

Institute of Actuaries of India

Subject SA4 – Pensions and Other Benefits

September 2021 Examination

INDICATIVE SOLUTION

Introduction

The indicative solution has been written by the Examiners with the aim of helping candidates. The solutions given are only indicative. It is realized that there could be other points as valid answers and examiner have given credit for any alternative approach or interpretation which they consider to be reasonable.

Solution 1:

i)

Risks under PAYG

1. Though the employees of the department have moved into the new pension scheme of C1, the Government is still exposed to the risk of experience variance of the transferred members in respect of the past service. (1)

These include

- Risk of supernormal increase in the salaries thus resulting in higher pension outgo when the employees retire. ... (0.5)
 - Since the pension has a component that is linked to CPI, there is a risk of high inflation resulting in high pension outgo. ... (0.5)
 - Risk of members leaving the scheme before normal retirement age either by death or other reasons resulting in earlier pay-outs under PAYG. (0.5)
 - The Government has no control over such experience variances. (0.5)
2. There is a risk that the Corporation (C1) & its Trustees may change the pension rules. These include reducing the retirement age, changes in the definition of pensionable pay, pensionable service changes in commutation factors etc. These changes will be having financial impact to the Government under the PAYG arrangement. (1)
 3. There is a risk that the surplus/deficit of the pension scheme of C1 is being shared disproportionately with the Government resulting in higher PAYG outgo. E.g., expected longevity of new members admitted into the scheme may significantly increase the pension cost & this may result in deficit. Sharing the deficit with the Government will increase the PAYG pay-outs. (1)
 4. Trustees of C1 are responsible for investment management & overall administration of the pension scheme. Poor investment management, lack of control on pay-outs will increase the pension cost of C1 & the share of Government under PAYG (1)
 5. Determining the fair annual/monthly pay out of Government will be very challenging. It requires the monitoring the performance of the two groups viz transferred members & new members. Government needs mechanism to verify the pay-out figures as demanded by Trustees. (0.5)
 6. The level of risk to the Government depends upon the number of members transferred to the new C1, their profile & how it compares with profile of Government employees for whom pension is being paid under PAYG. The risk is likely to be insignificant if the proportion of employees transferred to C1 is small. (0.5)

(Max 5 marks for 'risks')

Alternatives to PAYG

Transferring a lump sum payment to C1 removes all the pension liabilities of the transferred members. But there will be a lump sum outgo at the time of transfer which may result in cash flow strains to the Government. (0.5)

Such lump sum transfer secures the pension benefit of transferring members over the other members benefits (e.g., Employees of other departments) which are being financed under PAYG. This may invite demand from other employees to fund the pension liability which will provide additional security of the benefits. (1)

Lumpsum transfer value can be determined based on buy-out costs or by estimating actuarial value of the projected future benefits. ... (0.5)

Risks under both these methods are as follows:

- Risk in buyout basis:
 - appropriate deferred annuities may not be available in market. (0.5)
 - Even if they are available, the cost takes into account expense, commissions and profits margins of the annuity provider thus increasing the cost of transfer (0.5)
- Risk in actuarial value method:
 - Arriving at a mutually acceptable basis may be a challenge. (0.5)
 - The amount transferred may be significantly higher than the realistic “transfer value” of the accrued benefits of the members thus resulting in strain on cash-flows (0.5)

[Max 8]

ii)

List of methods as per APS 15

1. Projected unit method
2. Current unit method
3. Entry age method
4. Attained age method or Aggregate method (1)

AS-15 prescribes Projected Unit Credit Method for valuation of benefits as it is consistent with accounting principle of recognising liability when it incurs (0.5)

- PU method is fund driven. The fund together with one year cost under PU aims to secure the accrued benefits at the end of the year following valuation. Since the scheme is closed to new entrants, the one-year cost is expected to increase significantly over the futured period. (0.5)
- AA method is a prospective method & it aims to achieve stability in contribution rates. It builds fund in earlier years & less in later years to achieve the stability & it may be appropriate for a closed scheme. If the objective of the employer is to have stability. (0.5)
- Adopting two different approaches for accounting & financing (i.e., PU method for AS 15 & AA method for determining contribution rates) will increase the funding level & if the investment experience is favourably, the net interest cost will reduce & the pension cost as reflected in AS 15 will also reduce. (1)
- The Scheme is having significant deficit. There will be a second order effect on the contributions depending upon how the deficits are financed. (0.5)
- As the scheme approaches the closing year, the gap between PU & AA pension cost will reduce & in the final year of closure both will recommend the same contribution rates. (1)

[5]

iii)

Professional aspects to be borne in mind:

1. The Actuaries Act and Professional Code of Conduct requires the new consultant to communicate with the previous consultant on potential professional concerns before accepting the assignment.
2. He/ She must initiate discussion with the previous actuary to understand the peculiar characteristics of the scheme, its financing, & possible causes for the volatility in the deficit levels.

