Actuarial Society of India

Examinations

November 2006

SA4 – Pensions & Other Employee Benefits

Indicative Solution

Note: It is appreciated that there could be other valid points as appropriate answers than the points included in the indicative solutions given herein after. While giving marks this should be kept in mind.

1. A contributory funded pension scheme of a medium sized industrial company provides following benefits for its employees:

   On death in service: A lump sum equal to twice the total of the member's own contributions with interest at 5% p.a. compound.

   On retirement: At age 60 or earlier on grounds of disability, a pension of 1.5% of pensionable salary of each year of contributing service. Pension is payable for five years certain and thereafter for life. However, as the pension is purchased from life insurers, company offers other options provided by the life insurer of equivalent value. The pensionable salary is the average salary during the last three years of service before retirement.

   On withdrawal: Within five years, a refund of member's own contributions without interest. After five years, either a deferred pension or an equivalent transfer value.

   Retirement within five years is considered as withdrawal.

Presently members contribute at the rate of 5% and the company contributes at 15% rate. The member's data indicates an even spread of members between 20 and 60 by age.

You are the actuary to the scheme and have just completed the annual valuation. The company has called for a meeting of the directors to discuss the results of your valuation.

i) Your valuation reveals satisfactory financial state of the scheme and you mention that, on the valuation basis adopted, the present contribution rate is a little more than sufficient to provide the current benefits. At this the directors of the company indicate that they would wish to improve the benefits provided. The Director Personnel asks you to write to them commenting on the proposal to introduce the following changes in their pension scheme benefits :

   a) A lump sum on death in service of three years' salary in place of the present death benefit or dependant's pension of 50% of member's prospective pension

   b) The option to commute upto one-third of the pension in the form of a lump sum at the time of commencement of pension.

   c) Spouse's pension of one-half of the member's pension on death after retirement.

   d) Increases in the level of pensions after retirement linked to Consumer Price Index to take care of rises in the cost of living

The directors have indicated that the company can consider to increase the company's contributions to the scheme. Members' contribution may or may not be increased.

Discuss the points you would include in your reply covering general and other comments on the suitability and practicality of the suggestions as well as an estimate of the cost of introducing each proposal.

ii) The Chairman of the company in the meeting disclosed that there was a proposal to purchase xyz company which also had a pension scheme for its employees. He desired to know an overview of the purchase process. He further mentioned whether the bulk transfer value might be calculated as the total service liability less the value of future contributions.

Prepare a Note giving an overview of the purchase process involved with particular reference to the pensions' aspects and explain why the method mentioned by the Chairman is rarely suitable for calculating bulk transfer value.

[Total 50]

Indicative Solution

i) General Points

- Is it fair to ask the employees to pay for some of the cost of the improvements? It depends how much of the cost of the improvements is to come from additional employee contributions rather than employer contributions.

- If the employee's share is significant, the younger members and the unmarried ones will be heavily subsidizing the older married members particularly if spouse's benefits and pension increases are introduced retrospectively.

If employees are asked to contribute more:

? Some may leave the scheme
? Less will join in the future

This will save the employer's money, but presumably the employer wants employees to join the pension scheme!

There may be pressure for a compensating pay-rise if employees are asked to contribute more. A pay rise will then increase the value of the accrued benefits

Employee contribution rates in similar industries should also be considered

However, it is more likely for the employees to contribute at fixed rates with the employer paying the balance of the cost of providing the promised benefits.

[5.50]

Option (a) –Lump sum on death in service or dependant's pension

The average age, weighted by salary, will be greater than 40 because the members' ages are evenly spread between 20 and 60. The mortality rate at 40 may be approximately 0.2%. The cost of providing a lump sum of 3 x salary will probably lie in the range 1% - 1.25% of salary. If insured then a little more.

From this should be deducted the value of the current lump sum benefit

Based on an average past service of 15 – 20 years (older members more likely to die), the current benefit is (very) approximately 1 x salary.

Therefore the extra cost will be a little less than 1% of salary.

The lump sum on death in service is usually funded on a current cost basis and, hence, introduction of this benefit will have no adverse effect on the scheme's funding position.

The proposed benefit is tax-exempt under Income-tax provisions.

The death benefit will have the greatest importance for the younger members with dependants. Currently the benefit for them will be low so that the improvement will be significant for them.

The proposal will be popular with all members, but particularly those with dependants.

The cost of spouse pension can be assessed as 50% of prospective pension x an annuity factor x crude death rate. The cost of this would be approximately 0.5 x 1.5% x 40 x 17 x 0.3% = 1.5%.

