Institute of Actuaries of India

Subject SA2 – Life Insurance

September 2016 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) Differences in the method of valuation of assets and liabilities between the statutory balance sheet and a realistic balance sheet are set out below:

Regulatory and professional standards

The method of valuation, in the case of statutory balance sheet is governed by regulations issued by the IRDAI, viz., the IRDAI (Assets, Liabilities and Solvency Margin of Life Insurance Business) Regulations, 2016; and the IRDA (Preparation of Financial Statements and Auditor's Reports of Insurance Companies) Regulations, 2002. In addition, various clarifications, circulars, guidance from the IRDAI as well as actuarial practice standards as issued by the Institute of Actuaries of India apply when determining the appropriate method to be used for the statutory valuation.

In contrast, currently in India, there are no formal rules or regulations governing the method of valuation for realistic balance sheet.

Valuation of assets

In the case of statutory balance sheet, a combination of historical cost (subject to amortisation) and fair value is used, depending on the type of asset and the fund in which the business is written. For example:

For non-linked funds and shareholders' fund

- Fixed interest securities are valued at historical cost subject to amortisation;
- Property is valued at historical cost subject to revaluation at least once in three years;
- Listed equities are measured at fair market value;
- Unlisted (and other than actively traded) equities are measured at historical cost;
- Loans are measured at historical cost, subject to impairment provisions.
- Fixed assets are measured at historic cost less accumulated depreciation and impairment loss, if any.

For linked funds

- All assets within the unit-linked funds are measured at fair value.

By contrast, in the case of a realistic balance sheet, all assets are intended to be measured at fair value.

Valuation of liabilities

The overarching difference in the methodology used for the valuation of liabilities between the statutory balance sheet and a realistic balance sheet is that in case of the former, liabilities are measured based on a prudent basis reflecting the statutory principles, whereas in the case of the latter, liabilities may be measured on what is deemed as the market value

or fair value of liabilities. Specific aspects of the valuation, where differences arise are further elaborated as follows:

Flooring of the valuation of liabilities

In the case of statutory valuation, where the amount of mathematical reserves in respect of a policy, determined as per the gross premium valuation methodology, are negative or less than the surrender value payable, the amount of such reserves must be set equal to zero or to the amount of the surrender value payable, as the case may be. In case of unit-linked products, the negative non-unit reserves are required to be zeroised before adding to the unit reserves under the policy.

Certain additional floors may also be applied in specific cases, depending on the method adopted by the Appointed Actuary, such as holding a minimum of unearned premiums (e.g. in the case of certain riders or yearly renewable pure protection products) or a minimum of unearned or one month's risk charges (e.g. in the calculation of non-unit reserves for unit-linked products).

No such minimum conditions or floors are usually applied in the case of realistic valuation of liabilities, whereby negative reserves may be permitted, thereby permitting the present value of the excess of futures incomes over outgoes to be treated as an asset, provided these are measured on a best estimate, realistic basis.

Margins over current estimates

In the case of statutory balance sheet, while valuing the liabilities, a margin over the 'best estimate' assumptions is applied to introduce certain degree of prudence, in order to reflect the inherent uncertainty related to future cash-flows. This is typically reflected by adding a margin for adverse deviations (MADs) to each of the best estimate assumptions, and valuing the liabilities on a basis comprising a single combined scenario representing the 'best estimate' assumption plus the MAD.

In the case of a realistic balance sheet, however, such a margin for prudence is not applied and the valuation basis for all the parameters are intended to be 'best estimate', since the liabilities are intended to be measured on a realistic basis.

However, in the case of realistic balance sheet, a margin is still applied to the valuation bases to recognise the liabilities at 'transfer value'. This margin is reflected as an additional amount above the 'best estimate' liability, considered necessary for the transfer of the insurance liabilities to another entity. Given the uncertainty attached to cash-flows underlying the insurance liabilities and the absence of available hedging options, a third party may be expected to hold assets of an amount greater than the 'best estimate' liabilities, to take over the commitment to pay the policyholder obligations. Such a margin, applied to recognise the 'transfer value' may be called by different terminologies, e.g. "risk margin" or a "market value margin (MVM)" or a "cost of non-hedgeable risks" etc.