3. In case your initial assessment of the scheme differs materially then the issue should be first discussed with the previous consultant to understand the approach and sources of such difference before giving your opinion to the trustees.
4. Adequate care has to be taken so that none of the action of advice brings disrepute to the profession or the fellow professional.

(0.5 mark each point max 2 marks for professional aspects)

Technical Reasons for the increase in Contribution Rates

- Significant under funding of the Scheme (persistent deficit)
- Increasing age & salary profile active members
- Reducing term of the liabilities
- Under performance of assets
- Parameters used in valuation discount rate, salary growth, pension increases, Longevity consistently understating the actual experience
- Changes in funding strategy
- Recommended contribution not paid
- Any exceptional expense made by the trust.
- Random fluctuations in experiences
- Errors in members data now being rectified
- Benefit pay-outs significantly exceeding the reserves for (a group) of members
- The increase in contribution rates is to reflect the consolidated impact of the actual experience of the pension fund during the inter-valuation period as compared with the reserves kept based on prudent valuation.

(0.5 mark each point max 4 marks for professional aspects)

The impact of some of the factors can be broadly quantified to explain the increase in contribution rates.

	FY 19-20	Comments	Item's weight in the contribution rate change
Opening Deficit	2,595	Total service obligation – Assets (5595 – 3000)	
Interest on deficit	176	Opening deficit * opening discount rate (2595 * .068)	=176/2595 * 33% = 2.2%
Contributions	-356	Opening contribution rate * opening annual salary (assuming contributions at start of the year)	= -356/2595 * 33% = -4.52%
loss on salaries / pension experience	504	The average salary increases for year ended 2019-20 was 15%. The average pension increase was 13%. There is an adverse experience on salary and pension growth to the extent of 9% (5595 * 9% = 504)	=504/2595 * 33% = 6.4%
Gain on obligation due to change in discount rate assumption	-200	$6050 * (1.068/1.071)^{12}$	= -200/2595 * 33% = -2.54%

Loss on assets due to change in discount rate assumption	96	$6050 * (1.068/1.071)^{12}$	$=96/2595 * 33\%$ $= 1.22\%$
increase in receivables	350	From data	$=350/2595 * 33\%$ $= 4.45\%$
Loss of interest on amount receivable	23.8	$350 * .068$ (assuming returns on asset are equal to discount rate)	$=23.8/2595 * 33\%$ $= 0.3\%$

[10]

iv)

1. The Scheme is in deficit during the last 3 years; the funding deficit is growing over these 3 years (i.e., from 30% to 43%). Immediate financing from the employer C1 is required to reduce the deficits. This will reduce the recommended contribution rates & its volatility. (1)
2. The “amount due from the Government” is increasing over the last 2 years. Trustees should take up with C1 & Government for payment of this outstanding due. (0.5)
3. Review the existing PAYG arrangement with the Government in respect of transferred members. Review the approach in determining the Government share; ensure the model used in the calculation takes into account profile of transferred members, their actual salary growth, the expenses & the loss of investment income under the PAYG. (1)
4. Negotiate with Government to discontinue the PAYG arrangement & insist for a fair transfer value for the transferred members. This will improve assets significantly & the scheme will be benefitted by the investment returns. (0.5)
5. The Scheme is closed to new entrants & the cost of accrual as reflected in the current service is expected to increase significantly over the future years. Trustee can consider using AA method to arrive at the annual contribution to reduce the volatility. But this will increase the contribution requirements immediately. (1)
6. Increase the period over which the contributions are spread. This will bring stability to the contributions rates if future deficits are immediately financed. Such lengthening of the contribution period must be within the “future duration” of the liability. (0.5)
7. Check the basis of asset valuation. In case the assets are being taken on book value, a fair valuation of assets as per DCF may help reduce volatility on contribution rates due to the discount rate. (0.5)
8. Taking some exposure to equity up to the allowed 15% allocation may help reduce the cost as the liabilities are long term in nature and equities are expected to out-perform debt instruments over the long term. ALM study will help to arrive at an investments strategy that optimises risk adjusted returns. (1)
9. Diversify assets by parking some amount with fund-based products of insurers. They provide reasonable returns, indirect exposure to equities, liquidity & professional management of funds (1)
10. Perform a detailed analysis of Actuarial gains/losses for the past years to understand the significance of extraneous factors. Appropriate actions can then be evaluated. (0.5)
11. Review the basis used in valuation taking into account the scheme experience, the general trends & the professional guidelines & consider any scope for removing the excess prudence built if any without compromising the security of the vested benefits. (1)
12. Validation of data, systems audit to verify the correctness of the pay-outs will help to reduce liability of the scheme & its contribution requirements. (0.5)
13. The trustee can consider financing from active members (if the scheme rules permit) to control the increasing contribution requirements of employer. (0.5)