This would mean married members get a higher benefit than single members, but this is typical of most schemes as the need for death benefits is likely to be greatest for married members.

The Company may want to consider paying a pension to dependants other than just the member's spouse, in which case this will be more expensive.

As not all members will have dependants, this option may still prove cheaper than the lump sum of 3 x salary.

Typically the benefit will be pre-funded and so its introduction will have an adverse effect on the funding level of the scheme.

Alternatively, the scheme may wish to consider a lower lump sum and spouse's pension combination.

[10]

Option (b) – Commuting pension

Commutation has significant tax advantages, i.e. a lump sum can be taken tax free (within one-third if gratuity is payable otherwise one-half).

Commutation is very common in almost all schemes (Rule 90 of IT Rules, 1962 allows this benefit).

However, the trustees may think it is their responsibility to provide an income to provide protection in retirement rather than lump sums.

The option may be cost neutral.

If the commutation factors are calculated using a best estimate basis, there would be no profit or loss on commutation.

In the short term there may be profit or loss to the scheme as interest rates vary, but these should iron out in the long run.

From a practical and administrative viewpoint it is better to have factors that are fixed and do not vary with prevailing interest rates.
After calculating "accurate" factors, they can then be simplified and tabulated for use by the administrators and may be stated in the members' booklet if desired.

The factors will depend to some extent on any pension increases decided and whether pension increases are provided on the pre or post-commutation pension.

As this benefit is just an option for members and there is a tax advantage for most members, it will be possible to use terms that result in the cost of providing the benefit being lower than the cost of the commuted pension.

[6.50]

Option (c) – Spouse's pension on death after retirement

This is the sort of benefit that may be applied to past service as well

It is difficult to estimate the cost accurately.

Most members may be male, hence consider adding widow's pension.

This can be estimated by taking the ratio of two annuities assuming a certain percentage married and the age difference. Using a suitable mortality table at a net interest of 6%, the costs may roughly increase the overall contribution rate required by 15 to 20% (i.e. 2 to 3% of payroll).

Should this benefit be extended to existing pensioners? Possibly not, on the grounds that they will have made no additional contributions. However, another agreement may be that they did contribute whilst the surplus funds arose and so should possibly also benefit from the improvements particularly if only company's contributions are likely to increase.

This is a common benefit among pension schemes, and so a feature that will help in recruitment. However:

- it is relatively expensive
- it is difficult to be fair (particularly for past service)
- it is not attractive to all as it is not an enhancement for single members

Further, introduction of this benefit would lead to inconsistent benefits if there was not a corresponding spouse's death in service pension.

If a company and/or the trustees are keen to introduce the benefit (perhaps because of competition) a number of alternatives are possible, eg.

? Introduce the benefit for the future service only
? Provide a lower fraction, which could be improved later
? Extend the benefit to dependants rather than just spouses

A further option is to allow members to commute their own pension for a spouse's pension. However this can leave the scheme open to selection.

[8.00]

Option (d) – Pension increases

Cost of pension increases may be quite high. Further, it introduces another factor of uncertainty and hence increases risk.

The trustees could continue providing no increases but provide additional discretionary increases as and when there is a surplus.

The impact on cost of CPI increases depends on the future levels of inflation.

For every 1% CPI increase, the costs of pension benefits will increase by around 10%.

There may be a small extra cost through a guarantee of CPI pension increases constraining investment policy.

It should be attractive to employees (particularly the older ones), although they won't see the benefit immediately.

Traditionally private sector schemes have been reluctant to give CPI increases due to concerns that this is an open-ended commitment particularly in the absence of index-linked gilt markets.

[5.50]
[Max – 35]

ii) Overview

? Buyer and seller start to discuss possibility of sale.

? Buyer and seller ask actuaries to negotiate the terms relating to the transfer of past and future pension rights.

? Agreement is formed and the business is sold (completion date).

? The concerned employees are invited to join the buyer's pension scheme.

? Any detailed or individual transfer terms are calculated.

? The relevant members of the seller's scheme are informed of the transfer terms and are invited to transfer their past service rights to the buyer's scheme. (Usually this will only apply to those who choose to join for future accrual. Occasionally they will be compelled to transfer, not invited.)

? The employees are admitted into the buyer's scheme (Transfer date). This usually follows a period in which various administrative requirements are met (Participation period).

? An interim transfer amount may be received by to the buyer's scheme.

? The transfer amount is calculated by the seller's actuary and agreed to by the buyer's actuary.

