INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

September 2019 Examinations

Subject SA1 – Health and Care Specialist Applications

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.

Mike Hammer
Chair of the Board of Examiners
September 2019

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

1. The aim of the Health and Care Specialist Applications 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.

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

This paper was more challenging than some SA1 papers in recent diets; this is reflected in the lower pass mark.

Well-prepared candidates scored well across most of the paper. Questions that required an element of analysis or application of knowledge to a particular situation, such as Q3(ii) and (iii) were less well answered than those that were mainly knowledge based, with candidates not always providing a sufficiently broad range of points to score well.

It is encouraging to see many candidates using headings in their answers to the longer part questions.

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

Pass Mark

The Pass Mark for this exam was 57.

Solutions Subject SA1

Q1

(i)

Long term care covers all forms of continuing personal care or nursing care and associated domestic services…. [½]

…. for people who are unable to look after themselves without some degree of support, [½]

Whether provided at their own homes, at a day centre or in a care home. [½]

[Max 1]

(ii)

Possible reasons include:

Insurer sees a market opportunity. [½]

First mover/competitive advantage. [½]

Increasing demand from customers because of ageing population. [½]

Increasing demand from distributors on the insurer to provide innovative sales/products. [½]

Increased need for such cover in the future due to increasing life expectancy but not increasing healthy life expectancy. [½]

Policyholder need - concerns over Government future provision of basic LTC due to resource or political willingness. [½]

Can plan for their long-term need. [½]

And not be a burden on their family. [½]

There may be Government incentives. [½]

Changing tax rules for prefunded LTCI may increase its attraction to customers. [½]

Increased sales as pre-funded cover cheaper than immediate needs policy. [½]

Improve insurer's brand image. [½]

Changing social circumstances – e.g. increasing number of older generations who are divorced or have no dependents to provide informal care. [½]

Insurer may have experience in selling long-term care in other territories and can use this experience to launch a LTC in this country. [½]

Insurer expects to sell more profitable business. [½]

Alternatively, may be used as a loss leader. [½]

May allow cross-selling of other products. [½]

[Max 4]

(iii)

(a) <u>Benefit Structure</u>

The level and form of the benefits must meet the needs of customers. [1]

Could be a lump sum [½]

or regular income. [½]

The term of the benefits – are they payable for the rest of the policyholder's life or for a fixed term e.g. 2 or 5 years. [½]

The policy could cover the costs of care throughout the remainder of life, i.e. indemnify against long term care costs. [½]
This would give rise to very uncertain benefits so the financial risk is large. [½]
Providing fixed benefits or benefits that increase in line with an index removes the degree of benefit uncertainty and so financial risk is greatly reduced. [½]
Fixed non-indemnity benefits are administratively simpler [½]
But need to consider carefully any index used. [½]
The level of benefit could depend on the level of disability; this could reduce the cost to the customer whilst still meeting their needs as they change [½]
Although this might lead to increased complexity of definitions, misunderstanding of benefits and reduced sales. [½]
Mis-selling risk if the benefits not sufficient to cover the actual cost of care. [½]
Index benefits may be a compromise between the fixed benefits and indemnity benefits [½]
…. But choice of the index problematic as no one index captures the increase in costs [½]
…. main costs are salary related so a salary/earnings index may be suitable but accommodation costs which is another main cost could increase at a different rate. [½]
Additional benefits may be payable such as death benefits or a surrender value. [½]
Consider the use of limitations on benefits (e.g. caps/excesses/limits) etc to ensure cost of product is affordable [½]
And profitable for the insurer. [½]
Are benefits paid directly to the policyholder or the provider of care. [½]
Benefits should be designed to integrate with state LTC provision to maximize value for money to customers and improve affordability. [½]

[Max 3]

(b) <u>Claim Definition</u>

The claims definition needs to be well defined to avoid unanticipated claims but enable policyholders who need care to meet the definition. [½]
For example, the policyholder fails to meet a number of activities of daily living, [½]
Such as, dressing, feeding, washing, mobility, transferring. [½]

[Half mark awarded for one relevant example, maximum ½ mark]

