

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2022

SA2 - Life Insurance Specialist Advanced

Introduction

The Examiners' Report is written by the Chief Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and using past papers as a revision aid and also those who have previously failed the subject.

The Examiners are charged by Council with examining the published syllabus. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the Specialist Advanced (SA) and Specialist Principles (SP) subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision.

Sarah Hutchinson
Chair of the Board of Examiners
July 2022

A. General comments on the *aims of this subject and how it is marked*

The aim of the Life Insurance Specialist Applications subject is to instil in the successful candidates the ability to apply knowledge of the life insurance environment and the principles of the actuarial practice of life insurance to practical situations for a life insurance company.

The Examiners' Report covers more points than would be expected to get full marks. This is so that alternative approaches to questions by different candidates can be accommodated. Whilst candidates are expected to show knowledge of the relevant content of the core reading, it is much more important in this exam to tailor answers and apply that knowledge to the specifics of the question than it is in earlier exams.

Candidates who make well-reasoned points, which are not in the marking schedule will receive credit where appropriate and relevant to the question asked.

B. Comments on *candidate performance in this examination.*

This exam enabled the well-prepared candidates to score well with some scoring very high marks.

Candidates that reflected the specifics set out in the questions were able to score higher marks. For example, candidates that were able to tailor their knowledge to the case in point in question 1.

Candidates found more challenging question 2, however, well prepared candidates scored well.

In question 3 candidates scored well, generally for parts (ii), (iii) and (iv).

C. Pass Mark

The Pass Mark for this exam was 60
485 presented themselves and 170 passed.

Solutions for Subject SA2 - April 2022

Q1

(i)

The development did not meet the company's profit criteria.	[½]
The target market is very different	[½]
So the distribution channel is likely to be very different.	[½]
It is possible that the mix of the insured lives may be different	[½]
so the mortality experience the company has may not be relevant	[½]
the mortality for group life will be significantly impacted by the industry of the employer.	[½]
There may be greater concentration risk with group life	[½]
especially by geographic region.	[½]
So reinsurance requirements may be very different	[½]
and it is possible that current reinsurance partners would not be suitable	[½]
or the terms are expensive.	[½]
A separate administration system would be needed	[½]
or significant changes may be required to the company's existing systems.	[½]
For all of these reasons, the development costs may have been too great	[½]
in addition to the capital requirements.	[½]
The company may have felt that it did not have sufficient or reliable data.	[½]
Group Life market is competitive	[½]
and the company has no experience in the group market	[½]
The company may not have the economies of scale needed to offer a competitive price	[½]
the market may be dominated a small number of large companies making it hard	[½]
to gain market share.	[½]
There may be taxation differences.	[½]
The company may have found that there was a lack of demand or that the market	[½]
was in decline	[½]
any suitable example	[½]
The economic conditions may not be appropriate at this time	[½]
so employers are cutting back on benefits for its staff.	[½]
The company may have found that other lines of business provide a better return	[½]
on its available capital	[½]
any suitable example took resource from more profitable term assurance.	[½]
There may be strict regulatory or authorisation requirements.	[½]
The company may have concluded that the product was not within its risk appetite.	[½]

[Marks available 14½, maximum 6]

(ii)

Levels of new business in the previous year may have been unusually low.	[½]
The company is new, and this is part of its development plan.	[½]
The general environment may have changed.	[½]
so that demand in the market for term insurance has grown:	[½]
due to government led incentive (e.g. tax).	[½]
Or promotion	[½]
Changes in regulations may have increased confidence in the market.	[½]
Improved economic conditions may have led to increased spending generally.	[½]
Competitive advantage	[½]
The company may have achieved a unique selling point	[½]