? The final transfer amount is received by the buyer's scheme, including any interest or investment return from the date at which the original calculations applied.

? Any shortfall or excess clauses are exercised if the trustees of the seller's scheme pay an amount that differs from that agreed by the companies.

[Total 5]

Why the method is unsuitable

Pensions clauses usually aim to make the transfer cost neutral and any method that provides significantly more or less than the past service liability on a realistic basis is not cost neutral.

Total service liability minus future contributions may over or understate the past service reserve for all sorts of reasons:

? future contributions may be low because of an existing surplus now, and the transferring members may have no claim to that surplus

? future contributions may be low simply because the employer wants to pay less at the moment

? future contributions may be too low because the transferring group of members are young, or vice-versa

? future contributions may be high because the scheme is being funded conservatively

Payment of total service liability less future contributions may not conform with the funding method adopted for funding or accounting, eg. Projected Unit method.

The approach may be consistent with funding and accounting using an Entry Age or Aggregate method.

The past service liability is:

? easier to calculate (no argument over future contribution rate)

? easier to understand/explain and is more common

What is so special about the valuation assumptions? They are often deliberately prudent and should not therefore be taken as best estimates of future.

The fund may not be able to afford to pay the total service liability less future contributions, eg if the scheme is very poorly funded at the moment and the deficit is being made up slowly.

Payment of total service liability less future contributions may conflict with the trust deed and rules.

Suitable assumptions for the transferring group may differ from those for the scheme as a whole, eg if it is a specialist subsidiary company.

If the scheme is not a balance of cost scheme employees may have the right to a specified share of any surplus

[Total 15]

Question 2

2. As a Fellow Member of Actuarial society of India you are Actuary and Advisor to an Employee Benefit Plan in India having the following characteristics amongst others;

a) Defined Benefits final salary, benefits accrual as a function of service and salary and payment of benefits as life annuities (with spouses life pension on death of the member/pensioner), out of the fund but option to purchase annuities from life insurer/s by Trustees. Pension to increase at the discretion of Trustees in line with cost of living, generally benchmarked with salary increases on account of cost of living inflation.
b) Option available to members to be exercised before inception of the pension to reduce the pension to the extent of ten percent in favour of lump sum payable on death equal to hundred times the pension forgone.
c) Contribution is a percentage of Salary shared between the Employer and the Employee.
d) Asset allocation in accordance with specifications as applicable to Employees' Provident Funds administered by EPFO under Employees' Provident Fund and Miscellaneous Provisions Act, 1952.
e) Members of the Scheme are engaged in same occupation but are employed by number of Employers having individual legal structure as a Company under Indian Companies Act 1956.
f) The Scheme Rules provide Actuarial Report once in three years, for assessing solvency of the fund and making recommendations on the contribution rate.
g) The Scheme is enabled by Act of Parliament and rules framed under provisions of this Act. It is mandatory to be participated by the Employers engaged in the same business, currently nine employer entities. The Act

provisions and the Rules prescribe besides other aspects, nature of Benefits, level of contribution and the composition of trustees representing employer entities and the employees. The Plan is administered by the Board of Trustees specified under the Act.

h) The Scheme currently has in total more than about six lacs employees and about three lacs pensioners.

You are also Actuary to some of the nine Employers participating in the above scheme.

In your role as described above, you are required to frame response to the following questions;

(1) Some of the Participating Employers have enquired of you on the certain aspects of Accounting Standard 15 (revised, 2005) and sought your help in understanding the implications of the same. These are;

a) The Objectives of the AS 15 (rev.2005) and whether it applies equally to the Employer Entities as well as to the Employee Benefit Plan. (2)

Answer:

The objective of AS 15 (rev.2005) is to prescribe the accounting and disclosure for employee benefits. The Statement requires an enterprise to recognise:

(a) a liability when an employee has provided service in exchange for employee benefits to be paid in the future; and

(b) an expense when the enterprise consumes the economic benefit arising from service provided by an employee in exchange for employee benefits.

The Scope

1. The AS 15 (rev. 2005) is to be applied by an employer in accounting for all employee benefits, except employee share-based payments.

2. The AS 15 (rev.2005) does not deal with accounting and reporting by employee benefit plans.

b) What are the Category of Employee Benefits to which the AS 15 (rev.2005) applies?