This margin to reflect the 'transfer value' of liabilities is typically estimated using a 'cost of capital' approach which broadly requires the following steps:

- Identification of the non-hedgeable risks (e.g. insurance risks);
- Estimation of the risk capital required for each non-hedgeable risk using an appropriate risk measure (e.g. VaR or Tail VaR) for a particular target level of security (e.g. 99.5th percentile) of the loss distribution over a chosen time horizon (e.g. one year);
- Aggregation of the risk capital for all risks allowing for diversification benefits and obtaining a measure of the projected aggregate risk capital required for each time period until run-off of the underlying cash-flows;
- Estimation of a cost of holding such risk capital, based on an appropriate capital charge; and
- Calculation of the present value of the cost of holding the projected risk capital, to arrive at the margin to reflect the 'transfer value' of liabilities using a 'cost of capital' approach.

Economic assumptions

Under both statutory and realistic liability valuations, the liability may be calculated as the discounted value of future cash-flows, allowing for time value of money.

However, in the case of statutory valuation of liabilities, the valuation rate of interest must be determined by having regard to the current yields on existing assets backing the relevant block of business and adjusted for expected future investment outlook, including an allowance for reinvestment risk and additional margin for prudence.

Whereas, in the case of realistic valuation of liabilities, the 'best estimate' liability is generally determined using a "risk neutral valuation" principle, whereby the future investment returns for all asset classes and the discount rate for determining the present values are set with reference to a risk free yield curve.

Value of options and guarantees

Both statutory and realistic valuation methodologies require that the value of any policyholder options and guarantees are appropriately captured. However, in the case of statutory valuation, these may sometimes be reflected implicitly (e.g. through the MADs reflected in the valuation bases), whereas it would be typical to measure such value explicitly (typically, using stochastic approaches) for the realistic valuation of liabilities.

Additional (aggregate, company level) provisions and specific statutory requirements

The statutory liabilities include several additional provisions and specific constraints introduced due to application of various regulatory or professional standards. For example:

- An expense provision for closure to new business in one year – which would not be required under realistic liability estimates;
- Provisions for sub-standard risks, IBNR, claims in payment, revivals etc. would be required under the realistic valuation only to the extent not already captured within the 'best estimate' liability;
- For realistic valuation, the provisions for AIDS/catastrophe risk, operational risks and data inadequacy issues, ALM mis-match etc. would likely be captured within the margin to recognise 'transfer value' and thus, not required separately;
- Specific statutory requirements under participating business for including shareholder transfers from future bonus declarations and associated tax outgoes may not apply for realistic valuation.

[15]

(ii)

1. **Mortality/longevity**

Given largely protection type business, one of the key risk factors is the mortality experience of the policyholders.

For the statutory balance sheet:

- If the mortality experience is in line with 'best estimate' expectations, expect a release of the margins for adverse deviations (MADs) and hence increase in the net asset value (NAV) over the year.
- For the assurance products (i.e. term insurance and whole life), if the mortality experience is worse than 'best estimate' expectations, there could still be some release of margins (subject to the experience being within the bounds of the assumed MADs). However, in case the experience is even worse than the bounds of the underlying MADs, this would lead to a net outgo greater than what is allowed for in the reserves and hence would result in a reduction in NAV.
- For the assurance products (i.e. term insurance and whole life), if the mortality experience is better than expected, then fewer deaths would imply lower than expected death outgo and this would result in an improvement in NAV.
- In case of immediate annuity business, the direction of change in NAV for any variation in the mortality experience would be opposite to that under the assurance products discussed above.

For the realistic balance sheet, there are no explicit margins for prudence within the liability valuations, hence any variance in mortality experience would result in a corresponding increase or decrease in NAV due to operating experience variance

In addition, if the variance in the underlying experience over the past year leads to a change in the mortality assumption to be adopted for future years, then this would have a further impact on valuation of liabilities and hence the NAV. For protection products, it would generally be the case that an improvement / worsening in mortality experience over the year leads to a lower / higher reserving bases (and

therefore reserves) at the end of the year respectively, and thus an improved / worse NAV respectively. For annuity products, the impact would generally be opposite (i.e. an improvement in mortality experience over the year would lead to lower mortality assumption and higher reserves at the end of the year, and worse NAV) as the benefits are paid on survival. Also, if the 'best estimate' assumption is revised, the impact on statutory balance sheet may be more pronounced (as there would be a second order impact due to application of MADs as well) than might be the case for a realistic balance sheet.