[Max 7]

v)

1. The assets may not be admissible for the accounting or the funding valuation thus resulting higher deficit and hence higher contribution requirements. (0.5)
2. The interest recoverable on this shortfall (if any) may be lower than the returns earned by the other assets. (0.5)
3. The trust will have to redeem other investments to pay the amounts that were to be paid by the govt. thus resulting in untimely redemption of the investments. Such unexpected redemptions may put strain on cash-flows and may result in untimely liquidation of assets. (1)
4. In case the amounts are disbursed by the government at a later date. Such disbursement may result in surplus in the scheme that may not be recoverable by the Corporation (C1). This may have adverse tax implications too (0.5)
5. Such unpaid dues from the Government adversely impact the security of the pension benefits in service members recruited by the Corporation (C1) (0.5)
6. Hardships and stress caused to the Trustees and administrators of scheme on day-to-day basis due to strain on cashflows and general lack of clarity regarding the status of past and future dues. (0.5)
(up to 2.5 mark for 'challenges')

Measures

1. Actively liaise with the Government. to get a clarity on the future payments expected PAYG cash-flows and also on the past dues. (0.5)
2. Seek lumpsum transfer value payment to avoid uncertainty in future receipts. (0.5)
3. Seek guarantees from Government. on the amounts receivable and. (0.5)
4. Educate the stakeholders about the fallout effect of sustained shortfall in the recoveries. The impact includes:
 - Inability of trust to make timely payments to the pensioners.
 - Bad press for govt/govt owned corporation in an event the pensioners does not receive the benefits.
 - High contributions may put tremendous strain on C1's books.
 (0.5 mark for stating the point + up to 1 mark for highlighting different areas of awareness)
5. May consider "ring fencing" of funds relating to transferring members. This will minimize the cross subsidization of funds between the two groups. But Trustees are still responsible for making pension pay-outs to both the groups. Such ring fencing poses additional problems in investments, administration & accounting areas. (1)
6. Check feasibility of curtailing the benefits. The curtailment can be:
 - Lowering of future increase in the benefits (say 75% of CPI increase)
 - Lowering of maximum pension (say 70000 instead of current 75000)
 - lower accrual rate (this won't impact the current pension being paid)
 (0.5 mark for stating the point + up to 1 mark for reasonable amendments)
(up to 5 marks for 'measures')

Impact on Accounting & Funding valuations

1. Accounting valuation require recognition of assets on fair value. In absence of any guarantee, the asset recorded in the balance sheet would have no value and hence would not be considered as Plan Asset. (0.5)

2. If the asset does not accrue any investment return, the offsetting allowed in the interest cost (for investment income) will reduce. This will increase the pension cost recognised in P&L account. (1)
 3. If there are actuarial gains in the asset sides due to higher investment returns, the gains will reduce (0.5)
 4. This unpaid pension cost will ultimately increase the liabilities of C1 & adversely impact the financial results of C1. (1)
 5. The future funding valuation will also be impacted by this unpaid due of the Government. The prudence built in the valuation will increase & this will result in higher deficit and hence higher contribution requirements from C1 (0.5)
- (up to 2.5 mark for 'impact')
- [Max 10]**

vi)

