EXAMINERS' REPORT

November 2013 examinations

Subject F102 — Life Insurance Fellowship Principles

INTRODUCTION

The attached report has been prepared by the subject's Principle Examiner. General comments are provided on the performance of candidates on each question. The solutions provided are an indication of the points sought by the examiners, and should not be taken as model solutions.

General Comments

The following general issues relating to poor performance were identified:

- *Not answering the question and giving too much detail on points that are not central to the question*
- *Vague answers and failure to substantiate the points (generic comments like "select appropriate distribution channels" are not given full credit)*
- *Failure to get easy marks on general principles e.g. competitors*
- *Being daunted by harder questions and not getting the easy bookwork/ straight forward application marks in these questions*
- *Lack of preparation and failure to understand key concepts like workings of unit-linked and with-profits policies*
- *Not tailoring the length of the answer to the number of marks (often not enough written for the mark allocation or precious time is wasted writing too much)*
- *Failure to attempt at all questions, no credit can be given when no attempt is made and there are usually some easy marks in every question*

QUESTION 1

- Investigate whether the actual per policy expenses are higher than those expected in the valuation basis.

- It would have been expected that per policy expenses would have increased over the two valuation periods, due to expense inflation and the reducing number of policies in the closed book (all else being equal).

- If per policy expenses were as expected then not too much time should be spent on further investigation.

- If, however, the increase was not expected, then further investigation should be carried out in order to take corrective action where necessary.

- Investigate whether any mistakes were made in the initial analysis.

- Investigations will consider only renewal expenses because the book is closed for new business and hence would have no initial expenses.

- Consider the functional expense analysis to determine whether significantly more expenses were allocated to the book than previously. If so, investigate why.

- If it was due to a once-off item, like a new IT system needed to administer the book, no action should be taken and the expense basis should not be adjusted for it.

- If this was due to recurring expenses that have simply increased, for example due to more expensive staff being required to administer the book, then the expense basis should be adjusted accordingly.

- Investigate whether withdrawal experience has affected per policy expenses, by comparing the level of withdrawals experienced with that expected per the valuation basis.

- If these are significantly higher, then an investigation into the underlying reasons may be launched to take corrective action if necessary.

- Ways of reducing the expense base should be looked into and recommended to management.

- The book is closed for new business and if the book is immaterial in the bigger scheme of things, it strengthens the case not to spend too much time on it.

Examiner's comment
This question was poorly answered.
This was an application question which required tailoring the solution to circumstances of the insurer. Many candidates failed to consider one of the key issues 'actual vs expected experience' and then failed to discuss issues relating to a situation when the increase was expected as well as issues relating to when the experience is different to that expected. A number of candidates failed to focus on the main issue of the question which was expenses and wasted time on detailed discussions on mortality and withdrawal investigations, which did not score credit. Many candidates gave too much detail on individual points and did not discuss the full range of issues relating to expenses.
Some candidates did not answer the full question, leaving out the points on 'actions which might be taken' where there were relatively easy marks for giving examples on expense reduction.

QUESTION 2

(i)
Claims definitions

Inability to perform 3/4 or more activities of daily living on standard ADL scale (or some other independent measure of incapacity) and moving into frail care accommodation.

There should be an exclusion for residing in frail care for recuperating after an operation and a deferred period e.g. three months to ensure that incapacity is permanent.

The ADL criteria need to be carefully determined so that the policyholder will meet the criteria when genuinely needing frail care.

The claims definition needs to be clear, otherwise there is a risk of disputes if policyholders have different expectations.

(ii)
Advantages and disadvantages of Option A over Option B:

Monetary benefit as opposed to indemnity benefit lessens the guarantee offered by the insurer therefore lower cost compared to option B.

The benefit may (unexpectedly) turn out to provide a benefit greater than is required to cover the additional costs of Frail Care, allowing the policyholder to cover any additional costs which might be needed. (This may, however, be considered a disadvantage if it means that the policyholder is paying for a benefit they don't need.)

Advantages and Disadvantage of Option B over Option A:

Indemnity benefit covers the actual cost of care which avoids the issue of dissatisfaction of policyholders if annuity payments do not meet cost of care.