2. Reinsurance

Related to the mortality risk, a higher/lower mortality experience for protection products may result in greater/lower reinsurance claim recoveries respectively (although this might depend on the exact terms of the reinsurance arrangements, including the level of retention etc.). The immediate impact on NAV as a result of reinsurance cash-flows might in part off-set the mortality impacts noted above. However, there might be a second order implication, if the experience variations lead to the reinsurance premiums being re-rated (if permitted within the treaties), in which case the valuation of liabilities would be correspondingly affected. The net impact on NAV in such a scenario would depend on the relative impact of each component of the mortality experience, reinsurance cash-flows and reserving bases.

A specific consideration might be required in respect of how reinsurance has been modelled / allowed for, specifically in the case of statutory balance sheet. In case there are discontinuities between the modelled approach and the real-world cash-flows, then there could potentially be a skewed impact on the NAVs.

3. Persistency

The immediate annuity products may not allow for surrenders and therefore the persistency risk may be only pertaining to the protection products.

As for mortality, the impact of persistency experience on statutory NAV will be determined against the valuation assumptions reflecting the level of assumed MADs, while for realistic basis, this would have a direct impact.

The direction of the change in NAV relative to the improvement/worsening of actual experience would depend on the level of surrender values offered, duration of the policies at which they surrender as well as specific product features, so it is difficult to assess at a broad level how these are likely to interact.

4. Expenses

Higher expenses during the year than anticipated would result in net outgoes and thus a reduction in NAVs. In particular, if the (higher) expenses incurred during the

year are in respect of acquisition costs, then these would likely not have any impact on the liability valuations, but only result in a reduction of assets over the year and hence reduction in NAVs.

However, if the operative variance for expenses is also in respect of renewal/maintenance expenses, then this would have a similar implication on NAVs, as discussed for mortality above.

5. Impact of new business

New business might have a significant impact on the NAVs – in the case of statutory balance sheet, writing of new business during the year is likely to result in the requirement to setup greater (prudent) reserves, and thereby reducing the NAV. This would be particularly true in case the reserves to be held for new business is greater than the first premium received net of initial expenses and related first year policy outgoes such as commissions.

However, in the case of a realistic balance sheet, writing of new business on profitable terms should result in the following impacts:

- On the asset side, the asset values should change by the net first year cash-flow (i.e. premium received net of acquisition costs and commissions); and
- On the liability side, the value of realistic liability would effectively capitalise future profits and may well be negative in early policy durations.

This may result in an overall strengthening of the balance sheet and increase in the NAV.

However, new business sold on loss making terms would lead to a reduction in the NAVs.

6. Distributor attrition

In case the distributors (e.g. agents) leave the insurance company, there could potentially be savings of future commissions payable to them (subject to company policies in this regard). On a statutory basis, no credit is allowed to be taken for such agent / distributor attrition in the valuation of liabilities. Thus, in case of attrition of distributors during the year, there could be a release of margins within the statutory reserves to the extent that future commissions are not payable, and this would lead to improving the NAV over the year.

In case this has already been allowed for in the realistic liability valuation, then the impact of distributor attrition during the year would need to be weighed against the assumed rates of such attrition – and any savings in or excess outgoes of future commissions relative to those assumed would result in higher/lower NAVs correspondingly.

This would be applicable only for protection business, as the immediate annuity business would be issued on a single premium business.

7. Earned investment returns on assets

Whilst considering the impact of this, the investment returns earned on assets need to be measured on a basis that is consistent with the methodology used for the valuation of assets. Thus, in the case of the statutory valuation, the investment return earned would be a combination of book yield (arising on fixed interest securities) and market returns (arising on listed equities), whereas in the case of the realistic valuation, this would be fully based on market returns (i.e. reflecting any unrealised gains/losses).

Thus the impact on the respective NAV positions would be related to the volatility of the investment returns – whereby the statutory NAV may be relatively less volatile than the realistic NAV, particularly in case of movements in bond markets.

A higher than expected actual return would lead to strengthening of both statutory and realistic NAVs.

8. Outlook for future investment returns

Changes in the outlook for expected future investment returns would result in a corresponding impact on the valuation of both assets (via implied market values) and liabilities (via changes in corresponding interest rate assumptions).