Points to consider:

1. Risk Transfer: By choosing the option 2, all the risks associated with final salary pension scheme is transferred to C2. The impact depends upon the age, salary profile of the transferring members. Under option 1, the risk is retained with C1. (1)
2. What is fair value of such transfer? Under option 2, the fair value of the transfer should represent the realistic value of the accrued pension benefits of transferring members. While C1 is willing to transfer only on realistic basis, C2 may demand higher value for its exposure to higher pension risk. There could be disagreements on the approach & method used in calculations. This may delay the transfer process. Option 1 face no such difficulties. (1.5)
3. Sharing of deficit: Scheme of C1 is having significant deficit under the scheme. Trustees of C1 may insist for proportionate share of deficit to be considered while calculating the transfer value under option 2 but C2 may not agree to this proposal due to lower amount of transfers. Under option 1, the deficit is retained in C1 trust. (1.5)
4. Treatment of PAYG arrangement: Scheme of C1 is facing additional deficit risk due to the PAYG arrangement with Government. It may want to transfer the risk proportionately in respect of transferring members under option 2. But C2 may be unwilling to accept such transfers. Under option 1, the risk is retained with C1. (1)
5. Impact on P&L of C1: Under option 1, C1 expect the financial statements to strengthen following transfer of members. This depends upon the value of liabilities transferred as compared with transfer value amount. But under option 1, the financials of C1 continue to remain under stress. (1.5)
6. Funding requirements: Under option1 there will be no reduction of liabilities as members are retained in C1 scheme. But the contributory requirements will reduce (in absolute terms) as the cost is now shared by C2. Under option 2, the transfer of liabilities, risks are complete & hence the funding requirements will be less constraining. (1)
7. Liquidity: – the trust of C1 may not be holding such a high volume of liquid assets. Hence if option 2 is chosen, the assets may have to be liquidated at available rates which may result in sub-optimal realizations. But if option1 is chosen there will be cash flows from C2 by annual contributions which may ease the liquidity constrains of C1 if any). (1)
8. Administrative simplicity – Under option 1, demanding annual contributions would require consensus on the assumptions and basis of computation between both the corporations every year. Proper administrative& accounting mechanism has also to be established. Transfer of one-time lumpsum under option 1 is simpler as it typically requires a consensus on various factors only once. (1)

9. Tax implications: Under option 1 there could be tax implications on the benefits paid & contributions received in respect of transferring members. The Tax authorities may not give approval to such arrangement. But no such issues will arise under option 2. (0.5)

[Max 10]

[50 Marks]

Solution 2:

i)

General:

- Actuarial gain loss could occur due to change in assumption over the reporting period like discount rate, salary escalation rate, withdrawal rate, etc. (0.5)
- Experience gains and losses would arise because of actual experience during the year being different from the assumption (0.5)

[Max 1]

Gratuity:

- If actual salary increase is higher than expected during the year, it would lead to actuarial loss and vice versa.
- If more of unvested employees leave than assumed, the Gratuity scheme would see a gain due to higher attrition (0.5)
- However in case of vested employees, the gain / loss would depend on the relationship between the discount rate assumption and salary escalation rate assumption. If the salary increase rate is higher than discount rate then higher attrition would lead to actuarial gain as the employees leaving sooner than assumed would mean leaving at lower salary than assumed. (0.5)
- If death benefits are more generous than the survival benefits, then higher mortality than expected would lead to actuarial losses (0.5)
- Since the scheme is funded, actual returns on assets being higher than expected return would also lead to asset gain (0.5)
- Gains and Losses would be recognized through the Other Comprehensive Income (0.5)

[Max 2]

Leave Encashment:

- a. Actual attrition and mortality in the Company being different from assumed rates leads to gain / loss, i.e. if the assumed salary escalation rate is higher than discount rate, then actual attrition being higher than assumed attrition rate would lead to a gain and vice versa (0.5)
- b. If the change in leave balance is different from what is assumed in the year's expense through the Current Service Cost, it would lead to gains/losses (0.5)
- c. New entrants during the year would lead to experience losses (0.5)
- d. Actual salary increase being different from assumed would lead to gain / loss (0.5)
- e. Gains and Losses would be recognized through the P&L expense (0.5)
- f. But "leave availed" as against the assumption used in valuation is an important factor contributing to actuarial gains/losses. If the valuation does not allow for this parameter, there will be actuarial gain if the employee avails leave during inter valuation period. (1)
- g. As per para 5c and 154 of Ind AS 19 gains and losses for other long term benefits like leave and LSA should be recognized through P&L,