But subject to maximum payment level so not protected against increases in cost of frail care by more than the cut off level.

(iii)

Volume and mix of new business

Volume of new business depends on the take-up of policies from existing members of the retirement community group and on how quickly the group opens up new facilities.

If take-up and future growth is too low business volumes may not justify the initial costs and employment of experts to manage this specialised business.

If business grows too quickly new business strain may adversely affect the solvency position of the insurer (there are significant guarantees in this product design and the uncertainty relating to future benefit payments means that there are likely to be high margins in the reserving and capital requirements for this business).

Changes in types of facilities that are opened in the future may result in a change in new business mix by target market and size of contract. This may affect the risk profile, capital needs and adequacy of allowance for expenses in the premiums.

Actions of distributers

Distributors may take actions that are in their own interests rather than in policyholders (suggest more expensive product to earn higher commission) or business lapsing/ moving to cheaper policies.

There is a risk that the terms and conditions are not well explained resulting in dissatisfied policyholders.

Competition

The insurer needs to compete initially to win the business of the retirement community group. The insurer may need to compete initially on price and service.

There is no competition from other players once the agreement between the parties is in place.

If the retirement community decides to change insurer underwriting the product the risks would need to be transferred to the new insurer.

Economic Environment

The economic environment may affect the affordability of premiums for this product.

Single premium: Lower investment returns before retirement are likely to result in smaller than expected lump sum at retirement.

Regular premium: Lower investment returns after retirement are likely to influence whether policyholders can afford regular premiums.

In a poor economic environment policyholders may select the cheaper option or lapse their policies.

Legal, regulatory and fiscal developments

Changes in state support for the elderly may affect demand for the product.

Change in regulation is a risk to the insurers. Since care of the aged is a politically sensitive issue there is a risk of state interference and the insurer having to provide a minimum level of benefits that were not originally priced for.

If there is a preferential tax regime for retirement savings products and insurance post-retirement changes in the pre- and post-retirement tax regime could affect propensity to make additional savings for retirement or purchase insurance after retirement.

Expenses

Unexpected increases in expenses due to unforeseen expenses and expense inflation.

This is particularly an issue because the premium rates are guaranteed.

Examiner's comment
This question was poorly answered. Many candidates failed to demonstrate an understanding of the issues relating to long-term care insurance.
(i)Many candidates failed to consider the wider issues around claim definition like the need for exclusions for recuperation thus failing to demonstrate a full understanding of the notes. A number of candidates did not consider the 'considerations when determining definition' and therefore failed to fully answer the question.
(ii) Weaker candidates failed consider advantages and disadvantages beyond the benefit definition. Few candidates considered technical aspects like the effect of guarantees on costs.
(iii) Although many candidates managed to generate a large number of points for this part. Many of the points were vague and did not link to the structure of the product or the retirement community aspect.
At the F102 level examiners expect candidate to be able to justify why a particular issue is important. Comments like "select an appropriate distribution channel" were not given full credit. But many candidates discussed general issues relating to product design like "return on capital" when the question required candidates to discuss general business environment issues. This was an 8 mark question and some candidates did not generate sufficient points for mark allocation.

QUESTION 3

(i)
Benefits

Quota share with a low retention limit would have reduced the capital required by the insurer easing any solvency pressures and the volatility and uncertainty of its future results.

The insurer may have needed technical assistance from the reinsurer e.g. setting premium rates and underwriting.

Reinsurance rates may have been favourable allowing the insurer to make a guaranteed profit on reinsurance by charging a risk rate higher than the reinsurance rate.

(ii)

Key disadvantages:

The reinsurer might make specific demands regarding risk management (e.g. referrals) that impact on the business processes, i.e. the level of freedom of the business might decline.

If the business is profitable you are giving away profit to the reinsurer.

(iii)
Individual surplus reinsurance

The excess (if any) of the sum at risk or sum assured above the insurer's retention limit on any individual life is reinsured.

This allows the insurer to fully retain lower sum at risk amounts, but to reinsure larger sum at risk amounts that are likely to have an impact on the financial results of the insurer.

Aggregate excess of loss

The aggregate losses over a specified retention level are reinsured.