A further point to note may be that in the case of statutory liability valuation, part of the assets (e.g. bonds) are valued on an amortised book value basis, so that the changes in outlook for future investment returns might have a more muted impact. The underlying valuation rate of interest might be more "sticky". Thus, small changes in the outlook for future investment returns may not necessarily lead to changes in the valuation rate of interest.

However, in the case of realistic liability valuation, the calculations are directly driven by the market implied yield curves, hence might be expected to be more volatile. Thus, the impact on NAV for realistic balance sheet would be heavily dependent on the level of asset-liability matching on the books. In case the assets and liabilities are well matched, the impact of change in market value of assets would typically get mirrored in the change in liabilities, thus resulting in minor impact on NAV. However, in the case of significant mis-matches, the NAV could well be very volatile.

9. Change in asset mix

Any changes in the asset mix over the year would likely impact the NAV for statutory valuation through two ways:

- Directly on the asset side, as the valuation of assets would now reflect the new asset position. If the asset mix has changed, this might have even led to a change in the asset valuation basis (e.g. switch from historical cost subject to amortisation (as for fixed interest securities) to fair market value (as for equity)) and hence led to changes in the valuation of assets via inclusion or exclusion (as the case may be) of unrealised gains/losses over the year.

- Secondly, any changes in asset mix would have a knock on impact on the liability valuations as well, through changes in assumptions for future investment returns to reflect the revised asset mixes.

However, in the case of a realistic valuation, there should not be any direct impact due to change in asset mix.

10. Other miscellaneous factors

These could include items such as:
- Impact of adjustments (e.g. changes to model or data, including any corrections)
- Changes to external operating environment (regulations & legislation, legal etc.)
- Changes in business mix and liability profiles

Such miscellaneous items would result in a change in the NAV over the year depending on the specific nature of the items of change.

[18]

(iii)

The cost of capital in the traditional embedded valuation (TEV) approach arises due to the impact of locking in the capital needed to back the RSM in assets that earn an investment return that is less than the (risk adjusted) shareholder required return (i.e. the hurdle rate or the risk discount rate, 'RDR'). In addition to this opportunity cost, the investment income from such locked-in assets attracts income tax as well as incurs investment expenses, all of which combined lead to the overall 'cost of capital'.

The Company may consider the following steps / investigations to potentially reduce its cost of capital:

1. The Company may revisit its investment strategy for assets backing the required capital. Subject to meeting admissibility criteria, the Company may look to invest in assets with higher expected returns than what is available through current investments. This would

increase its investment income from the assets backing the required capital and thereby potentially reduce the cost of capital.

The extent to which the above would be effective depends on the current investment strategy. If this is very cautious such that the Company is largely investing in risk-free or low yielding assets (such as government bonds, cash or fixed deposits only) then there may be reasonable scope to improve the investment returns whilst still remaining within the maximum limits specified by investment regulations or admissibility requirements.

2. The Company should investigate the possibility of reducing the absolute level of capital required. In India, this is currently based on a factor-based approach, such that higher mathematical reserves leads to a higher level of capital required. Thus the Company could investigate the level of MADs and other areas of prudence built into its reserving basis. If these are excessively prudent, then the Company may consider rationalising its reserving approach which could have a corresponding impact of reducing the capital required and the cost of capital.

3. The Company should also look at specific aspects of its product design. For example, if there are certain explicit guarantees which consequently attract a higher solvency margin factor, then the Company could consider alternative ways of setting out the benefits without such guarantees and hence reducing its required solvency margin and hence the cost of capital.

4. A further aspect of product design that might be considered is how it affects the build-up and subsequent release of reserves over the lifetime of the policy. The Company may look to modify the timing (and amounts) of premium receipts as well as benefit pay-outs in such a way that the build-up of mathematical reserves (and hence the required capital) is moderated. For example, if there are single premiums or limited premium payment terms, then it might be the case that a relatively larger reserve is being set up at earlier policy durations as the premiums are received, and consequently resulting in a higher (factor based) capital requirement over the lifetime of the policy, which may be rationalised if possible. Similar consideration may apply to the speed of release of reserves / required capital depending on the timing (and amount) of the benefit pay-outs.

