INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

April 2021

Subject SA1 – Health and Care
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 later 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

Paul Nicholas
Chair of the Board of Examiners
July 2021

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

1. The aim of the Health and Care Specialist Advanced subject is to instil in the successful candidates the ability to apply knowledge of the health and care environment and the principles of actuarial practice to the provision of health and care.

2. Candidates who approach the questions, especially the more substantial elements of each question, in a methodical and detailed manner are far more likely to satisfy the Examiners and receive a pass in the subject. Candidates will gain few marks if they do not address the question asked but merely write around the topic of the question.

3. The mark allocation for each question part gives an indication of the relative length of answer or number of points to be made to gain full marks. 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.

4. It is often helpful to use subheadings when answering long part questions.

5. Candidates who give well-reasoned points, not in the marking schedule, are awarded marks for doing so.

B. Comments on *candidates' performance in this diet of the examination.*

1. Well-prepared candidates scored well across most of the paper. Most of the questions required an element of analysis or application of knowledge to a particular situation. For these questions, candidates did not always provide a sufficiently broad range of points to score well or did not make points that related to the specific scenario set out in the question rather than just generic points to demonstrate that they could apply their knowledge.

2. It is encouraging to see many candidates using headings in their answers to the longer part questions and setting out their answers in a methodical manner which aids marking scripts.

3. The comments that follow the questions concentrate on areas where the candidates could have improved their performance.

C. Pass Mark

The pass mark for this exam was 60.
65 candidates presented themselves and 20 passed.

Solutions for Subject SA1 April 2021

Q1

(i)

Citizens in country A are likely to have a wide range of medical needs and different groups of citizens may have very different needs depending on a wide range of factors (e.g. age, location, health status etc.). [1]

The government may provide medical services for its citizens in limited circumstances, for example, accident and emergency treatment [½]

The state may provide means tested benefits as a safety net. [½]

However, there may be gaps; for example, middle income families may not be able to afford insurance but may also not be entitled to any means tested benefits from government. [½]

The limited medical services offered by the state might be acceptable while the population is relatively young, but as the population ages (as mentioned in the question) their healthcare needs will rise, leading to more care being required. [½]

Additional healthcare needs not covered including Long Term Care, Income Protection etc. [½]

Provision of check-ups, vaccinations and other preventative care may not be covered. [½]

Healthcare may not be equally accessible to all, driving health inequalities [½]

Some groups may have difficulty accessing agents or other insurance distribution channels (e.g. those in remote rural areas). [½]

The less financially aware/literate may suffer from lack of public availability [½]

The quality of hospitals is good so standard of medical treatment from hospitals should also be of good. [½]

The private sector may be able to offer a more flexible healthcare service than the state. [½]

For example, it may be able to respond more quickly to changing healthcare needs of citizens than the state. [½]

It may provide a greater choice for citizens than the state - coverage can be flexed to suit individual's own health needs. [½]

It may provide better customer service than the state [½]

The number of PMI providers could mean that the market is competitive – potentially could mean that premium levels are affordable. [½]

Or a wide range of products is available or there is product innovation. [½]

The market is well-developed so likely to be well regulated - good for customers [½]

Detailed underwriting requirements could increase the cost of cover. [½]

Medical treatments are potentially available provided by private companies but to access these treatments the individual will need to be able to afford to pay for treatment from their own resources [½]

Or have suitable insurance in place. [½]

Private Medical Insurance is potentially a good way for individuals to spread the costs of medical treatment in advance of need [½]

And to meet the cost of care when required. [½]

Although there may be limits on how much of any claim the insurer will cover. [½]

Depending on any excess of claim limits Private Medical Insurance may not fully cover the costs of a particular treatment and for certain treatments the citizen may end up needing to pay significant costs themselves. [½]

Certain expensive treatments could be excluded from Private Medical Insurance policies and may need to be funded completely by the individual [½]

There may be other exclusions, for example

Normal pregnancy [½]

Cosmetic surgery [½]

[Maximum 1 mark for 2 relevant examples]

Private Medical Insurance may be very good at covering acute, treatable conditions that individuals have [½]
but is likely to be less good at covering the costs of chronic long-term conditions. [½]
Given the cost of treatment and comprehensive nature of private medical insurance in Country A it is unlikely Private Medical Insurance will be cheap. [½]
Therefore, only certain groups of individuals may be able to afford insurance – e.g. the relatively wealthy, individuals in employment. [½]
Individuals may not be able to afford to pay for the cost of medical treatments from their own financial resources [½]
Or once started the cost of treatment could exhaust the financial resources of the individual and possibly end up in significant debt [½]
This could particularly be a problem where the individual has a long period of ill health [½]
Some groups of citizens may not be able to access insurance as they may be declined by the insurer during any underwriting process or they may be heavily rated. [½]
For example
Individuals with complex medical needs [½]
The elderly [½]

[Maximum 1 mark for 2 relevant examples]

Individuals in employment may have Private Medical Insurance through their employer [1]
But the level of cover could depend on how much the employer is willing to pay for private medical insurance for its employees. [½]
Private Medical Insurance may only be available to certain classes of employee [½]
For example, those in employment for a minimum period. [½]
Not all employers may be willing to pay for Private Medical Insurance for their employees [½]
Even if an employee was covered by their work scheme, their dependants may not be [½]
There could be a large group of citizens who are unlikely to be able to access insurance at an affordable cost such as: [½]
The unemployed [½]
The low paid [½]
Individuals with existing medical conditions [½]
The elderly [½]
The self-employed [½]