[Max 2]

Long Term Service Award:

- a. This is a long term service benefit where benefits are dependent on service put in by the employee at the time of exit. The impact depends upon whether uniform or variable exit parameters is used in valuation. For example, if the valuation uses uniform attrition rate & larger proportion of exits happen at >25 years category, there will be actuarial losses. (0.5)
- b. New entrants during the year would lead to some experience losses (0.5)
- c. Gains and losses would be recognized through the P&L Expense (0.5)

[Max 1]**Post Retirement Medical Scheme (PRMS)**

- a. If the actual attrition / mortality is higher than assumed during the year, it would lead to actuarial gains as more than expected employees who were to receive the post retirement medical benefit would have separated from the Company (0.5)
- b. Since the scheme is insured, if the actual increase in hospitalization premium is higher than the assumed medical inflation rate, it would lead to actuarial losses (0.5)
- c. If the mortality among beneficiaries is different than assumed, it would lead to gain / loss (0.5)
- d. If the insurer takes all the risks of the PRMS on payment premium by the company, there will be no actuarial gains/losses for the company. (0.5)
- e. Gains and losses would be recognized through Other Comprehensive Income (0.5)

[Max 2]**[Max 8]****ii) The actuarial & other risks to be considered by the company before deciding to self insure PRMS.**

- 1. Self-insuring PRMS may help to avoid the escalating premium rates of the insurer. By self-insurance, the expenses of insurer & profit margins are eliminated. However, high competition between insurers could help the employer get a better price for the hospitalization cover. (0.5)
- 2. Employer would face more volatility in terms of financing the scheme when self-insured instead of buying a hospitalization cover. There will be less predictability of cost and potential for higher variability of claim costs. (0.5)
- 3. Actuarial valuation would require assumptions like morbidity, medical inflation, distribution of claim amounts, etc. and the data for setting these parameters may not be readily available. (0.5)
- 4. The company may create actuarial reserve based on its own experience. But such reserve may be inadequate, as it is based on small internal data of the company & is not considering the recent trends in the morbidity (0.5)
- 5. By insuring the scheme, adverse experience could be shared across similar other PRMS group. But by self insuring, this diversification of risk is eliminated (0.5)
- 6. If the Company chooses unfunded approach (PAYG) to pay the benefits, there could be liquidity problems for the employer, especially if many large claims are registered within a short span of time. (0.5)
- 7. The company will be exposed to new risks emerging that require expensive, longer hospitalization (eg: COVID 19) & the Company may be missing the services of professional risk management (0.5)
- 8. It could be difficult for the Company to administratively manage this arrangement. This would include taking responsibility of member communications, calculations of claim amounts to be settled and record-keeping of various members, their bank accounts, claim paid during the year, ailment, etc. (0.5)

9. Insurance arrangement might have some deductible or co-pay with the members to avoid moral hazard thus keeping the claim amounts in check. Employer may not be able to implement similar controls (0.5)
10. Engaging a Third Party Administrator (TPA) for administering the scheme will entail additional expenses. Monitoring is also required on the functioning of TPA. (0.5)
11. There may be tax disadvantages of self insuring PRMS or tax relief gets increasingly complicated (0.5)

[Max 4]

iii)

a) Options of design changes:

The changes in the scheme design listed below would lead to reduction in expenses. The impact would depend upon the profile of the members covered under these schemes.

This also depends upon 1) whether the changes are proposed for new members or for existing members. 2) Whether such changes impact the past services rendered (1)

Gratuity:

- The scheme design is more generous when compared to the statutory gratuity benefit. Hence the benefit design could be changed to reduce the benefit to statutory benefit level. (0.5)
- There will be a reduction in current service cost & the annual contribution requirements will come down. This will reduce the expenses under P&L. If the scheme continues to operate at 100% funding level, there will be no changes in the balance sheet of the company. (1)
- The employer can change the scheme rules for existing employees by reducing the accrual factor from 21/26 to 15/26 and/or capping the benefit to INR 20 lakhs. This would reduce the past service liability and would be recognized immediately in P&L under the heading Past Service Cost / (Credit) (1)
- Current service cost would also be reduced from the date of amendment (0.5)
- If the employer makes good the reduction in benefit by paying the differential amount for past service to the employees, the difference between reduction in liability and one-time benefit paid to make good this change would be shown as settlement gain/ loss which is also recognized immediately in the P&L (1)