A mental impairment trigger may also be included. [½]
The definition could be a 'single event' trigger [½]
or an ongoing assessment definition, where policyholder meets the definition for a period of time. [½]
The former is administratively simpler. [½]
The latter is more complex but arguably better fits the customer's needs. [½]
Increasing the number of activities to be failed or the severity of each of the tests will limit the number of claims [½]

but may reduce the marketability of the policy. [½]
If the product claim trigger also meets the State benefit trigger this may reduce the amount of benefit required under the policy as they would be receiving some benefit from the State as well and hence reduce the cost. [½]

[Max 3]

(c) Other factors

Premiums: how long will these be paid for. [½]
Will they be level of increasing. [½]
Will they be reviewable or guaranteed. [½]
Underwriting: will the product be fully medically underwritten for each life. [½]
Will evidence of health be required. [½]
Shouldn't be too onerous to deter applicants but needs to be thorough. [½]
Claims management which help insurer control future claim costs which keep prices down and so improves competitiveness, [½]
…. for example an assessment period, telephone helplines. [½]
The product should be designed to achieve the desired profitability of the company. [½]
Additional design features may improve marketability for example, addition of options and guarantees [½]
…… but not too onerous that the capital required significantly affects the company's financial position. [½]
The product should be designed with the risk appetite of the company in mind [½]
Balancing this with the marketability of the product. [½]
Sources of data available to assess risks. [½]
Consumer demand – check acceptable price levels. [½]
Distribution – consider the most appropriate distribution channels; [½]
Likely to be specialist healthcare brokers. [½]
May need a new distribution network if the insurer does not currently use such distributors. [½]
Complex product, policies can have large benefit amounts therefore require large remuneration to motivate sales. [1]
May need training. [½]
Consider documentation/sales literature etc required. [½]
Consider any admin/systems changes required. [½]
For example, underwriting, claims management, admin [½]

[Half mark awarded for one relevant example, maximum ½ mark]

Sales volumes – if too low, may not cover development costs or fixed expenses [1]
If too high may cause new business strain [½]
And require additional capital. [½]
Consider the extent of any cross-subsidies between sexes etc. [½]

Simple design helpful for marketing [½]
So potential higher sales [½]
And reduces the administration required [½]
So lower costs. [½]
Consider regulatory requirements on the product design e.g. UK benchmark set of claim definitions, reviewability of premiums and benefits. [½]
Consider local tax rules to assess tax efficiency of the product. [½]
Financing requirements - e.g. capital should be available to support initial set up cost. [½]
And capital requirements [½]
Without higher opportunity costs on other projects. [½]
Sensitivity of profit [½]
E.g. for changes in state benefit provisions, for a fast or slow sales volume launch, for tax or interest rate changes *[half mark for one suitable example]* [½]
Need for and availability of reinsurance [½]
And cost of reinsurance. [½]
Consider investment strategy and availability of assets required. [½]
Need to consider potential actions of competitors. [½]

[Max 7]

(iv)

(a) Insurance Risk

Lack of data to price the product accurately. [½]
Longevity risk – claims last longer than expected. [½]
Morbidity risk – greater number of claims than expected. [½]
Aggregation/accumulation of claims e.g. too much exposure to cross subsidies on sex or postcode that are for more costly claims and lengthy claims. [½]
Catastrophe risks from one-off events. [½]
Claims may be more volatile than expected leading to a risk that provisions insufficient and risk of insolvency. [½]
Persistency not as expected with early lapses before costs are covered [½]
Or selective lapses leading to worse claims experience on the remaining block of business. [½]
Development expenses greater than expected. [½]
Policy expenses greater than expected. [½]
If indemnity cover provided, costs may increase faster than projected. [½]

[Max 3]

(b) Underwriting Risk

The underwriting process is inadequate [½]
resulting in inappropriate premiums charged for benefits. [½]
Poor financial underwriting leading to over insurance. [½]

Moral hazard – e.g. policyholders exaggerating symptoms or behaving differently knowing that an insurance policy can be claimed. [½]
Anti-selection – policyholders take out a LTCI policy believing that their risk is greater than that allowed for in the premium rate. The policyholder makes use of information (their health) that is not favourable to the insurer. [½]
Claims handling expenses are greater than expected e.g. because processes are inefficient. [½]
Non-disclosure – where policyholder when asked for information does not disclose relevant information. [½]