for example, by exploiting wearable technology.	[½]
It may have been able to exploit AI/data science techniques	[½]
to identify potential customers or aid underwriting	[½]
and so may have a price advantage.	[½]
A major competitor may have suffered brand damage	[½]
leading to increased sales for other companies.	[½]
It may have increased its potential target markets	[½]
by broadening the propositions it offers.	[½]
It may have improved its distribution	[½]
it may have agreed a new deal with a major distributor.	[½]
It may have increased its brand awareness through advertising	[½]
or a major sponsorship deal.	[½]
It may have raised extra capital to fund new business growth.	[½]
The company may have reduced the price of the product	[½]
any reasonable example to increase total profit, marginal costing, through cost	
savings, lower capital requirements, revised reinsurance terms	[½]
Changes to the tax regime may have led to the product being cheaper.	[½]
If bought alongside a mortgage, increased house sales, may have increased demand.	[½]
Slicker processes may give a better customer experience and increase popularity	[½]
for example, the company may have changed its underwriting processes	[½]
	[Marks available 14½, maximum 8]

(iii)

The local regulations may require the company to hold more capital	[1]
either explicitly through a capital add on	[½]
or through the rules for determining regulatory reserves and capital	[½]
such as limiting the extent that future premiums can be valued.	[½]
The company may have a Risk Appetite Framework	[½]
which would probably set a range for capital in excess of the minimum.	[½]
The company may be interested in raising capital in the financial markets	[½]
and so may be holding capital in line with models used by rating agencies	[½]
in order to achieve a desired credit rating	[½]
in order to be able to raise capital more cheaply	[½]
and there may be a marketing advantage to be highly capitalised.	[½]
It may be holding additional working capital	[½]
in order to develop the business	[½]
through rapid new business growth	[½]
improved technology projects	[½]
or via acquisitions.	[½]
The company may be aiming to have similar capital levels as competitors.	[½]
The company may be concerned about possible adverse future conditions.	[½]
There may be some uncertainty around the assumptions used	[½]
of the economic capital model	[½]
any reasonable example, too simple, errors identified, not validated, does not reflect	
all risks.	[½]
But the company would not want to hold too much capital	[½]
any reasonable example, shareholders unlikely to support.	[½]
	[Marks available 12, maximum 6]

(iv)

There may be an error in the calculations	[½]
The company has written considerably more new business that is profitable	[½]
so that the value of future profits exceeds the new business strain on the valuation basis.	[½]
The company has instigated efficiency projects so that expense outgo over the year has been less than before.	[½]
Any reasonable example	[½]
Lapse experience may have been more favourable than expected.	[½]
Mortality experience has been lighter than expected so there has been lower claims outgo.	[½]
If this is part of an ongoing trend, then there may have been assumption changes to reflect these positive experiences.	[½]
The company may have reinsured some of the business on favourable terms	[½]
or recaptured past reinsured business resulting in the profits not being shared with the reinsurer.	[½]
The company may have reduced dividends payable to shareholders or received a capital injection	[½]
in order to build up additional working capital	[½]
The company may have sold a block of business on favourable terms.	[½]
The return achieved on the excess assets was higher than expected.	[½]
It could be due to a mismatch position or imperfect hedge position.	[½]
Defaults on assets less than expected.	[½]
The assumptions have been weakened, so reducing the liabilities.	[½]
Review of reserves may have led to reduction in liabilities (COVID reserves are now in the main reserve so can be released, additional data reserves no longer needed)	[½]
Modelling changes may have led to the result.	[½]
Any reasonable example, such as remove simplifications	[½]
Tax paid may have been lower than expected.	[½]
There may have been changes to regulations.	[½]

[Marks available 15½, maximum 7]