Answer:

The Category of Employee Benefits to which AS 15 (rev.2005) applies include;

(a) short-term employee benefits, such as wages, salaries and social security contributions (e.g., contribution to an insurance company by an employer to pay for medical care of its employees), paid annual leave, profit-sharing and bonuses (if payable within twelve months of the end of the period) and non-monetary benefits (such as medical care, housing, cars and free or subsidised goods or services) for current employees;

(b) post-employment benefits such as gratuity, pension, other retirement benefits, post-employment life insurance and post-employment medical care;

(c) other long-term employee benefits, including long-service leave or sabbatical leave, jubilee or other long-service benefits, long-term disability benefits and, if they are not payable wholly within twelve months after the end of the period, profit-sharing, bonuses and deferred compensation; and (1/2)

(d) Termination benefits.

c) While explaining the concept of Defined Contribution (DC) and Defined Benefits (DB) Plans, analyse whether the obligation of the Employers to contribute at a rate of contribution determined under the Statute will constitute DC or DB for measurement and disclosure.

Answer:

Post-employment benefit plans are classified as either defined contribution plans or defined benefit plans, depending on the economic substance of the plan as derived from its principal terms and conditions.

Under defined contribution plans:

(a) the enterprise's obligation is limited to the amount that it agrees to contribute to the fund. Thus, the amount of the post-employment benefits received by the employee is determined by the amount of contributions paid by an enterprise (and also by the employee) to a post-employment benefit plan or to an insurance company, together with investment returns arising from the contributions; and

(b) in consequence, actuarial risk (that benefits will be less than expected) and investment risk (that assets invested will be insufficient to meet expected benefits) fall on the employee.

Under defined benefit plans:

(a) the enterprise's obligation is to provide the agreed benefits to current and former employees; and

(b) actuarial risk (that benefits will cost more than expected) and investment risk fall, in substance, on the enterprise. If actuarial or investment experience are worse than expected, the enterprise's obligation may be increased.

Under the given scheme the formula for contribution as well as benefits is determined under the Act/rules. Given the benefits, if the current contribution rate as provided in the Act is not found sufficient, the Government is likely to be inclined to raise the contribution by amending the Act/rules. This will then have to fund the deficit if any as these pertain to past service. While a view can be held that as the contribution rate is determined as per Act/rules, the scheme from an employer's point of view should be taken as DC. At the same time one could argue that as employers need to comply with enhanced contribution rate if that is enforced by amending the Act/rules and as these will pertain to funding the deficit for past service, this "implied guarantee" part should be taken as DB. This view gets strengthened by provision in AS 15 (rev. 2005) under Section 26 as;

"Examples of cases where an enterprise's obligation is not limited to the amount that it agrees to contribute to the fund are when the enterprise has an obligation through:

(a) a plan benefit formula that is not linked solely to the amount of contributions; or

(b) a guarantee, either indirectly through a plan or directly, of a specified return on contributions; or"

d) Concept of and causes for Actuarial Gains and Losses as these are recognized in the Profit and Loss.

Answer:

Actuarial gains and losses may result from increases or decreases in either the present value of a defined benefit obligation or the fair value of any related plan assets.

Causes of actuarial gains and losses include, for example:

i unexpectedly high or low rates of employee turnover, early retirement or mortality or of increases in salaries, benefits (if the terms of a plan provide for inflationary benefit increases) or medical costs;

ii the effect of changes in estimates of future employee turnover, early retirement or mortality or of increases in salaries, benefits (if the terms of a plan provide for inflationary benefit increases) or medical costs;

iii the effect of changes in the discount rate; and

iv differences between the actual return on plan assets and the expected return on plan assets.

e) The framework of the Actuary's professional responsibility under Professional Conduct Standards of Actuarial Society of India (ASI) and the coverage of the Guidance Note there under that ASI may issue to be applicable to a Fellow Member tendering Actuarial advice under As 15 (rev.2005).

Answer:

The framework of the Actuary's professional responsibility under Professional Conduct Standards is specifically contained under the following provisions of PCS Ver. 2.00;

PROFESSIONAL STANDARDS

The actuarial profession has an obligation to serve the public interest. Collectively it seeks to do so by informed contribution to debate on matters of public interest and by influencing those with power to protect and enhance the public interest. Individually members must maintain and observe the highest standards of conduct. The standing of the profession depends on the judgment of individual members.

A member has a duty to the profession and must not act in a manner, which denigrates its reputation or impugns its integrity. Responsibility to any client must be consistent with that duty. The requirements of this paragraph do not, however, preclude criticism of the profession which forms part of a justifiable debate conducted in the public interest.

Users of actuarial services, including actuary's firm and colleagues in that firm, are entitled to have absolute confidence in the skill, objectivity and integrity of any member. If work which an actuary considers necessary is precluded by cost or time constraints the actuary should normally either decline to act or qualify the advice given.