Sales Risk
Sales remuneration structure leading to inappropriate sales/mis-selling. [½]
Poor training of sales staff leading to mis-selling. [½]
Insufficient sales volumes leading to fixed expenses are not being covered. [½]
This may be caused by competitive pressures, prices or contract terms, poor servicing or poor underwriting (e.g. taking a long time to make a decision). [1]
[Half mark awarded for any relevant example, maximum 1 mark]
Sales volumes are too high resulting in too much new business stain risking insolvency. [½]
If there are cross subsidies in the pricing basis a different business mix to that expected may lead to losses. [½]
[Max 3]

(v)

New business volumes - may increase sales leading to admin/capital strain. [½]
May change new business mix – may be more attractive to healthier lives. [½]
In the pre-funding phase individuals who are likely to die soon may request a surrender value. As the product does not offer a payment on death the assumed mortality gain during prefunding may be released. [1]
There may be self selection from healthier lives leaving the insurer with a worse pool of risks. [½]
In claim phase, people who are likely to have very short life expectancy will likely ask for a surrender value. Risk is that the insurer's mortality assumptions are undermined and that the remaining portfolio has greater life expectancy than before. [1]

If the surrender value basis is not on a neutral basis or profitable for the insurer the surrender value may be greater than the policy asset share, particularly for early surrenders. [½]

Lapse risk would require changing … [½]
… and the product may no longer be profitable. [½]
Liquidity risk if many policyholders ask to surrender at the same time. [½]

Operational risk if the number of surrenders is too high over a short period of time. [½]
TCF risk if the surrender value appears poor value to policyholder. [½]
Political risk – state provisions may become more generous, creating an increase in surrender values sought. [½]
All the above risks result in increased capital requirements and in extreme insolvency.[½]
May affect availability and cost of reinsurance. [½]
[Max 3]

(vi)

The transfer basis should differ depending on whether the policy is in claim stage or in the pre-claim stage. [½]

Under both stages an adjustment may be made for the cost of the surrender. [½]

<u>In claim stage</u> (i.e. LTC payments are being paid)
The income is contingent on survival and continuance of the incapacity. [1]
The reason for surrender is important because the reason for surrender is potentially anti-selective so the basis should allow for this. [½]
Insurance company established a reserve as present value of future benefit payments.
Need to adjust the reserve to remove prudence margins. [½]
Being disabled, a specific mortality assumption is needed for each surrender value calculation. [½]
….. and the individual's medically assessed estimate of the policies future claim payments will be required. [1]
Reduce surrender value for costs of medical assessment and other admin costs. [½]
The interest rate in the reserve may need adjusting as there could be changes in market yields since the valuation. [½]
The company may use a higher yield to value the future liability so reduce the need to monitor and adjust for interest rate changes in the market. [½]

<u>Pre-claim stage</u>
Future income is contingent on survival and continuance of the incapacity. [½]
In this scenario policyholder health is likely to be more in line with the reserve with any mortality and incapacity prudence margins removed. [½]
The surrender value in the pre-claim stage needs to value the probability that the policy in the future meets the claim trigger. [½]
As the policyholder is selecting to surrender then need to allow for anti-selection by assuming the probability is significantly lower than assumed in the reserving. [½]
The reserve also needs to be adjusted for the revised probability of future claim. [½]
The interest rate in the reserve may need adjusting as there could be changes in market yields since the valuation. [½]

The company may use a higher yield to value the future liability so reduce the need to monitor and adjust for interest rate changes in the market. [½]
Adjustments may be made to the surrender value to recover initial expenses that are not covered by product margins. [½]
This adjustment could be a decreasing function based on the duration elapsed. [½]
[Max 5]

(vii)