E.g. catastrophe cover where a catastrophe could be defined as a minimum number of deaths from a single incident with the deaths occurring within a specified time of that incident.

E.g. stop loss reinsurance where the reinsurer pays the aggregate net loss over the predetermined retention for a portfolio over a given time period, usually a year. But not likely to be available at a reasonable cost to insurer.

Facultative reinsurance will be used for unusual risks outside the surplus treaty.

Factors influencing the reinsurance programme

Availability of certain types of cover (e.g. stop loss cover may not be available in the market).

Cost of reinsurance relative to cost of holding additional capital (or other risk mitigation mechanisms).

Terms offered and restrictions places on business by reinsurers.

The risk appetite and solvency position of the insurer will influence the retention level set by the insurer.

Capacity and financial position of reinsurers will influence the amount of risk that reinsurers are willing to accept.

Credit rating of the reinsurer will influence the default risk of reinsurers and hence the reinsurers selected for cover.

Examiner's comment
This question was fairly straightforward, but was not well answered. Many candidates missed the easy bookwork points. There was some confusion amongst candidates what is meant by the 'type' of reinsurance, with candidates giving points on risk premium vs quota share, treaty vs facultative and original terms, which were not given credit. A few candidates got stuck in detail about administration and softer issues such as relationship building. These points did not get marks and wasted valuable time.

QUESTION 4

(i)
Actuarial funding

- Actuarial funding is a process that allows the insurer to recognise charges in excess of those needed for recurring expenses at point of sale.
- It assists by reducing the total reserves held by the company at point of sale, and hence reduces new business strain.
- In addition, it eliminates investment risk because of the mismatch between initial expenses (generally a monetary amount) and charges (% of fund over time).
- Actuarial funding should be allowed by regulation.

Conditions

- The policy should offer a death benefit or a benefit on survival to a particular date.
- The policy will need to have a (unit-related) surrender penalty to ensure that at any stage the surrender value is below the actuarially funded value.
- The fund management charges will need to be in excess of the recurring expenses attributed to the policy. (After actuarial funding, prudently projected future profit flows remain positive.)

(ii)
Financing Requirement

- Given the unit linked structure the capital required for setting up reserves may be lower than with-out profit business.
- In addition, if actuarial funding is used as for the other portfolios, the initial strain on the product will be reduced.
- However, large levels of new business would likely still result in material new business strain for the company.
- In order to start up the fund, initial capital will be required. In particular due to the nature of the assets i.e. direct holding in large assets, a significant shareholder investment will likely be required for the initial capital. This funding will need to be returned to the shareholder grown at the cost of capital as the portfolio grows.
- As there are no guarantees on the product, there will be no impact on reserving and capital due to guarantees.

Risk Characteristics

- The nature of the assets creates a liquidity risk. If a large number of policyholders leave the portfolio, the asset manager may not be able to liquidate the assets at market price to meet the cash flow requirements.

- It may be necessary to implement high surrender charges on the portfolio as a disincentive to withdraw.

- The liquidity may result in a need to keep a sufficient proportion of the portfolio in cash. This may result in sub-optimal returns. This may result in increased lapse and expense risk.

- The portfolio will be subject to lapse risk due to the high initial expenses which are only recouped over the period of the contract. This will be mitigated by the level of the surrender charge.

- The portfolio will have expense risk if volumes are too low to meet overheads or if there are expense overruns.

Profitability

- The product should meet the profitability requirements of the company. This will be determined by the charges on the unit-linked product.

- The charges should be sufficient to at least cover the initial and recurring expenses as well as the costs of designing and setting up the portfolio.

Sensitivity of Profit

- The product fees are particularly sensitive to withdrawals from the fund and the growth rate in the property assets.