Advice given to the actuary's firm or to a colleague within the same firm, whether or not the colleague is an actuary, should normally meet the same standards as for external advice.

Rule 29 (1) of the Rules of the Society enables ASI to put in place Guidance notes so as to actualize the above and other requirements on the member of ASI.

AS 15 (rev. 2005) provides for actuarial advice by a "qualified Actuary" to be taken by the employer entity and thus it is of key importance that ASI comes out with a Guidance Note on the subject.

Coverage of the Guidance Note that ASI need to be issuing:

Note: The answer is not expected to cover all the following aspects with respect to its details, however, key aspects in brief need to be mentioned covering these and other relevant (as perceived by the student) aspects.

1 Objective:

This Guidance Note provides guidance to actuaries in making actuarial valuations and preparing their actuarial reports on valuations done under AS 15(R). Provisions of this GN also apply to reporting for expensing in Financial Statements of a reporting entity not falling within the purview of AS 15(R) but not specifically covered by any other Accounting Standard. For the purposes of making actuarial valuation under AS 15 (R), an actuary should be well versed with all the requirements of AS 15 (R). In case an actuary is not well versed with the requirements of AS 15 (R), he/ she should get in-depth knowledge of AS 15 (R) before making any actuarial valuation under AS 15 (R).

2 Introduction: Currently actuarial reports under AS 15 are given within the framework of some of the provisions of GN11 and provisions of GN12 issued by Actuarial Society of India. These GNs shall remain inforce in respect of the valuations an actuary is required to carry out for the clients for the period for which provisions of AS 15 (R) do not apply.

It may be noted that while AS 15 (R) provides that it is the responsibility of the "reporting enterprise" to measure the obligations under defined benefit plans, the AS 15 (R) recognizes ***"that for doing so the enterprise would normally use the services of a qualified actuary"*** (link para 49 of AS 15 (R))

(1) For the purpose of para 49 of AS 15 (R), a qualified actuary would mean a Fellow member of the Actuarial Society of India, called Actuary herein after, holding a Certificate of Practice issued by it for the purpose,.

(2) Projected Unit Credit Method: Also called Projected Unit Method, under this method the amount of actuarial liability for the service reckoned as at the reporting date, is calculated after taking in to account all types of relevant decrements and projecting the qualifying salary up to the assumed date of cessation of service (link: para 51 (b) & para 65).

(3) Past Service Cost is the present value of defined benefit obligation for employee services in prior periods, resulting in the current period from the introduction of or changes to, post employment benefits or other long term benefits for the first time or is the change in the present value of defined benefit obligation for employee services in prior periods, resulting in the current period from the changes to, post employment benefits or other long term benefits.

Where an enterprise first adopts AS 15 (R), actuarial valuation as at 31st March 2006 has to be calculated as per this standard as well as pre revised AS 15 . Any difference between the two values which is not recognised so far has to be immediately adjusted against the opening balance of revenue reserves and surplus as at 1 April 2006 (link para 143,144,145 of AS15 (R)

(4) The Enterprise accounts are generally prepared on a going concern basis. Accordingly calculations under AS 15 (R) should be prepared on the assumption of an ongoing scheme unless the circumstances indicate otherwise or unless there are specific instructions from the Enterprise to the contrary. In the later case such specific instructions should be made part of the Actuarial report

and the actuary should disclose the assumption and the basis on which the calculations are made.

(5) Materiality: Materiality is a technical accounting term reflecting the importance of a monetary amount to the Enterprise's financial results. The relevant amount may differ for the Balance Sheet, the Profit & Loss Account or for any other specified purpose. The Actuary should seek from the Enterprise an indication of the materiality levels applicable for each accounting period (interim or full year results) The actuary is required to consider materiality in determining the level of accuracy required in actuarial valuation so that he may advise an enterprise about the steps required to be taken to achieve the degree of accuracy required in the valuation. To illustrate, where a comparatively lower amount is considered to be material in the context of an enterprise, a higher level of accuracy is required in the actuarial valuations. To achieve that level of accuracy, the actuary may advise the enterprise that for determination of future salary increases, it should consider trends over a comparatively longer period. Also, to give advice to an enterprise on the steps required to achieve, within the reporting timescale, the degree of accuracy required in the valuation should be one of the responsibilities of an actuary. (link: para 51 (f)).

