Transfer of funds to an insurance company to invest and provide benefits

Legislation may permit funds for an individual to be placed with a benefit provider (insurance company or similar) chosen by the beneficiary

Benefits will depend on the terms and conditions of the new provider and the experience of the individual

The ultimate benefits may depend on future investment experience and assumptions used to capitalise benefits

and may be different from the discontinuance benefit

Transfer of liabilities to an insurance company to guarantee some or all of the benefits

It may be desirable to protect the members from adverse investment / conversion experience or there may be legislation requiring this

In this case it will be necessary to transfer the liabilities to a provider who will accept the risk of future experience and guarantee a benefit

There may be a lack of providers willing to accept this risk

Those who are willing to do so will probably invest cautiously and build contingency margins into the price

This may mean that the funds are not sufficient to cover the cost of the accrued benefits

Transfer of the liabilities to a central discontinuance fund

A central discontinuance fund may be able to guarantee the benefits at a lower price



This is only likely to be the case if there is a guarantor of last resort or if there is a requirement for levies to be imposed on employers or schemes to meet any deficit

- 7** (i) Assume we want to express the pension as a percentage of salary at age 40 ("Sal")

To estimate the accrued fund at age 40:

$$\text{Fund}_{40} = 10\% \times \text{Sal} \times \{s_{5,j\%}\}$$

Assuming

Net investment return minus salary growth ( $j\%$ ) = 0%,

Contributions payable continuously

Continuous salary growth

$$\text{Then } \text{Fund}_{40} = 50\% \times \text{Sal}$$

Early retirement comes at age  $40+5 = 45$

Project  $\text{Fund}_{40}$  to age 45:

$$F1 = \text{Fund}_{40} \times (1+i)^5$$

Assuming nominal investment return  $i\% = 6\%$ ,

$$F1 = 50\% \times \text{Sal} \times 1.338$$

$$= 66.9\% \times \text{Sal}$$

Add employer contributions paid between 40 and 45:

Assuming these are based on salary at age 40 with no indexation

$$F2 = 5\% \times \text{Sal} \times \{s_{5,6\%}\}$$

$$= 29.0\% \times \text{Sal}$$

Add additional lump sum:

$$F3 = 5\% \times \text{Sal} \times 20$$

$$= 100\% \times \text{Sal}$$

Total fund at age 45:

$$F1 + F2 + F3 = \text{Sal} \times (66.9\% + 29.0\% + 100\%)$$

$$= \text{Sal} \times 195.9\%$$

Assuming that it costs £15 (or similar) to purchase £1pa annuity,

$$\text{Pension} = \text{Sal} \times 195.9\% / 15$$

$$= 13.1\% \times \text{Sal}$$

(ii) Compare with expectations

The employee's expectations will be partly determined by the information he has been given by the employer,  
And by what is general practice in this country/industry.  
He could compare the illhealth pension to the income provided for the first 5 years (50% of salary).  
He may have expected that this would continue  
Because that is the current arrangement  
— if so, expectations would not be met.

Alternatively, he could compare it to the pension that might have been payable on normal retirement.  
Ostensibly, the employer has paid the same contributions into the DC fund as would have been paid if the employee had continued working.  
However, the illhealth pension is lower because:  
There is no credit for employee contributions after illness starts  
The contributions are not invested for as long  
The annuity is purchased at a younger age  
(Although it may be higher if he is classed as an impaired life).

(iii) Advantages/disadvantages to employer

Advantages:

Generally provides lower benefits than the existing system,  
so ultimately cheaper.  
Employees are removed from the payroll after 5 years, so avoiding a long-term commitment.  
In particular, no obligation to find employment for an employee who recovers after more than 5 years.  
It may be more cost-effective to get insurance for the additional lump sum than for the continuing 50% salary payments.  
The benefit provided for employees who take illhealth retirement close to normal retirement date will be similar to the standard early retirement benefit.

Disadvantages:

The complex nature of the illhealth pension calculation suggests that the employee will not easily be able to predict how much it will be.  
Employees may overestimate what the system provides and so complain when the benefit is paid,  
Or underestimate and so undervalue what the employer is paying for.  
It may be seen as providing inadequate benefits,  
especially for younger employees  
This may lead to industrial relation problems.

8

(i) (a) Main Types

- level & incidence of benefits
- contributions
- return of capital

or combination

models must:

- allow for all features of item modelled
- allow for general economic/fiscal environment
- have theoretical grounding
  - relative to experience to be projected
- be interpretable
- verifiable
- communicable
- expenses of running the model should be reasonable in relation to significance on decision making process
- have appropriate parameters
- reflect statistically significant individual features

(b)

- level and incidence of cash flows uncertain
- experience therefore differs from model result
- need, therefore, to know sensitivity of result and likely extent of differences
- A stochastic model may give some illustration of potential variation
- but results still dependent upon accuracy of model/parameters
- rerunning a model with different parameters using a probability distribution for these individually
- may extend to give probability distribution for results
- any reasonable example

(ii) (a) Attained Age  
Entry Age  
Projected Unit  
Current Unit

(b) Security

Largest Actuarial Liability (AL) — highest security

AL for Entry Age exceeds Attained Age

- if entry age < weighted average Age

AL for attained age = AL for Projected Unit

AL for Projected Unit > Current Unit

- if salary growth > revaluation for leavers

Stability

- model result only stable if no fluctuations in experience
- instability results from difference in actual experience Vs assumptions implicit in method and parameter values.

The model result will be stable if, for Entry Age, assumed entry age and sex proportions joining is unchanged, and members join in line with assumptions

- for Attained Age there are no new members
- for Projected Unit Method, the age/sex/salary distribution is unaltered by new members
- under Current Unit Method, the age/sex/salary/past service distribution is unaltered by new members

Realism

- a method must have underlying assumptions that are likely to be met in practice
- the current unit method may, for example, be viewed as unrealistic if members are not expected to leave service at ear end (or other example)

Flexibility

- an employer may require flexibility to match company finances.
- The most flexible are the Projected Unit and Attained Age methods
- Entry Age may lead to restrictions as target fund high — possible surplus.
- Current Unit has low target, hence low security and less flexibility
- Durability, opportunity cost and liquidity are also issues.