(iii)

- This will be done at the appropriation price
- The market value of the assets would need to be obtained
- As the assets are direct property, there is unlikely to be an observable market value.
- A mark to model approach or use of a property valuation company will be necessary
- A mark to model approach could model the expected cashflows of the property using a financial economic approach where unknown parameters are set so as to be consistent with market values where a corresponding market exists
- Any expenses involved in purchasing additional assets will need to be added
- Any current assets would need to be added
- Any current liabilities will need to be subtracted
- The price will need to be increased for any accrued income
- Less allowance for accrued tax
- This would be divided by the number of units to get the price

Examiner's comment
This question was not answered well overall by the candidates.
(i)This part was bookwork yet few candidates scored full marks for the question. It was clear that many candidates did not understand how actuarial funding is applied to unitised business.
(ii) This part was very poorly answered. Few candidates identified that the policyholder would carry the investment risk. Many assumed that the insurance company would carry the direct investment risk and expenses of the property rather than the risk of the impact of markets on the charges applied to the portfolio.
(iii) This part was bookwork yet few candidates managed to score full marks. Very few candidates identified that a new portfolio would be priced using the appropriation price.

QUESTION 5

(i)
Full medical underwriting is unlikely to be cost-effective for the simple lower sum assured product and may act as a barrier to sales.

Alternatives to full medical underwriting include:

- Using a waiting period (e.g. three months) where only claims relating to accidents will be covered
- Using a questionnaire (or simplified questionnaire) covering medical, lifestyle and financial questions to allow for lifestyle, financial and limited medical underwriting

The underwriting decision is likely to either “accept at standard rates” or “decline”.

But if a more complicated approach is taken the insurer may use the results from the medical questionnaire to flag applicants for further medical tests, loaded premium rates or exclusions.

Claims underwriting may need to be performed to enforce the exclusions.

Insurer may consider and HIV test only.

(ii)
General comments

- The company has been selling a whole life product for many years hence it will have experience for all the relevant assumptions.
- However, the product is different and one would need to consider carefully the extent to which assumptions can be used for the new product.
- The current experience should at least be used to give boundaries, either minimum or maximum, to your new assumptions.

Mortality:

- The mortality rates for the new product is likely to be higher than the existing product due to:
    - Differences in target market the lower socio economic class (based on lower sums insured)
    - Less extensive underwriting
- Simpler underwriting decision (“accept” or “decline”) could mean that lives that would have been loaded on the existing product may be accepted at standard rates, so the mortality assumption for standard rates cases needs to be relatively higher
- There is an overlap in the sums insured of the two products so the experience of the lower sums insured will be more relevant
- The existing mortality experience will be split into various factors,

- e.g. male / female, smoker / non-smoker, standard rates / loaded,

- The data will need to be aggregated for the new products if fewer rating factors are used
- There may be industry data for this type of product, or the company could get assistance from reinsurers or consultants with setting the assumptions
- Trends in mortality, levels of underwriting etc. must be taken into account in making adjustments to insurer's data and other sources of data

Expenses and commission

- Load what you are going to pay for commission.
- Expenses are likely to be lower than for the existing product as:
    - there is less underwriting; and
    - the product is simpler.
- Base the assumption on the existing experience, but only allowing for the relevant items.
- Make some common sense adjustments to the existing experience.
- Per policy expenses for costs that do not vary with the size of the contract need to be carefully considered as sum assured are lower than existing product…
- Policy fees need to be set at a reasonable level compared to the premium to ensure the product remains competitive
- Allowance needs to be made if there will be any cross-subsidies between the different products

Lapses:

- The lapse experience is likely to be higher than the existing product existing product, due to:
    - the socio economic class of the policyholder.
    - But could be lower due to the fact that no surrender value is offered (depending whether SV is offered on old product)
    - Potential for lapse and re-entering should be considered

Investment:

- The existing product can be used as a base.
- But it will also depend on what assets will be invested in.
- Given the long term nature of the product possible reinvestment costs/risks should also be considered.

Profit margin and other considerations:

- You would rely on the profit margin that your company / shareholders require
- The profit loading should be higher than for the existing product …
- …as the new product is more risky as you don't have any experience
- You would need to consider reasonable margins for uncertainty

The following other assumptions also scored marks, but only to a limited extent

- Tax rates, which should be the same as the current product's
- Cost of reinsurance
- Likely to require an assumption on the volume and mix of new business, especially for the expense assumption…
- Sensitivity tests and scenario analysis may be performed to test certain assumptions and how big the impact is of under/over estimating them.