(v)	
Mortality risk	[½]
as mortality claims are high relative to premiums for term assurance	[½]
underwriting may not be effective	[½]
as term insurance is the only product type written, so there is little diversification although, reinsurance may result in a lower SCR.	[½]
Expense risk	[½]
as the per policy costs tend to be relatively high in relation to premiums for term assurance.	[½]
although the SCR may be reduced by any outsource arrangements in place but even with this, there is likely to be inflation risk.	[½]
Operational risk	[½]
any reasonable example relevant to term assurance, error collecting premiums, paying claims	[½]
Counterparty risk	[½]

as a result of any reinsurance arrangements	[½]
any outsource arrangements	[½]
any corporate bonds held.	[½]
Interest rate risk	[½]
The only investments held are likely to be bonds	[½]
there is unlikely to be any other material market risk (other than the counterparty risk on corporates mentioned above).	[½]
Catastrophe risk	[½]
for example, pandemic	[½]
or due to any concentration of risk inherent in the target market.	[½]
Lapse risk/ mass lapse risk	[½]
selective lapses later in the policy	[½]
early lapse before initial expenses recouped.	[½]

[Marks available 12, maximum 7]

[Total 34]

Parts (i) and (ii) were generally well answered. Well prepared candidates were able to provide a wide range of reasons.

In Part (iii) well prepared candidates were able to relate knowledge of economic capital, regulatory capital, working capital and rating agency capital to generate a wide ranging list of reasons.

In Part (iv) a number of candidates gave reasons relating to change in value of assets without recognising that the liabilities would likely move in a similar way, thus giving a broadly neutral impact on surplus.

In Part (v) most candidates were able to identify the key risks. Higher scores were achieved by those who explained why those risks applied to the product in question.

Q2

(i)

Return on net assets	[½]
Reflects the actual return on the starting assets	[½]
and may be split into expected return and the excess of return over actual	[½]
Economic experience	[½]
The impact of the variance actual economic experience vs expected economic experience on the surplus arising over the year	[½]
and on the value of in-force business at the end of the year	[½]
Expected return on in-force business	[½]
will include the expected change in the value of the in-force business over the year calculated on the economic assumptions at the start of the year.	[½]
This can also be seen as the “unwind” of the discount rate over the year.	[½]
Operating assumptions may include change in economic assumptions over the period including changes in the risk discount rate.	[½]
When changing the assumption changes, consider both the projection basis and the valuation basis.	[½]

Unexplained linked to the investment returns. [½]
 [Marks available 7, maximum 5]

(ii)

Splits by asset type are not a required disclosure [1]
 it is in the company's own interest to not disclose additional information that could
 lead to competitive advantage [½]
 if there is no precedent in the market. [1]
 The company may use alternative metrics to measure experience internally [½]
 Analysis by asset type may not be readily available [1]
 due to limitations in modelling capability [½]
 or in the available data [½]
 or in resources to carry out the analysis [½]
 particularly if MCEV is not a key focus for the company in terms of reporting. [½]
 The company may not have confidence in the results... [½]
 if the unexplained is large, or if there are significant simplifications [½]
 Allocation of assets to particular asset types may be considered too difficult/complex: [½]
 if the company invests assets indirectly through collective investment products [½]
 if the company makes use of derivative arrangements which are hard to classify [½]
 Allocation of liabilities to asset classes may have practical difficulties [½]
 for complex products [½]
 or may appear misleading in the analysis if split. [½]
 determination of the PVIF element may also cause limitations of the analysis. [½]
 Investment guarantees on products may limit the value of splitting the analysis [½]
 as the value of the guarantee means steps of the analysis are not independent [½]
 meaning the order of the analysis will affect the attribution. [½]
 The expected return may be risk free and only calculated in aggregate [½]
 meaning a split of variances is not available without further attribution/analysis. [½]
 Detailed analysis may not be available in time for submission [½]
 Attribution of tax to individual items may be considered too complex/inaccurate, [½]
 or may not be available in time. [½]
 It may involve a considerable amount of work. [½]
 [Marks available 14½, maximum 8]

(iii)