[Maximum 2 marks for 4 relevant examples]

Increasing costs of medical treatment could make insurance affordability even more of an issue even for relatively wealthy individuals. [½]
Employers could find it is no longer affordable for them to pay for Private Medical Insurance for their employees. [½]
Even if employers can afford schemes now, due to the increasing costs of medical treatment, they may become unaffordable in the future. [½]

[Marks available 27½, maximum 10]

(ii)
<u>Option 1</u>
<u>Advantages for Citizens</u>
HCP can help meet the cost for a range of medical treatments [½]

HCP is more affordable than full PMI [½]
HCP could offer sufficient benefits for citizens in good health but who want limited cover at a low cost [½]
HCP may cover some treatments that are not covered under PMI [½]
Treatments covered may be particularly relevant for some citizens [½]
It will enable some citizens that currently cannot afford insurance to get some cover. [½]
The government may offer additional incentives for citizens take up HCP making it more attractive [½]
May encourage new entrants to the market, resulting in innovation and price competition. [½]
Customers can choose how to utilise cash. [½]

Disadvantages for Citizens
HCP not intended to cover the cost for more significant medical treatment [½]
Citizen may still be liable for some of the cost of medical treatment [½]
HCP could still be unaffordable for the lowest paid [½]
The medical treatments covered may not be that relevant for some groups of citizens [½]
May reduce the pool of lives for PMI / introduce selection against insurers where healthier lives take out cash insurance. This could lead to PMI becoming more unaffordable for those who need comprehensive cover. [½]

Advantages for Insurers
It could increase the profitable business sold by the insurer [½]
It could allow the insurer to attract new customers [½]
It could allow the insurer to spread its fixed expenses across a wider range of policies. [½]
The costs of underwriting and claims management could be significantly lower than for PMI business. [½]
The risk of medical inflation is passed to the customer. [½]
There may be a reputational advantage for the insurer being seen to offer more affordable cover [½]

Disadvantages for insurers
There may be more profitable uses of the insurer's capital elsewhere [½]
The low level of premium income received per policy may be insufficient for the insurer to recoup its costs…. [½]
Depending on the terms of the product it may be onerous for the insurer to administrate the HCP product [½]
Some PMI policyholders may lapse and take up a cash plan policy instead which may lead to a loss of profit if HCP is less profitable than PMI [½]
From the insurer's perspective, there is a lack of data and experience for the HCP. This could lead to issues with setting assumptions, [½]
The experience could be worse than expected, [½]
And it may lead to higher capital requirements to cope with the risk. [½]
Whilst the claim amount is capped compared to PMI, a large volume of claims could still be expensive. [½]
The new product may require new systems and staff training, increasing costs. [½]
If the product is new to the market (as well as the insurer) there could be misunderstandings with policyholders expecting an indemnity product, leading to an impact on the insurer's reputation (this is mentioned in part (a) so could be cross-marked here). [½]

[Marks available 15, maximum 6]

(iii)

The Option 2 approach will make insurance more accessible/affordable for a number of groups of citizens. [½]
Individuals with existing conditions may now be able to obtain medical insurance as the insurer will no longer be able to exclude them at the underwriting stage [½]
And at an affordable cost [½]
Individuals who were previously treated as uninsurable could now be able to obtain insurance. [½]
Older individuals will potentially find private medical insurance to be more affordable due to the limit on premium size due to variations in age. [½]
Private Medical Insurance premiums are likely to be much more consistent between different groups of policyholders with different characteristics [½]
More consistency in premiums over time should allow citizens to plan better financially [½]
The removal of medical underwriting should lead to faster decisions on acceptance [½]
This is likely to mean considerable cross subsidies between different groups of customers. [1]
For example
Younger policyholders will end up subsidising older customers [½]
Healthier policyholders will end up subsidising less healthy customers [½]
Cross subsidies by gender [½]

[Max 1½ marks for 3 relevant examples]

Some policyholders may be unhappy about the level of cross-subsidy between different sub-groups of policyholders [½]
This could see the cost of Private Medical Insurance increase for some groups of customers [½]
Citizens may be able to gain from information asymmetry [½]
Margins for uncertainty may increase cost. [½]
There may be a general rise in premiums if the insurer wants to increase the 'base' premium [½]
Even with the changes in option 2 it is possible that many individuals may not ultimately be able to afford Private Medical Insurance. [½]
There may be little change for Group PMI business if it is experience rated. [½]
Poorer areas are often afflicted with poor health, so keeping geographical location as a rating factor may drive inequalities [½]
The changes may be in line with laws on discrimination (age, gender, disability, etc.) [½]
May be viewed as unfair on relationship status (extra burden on singles) [½]

[Marks available 11½, maximum 5]

(iv)