Examiner's comment:
(i) This part was well answered. Good candidates commented on the likely outcomes of such a limited underwriting process (accept/decline only), although other outcomes were also given credit
(ii) A key issue which candidates needed to identify is that the company would have a large amount mortality (and other) data but that the new product is very different. Since mortality is the key assumption most marks were allocated to that assumption. It was disappointing that many candidates elaborated in detail as to why the assumption is required or important, rather than how to set the assumption and how that is affected by the scenario given.

QUESTION 6

(i)
Past profit distributions

- Past profit distributed as a paid-up addition to the sum assured under the contract is a guaranteed liability, and a prudent value of this liability must be included in the valuation of all existing policies.

Future profit distributions

- A supervisory valuation should allow for future bonuses on conventional with-profits contracts to the extent that some level of future bonuses is thought to be consistent with policyholders' reasonable expectations.
- These bonuses would include regular reversionary bonuses and may not include terminal bonuses.
- Future surpluses should be projected to emerge in a suitable pattern and amount so as to match the assumed future regular bonus.
- Where no explicit allowance is made for future distributions, a suitable reduction should be made to the valuation rate of interest, if necessary.

The valuation interest rate and statistical basis should be prudent (include margins for adverse experience). Consistency between valuation assumptions is important.

The method of calculation of the reserves from year to year should be such as to recognise profit in an appropriate way over the duration of each policy and should not be subject to discontinuities arising from arbitrary changes to the valuation basis.

(ii)

- Should consider what the previous company's philosophy has been with regards to the split
- Since PRE would have been formed, and a similar philosophy would be expected
- However, since it is a closed book of business, a change could be warranted because you would need to distribute any surplus equitably over all remaining policies.
- Should consider the term profile of the book of business, because the longer the average term to maturity, the more policyholders would require RB for peace of mind
- Consider the funding level of the portfolio – the higher the funding level, the higher the TB could be
- Equities have volatile returns, so the company would want to keep policy guarantees low to protect solvency, hence prefer TB to RB
- RBs increase guarantees so increase risk of insolvency
- TBs can be varied up or down so can absorb capital losses

- Will also depend on volume of business remaining in closed book
- And on particular assets invested in – and if the company intends to change the split between equities vs fixed interest whilst this book is running down
- Low free assets of the company increases risk, so increases preference for TB
- Reserves for RB would need big margins if it's backed by equities, which would reduce free assets further
- TBs defer surplus distribution, reducing build-up of guarantees and therefore increasing free assets
- The split should still reflect company's marketing literature
- Will not wish to deviate too far from competitors' practice
- It also depends on the bonus earning capacity of the book – large BEC, large TBs
- Shareholders would prefer RBs due to earlier payments to them

Examiner's comment
Candidates answered this question reasonably well, given that a large part could be seen as bookwork.
(i) Few candidates referred to general aspects of supervisory valuation eg prudence and consistency.
(ii) Few candidates generated enough ideas to score full marks.

QUESTION 7

(i)

- The insurer will have to cover the shortfall if the bid value of the fund is below the total premiums paid at maturity.
- A stochastic model of unit growth is needed where investment returns on asset classes in any given period are modeled as the outcomes of random variables with specified probability distributions.
- Suitable parameters would also have to be chosen, such as the mean and variance of returns on the assets and the relationships between asset returns.
- The model would be run using simulations.
- This could produce several thousand possible values for the unit fund at maturity.
- Some of these simulations will result in the bid value of the units falling below the total premiums paid at maturity and shortfall for the insurer (cost of the guarantee).
- An estimate of the expected value of the cost of the guarantee would then be an average of all the simulated outcomes.
- The results will only be valid if the model and the chosen parameters are appropriate.

(ii)

Affordability & Profit Contribution:

- In general, the penalty is required to recover the cost of initial expenses (not recovered yet at the date of alteration) and the cost of alterations.
- The penalty does not reduce over the term of the contract. It is a flat 10% linked to the bid-value of the units. Since this is a regular premium product the bid value of the units will be significantly lower at early durations which means that there is a cross-subsidy between alterations early on in the contract and alterations later on in the contract.
- The company is exposed to the risk of high lapse rates at early durations.
- It is not clear whether a penalty relating to the bid value of the units would allow for the cost of alterations.

Fairness:

- Policyholders may not view the above cross-subsidy as fair.