The company may first want to check the MCEV analysis is correct [1]
 especially if there is also a large amount of untraced/unexplained variance. [1]
 It may also want to carry out a more detailed analysis of investment variance
 than is required for the external disclosure. [½]
 It is possible the company will take no action [1]
 if the variance is within its range of tolerance [½]
 or if it expects a positive variance on the MCEV basis [½]
 or it is recognised as a one off [½]
 and therefore, accepts that MCEV will show a variance. [½]
 Alternatively it may decide to reduce risk in its investment strategy [1]
 to more closely match assets to liabilities by duration, reducing interest rate risk [½]
 and/or move into more higher rated corporate bonds to reduce credit risk [½]
 or use credit derivatives to protect against credit defaults [½]
 It should also limit exposure to each individual bond, [½]
 and use a wide spread of bonds for diversification [½]

It could adjust its asset mix	[½]
increasing the level of bond holdings (esp. government)	[½]
reducing the level of commercial mortgages / equity release	[½]
or reconsider its process for matching existing and new business	[½]
The company could add an illiquidity premium (if using corporate bonds).	[½]
Consider the views of the Chief Actuary and the requirements of professional guidance.	[½]

[Marks available 12, maximum 8]

(iv)

External considerations

MCEV is not a statutory disclosure, so this is an option for the company. [1]

MCEV is primarily used as a means of informing shareholders of the true value of their interests in the business [½]

and removing MCEV will change the information that the company presents to its shareholders. [½]

in terms of format of information... [½]

and the figures themselves - e.g. use of a matching/volatility adjustment instead of liquidity premium (any e.g.) [½]

Solvency II approach to contract boundaries [½]

This will change in reporting will need to be carefully presented to the market [½]

particularly if MCEV reporting is currently the norm in this country [½]

as analysts [1]

and rating agencies may not look on the changes in a favourable light. [1]

If this is less common, then the change will be easier to present to shareholders [½]

e.g. if most of the market has moved away from MCEV reporting already [½]

Solvency II reporting can serve a similar function for the market as it is also realistic reporting basis [½]

and the company will already be reporting information on this basis (e.g. through public QRTs) [½]

meaning MCEV reporting may already be seen by the market as surplus to requirements in some ways. [½]

The ease of transition may depend on how well aligned the company's MCEV reporting approach is to the SII approach. [½]

Internal considerations

Ceasing to report on MCEV should have benefits in terms of reducing reporting resource requirements [1]

which may allow reporting work to be refocused to other priorities [1]

and to ensure any elements of the internal reporting process that use MCEV are revised to use an alternative metric such as solvency II - e.g. [½]

Elements of MI may rely on MCEV reporting [½]

Elements of the accounting process may be based on MCEV results [½]

Some reconciliations/controls may be based off the MCEV analysis of change [½]

Internal agreements, or reinsurance contracts, may be expressed in terms of EV or MCEV [½]

There will be an associated cost to making these changes in the short term [1]

however, costs could be reduced in the longer term if reporting resources are reduced which would increase profits. [½]

However, MCEV is helpful to value the company in the event of a hostile takeover. [1]

Marks available 17, maximum 10]

[Total 31]

Part (i) was generally well answered.

In Part (ii) most identified that this is not a regulatory requirement. Consideration of whether it was normal or not to provide such information and the ease, or otherwise, of producing the analysis led to a wider range of points.

In Part (iii) well prepared candidates recognised that, whilst positive, an investment variance is not desirable in a well matched portfolio (as might be expected for without-profits immediate annuities). Thus, the main actions related to avoiding this again in the future. However, marks were available for stating that the variance may be within tolerance of a deliberately mis-matched position.

In Part (iv) well prepared candidates recognised the varying needs of internal and external stakeholders and the implications from changing published information, including the impacts on resources and costs.