Prior to the restrictions of option 2 insurance companies could charge premiums for Private Medical Insurance that closely match the risk taken on by the insurer. [½]
Insurance companies were also able to ensure that individuals that were potentially higher risk could be charged an increased premium to reflect this additional risk. [½]
The proposed new restrictions outlined in option 2 are likely to mean that insurance companies will be less able to differentiate between good risks and bad risks in terms of charging an appropriate premium rate for the risks taken on. [½]
Insurers will potentially have to charge customers the same premium as a customer with a much lower chance of claiming provided the customers are the same age. [½]
There is therefore a potentially significantly increased risk of anti-selection for the insurer. [½]

The insurer is much more heavily exposed to the risk of writing a different mix of business than expected given there are likely to be significant cross-subsidies *(as mentioned in part (iii)).* [½]
For example, if a competitor takes all the young, healthy lives, an insurer would be left with a portfolio of higher risk lives than expected. [½]
Past experience of claims incurred will be much less relevant for pricing future business. [½]
It is likely that it will take some time after the implementation of option 2 for insurers to accumulate sufficiently credible data for pricing. [½]

Expense risk - costs associated with changes
Assumption setting [½]
Increase in capital for associated risks increasing reserves [½]
Admin system changes [½]
Re-publish literature and advertisements [½]
Training of staff and intermediaries [½]
Cost in changeover of staff (less underwriting needed) [½]
Reinsurance likely to be more expensive as less specific to risk [½]

Competition risk
Will want to increase the premiums to cover risk [½]
but not over competitors' premiums for fear of not selling policies. [½]

Group
Less concerned as likely not rating on these factors, experience rated [½]

Provider negotiations
More higher risk lives, could mean more business for providers so could negotiate costs down or up depending on profitability for providers [½]
If there is an increase in premium rates, selective lapses may compound the problem. [½]

If the insurer can't make money under new arrangement it could decide to stop writing PMI business. [½]

[Marks available 11, maximum 5]

(v)
Possible actions that could be take include:
The government could set up a reinsurance fund which could meet the cost of individual claim amounts above a certain level. [1]
The government could provide aggregate stop loss insurance for insurers. [1]
The government could require all individuals to purchase Private Medical Insurance. [1]
The government could choose to meet some of the cost of insurance for lower income families. [½]
Tax relief could be offered for older customers to reduce the cost of premiums. [½]
The government could introduce risk equalisation within the PMI insurance market, where risk is shared across insurers. [½]
The profits / losses on the identified riskier policies are pooled and then shared among the insurers involved to ensure that they all have the same average experience. This avoids the risk of one insurer taking on more risky policies (e.g. by writing cover for older lives) than others in the market, leading to uncompetitive premiums. [½]
Health and care insurers could be subsidised directly based on the level of risk they are accepting. The more risk accepted, the larger the subsidy. [½]

Or tax incentives could be given to insurers. [½]
Or regulatory easing could be granted to reduce capital requirements [½]
The government may allow insurers to phase individual changes in gradually. [½]
The government may offer to review the experience of insurers at a future point and re-think if the changes are causing insurers problems [½]
Create insurance company backed by government to take the uninsurable/poor risks, subsidised by industry players [1]

[Marks available 8½, maximum 5]

(vi)

Overall

Setting assumptions for statutory reserving and capital requirements is likely to be challenging from outset for the government owned insurance company. [½]
The insurance company has no previous experience on which to base its assumptions at outset [1]
and it is likely to take a number of years before credible experience can be built up. [1]
The actuarial control cycle should be used to regularly assess the assumptions made, and update these assumptions over time as the government insurer builds up its experience [1]
Potentially the government insurer could end up writing a lot of new business due to its scale which could it allow it to build up credible data quickly. [½]
In the early years of the government insurer there is likely to be some variation between the assumptions the insurer has made and experience. [½]
There will be some selection from early-takers of the product who are more likely to perceive a benefit from cover and therefore more likely to claim (leading to worse experience initially). [½]
It is unlikely that the insurer will want to change assumptions too often until it has built up credible experience as this could lead to significant changes in capital and / or reserves. [½]
The assumptions required to set the reserving / capital requirements include:
PMI claim inception rates
PMI claim costs
Expenses
New business volumes
New business mix

[½ mark for 2 relevant examples, Maximum 1 mark for 4 relevant examples]

Data

It may be possible to use any publicly available information on assumptions for other insurers selling private medical insurance in setting its assumptions [½]
Although it may not be possible to access very up to date or accurate information from other insurers about their experience [½]
It may be necessary to get some information from other insurers past statutory returns [½]
Or other external sources such as from actuarial consultants [½]
However it is not clear how relevant that other PMI insurers experience will be in setting the government insurers assumptions: [½]

- The information could be quite out of date [½]
- The products sold by the other companies are likely to be different. [½]
- The target market these companies sell to is potentially different [½]
- The basis on which these companies sell their products is different – e.g. other insurers require a full underwriting process before accepting a risk, whilst the government insurers PMI product does not [½]

- The scale of the government insurer may be significantly greater than many PMI insurers [½]
- which may make comparing certain assumptions very difficult such as expense levels [½]

It may be possible to discuss assumption setting with external reinsurers. [½]
Another possible source of data is the government, who may have collected data directly from hospitals. [½]
The government may decide not to carry out certain functions (such as claims admin) internally, but could outsource these, and this would need to be considered in the assumptions. [½]
Regulation may specify how certain assumptions are to be set or give a specific value (e.g. cost of capital). [½]
It will not be possible to set IBNR reserves using statistical methods as there is no data. May need input from third party such as a reinsurer. [½]