(6) This GN covers actuarial valuation inputs for accounting for a wide range of employee benefits including, but not limited to;

i. Gratuity Schemes and Superannuation Schemes, whether "approved" under provisions of Income Tax Act/Rules or not.
ii. Other Retirement Schemes such as Leave Encashment, Post retirement medical benefits and similar and other long term benefits,
iii. Funded and Un-funded arrangements,
iv. Indian or overseas reporting Enterprise reporting under AS 15 (Revised, 2005)
v. Multi-employer arrangements,
vi. Defined Benefits secured under Trusts or otherwise,
vii. Constructive as well as legal obligations.

Note: As per AS 15 (R), post-employment benefit plans are classified as either defined contribution plans or defined benefit plans, depending on the economic substance of the plan as derived from its principal terms and conditions. It is, therefore, possible that a plan, which otherwise appears to be a defined contribution plan, is, in substance, a defined benefit plan. Paragraph 26 of AS 15(R) provides examples of certain plans under which an enterprise's obligation is not limited to the contribution made to the respective fund and, therefore, plans, in substance, are considered to be defined benefit plans. AS 15 (R) requires that obligations under such plans should be determined on actuarial valuation basis in the same manner as under other defined benefit plans.
As per AS 15(R), actuarial valuation is also required to be carried out in respect of other long-term employee benefits. However, AS 15 (R) requires a simplified method of accounting for other long-term employee benefits since all past service

costs are recognised immediately. Also, AS 15 (R) does not require detailed disclosures in respect of other long-term employee benefits.
Certain enterprises allow as a practice unavailed short-term absences, which otherwise expire within 12 months, to be carried forward in future period(s) for availing them at any time on or before retirement. Since, as per AS 15(R), informal practices are also taken into consideration in accounting for employee benefits, such short-term compensated absences, in substance, are considered to be of the nature of other long-term employee benefits. Accordingly, an enterprise is required to determine the obligation in respect of such absences using the actuarial valuation method as prescribed in AS 15 (R) for other long-term employee benefits.

3 Relationships, Context and Information

(1) Enterprise's accounts are the responsibility of the directors (or equivalent) and may be public documents. The actuary should endeavour to establish the significance of AS 15 (R) results to the Enterprise's accounts and measure of financial performance.
(2) The actuary should be aware that the Auditor may have specific requirements and should liaise with the Auditor if requested to do so, by the client.
(3) The actuary should ensure that the employer knows that the arrangements set out in (4) need to be in place to meet the time constraints of the Enterprise's financial reporting regime. The actuary should if necessary, initiate discussions with the enterprise and the auditor on other relevant aspects of the reporting exercise including assumptions, any split of work between different actuaries and the time scale for reporting.
(4) For each reporting exercise the actuary should make arrangements with the employer to ensure access to all relevant information including, but not limited to:

i. Immediately preceding year's disclosures under AS 15 or AS 15 (R) as the case may be.
ii. Scheme membership data.
iii. Details of Scheme including documents such as Trust Deed and Rules,
iv. Details of any benefit improvements, benefit curtailments or any other amendments,
v. Scheme financial statements such as relating to income, expenditure, assets.
vi. Details of bulk transfers or other settlements if any,
vii. Details of any relevant constructive obligations and discretionary benefits,
viii. Details of any material events, actions or changes. The actuary should ensure the enterprise is aware of the sort of events, actions or changes which could have material impact on the actuary's calculations.

The above list is not meant to be exhaustive.

4 Valuation Method

Paragraph 55 of AS 15(R) deals with the amount of defined benefit liability to be recognised in the balance sheet; paragraph 59 deals with the recognition of defined benefit assets and paragraph 61 deals with the components of defined benefit expense to be recognised in the statement of profit and loss of an enterprise. The actuary is required to include these items specifically in his report to the management.

For arriving at the present value (or actuarial values) in respect of defined benefit obligations, the related current service cost and, where applicable, past service cost, the Actuary under AS 15 (R) is required to adopt the Projected Unit Credit Method (para 65). The results of the valuation of the various items should be prepared in a tabular form, which will form part of the Actuary's Report addressed to the client. The AS 15 (R) prescribes a list of "Disclosure items" pertaining to defined benefit plans in paras 119 –125; further Appendix A & B to AS 15 (R) contains illustrative statement, disclosures. The valuation results table should be prepared on the same lines to ensure that no items are missed and the figures presented are duly reconciled.