Consistency with:

- Premiums at the start:

- Surrender values early on depends on investment performance which may be volatile given investment funds. In addition there is a surrender penalty. Surrender values may therefore be significantly lower than premiums paid.
- This is inconsistent with PRE.

- Maturity values:
    - There is a relatively large discrepancy (10%) between maturity values and the value available on surrender just before maturity i.e. the surrender value close to maturity will be significantly lower than the maturity value.
    - This will appear inconsistent to policyholders.
    - A premium reduction shortly before maturity would also result in a relatively large penalty.

- Internal consistency:
    - Boundary conditions: the values available on a significant disinvestment and surrender are consistent.
    - There is a material difference between the values a policyholder will receive if he/she surrenders, versus making the product paid-up and the shortly thereafter affects a full disinvestment.

The penalties are easy to

- Administer.
- Explain to policyholders and document.

In addition, the penalties should:

- be competitive relative to those on other products in the market.
- comply with any regulatory requirements.

Examiner's comment
The quality of the attempt made on this question was disappointing. A number of candidates failed to attempt part (ii)
(i) This was a straight forward application question and many candidates made a reasonable attempt. Candidates mainly lost marks through not discussing the technical aspects in more detail. Some points made indicated that candidates did not understand the cashflow processes for unit-linked products.
(ii) This part was poorly answered. Candidates failed to take a systematic approach in considering the reasonability of the penalties structures based on the principles of determining alteration conditions in the notes. This resulted in candidates discussing certain aspects like consistency with maturity values in detail and failing to consider other aspects. To score well in a question candidate needed to cover all the principles of alterations. Points that related to both alteration structures were not given credit twice. Many candidates wasted time through repeating points. Many candidates failed to discuss the general principles like competitors approach which are easy marks in a more challenging question.

QUESTION 8

(i)
There could be many reasons for holding shareholder equity in excess of the minimum solvency margin:

- Maintain a probability of ruin that is acceptable to the company's shareholders
- Maintain an acceptable level of solvency relative to other insurers in the market
- Maintain a pre-determined credit rating which affects the cost of capital funding and reputation among policyholders and brokers
- Fund future new business plans
- Fund large expenditures expected in future, e.g. costs associated with a new administration system
- Allow more investment freedom, which could include deliberate asset liability mismatching with the aim of obtaining higher returns on more risky assets
- Allow management greater freedom to pursue potentially profitable projects
- Maintain funds for potential business opportunities, e.g. acquisition of smaller companies
- Allow the company to reinsure a smaller proportion of its risks and thus retain a larger amount of the profits
- Build up shareholder excess in anticipation of more onerous regulatory reporting requirements

Potential reasons for paying out less than the maximum dividend:

- By paying out the maximum dividend based on the minimum solvency margin the company will no longer meet its internal solvency margin and this might be unacceptable to the company
- Even though the company would remain solvent on a regulatory basis after paying the maximum dividend it will be rendered very close to insolvency, which would already trigger the regulator to take action against the company
- If the maximum dividend is paid then the company could be rendered insolvent from even a small adverse deviation in experience this is quite likely given the random variation that the company is exposed to on investment, mortality, expense and other experience
- This would result in the regulator taking severe action, (e.g. requiring more frequent reporting, closing to new business, Placing the insurer under curatorship

(ii)
Maximum dividend calculations:

Internal solvency margin	= 1.5 * Minimum solvency margin
	= 1.5 * R120m
	= R180m
Maximum dividend	= Shareholder equity – Internal solvency margin
	= R230m – R180m
	= R50m

(iii)
Mismatching risk

Interest rates

- When interest rates increase the company's assets decreased by less than its liabilities, which results in a profit emerging
- This means that the company is probably exposed to losses from interest rate reductions, in which case assets would increase by less than the liabilities and a loss would emerge
- This is most likely due to the terms of the assets being too short relative to the term of the liabilities

Foreign exchange rates

- Some of the company's liabilities are denominated in a foreign currency, whereas all the assets are denominated in the domestic currency
- As shown in the sensitivity test this exposes the company to losses if the domestic currency depreciates

(iv)
Liabilities are not always known with certainty e.g. they often depend on mortality and it is difficult to find mortality-linked assets.