Expertise
Does the government have sufficient expertise to set its own assumptions [½]
If not, it will need to find and employ sufficient knowledgeable staff. [½]

Underwriting
Limited underwriting could mean the new insurance company could attract the poorer risks in the market which could not get cover at the other insurance companies [½]
There is therefore scope for considerably more anti-selection for the government insurer than other insurers in the market. [½]

Consistency with Pricing Assumptions
How will the reserving assumptions compare to the pricing assumptions assumed by the government insurer. [½]

Statutory returns
The insurer will need to consider the basis on which any reserves should be calculated, when setting assumptions. [½]
For example
If statutory reserves are calculated on a prudential basis then allowance will need to be made for prudence in the assumptions [½]
although care will be required to ensure there is not an excessive level of prudence. [½]
If statutory reserves are calculated on a best estimate basis then it is likely to be challenging to determine a best estimate for each individual assumption from outset. [½]

Capital Assumptions
The government insurer will need to consider the basis on which capital is calculated. [½]
For example, if capital is determined as a percentage of statutory liabilities there may be no additional explicit capital assumptions. [½]
The insurer's capital calculation could use more sophisticated methods than a percentage of liabilities, meaning more data could be required in order to determine appropriate probability distributions for key risk drivers. [½]
It may be assumptions may not be that important at outset – for example if there is a minimum monetary capital requirement. [½]

However, if the government insurer writes a lot of new business then very quickly the insurers capital requirements could exceed any minimum, and the assumptions used in the capital calculation could become more important. [½]

[Marks available 20½, maximum 14]

[Total 43]

For Q1(i), candidates who wrote about considerations for providing healthcare in general scored less well than candidates who tailored their answers to consider the specifics of the question; for example, the existence of a well-developed PMI market for both individuals and for employer-led group schemes, the limited provision of medical services by the state, the increasing cost of medical treatments in recent years and the ageing of the population.

The better candidates considered the advantages and disadvantages of the PMI provided and potential gaps in coverage: for example, the quality of treatment, a potentially more flexible healthcare service with wider choice and better customer service than the state, the number of PMI providers should mean that the market is competitive providing cheaper premiums and product innovation. On the other hand, there would be excesses and exclusions such as normal pregnancy which individuals would need to fund themselves and PMI is not good at covering the costs of chronic long-term conditions. Large groups of citizens would be unlikely to access PMI either because of the detailed initial underwriting or the cost was unaffordable.

Not all candidates discussed the additional health care needs not covered such as preventative care, long term care, income protection or provided any detailed discussion on group PMI provided by employers.

Most candidates scored well on questions Q1(ii) and Q1(iii) and Q1(iv) giving a wide range of relevant points.

Q1(v) was not well answered. Few candidates discussed options such as the government setting up a reinsurance fund to meet the cost of individual claims above a certain level or introducing risk equalisation or creating an insurance company to take on poor or uninsurable risks.

Similarly, in Q1(vi) many candidates did not generate sufficient points to score highly.

Q2

(i)

The criteria for a condition covered by CI insurance are:

- the illness is perceived by the public to be serious and to occur frequently
- that it can be defined clearly so that there is no ambiguity at time of claim
- sufficient data is available to price the benefit.

<u>Advantages</u>

The disease meets some of the characteristics of a critical illness [½]

For example, the disease is expected to have a high incidence rate [½]

And the disease is serious in a minority of cases and may be feared out of proportion [½]
The policy addition will be profitable if the insurer can charge more for the extra premiums than it will have to pay in extra claims. [½]
This addition may be seen as adding value by potential customers [½]
Which could increase new business [½]
Potentially leading to increased profitability [½]
And/or reduce lapses [½]
Distributors may also welcome the addition [½]
There could be a first mover advantage if the insurer is the first to offer the benefit [½]
Or it may be required to offer the benefit if other insurers are doing so [½]
As there appears to be an interaction with other health conditions, many policyholders who get the disease may claim anyway for another critical illness [½]
So it may be possible to offer the benefit at a reasonable price [½]
As the symptoms are mild in the majority of cases it may be possible to offer tiered benefits and reduce potential claims costs [½]
As the insurer is large it may have available capital to support the development costs involved [½]
And possible increases in solvency requirements [½]
The company may be seen as innovative and boost its reputation. [½]

<u>Disadvantages</u>
As the experience is emerging, it will be difficult to price with a reasonable level certainty [½]
The interaction of the new disease with other claims may be hard to estimate until much more experience has evolved (so there could be a more significant double counting issue). [½]
There is potentially considerable uncertainty on claim inception rates and mortality experience from adding the new disease [½]
which means it is difficult to set reserves / capital for the companies CI business [½]
It may be difficult to define when to pay a claim [½]
Possible definitions include being payable on diagnosis, on hospitalisation, on receiving certain treatments [½]
Need for a waiting period to know if already have the disease but without symptoms [½]
The insurer would need to consider what verification will be required to provide evidence for the claims that are made on the critical illness side, [½]
If 10-15% of policyholders may claim, it will be important to have clear wording to avoid high volumes of claims being made that may be declined as the disease was not serious enough. [½]
Non-payment of claims may lead to reputational issues [½]
And litigation costs/regulatory fines [½]
There will be systems and policy literature changes, [½]
Along with staff training (particularly around underwriting) required which will have a cost for the insurer. [½]
If there is a large increase in new business this may lead to pressure on admin systems etc though potentially less of an issue as the insurer is large [½]
Business mix risk as some in society at more risk than others of contracting infection [½]
There is the potential that the benefit might prove expensive given the expected incidence [½]
In many cases, the disease is not serious, and it is not clear that the disease results in a real customer need for financial support [½]
In these cases, there is the potential for windfall payments for policyholders if the claims definition is too lax [½]