The level of free assets enables the insure to withstand adverse experience in market movements [1]
Or meet the additional capital requirements that might be needed if a less matched approach were taken. [½]
The size of the insurer in terms of policies in-force or reserves. More reliable claims experience so less unexpected volatility in experience, so can hold lower margins for prudence. [½]
The extent to which there are margins for prudence held in the liabilities. [½]
The potential impact of the volatility of equities on solvency. [½]
Equities may provide a partial hedge against inflation (medical/salary). [½]
Insurer's risk appetite, if more risk adverse follow more close matching. [½]
The greater number of products the more diversification of risks which may enable the insurer to follow a less matched position. [½]
The level of reinsurance; the greater the use of reinsurance the less volatile the claims experience. [½]
The use of hedging or derivatives may protect the insurer from adverse market movements. [½]
The insurer's investment objectives as set out in any product disclosures. [½]
The insurer's new business plans; may require free assets to support its new business. [½]
The insurer's future strategy – acquisitions, merger as it will require free assets to achieve the strategy. [½]
Liquidity constraints on the insurer from its in-force business. [½]
Regulatory constraints restricting mismatched positions . [½]
Views of credit rating agencies as the credit agencies may downgrade the insurer. [½]
Views of market commentators and analysts, changes may adversely affect stock price. [½]
The availability of suitable equities. [½]
Cost of buying and selling assets. [½]
Use ALM to assess if the return is sufficient for the additional risk. [½]
Views of creditors of the company who may become concerned by significant mismatches. [½]
There may be shareholder pressure to increase returns. [½]

[Max 4]

(viii)

Technical Provisions

The Technical Provisions are the sum of the Best Estimate Liabilities and the Risk Margin. [½]

The BEL is calculated using the relevant risk-free yield curve …… [½]

….if the liabilities could be considered sufficiently predictable by the regulator a matching adjustment to the risk-free yield curve could be added…… [½]

……if the liabilities are considered not sufficiently predictable by the regulator then a volatility adjustment can be added to the risk-free yield curve. [½]

The purpose of the volatility adjustment is to reduce the risk of forced sales of assets in the event of extreme bond spread movements as the assets are more volatile than the BEL calculated using just the risk-free yield curve. [½]

If matching is applied by the insurer then the change in asset mix of the fund would likely invalidate the matching [½]

So the BEL would increase sharply [½]

Because the risk discount rate would reduce with the removal of the matching adjustment. [½]

If a volatility adjustment is applied then the change in asset mix will significantly change the volatility adjustment [½]

And likely result in an increased BEL relative to the BEL under the current asset mix. [½]

If no matching or volatility adjustment is used then there would be no change to the BEL [1]

The Risk Margin is determined using a cost of capital approach….. [½]

…. based on the cost of holding capital for risks that cannot be hedged in financial market. [½]

The proposal will not change the insurance risks or reinsurance credit risks. [½]

The market risks are hedgeable so the change in assets mix not affect the Risk Margin [1]

There could be a slight increase in operational risks due to the change in investment strategy if the company has little experience of equity investment… [½]

….so overall very small or no change to the Risk Margin under the current asset mix. [1]

[Max 5]

(ix)

Solvency Capital Requirement

The SCR corresponds to the capital required so that the company will still be in a position, with a probability of at least 99.5%, to meet their obligations to policyholders over the forthcoming 12-month period. [½]
The SCR is based on aggregating the modular risks faced by the company. [½]
The change in asset mix will impact the Market Risk module. [½]
Specifically, the change will Increase the Equity SCR as the fund holds more equity assets. [½]
Some of the Equities may be listed in emerging markets, non-listed equity, hedge funds where the stress is increased and so further increasing the Equity SCR. [½]
It will reduce the Interest rate SCR as the company will hold less fixed interest assets…. [½]
also it is likely that the company is moving to a less matched position [1]
and spread risk SCR will likely reduce as the company holding of corporate bonds will reduce. [½]
Depending on the degree of matching the liquidity SCR could increase. [½]
The currency SCR could increase as some of the equites may be not be of the same currency as the liabilities. [½]
The introduction of equities (assuming they are spread across different sectors and companies) are likely to increase the diversification benefits. [1]
The overall impact on the Market SCR will increase. [1]
The increase depends on the credit rating of the corporate bonds sold to buy equities [½]
and the change in the degree of matching between assets and liabilities and the equites purchased. [½]
The overall level of Counterparty risk will decrease as the company's holding of corporate bonds will reduce. [½]
Overall the SCR will increase. [½]

[Max 5]

[Total 46]

Parts (i) and (ii) were very well answered by most candidates. In part (ii) few candidates mentioned possible changing social circumstances leading to more older people who are divorced or have no dependents to provide care or that the insurer might have experience selling long-term care in other countries it can use or may use this as a loss leader.