5. The Company could investigate whether the level of reinsurance it has in place optimises its capital position. From purely a capital perspective, the Company should ideally look to deploy a level of reinsurance that maximises the available reinsurance credit in the calculation of the required solvency margin.

However, this may need to be weighed against the cost of obtaining such reinsurance and other related considerations.

6. On a related note, the CFO should check whether or not the credit for reinsurance has been allowed for in the modelling of the capital projections whilst calculating the new business profit margins. If this has not been considered, a more appropriate modelling solution might be considered that results in more accurate estimates of the reported figures.

7. A key consideration that affects the cost of capital is the margin or the difference between the risk discount rate (RDR) and the assumed investment return. The higher this margin, the higher would be the cost of capital. Thus, the Company may revisit its RDR and consider whether there is any scope to reduce its RDR (and hence the margin between the RDR and the assumed investment return).

8. The CFO should check whether or not the tax deduction in the estimates of cost of capital accurately reflects the Company's tax positon. For instance, in case a higher tax rate is assumed in the calculations than what the Company is subject to in practice, then this could lead to a higher cost of capital. Similarly it may be checked whether or not any credit for historical tax losses carried forward has been reflected within the estimates, as well as ensuring that the approach adopted is consistent with the intended methodology.

9. Although this may be a relatively minor contributor to the overall cost of capital, the Company may consider whether there is any scope to reduce the investment expenses incurred on the assets backing the required capital. In particular, it should investigate:

(a) whether the expense allocation has been undertaken appropriately and thus the projected investment expenses accurately reflect the expected real-world costs; and
(b) whether there is any scope to reduce such real world costs by rationalising the investment function expenses.

10. As a general consideration, the Company should validate and check whether its modelling and calculations are correct and the (high cost of capital) results being obtained accurately reflect the underlying product cash-flows and capital projections.

[11]

(iv) Specific regulatory requirements related to the design and management of individual non-linked non-participating variable insurance products are as follows:

1. The death benefit must either be the sum assured as agreed in the policy *plus* the balance in the policy account, or the higher of sum assured and the balance in the policy account, where the sum assured itself is subject to minimum requirements;
2. A minimum maturity benefit should be equal to the balance in the policy account together with a terminal bonus, if any, as applicable
3. The product is required to have:
    a. a guaranteed non-negative interest rate, referred to as the floor rate;

b. a non-negative additional interest rate above the floor rate to be accrued at various points in time as approved by the IRDAI;

c. non-negative residual additions that would be credited in order to meet the maximum permissible reduction in yield at the end of each year starting from policy year five. Such non-negative residual additions shall be determined as:

i. Gross Investment Yield earned in the shadow account at the end of each policy year, less

ii. Actual yield earned in the policy account value, at the end of each policy year, less

iii. Yield referred to as the maximum reduction in yield at that duration as stipulated;

iv. For the purpose of this regulation, the yield earned on each of the policy account shall be calculated using the money weighted rate of return method at the end of each policy year.

4. The minimum floor rate, shall be guaranteed for the entire term of the policy accumulating on the balance of the policy account. Such accumulation shall be at a frequency of not less than quarterly on the balance of the policy account at the beginning of each such quarter.

5. At each time interval, after the minimum floor rate is credited, the non-negative additional interest rate shall be credited to the balance of the policy account value.

[6]

[50 Marks]

Solution 2:

(i) The tax treatment associated with ordinary life annuities from a policyholder's standpoint is set forth below:

1) Premiums paid to purchase the annuity are tax-deductible up to Rs. 150,000 p.a. under Section 80CCC of the Income Tax Act, 1961.
2) Service Tax (along with the applicable cess thereon) applies on the single premium at the rate of 1.5%.
3) Annuity payments received from the insurance company are not tax-exempt. These would be added to the annuitant's income and thus would be subject to tax depending on the tax slab applicable to the annuitant.

The tax treatment associated with ordinary life annuities vis-à-vis bank deposits is set forth below:

1) Unlike an annuity product, contributions into bank deposits are not tax-deductible[1].
2) Unlike an annuity product, Service Tax and applicable cess thereon do not apply to the contributions into bank deposits. From a policyholder's standpoint, such taxes and cesses are expenses that would be saved if s/he were to invest in bank deposits instead of annuities.