There is a potential for lapse and re-entry if the benefit is not extended to existing policyholders [½]
May need to hold extra capital as the disease is new and claims experience may be underestimated or volatile [½]
May need increased capital to meet increased solvency requirements [½]
It may be difficult to get reinsurance [½]
Or reinsurance premiums may be high [½]
If the insurer has a reinsurance treaty then it will need to discuss the addition of the disease with the reinsurer. [½]
There is no guarantee that the reinsurer will allow the addition of the disease to any existing treaty [½]
so all claims from new disease may fall on the insurer. [½]
There may be additional requirements from the regulator which may be onerous [½]
If an individual has already had this disease, would they want/need it to be covered (ie can you get it multiple times?). If not it might deter some applicants if the premiums are high for cover they don't require [½]
Ultimately the insurer may need to increase premium rates in respect of the new disease. [½]
This could put off potential new customers from buying the company's CI products [½]
And put the insurer at a competitive disadvantage if consumers don't value the addition of the new disease. [½]
Underwriting may be complex given disease interactions. May need to introduce new underwriting factors (e.g., Employment sector). [½]
The disease is new and as such, the risk is not yet fully understood, including lasting prevalence. [½]
Would the need for the product remain high after the initial novelty of the disease, causing a need for the expenses to be front loaded to avoid lapse risk [½]

[Marks available 25½, maximum 10]

(ii)

<u>Data</u>

Consider the data available [½]
whether reinsurer data is available [½]
Or whether medical studies can be used as a proxy [½]
Consider how data will need to be adjusted given the specific claims definition used [½]
If there is a lack of data, the pricing assumptions may include a level of prudence [½]

<u>Demographic rates (mortality, morbidity, lapse)</u>

Is there a bias between the population and the insured lives? If insured lives are generally healthier than the population and be expected to be less severely impacted by the disease, the impact on pricing assumptions will be less than for the population as a whole [½]
However, depending on the level of anti-selection the impact could be larger than in the general population [½]
What is the prevalence of serious underlying medical conditions in the book? If this has been reduced due to underwriting, then the impact to pricing assumptions will be less [½]

<u>Morbidity</u>

Consider how the prevalence of the disease is related to various risk factors [½]
Such as age, gender [½]
Consider the co-morbidities between the disease and other conditions covered under the policy [½]

If offered under a tiered structure, consider transition probabilities between levels [½]
Given that this is a new disease and there is significant uncertainty, consider what level of margin may be needed [½]
Need to consider possible future trends in diagnosis [½]
And treatment (for accelerated business) [½]
And the development of effective vaccinations, if the disease is infectious [½]
This disease may accelerate some claims that would be paid anyway if individuals are seriously ill. [½]
Similarly, it may not have a significant impact if those who are seriously ill have already made a CI claim for the existing illness (e.g. heart attack). [½]
The claim definition (severity of) will impact rates [½]

Mortality

Mortality rates may need to be considered for both SACI and accelerated business. [½]
In the case of SACI, if the disease causes fatality within the survival period, the impact to pricing assumptions will be lower than otherwise. [½]

Lapse

Lapse rates: could decline if added to existing business, [½]
If not there may be lapse and re-entry concerns. [½]
Lapse rates for new business could differ compared to the existing book (potentially lower if the benefit is valued [½]
Or higher if the introduction of the benefit is costly) [½]

Discount rates and investment returns

Investment returns: if the spread of the disease outbreak has wider economic implications, investment returns will need to be revisited. [½]
May need to add in margins given the uncertainty involved [½]
The discount rate may be informed by the long term expected return on assets [½]
The cost of capital may increase as with increase uncertainty and margins, the reserves will increase. [½]

Expenses

Expenses: Likely to increase as there will be product development [½]
And marketing expenses associated. [½]
Claims expenses may be linked to the number of claims submitted and may depend on the amount of claims underwriting required. [½]
Expense inflation may not be impacted [½]

Business impacts

It is likely that the expected incidence for this disease will be calculated and, if the disease is expected to be a significant contributor to cost then the incidence rate will be combined with the incidence rates for the other major conditions in order to derive the global incidence rate. [½]
Alternatively, if the cost is not significant or it is not possible to find reliable data, it may be added as a proportionate cost to product. [½]
New business volume: likely to increase if the benefit is seen as valuable [½]
Potentially reducing expenses per policy [½]
New business mix might also change depending on whether the disease coverage appeals to specific categories. [½]