Part (iii) was generally well answered although under benefit structure few candidates discussed different types of indexing benefit levels and the advantages or disadvantages of these. Few candidates mentioned the possibility of a mental health as a claim definition, the use of an ongoing assessment definition rather than a single trigger or the interaction with triggers for any State benefits provided.

Many candidates provided a wide list of potential insurance, underwriting and sales risks in part (iv) and hence scored well.

Many students did not perform well on parts (v) and (vi). Students did not explore fully the financial and anti-selection risks posed by offering a surrender value and how they differ between different groups of policyholders, in particular policies that are in pre claim and in claim stages. Very few candidates set out more than one or two points on how the policy reserve basis might be adapted to create a suitable surrender value basis.

Part (vii) was reasonably well answered. The better candidates mentioned points such considering the level of reinsurance, any existing use of hedging or derivatives, liquidity constraints and shareholder pressure to increase returns.

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In part (viii) the better candidates scored well by highlighting the generic details of technical provisions and, for the best estimate liability, discussing how the change in investments could affect the discount rate and hence, for example, any matching adjustment or volatility adjustment. In the other component of the technical provisions, the risk margins, few candidates noted that the market risks are hedgeable, so the change in assets mix does not affect the Risk Margin.

Similarly in part (ix) the better candidates set out the generic details of the Solvency Capital Requirement. Whilst most candidates discussed the equity and interest elements of the market risk and stated that the market risk would increase, only the better candidates discussed how the spread risk may change or how the degree of matching between assets and liabilities and the equities purchased might impact the increase in the market risk, or discussed the liquidity and counterparty risks.

Q2

(i)

The regulator will want to reduce risks around health and care insurers
(to give confidence and protect consumers) [½]
Which actuaries could help through risk management processes. [½]
Trained ethical professionals should also ensure better decisions are made [½]
And insurers act in the public interest. [½]
This should help insurers maintain their solvency [½]
And treat customers fairly (which should reduce information asymmetries). [½]
Should increase the confidence of key stakeholders …. [½]
…. e.g. policyholders, shareholders …. [½]
That insurance companies in the country are managed by appropriately experienced individuals. [½]

Actuaries have specialist skills and knowledge in health and care insurance. [½]
Actuaries are trained to be aware of the impact of their work on a wide range of stakeholders (e.g. policyholders, employees and shareholders). [½]
Those currently holding roles of responsibility within the insurance industry may not have the same degree of skill, knowledge and experience as actuaries. [½]

Most major actuarial organisations around the world have their own frameworks

of professional standards of practice and codes of professional conduct so it is likely that the actuarial profession of Country A has this. [½]
Therefore there are existing frameworks for training and promoting the professional development for actuaries in many countries. [½]
Actuarial standards are not static and change to reflect changing regulation. [½]
Extending this framework from professional standards to statutory roles may be easier than creating completely new statutory roles for a less well-defined profession. [½]
The actuarial profession in Country A is likely to have existing disciplinary procedures for its members who do not meet the standards that it sets. [½]
As members of a profession, actuaries have a duty to uphold professional standards [½]
And to act in the public interest. [½]
It is likely that the aims of the financial regulator are shared by individual actuaries and actuarial professional organisations in Country A: [½]
Actuarial professional organisations in many countries have objectives to improve the standards of the health and care insurance industry. [½]
Making key actuarial roles in each company statutory roles can improve consistency in actuarial practice between companies. [½]
The regulator will want the management and Board of insurers in the country to operate in a professional and prudent manner with respect to the ongoing management of their business. [½]
The regulator will want to ensure that individuals who hold, or who are proposed to hold, specified senior positions in regulated firms are vetted to ensure that they satisfy appropriate 'fit and proper' criteria. [½]
These 'Fit and Proper Person' criteria may fit well with the experience and skillset of actuaries. [½]
"Fit and Proper"criteria are the requirements and rules by which individuals who hold specified positions are vetted to ensure they satisfy appropriate criteria. [½]
These criteria could take the form of an appropriate amount of relevant industry experience at a senior level and background checks. Being a qualified actuary may be one part of satisfying these criteria. [½]