3) Finally, and most importantly, in case of a bank deposit only the interest received is subject to tax whereas in case of an annuity, the entire annuity benefit is subject to tax. The life annuity entails an interest component on the single premium payment as well as amortisation of the principal (i.e. single premium) based on the average life expectancy priced for. Therefore, taxing the entire annuity payment reflects double taxation to a certain extent, since the principal paid was from the income that would have been previously subject to tax (apart from the benefit availed under Section 80CCC of the Income Tax Act .

[7]

(ii)

Generally, such an investigation should cover:

- Competition analysis
- Review of the pricing basis
- Other strategic considerations

Competition analysis

Some of the aspects that should be covered are:

– Benchmarking the Company's annuity rates for the two variants vis-à-vis those offered by competitors
– Are our rates uncompetitive vis-à-vis several players or are they uncompetitive vis-à-vis one or two players who may be writing loss leading or low margin business to garner market share?
– Annuity rates may vary by purchase price bands i.e. progressively higher annuity rates as purchase price increases. Are our rates uncompetitive across the board or only at certain - lower or higher - bands?
– Amongst the two variants, which one is more popular in the market? How competitive are our rates for such a variant?
– Is there any other selection factor – such as impaired lives – being used by the competitors that cause their rates being more attractive than those offered by the Company?
– Conduct market intelligence to identify the frequency at which various competitors update their annuity rates. For instance, if the Company updates the annuity rates monthly whereas other competitors only update their rates quarterly, then there may be a lag effect in a falling interest rate scenario.

Review of the pricing basis

It is important to perform a review of the pricing basis to identify if the basis could be refined to sharpen the pricing.

Mortality

- Review the appropriateness of the mortality basis reflected in the annuity rates.
- The Company has written significant pensions business historically. Has it written sufficient volumes of annuities in the past? If so, does the mortality basis reflect the Company experience?
- If the Company does not have sufficient experience, then how has the basis been set?
- Does the basis reflect future mortality improvements? If so, how are the future mortality improvements calibrated? Are these based on mortality improvement studies in other countries? If so, examine the appropriateness of applying such improvement factors in the Indian context.

Expenses

- Review the appropriateness of the expense basis reflected in the annuity rates.
- Is the expense basis reflective of the actual expenses incurred in servicing this business?
- If the existing annuity business is of small size, it may be worthwhile to review whether the expense basis is reflective of the Company's methodology to allocate expenses to various lines of business.
- Since this is a single premium business, the maintenance expenses should be lower than that of regular premium business, as there are no renewal premium collection costs. Confirm the treatment in this regard.
- How frequently does the Company obtain survival certificates from the annuitants? Are the costs of periodically obtaining these appropriately reflected for?

Investment returns

- Review the appropriateness of the investment basis reflected in the annuity rates.
- Review the target asset allocation and the expected return on each of the asset classes.
- Does the Company invest a part of the assets in corporate bonds so as to pick up additional yield? If not, check if this can be considered without causing a material, adverse impact on the ALM position.
- Does the Company follow a so called 'market consistent' approach or a traditional approach in pricing? If the Company follows a market consistent approach, then review how the illiquidity premium is accounted for in setting the investment basis. Is there any scope to enhance the level of illiquidity premium?
- Explore whether non fixed income investments such as real estate or equity can be considered to enhance the investment yield. However, these will have associated costs – in terms of asset-liability mismatches and cost of guarantees and will result in an increased volatility in earnings. This can be considered

provided the Board/Management understand the risks involved and are comfortable with the risks and associated capital requirements.

Others

- Review the tax rates used in pricing. Currently, there is no tax on the profits emerging from the annuity business (if it is considered 'pensions' business). However, tax will apply to investment income on required capital supporting the business, unless such capital resides in the 'pensions' fund. Is the pricing basis consistent with the actual tax position of the Company?
- Review the appropriateness of the costs of residual non-hedgeable risks (in case of a 'market consistent' approach used in pricing) or the risk discount rate (in case of a traditional approach used in pricing) reflected in pricing.
- Review the appropriateness of frictional cost of capital (in case of a 'market consistent' approach used in pricing) or the cost of capital (in case of a traditional approach used in pricing), reflected in pricing.
- Does the Company have annuity rates varying by premium size or other selection factors (such as impaired lives)? If not, consider introducing such bands / factors so as to make the rates more competitive for different bands / selection factors.