[Max 3]

Leave:

- Leave Encashment benefit is also a statutory benefit in India and the benefit should comply with the local state laws (0.5)
- The benefit provided by this employer is more generous than the mandatory benefit level.
- The employer could reduce the maximum leave to be accumulated for encashment from 120 days to say 60 days to optimize cost. The reduction in liability would lead to past service cost / credit. (0.5)
- The employer could allow the employees to avail leaves above 60 days upto a certain limit and lapse the rest. This would lead to actuarial gains due to higher availing of leaves and lead to reduction in liabilities in the next actuarial valuation. However, the loss of productivity or notional cost of absence of employees may have to be factored in while taking decision. (1)
- Alternatively, if the employer allows the employees to encash the leaves above 60 days on current salary, the difference between the reduction in DBO and one-time settlement would lead to settlement gain / loss (1)
- The employer could change the salary definition basis which the encashment happens from gross salary to basic salary. The impact due to this change would also be a past service cost / credit (0.5)

[Max 3]

Long Service Award:

- This is not a statutory benefit in India and hence the employer could close the scheme completely to new entrants.. There will be a reduction in current service cost over the future years depending upon the service profile of existing employees. (0.5)
 - The employer could also reduce the cash benefits or link them to performance of the employees year on year (0.5)
 - Assumption around performance of employees would have to be built in for valuations if such a design change is implemented (0.5)
 - The employer could increase the service eligibility criteria for the awards (0.5)
 - Such change in benefits through change in plan design would lead to past service cost / (credit) (0.5)
 - Employer could close the scheme altogether for existing employees also by honouring the pay-outs for a short time period (eg 3 months) in which case there will be settlement gains & the scheme gets closed, thus extinguishing the long term DB liabilities (1)
- [Max 2]**

PRMB:

This is not a statutory benefit in India and hence the employer could close the scheme completely to new entrants.

- There may be a reduction in insurance premium due to the declining members to be covered on account of deaths. It is possible that the annual premium charged may go up for a while if the insurer considers shrinking size. (0.5)
 - The employer could change the design for current employees by providing the medical benefit upto a certain age instead of till death (0.5)
 - The hospitalization sum insured could be reduced or be linked to grade / service of the employee on retirement. (0.5)
 - Vesting criteria around age and service could be added for eligibility of post retirement medical benefit on retirement (0.5)
 - It might be difficult to implement these changes for the retired members already receiving this benefit and would usually be introduced for the active employees. (0.5)
 - If the scheme is self insured, there will be greater volatility in current service cost, actuarial gains/losses & the contributory requirements over the short term. (0.5)
 - Reduction in liability due to change in scheme rules would lead to past service cost / credit (0.5)
- [Max 3]**
[Max 12]

b) Reduce workforce upto 10%:

- The impact of the proposal depends upon whether it is backed by a formal plan or not & if this reduction is voluntary or not. It also depends on the level of additional benefits on such termination. (0.5)
- If there are additional benefits on such termination, they are to be recognized as expenses relating to Termination benefits. (0.5)
- Such (proposed) pay out may require disclosures under AS 37, AS 1 & AS24 (0.5)
- The impact should be recognized in financial statements only when the formal plan of termination is executed. (0.5)

- On such termination, there will be a reduction in salary related expenses depending upon the profile of employees for whom 10% reduction is proposed. Such reduction in work force will also impact the payouts of other employee benefits (0.5)
- A curtailment occurs when an entity significantly reduces the number of employees covered by a plan under IND AS19 accounting standards. (0.5)
- In case of lumpsum plans like Gratuity, Leave encashment benefits & long service awards the difference between the liability with respect to the employees being laid off and the benefit paid to the employees with respect to these plans is shown as curtailment gain / loss. This forms a part of P&L and is recognized immediately. (1)
- Also the current service cost would be restated on the date of these employees leaving for the remaining employees.
- Gratuity may have to be paid to unvested employees as well since the separation is not voluntary (0.5)
- If the released liability on account of employees leaving is higher than benefits paid, it would lead to curtailment gain and vice versa. This forms a part of P&L and is recognized immediately. (0.5)
- If the employer chooses to extend PRMS benefits to the “laid-off” members, the age, mortality/morbidity profile of members of PRMS would undergo a change. The annual premium charged (in case the scheme is insured) will depend upon the revised profile of the insured members. If the scheme is self insured, there will be a reduction in current service cost & there will be actuarial gains in the following year (0.5)
- Since PRMS is non mandatory, the employer may choose not to pay anything against these benefits in which case the entire release in liability would be curtailment gain for the Company. (0.5)