5 Actuarial Assumptions

AS 15 (R) has set out in paras 78 –91 the basis upon which the various assumptions to be used in the actuarial valuation are to be determined. The actuarial assumptions are the enterprise's **best estimates** of the different variables and the responsibility for setting these financial assumptions rests with the enterprise and need to be determined in consultation with the actuary. However, this does not preclude the actuary from advising the client on the interpretation of AS 15 (R) and determination of the various assumptions nor from commenting on the assumptions chosen by the client, which the actuary believes do not comply with the requirements of AS 15 (R). Similar considerations would apply in the determination of Fair Value of plan Assets.

6 Actuarial Gains and Loses - recognition

AS 15 (R) has specified that "Actuarial Gains and Losses" should be immediately recognized in the statement of Profit and Loss as income or expense (see para 92).

7 Past Service Cost - recognition

AS 15 (R) has specified that Past Service Cost should be recognized immediately to the extent that they are already vested; and non-vested past service cost should be recognized as expense on a straight line basis over the "average period" until the benefits become vested (see para 94). The Actuarial report should contain such average and also specify as to how such "average period" has been calculated.

8 The Report

(1) The following aspects should be covered in the Actuary's Report:

- ? benefits covered;
- ? enterprise for which valuation figures are being prepared;
- ? whether the actuary is advising on assumptions, calculating liabilities

and costs for the schemes covered;

- ? full valuation or subsequent actuarial assessment on which the update is based;
- ? information and instructions used for the valuation/ update;
- ? assumptions used and the actuary's advice relating to those assumptions;
- ? the results of the actuarial valuation, including all figures required from an actuary for complying with the requirements of AS 15 (R) concerning recognition of defined benefit obligation in the balance sheet, recognition of defined benefit expense in the statement of profit and loss and making all disclosures required by AS 15 (R);
- ? whether (and, if so, what) allowance for deferred tax has been made.

(2) The Actuarial Report under AS 15 (R) should specifically state that in setting the assumptions the relevant sections of AS 15 (R) have been taken in to account. If for any reason, any of the assumptions are not in conformity with AS 15 (R), the actuary should state so giving the reasons for such choice (link para 120(l) 5 of AS 15 (R),

(3) If for any reason, any of the actuarial assumptions is not in conformity with AS 15 (R), the auditor of the enterprise would be required to disclose the same in his audit report. As a part of this disclosure, the auditor would also be required to disclose the effect of the same, in case it is determinable. In order to enable an auditor to comply with this requirement, the actuary should disclose, if determinable, the effect of the assumptions not being in conformity with AS 15 (R), along with the reasons for choosing different assumptions.

9 Glossary of Key words/definitions : This section should contain definitions of key actuarial terminology that is relevant to the report but has not been defined in the text of AS 15 (R).

(2) Trustees have requested you to make presentation to them as a preparatory exercise to the 5th Triennial Valuation on number of aspects of the valuation exercise. As part of this presentation respond to the following;

a) List the possible sources of surplus (deficit) and prioritise with reasons the listed items in order of likely magnitude as sources of surplus (deficit).

Answer:

The sources of surplus and their likely magnitude;

1) Investment growth: the investment performance of the assets will have a significant effect on the valuation result.
2) Inflation of salaries: the rate of earnings inflation will affect the reserve held in respect of active members. The level of pension increases is also important for the scheme as numbers of pensioners is large.
3) Contributions received: The difference between contributions paid and cost of benefits accruing will be a major source of surplus or deficit.
4) Legislative benefits changes and/or changes in tax laws: depending on the changes, this can have major effect on the financial status of the fund.
5) Bulk transfers changing the funding level or membership mix: Relative size of the transfer value paid or received on account of such movements can affect the financial status of the Fund.
6) Decrements for mortality, withdrawals and retirement: The number of deaths in a large scheme like this are fairly predictable but the withdrawal and early retirement rates in different employer entities may affect the financials.
7) Marital statistics: This will have a very minor effect on the valuation results.

b) Illustrate the movement of Actuarial Liability over the inter-valuation period by a recurrence equation defining the symbols used.

Answer:

Over a period of time the actuarial liability changes due to the accrual of benefits, the reduction in the period of discount, benefits outgo and deviation in experience affecting such liabilities. The Actuarial Liability (AL) can therefore be expressed by the recurrence relation;

AL1 = AL0*(1 + i) +SCR1 - B1 + LD1

Where;
AL1 is the Actuarial Liability at time 1

AL0 is the Actuarial Liability at time 0

i is valuation rate of interest

SCR1 is Standard contributions from time 0 to time 1 based on expected experience.

B1 is the expected benefits payments between time 0 and time 1

LD1 is the growth in the liabilities due to differences between experience and assumptions.

c) Discuss the relevance of future service cost in analysis of surplus and the cost of benefits accrued over the inter-valuation period, keeping in view the valuation method and any other method to determine the amount of accrued benefits.