Other Strategic Considerations

Some of the aspects that should be covered are:

- If the lack of competitiveness of annuity rates is having a significant adverse impact on the accumulation pensions business, will the Company consider writing annuity business at a lower profit margin?
- The Company could consider providing special rates (e.g. 5% higher annuity) for annuities 'purchased' by existing accumulation pension policyholders. It can continue to have standard rates for open market clients or those who surrendered their accumulation policy before the vesting date.
- Does the Company pay commissions at the time of annuitisation? If so, the Company could consider discontinuing them. This is because the annuitisation with the same insurer who offered accumulation pension product is now mandatory and therefore there would not be any distribution effort at the time of annuitisation.
- If the Company is concerned about longevity risk, it could explore whether any reinsurance is available at attractive terms. If so, such a reinsurance arrangement could help to make the annuity rates more competitive.

[16]

(iii)

Overall, it is manageable for banks to offer such a feature vis-à-vis an insurer because:

- Bank liabilities are shorter tenure relative to insurers. Maximum period for bank deposits is typically 8 to 10 years.

– A significant part of the bank lending is on floating rate basis. Therefore, whilst increase in interest rates can induce a degree of withdrawals and re-booking of deposits, banks can offset some of this through higher interests on loans.
– In extreme scenarios (e.g. in case of a run on a bank), banks can avail of liquidity through the reserve bank of India (RBI). Furthermore, it may be more acceptable for banks to revise the withdrawal rules in such scenarios. However, for insurers, any post-facto change in product features may undergo detailed regulatory scrutiny apart from it being generally difficult to implement from a standpoint of meeting policyholders' reasonable expectation.

The key risks that the Company would be exposed to if such a surrender value was offered are discussed below.

Market Risk

Primarily, the Company is exposed to the risk that the market value of the supporting assets is lower than the surrender value at the time of surrender.

This could likely occur if the interest rates have increased relative to the time when the annuities were purchased. Generally, the assets supporting annuity products are invested into fixed income instruments. Purchase price paid by the policyholder, after deducting initial commissions (if applicable) and expenses, would be used to buy supporting assets. Thus, if subsequently the interest rates increase, the asset values will fall.

The asset duration for annuities tends to be on a longer side, typically greater than 10-12 years. As such, even a small increase in the interest rates – say, of 50 basis points – may result in the asset values falling below the surrender value. Such a risk may be greater at early durations as the Company may not have recouped the initial expenses and commissions (if incurred).

The Company may be investing a part of the assets into risky assets such as equities or real estate. In the event of an economic downturn, the annuitants may feel the urge to draw down their investments especially if the surrender value was available and attractive. In such situations, the Company may incur losses if the values of the risky assets have fallen.

Policyholder Behaviour Risks

The Company exposes itself to potential anti-selective behaviour by its policyholders.

If the interest rates have increased after an annuity is purchased, the policyholder has an incentive to surrender the annuity and buy a new one. Admittedly, since the guaranteed surrender value is only 95% of the initial purchase price, the policyholder

could lose 5% of the initial purchase price. However, if interest rates have increased meaningfully, the policyholder may be overall better off in spite of the 5% loss. In brief, the policyholder has a one-sided guarantee: if the interest rates rise, s/he may benefit from rising interest rates at a nominal cost, whereas if the interest rates fall, s/he will continue to receive annuities based on the guaranteed rates.

Arguably, a vast majority of the policyholders may not be sophisticated enough to exploit such a feature. However, with increasing financial literacy of the policyholders aided by influence by the distributors and the media including social media, it may be possible that such a feature may be exploited in the future.

Together, the policyholder behaviour risks and market risks also contribute to asset liability management challenges for such a feature.

Regulatory intervention / reputational risks

The current regulatory environment requires the policyholders to receive the proceeds of an accumulation 'pension' product in the form of regular income (i.e. annuity) apart from receiving a maximum of 1/3rd of such proceeds in lump-sum. The 'pensions' business is structured to be 'tax free' (for the life insurance companies) as an incentive for them to promote such business to fulfil the social need to provide adequately for retirement. Should the Company offer the ability to surrender the annuity for 95% of the purchase price, there is a risk that policyholders may take the surrender value in lumpsum instead of receiving the regular income in retirement.

Such behaviour may attract regulatory intervention and ultimately risk damaging the reputation of the Company.