[Max 4]**c) Other issues to be considered:**

- The proposed changes may have to be disclosed in notes to accounts by the employer (0.5)
- These decisions may not be popular and would lead to employee dissatisfaction. It could also result in losing key talent from the Company and higher overall attrition (0.5)
- If the payouts are generous and more than the liability released, it may lead to settlement/curtailment losses (0.5)
- The one time payouts against reduction in benefits would be taxable as income for the employees thus reducing the in-hand benefit (0.5)
- Changes to the Gratuity scheme would need amendments in trust deed and approval from Income Tax Commissioner (0.5)
- Liquidity risk for the employer to make the upfront payouts (0.5)
- Employer should account for the opportunity cost for foregoing the returns that could have been earned by investing this amount for any other business activities (0.5)
- It would be critical for the employer to clearly communicate the changes to the employees and how the settlements, if any are computed to make good the losses (0.5)
- Plan rules to be updated on Company’s portal (0.5)
- Employer should maintain proper records of the change and have sophisticated system in place to reflect the updates (0.5)
- Employer should seek legal opinion before bringing these changes into effect (0.5)
- If the Company has blue collared employees, union agreements have to be considered before making the changes (0.5)
- Investment strategy may have to be relooked to match the new duration and nature of liabilities (0.5)
- Actuarial assumptions may have to be revisited to address the changes in scheme rules (0.5)

- Seek the global team's view since this is a multi-national company so that the overall company's philosophy is adhered to (0.5)
 - The employer could also perform a market benchmarking and understand the benefits offered by competitors before making these changes (0.5)
- [Max 6]

iv)

a) Actuarial valuation is required for the Provident Fund Scheme because:

- Provident Fund Scheme managed by the employer needs to match the interest rate declared by the EPFO which is the defined benefit element in the plan. (1)
 - Also the interest credited to members are guaranteed in nature & they cannot be reversed even in case there are capital losses (0.5)
 - Also in case there are investment defaults, the employer would have to make good the capital losses thus requiring an actuarial valuation to understand the net deficit of the plan (1)
 - Paragraph 29(b) of Ind AS19 deal with the defined contribution plans where the enterprise provides a guarantee either indirectly through a plan or directly of a specified return on contributions (0.5)
 - These accounting standards require such plans to be treated as defined benefit plans from the standpoint of accounting and disclosure. (0.5)
 - Under AS15 and INDAS19, defined benefit plans are defined as post-employment benefit plans other than defined contribution plans. (0.5)
- [Max 4]

b)

Data:

- Employee wise data with details like date of birth, date of joining, retirement age, provident fund corpus accumulated till date, contributions made during the year split by employer, employee and voluntary, etc. (0.5)
 - Set of inactive members' data with accumulated account balance with interest outstanding in the scheme, date of separation, date of birth (0.5)
 - Plan information such as governing scheme documentation, HR policies or practices of interest credit etc. (0.5)
 - Investment schedule including fields like book value, face value, market value, coupon rate, coupon frequency, date of purchase, date of maturity, date of next coupon, etc. (0.5)
 - Balance sheet and Income and Expenditure statements of Provident Fund Trust Financials as on the date of valuation (0.5)
- [Max 2]

Assumptions:

- Interest guarantee rate of return or EPFO rate of return as the rate expected to be declared by the Employees Provident Fund Organisation (EPFO) (0.5)
 - The market yield on Government bonds [on the balance sheet date] .The term of the Government bonds must be equal to the decrement adjusted expected working life time of the employees (0.5)
 - Expected yield on asset portfolio(for each category of assets) (0.5)
 - Demographic assumptions like withdrawal rate, mortality rate, retirement age, etc. (0.5)
- [Max 2]