Q3

(i)

The companies would need to agree the commercial arrangement for Company A to receive something for selling/distributing the unemployment rider	[½]
and company B for manufacturing the product	[½]
This could be in the form of company A receiving a payment/retaining a specific amount at the sale point of each policy	[½]
which could be a % of expected premiums or expected NPV	[½]
Or as a % of each premium received	[½]
With the remainder going to Company B	[½]
The split would need to be agreed and could vary by policy size (Premium/Benefit)	[½]
Similarly, the split of marketing costs will need to be agreed.	[½]
There may be agreements on cross-selling	[½]
and so there will need to be suitable GDPR arrangements.	[½]

[Marks available 5, maximum 3]

(ii)

There is additional reputational risk for Company A	[1]
as they are linked to Company B and so could be associated with any negative actions or press by or about Company B	[1]
so lower than expected levels of new business	[½]
and increased expense and lapse risk.	[½]
Or if company B ceases operation, then Company A's customers are impacted and Company A may feel obliged to provide for customers or compensate them in some way	[1]
There's potentially additional mis-selling risk for this rider as it's branded as company A	[½]
and may not be appropriate for some people depending on terms and conditions	[1]
There could be additional operational risk	[½]
due to payments between company A and company B	[½]

Admin would likely sit with company B and so A has a lack of control over customer experience.	[½]
Depending on how the arrangement is set up there may be credit risk on Company B for the payment made between the companies	[½]
There may be additional legal risk with the agreement between the two companies	[½]
Company A may have little experience of negotiating and so results in a poor deal.	[½]
If the product proves popular, the higher levels of new business could cause capital strain for A	[½]
and increased expenses.	[½]
There may also be a risk if the business mix is different to that expected.	[½]
There may be liquidity risk if there are delays between A paying a claim and receiving the money from B.	[½]
There may be additional regulatory risk from the arrangement.	[½]
	[Marks available 12, maximum 6]

(iii)

Company A already sells a number of products and may have spotted an opportunity in the market	[1]
There may be growing demand as the population ages	[½]
They may have received insight from existing distribution channels on product demand	[½]
And be able to utilise these same channels to distribute an ER product	[½]
They may be able to cross-sell such a product into their existing customer base	[½]
They have experience assessing mortality/longevity risks for older lives from their existing products so could utilise this knowledge in an ER product	[½]
And if accessing a new and additional market this could increase company profits	[½]
The product would provide diversification benefits against some of the other products the company sell e.g. term assurance	[1]
This could give capital benefit to the company	[½]
There may be tax advantages or incentives to offer this product	[½]
Competitors may be offering or looking to offer a similar product	[½]
The products can provide a good yield to match the immediate annuity cashflows and match the longevity risk given the duration	[½]
It may be seen as good for the company's brand.	[½]
It may be a way to increase customer value.	[½]
It may look valuable on Company A's preferred metrics.	[½]
It will increase overall new business volumes	[½]
so spreading overheads.	[½]
The company may have spare capital and sees this as a suitable use for it.	[½]
	[Marks available 10½, maximum 6]

(iv)

Company A have their own mortality experience they could base assumptions on for this	[1]
That would be through their own term assurance and annuity products	[½]
However the target market for equity release is likely to be different to that for their term assurance and annuities	[½]
Therefore an adjustment to any historic data would likely need to be made	[1]
Alternatively, the company may have reinsurance in place for the term assurance and so be able to access data via the reinsurer for mortality in particular	[½]
Any assumption would likely be in reference to a standard table for mortality	[½]
For expenses there is unlikely to any relevant internal data	[½]

also there will be assumptions needed for early repayment depending on the type of product being developed and again little internal is relevant [½]
 and so reinsurers or external benchmark data could be used [1]
 adapted for any specifics of the product or company [½]
 although distributor costs would be known [½]
 It may be necessary to employ a specialist for expert judgement [½]
 for example to decide the necessary adjustments. [½]

[Marks available 8, maximum 5]

(v)