If assets are chosen to match the longest of the liability payments, the earlier income from the assets may exceed the shorter-term liability outgo. This exposes the insurer to reinvestment risk

The term of the longest available assets may be too short for the liabilities.

Assets that fully match increasing in benefits may not be available e.g. salary index-linked for income protection benefits.

There is also uncertainty around future cash inflows (e.g. premiums) and on what future terms they can be invested.

(v)
The company can take the following actions to reduce its mismatching risk on foreign exchange rates.

Invest an appropriate amount of assets in the relevant foreign currencies to match the liabilities by currency.

However, it is important to make sure that these assets also match the liabilities by term and nature.

Given the long dated nature of the liabilities, as indicated by the previous question, it might be that the foreign market doesn't have sufficiently long term assets to match the liabilities, in which case the company would have to decide whether to accept the exchange rate risk that it is exposed to currently or the interest rate risk which it would be exposed to if it follows this proposal.

Alternatively the company could use exchange rate derivatives to obtain the appropriate exposure to foreign currencies

Derivatives might allow the company to be protected from downside risk while at the same time retaining upside risk. For example an option that pays out when the domestic currency depreciates would provide such protection.

If any changes are made to the assets the following general requirements for investments should be taken into account.

- Costs associated with making the changes
- Regulatory restrictions on asset holdings or the use of derivatives
- The extent to which the company actually wants to avoid the mismatching risk
- Consistency with current investment mandates
- Whether the company has any expertise on assets in the foreign market or on exchange rate derivatives
- Instead of changing its asset profile the company could also try to change it liability profile

For example it could focus new business sales on products for which reserves are denominated in the domestic currency.

This will only result in a gradual change over time, especially if the book is large, and might thus be ineffective.

Such action might also be inconsistent with the company's new business strategy.

Examiner comments
This question was poorly answered and there were some indications that candidates were under time pressure.
(i) This question required candidates to generate a large number of ideas, with most candidates not generating enough ideas. Candidates who considered separately the higher internal solvency margin and the lower dividend tended to generate more ideas. A higher internal solvency margin will not have any direct impact on profits, since the solvency margin is not a reserve on the balance sheet. As

such any comments about deferring profits and associated tax benefits did not score marks. There might be tax advantages from the deferral of dividends, but this had to be stated clearly to score marks. Some candidates mentioned with-profits business and bonuses, whereas the question clearly stated that the company had only without-profits business.

(ii) This was a simple calculation question that was well answered by a large number of candidates. Some candidates calculated a dividend based on the minimum solvency margin instead of the internal solvency margin, whereas other candidates didn't understand the relationship between the free assets and the solvency margin.

(iii) This question tested candidates' understanding of asset-liability matching and was generally poorly answered. Most candidates stated that the company is well matched in terms of interest rates, since it made a profit under the interest rate increase scenario, but this is not the case. Assets and liabilities move in the same direction when the interest rates increase, indicating some level of matching, but this does not mean the assets and liabilities are matched well. Only a handful of candidates realised this and mentioned that the company is actually mismatched and that it is probably exposed to losses if interest rates were to decrease. It was clear that some candidates did not understand asset-liability matching, as their solutions didn't consider assets and liabilities in relation to each other, but rather considered them in isolation. Some candidates did not read the question properly and only commented on foreign exchange rate risk, not interest rate risk.

(iv) This was a bookwork question that was poorly answered, with only a few candidates mentioning that the standard bookwork points. Some candidates incorrectly stated that matching would remove all profits, whereas in reality it would only remove mismatching profits. Many candidates mentioned that shareholders might require higher yielding assets and hence mismatching is not possible. While this is a constraint in practice it is possible for a company to change its view in this regard and no marks were awarded for these comments.

(v)This question again required candidates to generate ideas as to how foreign exchange risk can be reduced. Candidates did not score marks for saying that free assets can be used to absorb losses, as this does not actually reduce the mismatching risk that is present. Many candidates mentioned that the risk can be transferred via reinsurance, but this would require the reinsurer to accept the foreign exchange rate risk, as opposed to just insurance risk, which tends to be unlikely. This had to be explained to score marks.