Methodology:

- The methodologies recommended in GN29 for measuring the value of the interest rate guarantee are:
 1. Deterministic Modelling Approach (including cash flow modelling approach)
 2. Option Pricing Approach
 3. Stochastic Modelling Approach

(0.5)
[Max 4]

Deterministic approach:

- At a basic level, deterministic modelling involves deciding upon a single assumption for each variable in the model.
- In a deterministic model prudence can be reflected through margins in the assumptions used or through changing the assumptions. A first step is to consider changing each assumption in turn; and evaluating the effect. This is known as sensitivity testing.
- In the context of valuing the interest rate guarantee, a deterministic approach involving scenario analysis will be to consider three interest rate scenarios: Base Case Scenario, Rising Interest Rate Scenario and Falling Interest Rate Scenario. The present value of the interest rate guarantee would be set equal to the average of the present values determined under these scenarios.
- The member balances are projected in the future to the various ages at which, the employees are assumed to leave active service considering the demographic assumptions
- The Cashflows are projected using the contribution rate, an interest crediting rate assumption (expected long term EPFO rate), and a salary increase assumption.
- To determine the PVO, the future projected benefits will then be prorated and discounted back to the valuation date (using the valuation discount rate), reflecting any decrement adjustments.

[Max 2]

Option Pricing Approach:

- This approach uses the modified version of the Black Scholes Option Pricing Model for determining Present Value Obligation (PVO) of the interest rate guarantee.
- This approach assumes that the rate of return on the asset portfolio is a random variable which follows a log-normal probability distribution.
- Under this approach, the PVO of the Interest Rate Guarantee is set equal to the Value of the Interest Rate Floor, which is computed using the Option Pricing Model used for pricing interest rate derivatives. The underlying rationale is that the interest rate guarantee obligation of the enterprise is like the obligation of the seller of an interest rate floor who has to compensate the buyer when the actual rate of interest [on an interest reset date] turns out to be less than the guaranteed rate.
- If the PF trust retains the surplus interest earnings for funding future interest shortfalls, then the enterprise indirectly benefits from the surplus interest earnings which will arise if the future interest rates are higher than the guaranteed rate. In this case the PVO of the interest rate guarantee will be equal to the Value of Interest Rate Floor less the Value of the Interest Rate Cap.

[Max 1]

Stochastic Modelling Approach:

- The stochastic modelling approach treats one or more of the assumptions as random variables. Typically, this model is run several times by randomly drawing the values for these variables from their respective probability distributions. The key benefit is that this approach provides a probability distribution for the model outputs.

Reserve set through any of these approaches requires regular monitoring to ensure its adequacy.

(0.5)

[Max 1]

[Max 8]**c) Key risks of self-managing the Provident Fund Scheme:**

- Requirement of actuarial valuation leading to long-term Defined Benefit liabilities for the employer (0.5)
- Since the investment decisions are taken by the Self managed fund on behalf of members, the employer(through Trustees) are responsible for investment losses. (0.5)
- Matching the investment performance of the funds with EPFO rates will be challenging for a self managed fund. (0.5)
- It may aim to replicate the performance of EPFO by choosing the same categories of assets. However it would still be exposed to the risk of underperformance due to the mis match of liabilities in terms of duration & different investment management approach. (0.5)
- Bond defaults would have to be made good by the employer thus posing risk to the investment capital (0.5)
- Market volatility would impact balance sheet liabilities of exempt PF Trust. (0.5)
- The employer faces volatility risk if he chooses to invest aggressively to out perform the EPFO investments & he needs funds to manage the volatility. (0.5)
- Liquidity Risk – sudden request of withdrawal of PF corpus could impose liquidity risk to the Trust. (0.5)
- Meeting the expectation of PF members to outperform the the EPFO without the downside risk will be a challenge to employer/trustees. (0.5)
- Increased exposure to Administrative risk, expense risk and risk of accounting errors (0.5)
- Increased expenses due to diverting the (internal) investment expertise & the need to have actuarial valuation to ensure the adequacy funds set aside to manage the guarantee. (0.5)
- Compliance with regulators and tax authorities. (0.5)
- Delay in settlement of PF dues leading to complaints from employees especially when employer covenant is weak. (0.5)

[Max 4]**[50 Marks]**