Consider any regulatory requirements (e.g. may not be able to use gender if the disease only impacts say men) [½]
Profitability of the existing products could influence the impact to pricing assumptions. [½]
If the existing product is priced on best estimate terms, then adding the disease may have a more noticeable impact on pricing assumptions. [½]
If the existing product is priced on prudent terms, then adding the disease may not increase pricing greatly but work to reduce the prudence margin. [½]
This may be done by the business to increase sales, as a means to retain profits if prudence in pricing is reduced. [½]
The demographic assumptions may be set by the re-insurer depending on the reinsurance arrangement, leaving only non-demographic assumptions to be considered. [½]
Pricing assumptions may only be impacted for the demographic affected (say over 50s) [½]
But if pricing is undertaken on community terms, then all ages would have an increase as the cost is spread across the book. [½]
Will need to consider the impact on reserves / capital requirements within pricing [½]
Will need to consider the impact on reinsurance assumptions [½]
Reviewability of premium rates may impact need for / extent of margins. [½]

[Marks available 24½, maximum 10]

[Total 21]

Most candidates scored well on question Q2(i) giving a wide range of relevant points. The general criteria for including a condition to be covered by CI insurance are:

- *the illness is perceived by the public to be serious and to occur frequently*
- *that it can be defined clearly so that there is no ambiguity at time of claim*
- *sufficient data is available to price the benefit.*

Considering each of these in turn and how they applied to the situation specified in the question would help generate several relevant points. Points less frequently mentioned included that as the insurer is large it may have available capital to support the development costs involved and the possible increases in solvency requirements, it may be difficult to define when to pay a claim and the possibility of non-payment of claims leading to reputational issues and possible regulatory fines or the possible effects on existing reinsurance treaties.

Q2(ii) was reasonably well answered. Most candidates discussed possible issues with the data available and how it might be sourced and adjustments that might be needed, the possible effects on expenses and the potential need for margins given the uncertainty. However, fewer candidates discussed issues the potential effects on morbidity and claims inception in detail or the possible on lapses, discount rates and investment returns and differences depending whether the current products were priced on best estimate or prudent terms and whether they were reviewable or not.

Q3

(i)

<u>Disadvantages</u>

Pricing may not be competitive [½]
The lack of competition might reduce product innovation [½]

If the product design does not meet customer needs, there will be little incentive to change. [½]
Customers may not have an alternative if premium rates are increased substantially [½]
Customer service may be poor and there may not be an option for policyholders to choose another provider to avoid this [½]
If a customer was declined cover, they may struggle to find alternative provision [½]
Because the pre-funded market is dominated by the insurer, it may be more disadvantageous for customers as they will only be able to compare to immediate needs products [½]
Over concentration of business in one company could be a problem for consumers if company Z got into financial or operational difficulties [½]
If there are concerns with the solvency of the company, consumers may not have an alternative [½]
In the event of a solvency crisis it is not clear whether other insurers in the market would be able to take over existing liabilities and consumers may lose benefits [½]

<u>Advantages</u>
Data is concentrated with one insurer and this may allow for better pricing and risk management [½]
Z may have the most specialist knowledge and expertise as it's the market leader [½]
which means it could offer the best LTCI product features and customer servicing [½]
If one insurer is the best then consumer does not need to go through a time consuming process of comparing different insurer's products before buying LTCI product. [½]
The insurer will be experienced in administering policies and claim handling so may deliver a good customer experience [½]
Economies of scale for the insurer could lead to lower premiums for customers [½]
The insurer may have the market power to negotiate better rates with healthcare facilities leading to lower costs than if the customer had to self-finance care [½]
The regulator may be focused on the insurer given its market dominance, this should give customers a level of comfort that the company has adequate reserves [½]

[Marks available 9, maximum 4]

(ii)

<u>Geographical variation</u>
Data could be analysed by region to understand whether the cost of care varies depending on location [½]
And whether exposure is concentrated in specific locations [½]
This may be because if the distribution of state and private facilities [½]
But as County B is small, it may not be material [½]

<u>Mortality and morbidity experience</u>
This insurer will need to review:
Morbidity incidence rates [½]
Cost of care [½]
Average claim amounts will be important as the product is indemnity based [½]
And claims inflation [½]
And the cost of claims will need to be investigated as this will be important for assessing the claims reserves required [½]
Impaired mortality rates [½]
Mortality rates pre-claim [½]
Estimation of future trends will be required [½]

Given that Country B is a well-developed country, it is likely that mortality rates have been improving [½]
In the context of pre-funded long term care, this translates to both a larger proportion of lives reaching an age where they are likely to need care [½]
And a likely reduction in impaired life mortality. [½]
Recovery rates might be reviewed but likely to be immaterial and this data may not be recorded. [½]
The insurer will need to investigate lapse experience [½]
By factors such as:

- duration in force [½]
- premium payment method [½]
- premium size [½]

[½ mark for relevant factors, Maximum 1 mark]