[Max 6]

(ii)

To ensure premium rates are calculated correctly [½]
And are adequate for the liabilities taken on by the insurer. [½]
Ensure that actuarial work is appropriately reviewed by an external suitably experienced actuary. [½]
To co-ordinate the calculation of the technical provisions. [½]
To ensure the appropriateness of the methodologies and underlying models used. [½]
To ensure the appropriateness of the assumptions made in the calculation of technical provisions. [½]
To assess the sufficiency and adequacy of the data used to calculate the technical provisions. [½]

To ensure the adequacy of technical provisions. [½]
To express an opinion on the adequacy of reinsurance arrangements. [½]
To compare the best estimate assumptions and actual results against experience; [½]
To inform the insurer's governing body of the reliability and adequacy of the calculation of technical provisions. [½]
To express an opinion on the overall underwriting policy. [½]
To express an opinion on the adequacy of reinsurance arrangements. [½]
To contribute to the effective implementation of the risk management system; [½]
With particular regard to risk modelling by the firm. [½]

Adhere to other professional guidance
To understand, and adhere to if necessary, all professional guidance in relation to their role [½]
E.g. in the UK, there are Actuarial Professional Standards (APS's): [½]
Those who are appointed, or who provide support, to Chief Actuaries, Actuarial Function Holders, With-Profits Actuaries, Appropriate Actuaries, and Reviewing Actuaries, appointed by or in respect of UK authorised insurance companies and friendly societies writing long-term insurance business should adhere to APS L1: Duties and Responsibilities of Life Assurance Actuaries. [½]
Actuarial Function Holders and With-Profits Actuaries appointed by or in respect of UK unauthorised insurance companies and Appropriate Actuaries of Friendly Societies should adhere to APS L2: The Financial Services and Markets Act 2000 (Communications by Actuaries) Regulations 2003. [½]
E.g. In the UK, there are also Technical Actuarial Standards (TAS's), issued by the Financial Reporting Council, which should be followed. [½]
Be the focal point for actuarial matters when engaging with the regulator. [½]

There may be guidance issued by other professional bodies (actuarial and other financial services organisations) that apply to specific jurisdictions. [½]
In some jurisdictions, the regulator may require that a new product is preapproved in advance, prior to being sold to consumers, and there could be a requirement for an actuary to have reviewed the application. [½]
Even if strict pre-approval is not required, the regulator may still expect that an insurer has discussed any new product features, particularly if they introduce new elements of risk for policyholders. [½]

The holders of statutory roles are usually not allowed to fulfil other roles within a firm that would cause a conflict of interest, or if they do then the firm is required to declare these roles to the regulator. [½]
Therefore the individual actuary should ensure that he/she does not accept another role that would cause a conflict of interest with the duties of his/her statutory role. [½]
For example, in the European Union under Solvency II there is a statutory requirement to have a Chief Actuary. [½]
In other jurisdictions there is a requirement for an insurer to have an Actuarial Function Holder, Appropriate Actuary or Appointed Actuary. [½]
E.g. in South Africa under the SAM (Solvency Assessment and Management framework), the Head of Actuarial Function for an insurer has responsibilities similar to those under the EU's Solvency II framework. [½]

[Max 8]

(iii)

The consequences for the individual actuary will depend on the severity of the offence [½]

Actuarial organisations will also normally have in place disciplinary procedures to deal with situations in which a member's conduct falls below the standards of behaviour, integrity, competence or professional judgement that the actuarial association, other members, or the wider public expect of them. [½]

Action may be taken by the regulator or the actuarial profession or both. [½]

Sanctions could range over

A reprimand from the regulator. [1]

The individual may be summoned to appear before a disciplinary panel within the actuarial profession. [1]

The individual may be required to undertake re-training or increased CPD

Or be fined. [1]

There may be naming and shaming of actuaries who fail to meet the standards required. [1]

The regulator may revoke the ability of the individual to hold the statutory role in a health and care insurer [1]

or to hold other senior roles within the insurer. [1]

The individual may be banned from working in the insurance or financial services industry for a period of time or for the rest of their life. [1]