The model for the business case may be too simplified to use for pricing [1]
 For example, the frequency of cashflows may be different [½]
 it may have considered all decrements as one or considered a full cohort of policies at once [½]
 The product design may have changed since the business case was done [1]
 if more market research has been done which has further influenced the product to be sold [½]
 The business case will likely have been based on a valuation basis as it would consider the impact to company profits whereas the pricing model may consider assumptions differently [½]
 A valuation model may have been built following the business case in different software and be more sophisticated in terms of modelling any features and multiple future scenarios and so this may then be used for pricing going forward [½]
 An error may have been discovered in the model used for the business case [½]
 There may be restrictions on pricing not allowed for in the business case model (e.g. gender neutral pricing). [½]

[Marks available 5½, maximum 4]

(vi)

The two elements usually considered for marginal pricing are expenses and capital [½]
 Marginal cost pricing would assume that existing overhead costs are already covered by other products [½]
 This has the advantage that the new product or incremental policies carry smaller expenses [1]
 and so either return a higher profit than otherwise [½]
 Or allow a lower price to be charged [1]
 Which would result in a more competitive market position and likely a higher volume of sales [1]
 However, this approach effectively means other products or policies are then cross-subsidising the new or marginally priced product or policy [½]
 And valuation rules may not allow this approach so valuation profits and results would differ to pricing [½]
 On the capital side the new product may introduce capital diversification benefits [1]
 As with expenses this could allow more competitive pricing or higher profits emerging against this product [1]
 Though the benefit only exists due to the products which it diversifies against also being within the company [½]
 Equity release is capital intensive so would benefit from the recognition of diversification benefits. [½]

Marginal costing is not viable in the longer term	[½]
as the product volumes become more significant	[½]
and so benefit would have to be apportioned across the relevant products allowing profitability and pricing to flex across all	[½]
[Marks available 10½, maximum 6]	

(vii)

The company would need to consider what the aim of using this metric is and why there is a desire to develop something additional	[½]
For example, does it have restricted capital?	[½]
It is unlikely one metric will be able to assess all aspects of profitability.	[½]
And also consider how this metric complements any already used or situations when they would result in conflicting business case decisions	[½]
It would need to understand the shortcomings of existing metrics that this new metric is seeking to overcome either as a replacement or supplementary metric	[½]
And then seek to develop a metric that reflects this, e.g. prioritise projects based purely on capital efficiency	[½]
They would need to define what elements of capital are to be considered or included in the metric	[½]
And whether any additional diversification benefits should be allowed for in there	[½]
They would consider ease of calculation of any metric	[½]
And also ability to be consistent across different proposals	[½]
e.g. use of consistent timeframes, assumptions etc	[½]
They would need to consider any situations in which the metric could not be calculated	[½]
And in these circumstances what would be used instead	[½]
They could also use existing projects to calculate the new metric against to test its appropriateness to support decisions previously made	[½]
They would need to ensure the metric allowed comparability of projects and worked for different types, e.g. system builds as well as new projects, to ensure that a mix of development across the company is achieved	[½]
The costs of development would need to be considered	[½]
The company would want to carry out sensitivity testing	[½]
It will be necessary to consider how to allow for overheads and tax	[½]

[Marks available 9½, maximum 5]

[Total 35]

In Part (i) well prepared candidates identified the need to agree appropriate profit sharing arrangements and the sharing of costs where both parties benefited, such as marketing.

Parts (ii), (iii) and (v) were generally well answered, although some answered part (ii) too widely.

In Part (iv) most candidates recognised that the company's own mortality experience would be a useful starting point, better prepared candidates realised that the different target market would mean that adjustments would be needed. Higher scores were achieved by candidates who recognised that the cost and lapse experience for such a

different product would mean that internal experience was unlikely to be helpful and so the use of external experts may be needed.

In Part (vi) some candidates focussed on the expense side, some on the capital side. The higher scores were achieved by those that considered both. Further, better prepared candidates recognised that, whilst marginal pricing would enable lower premium or higher profit in the short term, it was not sustainable in the longer term.

In Part (vii) higher scores were achieved by candidates that considered the practical implications of introducing the new metric, but also that one metric was unlikely to be ideal in isolation.

[Paper Total 100]

END OF EXAMINERS' REPORT