This could affect the profile of the underlying book of business if healthier lives lapse [½]
Early lapses will affect the ability to cover acquisition expenses [½]
The insurer will need to analyse expenses [½]
This will need to be divided by acquisition expenses, policy administration expenses pre-claim, claim assessment expenses, claims management expenses [1]
Consider if one-off expenses would be excluded [½]
Expense inflation would also be investigated [½]
The insurer will want to understand how the underlying business mix has evolving over time [½]
For example, the profile of new business [½]
And the volumes of new business [½]
And the profile of lapses [½]
And how these deviate from the expected business mix [½]
The insurer will also review the investment income [½]
The insurer will need to divide data into homogenous groups [½]
As the country is small, there may not be a large long-term care market so there may be limited data available [½]
But as the insurer is dominant in this product category, it may have higher volumes of data allowing it to analyse the data in detail [½]
The insurer will want to understand the experience by categories including age, gender, occupation, smoker status and region. [½]
Morbidity incidence and average claim cost will be estimated based on the sub-division of data [½]
Data on the exposed to risk will also be required along with claims/lapses [½]
Other data sources that could be used for comparison include
Reinsurer data [½]
Market data [½]
Population data etc. [½]
These data would need to be adjusted to ensure relevant to this insurer/product [½]
For all factors, the actual experience should be compared with the pricing assumptions and any reasons for a difference identified [½]

[Marks available 22, maximum 10]

(iii)

Sources of risk

Rates

Mortality

Life expectancy could have improved for a certain condition, meaning people are in care for longer [½]

Morbidity

There may be changes to policyholder behaviour which impact the propensity to claim and this may impact incidence/termination rates [½]
Claims eligibility could have weakened [½]
e.g. due to changes to the medical definitions used for functional test like ADLs [½]

Claims amounts

Treatment protocols may have changed which could change claim amounts [½]
Cultural factors may change provision of care, for example from in-home care, to care homes [½]
e.g. indemnity policy claim amounts increase [½]
Ongoing long term care claims may be increasing [½]
e.g. increase in staff care salary costs [½]

Investment

The cost of pre-funded LTC will in part be funded by investment returns, lower return experience would require an increase in premiums [½]
There may have been changes in investment strategy, economic effects such as recession [½]

Selection

The underwriting policy may have weakened [½]
e.g. to keep up with competitors or distributors needs [½]
There may be anti-selection risk [½]
e.g. genomics testing to highlight conditions that will require care later in life without need for disclosure [½]

Competition

Competitors may have launched new immediate care offerings which might lead to healthier lives delaying purchase [½]

Inflation

Medical inflation changes could be higher than expected costs [½]

Persistency

Increase in the number of people requesting a return of premium before the eligible period to claim e.g. reduced spread of expenses. [½]

Options & Guarantees

Guaranteed return of premiums on death may have been much higher than expected [½]

New Business

Volumes may be lower than expected, so increase represents increase in expense loading [½]
The source of new business may be more risky than was expected [½]

Changes to the cost of private healthcare may lead to change in the number of people taking out LTC [½]

Data
The company may have limited data and, as it builds experience, expectations may change [½]
e.g. the premiums could have been set too low initially [½]

Expenses
Expense claims could exceed expectation [½]

Reinsurance
Reinsurer could have adjusted rates upwards [½]

Actions of management
Management may have set the rates as a loss leader to develop the business initially. [½]

Non-disclosure
Policyholders may not disclose smoker status or lifestyle factors correctly [½]

Internal audit and systems failures
There may have been errors in the previous pricing exercise [½]
e.g. errors in models not caught through review process [½]

Counterparty risks
The distribution model may have changed to a different profile of customer [½]
e.g. selling to lower socio-economic area with poorer health outcomes [½]
Care providers may have changed [½]
Provider negotiated fee schedules may have changed [½]
Claims management may have weakened e.g. outsourced company did not uphold standards [½]

State benefits
Reduction to state health care may have led to changes in the cost of claims [½]
e.g. increase in means testing or reduction of state entitlement asset threshold [½]
Or the percentage of state and in-home care provision could have reduced [½]

Regulatory / Fiscal development
Legal challenges could have given rise to extra claims that were not expected [½]
e.g. previously disputed claims may now be allowed, with back dated payments [½]
The costs of complying with regulation may have increased [½]

Early screening / diagnosis
There may have been the introduction of screening programmes [½]
Changes in early diagnosis which could bring forward claims [½]

Reputational risks
Poor publicity could mean that claims have had to be approved even though not priced for in the rates [½]

[Marks available 22, maximum 10]

(iv)
OPTION A:
Need to consider if the amendments will apply to new business only [½]
There may be issues with TCF if changes are applied to all business [½]
This will limit the effectiveness of the changes applied [½]
Compared to an increase in premium which (if premium rates are reviewable) can be applied across the book [½]

(a)
Company XYZ
Advantages
This should reduce the cost of claims where private care is selected [½]
This change to the design of the product may be relatively simple to implement and easy for staff, distributors and customers to understand [½]
Competitors may offer this structure and so this will be in line with the market [½]
There may be a reduction in moral hazard [½]

Disadvantages
Depending on the reputation of state care, this may impact the reputation of Company XYZ [½]
If there are long waiting lists for state care may mean that customers perceive this as unfair [½]
There may be future changes to state care provision and the insurer will be more exposed to this risk [½]
If the change applies across the book, policyholders may lapse [½]
Operational cost of setting up and managing product structure. [½]

(b)
Policyholders
Advantages
This may be preferable compared to a premium rate increase [½]
Especially if the benefit changes do not affect current policyholders [½]
The reduced level of cover may make the product more affordable for some customers [½]