[10]

(iv) *Merits of the proposal*

The Company was known for its success in the pensions business. Having lost the momentum following the regulatory changes, it is important for the Company to revive its prominence in this business.

Under the new regulations, clients must buy annuities from the same insurer which provided the accumulation product in the first place. From the clients' perspective, therefore, this is an asymmetric arrangement – they must buy the annuity at whatever the then annuity terms are as offered by the insurer. Thus, the concern expressed by the Chief Distribution Officer (CDO) is not unreasonable.

Offering minimum guaranteed annuity rates enables the distributors to respond to clients' concerns. Clients can benefit from the minimum guaranteed annuity rates or the tabular annuity rates at the time of vesting, whichever is higher.

It is not a common market practice in India to offer guaranteed annuity rates for a future vesting date. Such a feature will prove to be a powerful differentiator vis-à-vis competing products in the market.

The Company offers a 3% p.a. guarantee on the regular premiums paid during the accumulation period. Offering a guaranteed annuity rates could allow the Company to show an "end-to-end" minimum guarantee to the clients i.e. at the outset, clients can know the minimum annuity that they would receive from a certain future age, provided they paid their premiums when due. From a distribution standpoint, this could be quite attractive and may appeal to many prospective clients.

In view of the prevailing interest rates in India, the 3% p.a. interest rate underlying the guaranteed annuity rates as requested by the CDO does not appear to be entirely unreasonable.

Risks associated with the proposal

Primarily, the Company is exposed to the market risk, i.e. risk of falling interest rates such that the 3% p.a. guarantee implied in the guaranteed annuity rates bites at the time of annuitisation.

A 3% p.a. minimum guarantee offered during the accumulation phase is not similar to guaranteed annuity rates being calculated at 3% p.a. interest rates.

The accumulation phase involves regular premiums paid during the vesting period. Some premium instalments may be invested such that the subsequent investment returns exceed the minimum guaranteed rate, whereas the converse may be true for other premium instalments. The nature of the minimum guaranteed rate is such that the guarantee will be met (i.e. it would be out of the money) if the average investment returns over time is higher than the minimum guaranteed rate. The regular premium nature, therefore, smooths out the short term volatility and makes the guarantee relatively more manageable.

On the other hand, annuitisation phase is akin to a single premium contract. The vesting benefit from the accumulation product is utilized to purchase the immediate annuity at the then prevailing annuity rates. If the investment basis underpinning the then prevailing annuity rates is below 3% p.a. then the guarantee will bite or else it will not. Thus, the annuitisation phase guarantee suggested by the CDO does not offer any degree of smoothing unlike the accumulation phase guarantee.

Whilst the risk of falling interest rates exists even in the accumulation phase, it is somewhat mitigated due to the following reasons:

– The prevailing interest rates offer a fair degree of cushion over the minimum guaranteed rate.
– Premiums payable in the initial years will be invested at a higher rate and this could offset potential declines in the interest rates as and when future premiums are received.

However, offering a guaranteed future annuity rates calculated at 3%p.a. exposes the Company to the risk of falling interest rates far out in the future. In the longer term, there is a considerable degree of uncertainty around the level of interest rates and therefore such a guarantee is far more onerous than the guarantee applicable during the accumulation phase.

The Company is also exposed to the anti-selective policyholder behaviour. Policyholders are entitled to take up to a third of the vesting benefit from their accumulation pension product by taking it in cash. However, if the interest rates at the time of annuitisation are lower than 3% p.a., then the policyholders may have an incentive to take less (or none) of the vesting benefits in cash, thereby increasing the overall costs of providing the guaranteed annuity rates.

Finally, guaranteeing the future annuity rates underpinned by a 3% p.a. investment return is more than just an investment guarantee. Effectively, it means guaranteeing the pricing basis, taken in entirety. Therefore, the Company is also exposed to:

– the risk that the underlying mortality basis turns out to be aggressive in the future (i.e. actual mortality being higher / lower than that reflected in pricing of the accumulation / annuity contracts respectively)
– the risk that the operating expenses in the future exceed the underlying expense basis
– the risk that the tax laws change for worse
– the risk that the capital adequacy norms change in the future and that the capital regime at the time of annuitisation requires putting up a far greater degree of capital for products with guarantees.

[17]

[50 Marks]

****