Answer:

Although the analysis of surplus concentrates on the past service aspects of the balance sheet, some thought should also be given to any changes in the cost of future benefit accrual. In particular the stability of retirement benefit costs under the chosen valuation method may depend on the stability of the age/sex structure of the membership. The validity of such assumptions for the scheme as described in the question is very important, particularly when there are as many as nine employer entities and each will have its own employee profile. For example if the PUC method is being used to determine the future contribution rate, it will be known that the PUCR will rise in future if it is known that the flow of new entrants is to be restricted and that the existing members remain in the scheme until retirement.

d) Discuss the method/s by which value will be placed on the group immediate annuities purchased by Trustees while placing a value on the assets of the Trust Fund.

Answer:

The group immediate annuities will cover some or all of the pensions in payment. The valuation method would usually be to take the value of the contract to be equal to the value of liabilities.

Immediate annuities are assets of the scheme if they have been bought out in the name of the Trustees. The liability has been extinguished if the benefit was bought out in the name of the member.

The rationale for adopting this approach is that the assets match the liabilities and the scheme is immunized against deviations from the assumptions used to place a value on the liabilities.

This may be appropriate for some purposes if the annuity in payment is payable in precisely the same circumstances at precisely the same level as the corresponding pension benefit.

e) Discuss the method/s by which value will be placed on the paid up non-profit and paid up with profit group annuities purchased by Trustees while placing a value on the assets of the Trust Fund.

Paid up non-profit deferred annuities are normally valued on the same basis as the liabilities they cover. The No-profit deferred annuities are usually bought in wind up situations and therefore usually in the name of the member. Thus in this situation the liability in the scheme is extinguished and they are not an asset of the scheme.

With profit deferred annuity contracts are not much in common. However where these exist the promised benefits are normally valued using same methods and assumptions as for other liabilities but also including an assumption for future bonus additions.

However if the policy is likely to be surrendered a different approach would be adopted – the surrender value would be taken as the market value of the asset and an assessed value determined using the method adopted for the scheme as a whole. The corresponding liabilities would be valued using valuation assumptions.

In the case of a large scheme as given in the question, the deferred annuity assets, if at all these exists are likely to be small and therefore prodent approach of using the Surrender Value might be used.

f) List examples of accrued benefits funding methods describing in brief each of these methods.

Answer:

The examples of accrued benefits funding methods are;

1) The Projected Unit Method

The Actuarial Liability for active members either as at the valuation date or as at the end of the Control Period is calculated taking in to account all types of decrements. In such calculations pensionable pay is projected from the relevant date up to the assumed date of retirement, date of leaving service or date of death as appropriate. This method is also known as Projected Unit Credit Method.

2) Current Unit method

The Actuarial Liability for active members is calculated taking in to account all types of decrements. In calculating the Actuarial Liability as at the Valuation date pensionable pay is not projected. While calculating it as at the end of Control Period, pensionable pay is projected to that date. In suchy calculations, allowance is made for increases in the benefits between the relevant date and the assumed date of retirement, date of leaving service or date of death as appropriate.

3) Partly Projected Unit method

The Actuarial Liability for active members is calculated as for the Current Unit Method except that, where pensionable pay is not projected in that method, some but not full allowance is made in the Partly Projected Unit Method.

4) Defined Accrued Benefit method.

The Actuarial Liability for active members either as at the Valuation date or at the end of the Control Period is calculated on the assumption that the scheme will be discontinued on those dates.

g) Discuss the need for and appropriateness of setting assumptions for the funding valuation with "Degree of prudence" as against "best estimate" assumptions under AS 15 (rev.2005).

Answer:

The funding valuation assumptions are always prudent as against best estimate required under Accounting Standards for expensing and disclosure on P&L and Balance sheet.

In deciding on a set of best estimate deterministic assumptions an sactuary is effectively trying to find the mean of a probability distribution for each factor. Prudence can be introduced by taking a margin above or below the mean, depending on how the particular factor affects the casahflows.

In deciding whether a funding valuation assumption is prudent all assumptions have to be taken together. For example if a degree of prudence were introduced in to each assumption, the actuarial basis when taken as a whole may be more prudent than had been intended.

h) Give examples of scenario under which it is prudent to assume that husbands are three years older than their wives or four years older.

Answer:

It depends whether most of the employees are male or female. If mail then the answer is four years' difference as this places a greater value on the contingent widow's pension.

If most employees are female then the answer is three years for the same reason.

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