Disadvantages
Policyholders will have additional payments if they select private care [½]
There may be insufficient state capacity which may disadvantage policyholders [½]
A lack of competition means that policyholders may not have alternative options [½]
If it impacts new business levels, premium increases may be inevitable if premiums are reviewable [½]
State care may be of lower quality. [½]
The product will no longer offer full indemnity cover and therefore may not meet the needs of the customer. [½]
Although the policyholder may be able to meet the premiums payments, once in care they may struggle to meet the cost of the deductible/excess [½]

(c)
Providers
Advantages
There may be less pressure to negotiate lower fee schedules [½]

There may be little change if providers service both state and private markets. [½]

Disadvantages
May face a loss of business if they relied on LTC customers [½]
May increase administration if co-payments need to be collected / managed by the provider [½]
A smaller market may result in aggressive competition [½]
There may be a change in the mix of State and private provision. [½]
Some customers may prefer State provision if they are unable to meet the cost of the excess, leading to lower demand for private providers. [½]

OPTION B:
(a)
Company XYZ
Advantages
If current claims are capped, this may be simple to introduce administratively [½]
May attract a broader market [½]
Which could increase sales and profitability [½]
It may allow for a premium increase to be matched with a benefit increase [½]
Reduces uncertainty relating to future claim payouts. [½]
The capped risk element of claims, moving away from the indemnity style product, may allow the insurer to reduce its capital requirements overall. [½]

Disadvantages
May have no experience with life insurance [½]
May have additional licensing requirements which may be expensive [½]
This is unlikely to resolve the premium rate issue [½]
May be significant administrative requirements [½]
Product complexity may make it difficult to explain / additional selling expenses (training, distributor commission) [½]
There will be policies that, at the moment, receive no benefit from cover as no care is required before death, all these policies will become claims under the new product. [½]
This will lead to higher claims administration costs. [½]
The insurer may lack the data to price this version of the product as the target market for the current product may differ given it meets a different customer need. [½]

(b)
Policyholders
Advantages
Unlikely to apply to existing policyholders so no impact on existing policyholders [½]
This may be an innovative benefit which is new to the market [½]
Which may prove attractive [½]
Policyholders may find the 'guaranteed' benefit element of the product attractive. [½]

Disadvantages
Overall amount payable is capped so there may be insufficient money to pay for LTC required. [½]
Policyholders will have to pay for life insurance [½]
Which they may not want [½]
Policyholders may be concerned about the benefits not paying for all care costs. They

may be uncertain about what happens if this occurs, e.g. do they have to move facilities? [½]
There is also the risk that this happens earlier than expected if cost of care inflation is higher than expected [½]

(c)
Providers
Advantages
There may be limited change which providers may welcome [½]
If this increases the market, this will likely be viewed positively by providers [½]

Disadvantages
Providers may be uncertain about what happens if the insurer payments cease – would policyholders be able to afford to continue with payments? [½]
Reputational issues if a policyholder claims their full benefit and is unable to continue to access LTC [½]

[Marks available 28½, maximum 12]
[Total 36]

Q3(i) was well answered, although relatively few candidates discussed the potential problems for customers if the company got into financial or operational difficulties or that given the company's market dominance the regulator may be focussed on the company providing a level of comfort that the company had adequate reserves.

Q3(ii) was also well answered with candidates giving a wide range of relevant points. Points less often made include that this is a well-developed country mortality rates are likely to have been and continue to improve, leading to more policyholders reaching an age when they are likely to require care and a likely reduction in impaired mortality once they start to receive care or that the experience could be considered against other data sources, suitable adjusted to be relevant to the insurer and product. Few candidates discussed in detail investigating the profile of the new business taken on or possible geographical variation.

Q3(iii) was reasonably answered with the better candidates generally the possible sources of risk under various headings such as morbidity, claim amounts, new business etc. Relatively few candidates discussed counterparty risks such as changes in care providers, changes in fees schedules or the possible impacts of management actions or changes in state benefits or operational failures or reputational issues being more claims had to be approved than priced for in the rates.

Q3(iv) was not well answered with few candidates providing a wide enough range of points to score highly. Several candidates appeared to confuse the differences between company Z as an insurer and the health care providers in the country. Company Z was not acting as a health care provider. The better candidates provided a discussion of the main points, which include:

Option A was likely to lead to more use of state care which would reduce claims costs for Company Z but may cause reputational issues, for example, if state care were not good or

there were long waiting lists and the company would be exposed to future changes in state provision.

Policyholders may prefer this to a premium rise and the product may be more affordable but they would have to make additional payments if they select private care and they would lose full indemnity cover and may have difficulty meeting the cost of any deductibles or excesses.

For care providers there would be less pressure to reduce fees and may see little change of they service both state and private markets. However, they may lose business if they rely on LTC customers and administration would increases if co-payments had to be collected or managed by the provider.

Option B might increase sales and profitability for company Z and capping the risk element of claims would reduce uncertainty relating to future claims payouts and allow the insurer to reduce its capital requirements overall. However, the company may have no experience of life insurance and have little data to price the new product. Administrative requirements and costs may increase (for example, all policies would now become claims at some point).

Policyholders may find this product attractive particularly as it would provide them with a guaranteed benefit element. On the other hand, they will have to pay for life insurance they may not want. Also, the overall amount is capped so there may be insufficient money to pay for LTC required.

Care providers may see little change or the market may increase. However, it is not clear what would happen if the insurer payments cease.

[Paper Total 100]

END OF EXAMINERS' REPORT