The individual may have their membership of their actuarial association revoked. [1]

Legal action ending in imprisonment. [1]

[Max 4]

(iv)

<u>Principles</u>

Adhere to the Code of Conduct of the actuarial profession within the country [½]

and maintain evidence that this is being done. [½]

This is likely to include principals around the themes such as Impartiality; Integrity; Competence and Care; Communications; Compliance. [½]

Produce and maintain documentation as evidence for any areas of judgement. [1]

Consider the needs of the recipients of their advice and/or services being provided. [½]

Actions and decisions are based on the advice of persons with an appropriate level of relevant knowledge and skill. [½]

Consider whether advice from other professionals and other specialists is necessary to assure the relevance and quality of their work. [½]

Take care that the advice or services they deliver are appropriate to the instructions and needs of the client …. [½]
…. including the legal and other rules which may govern the matter. [½]
Have due regard to others, such as the policyholders of an insurer, or any analogous persons whose interests are affected by the work of the actuary. [½]
Agree with the client (both internal and external) the scope and nature of any appointment or instruction. [½]
The actuary will keep their competence up to date. [½]
This includes, but is not necessarily limited to, undertaking an appropriate level of Continual Professional Development activities. [½]
The actuary will not allow bias, conflict of interest, or the undue influence of others to override their professional judgement. [½]
The actuary will take reasonable steps to ensure that they are aware of any relevant interest, including income, of their firm. [½]
The actuary will record in writing any steps they have taken, or propose to take, to reconcile any actual or reasonably foreseeable conflict of interest. [½]
The actuary will not act where there is a conflict of interest that has not been reconciled. [½]
The actuary will comply with all relevant legal, regulatory and professional requirements. [½]
They will take reasonable steps to ensure they are not placed in a position where they are unable to comply. [½]
They will challenge non-compliance by others. [½]
The actuary will speak up to their employer if they believe, or have reasonable cause to believe, that a course of action is unlawful, unethical or improper. [½]
The actuary will fulfil any obligations to report information to relevant regulatory authorities. [½]
The actuary will report behaviour that they have reasonable cause to believe is unlawful, unethical or improper, to regulators or other relevant authorities. [½]
The actuary will promptly report any matter which appears to constitute misconduct or a material breach of any relevant legal, regulatory or professional requirements. [½]
The actuary will ensure that their communication, whether written or oral, is clear (indicating how any further explanation can be obtained) and timely, and that their method of communication is appropriate. [½]

Communications will have regard to the intended audience; [½]
The purpose of the communication; [½]
The significance of the communication to its intended audience; [½]
The fact that the actuary is performing a statutory role. [½]
The actuary will, in communicating their professional findings, show clearly that they take responsibility for them. [½]
The actuary will take such steps as are sufficient and available to them to ensure that any communication with which they are associated is accurate and not misleading; [½]

And contains sufficient information to enable its subject matter to be put in proper context. [½]

Processes and Controls

Governance: ensure that data, assumptions and methods for calculating technical provisions are reviewed and approved at an appropriate level of seniority. [½]
Regular attendance at Board meetings with all outcomes documented in minutes from these meetings. [½]
Maintain and encourage good record keeping around all work [½]
Set up suitable risk management processes, e.g. [½]
Appropriate training of staff. [½]
Data: ensure that data checks are performed on all data extracts that are used in the calculation of technical provisions [½]
E.g. For regular data extracts (e.g. for monthly reserving calculations), create a series of checks that can be performed automatically on the extract to test criteria such as the number of data items, total premiums received for each product line. [½]
Assumptions: ensure that assumptions are set based on best available evidence. [½]
Ensure there is a robust process for reviewing and approving the assumptions to be used in the calculations for pricing, reserving and valuation [½]
E.g. Ensure there is a team to perform experience investigations and make recommendations for assumption setting; [½]
coupled with a review by senior colleagues (e.g. Finance Director, Chief Actuary/Actuarial Function Holder). [½]
Ensure that the assumption setting process is clearly documented. [½]
Models: ensure that models are developed in a systematic way
with a clear programme of development and release of new versions/updates [½]
and that there is sufficient testing before models go live, including user acceptance testing. [½]
Ensure that the model development process is clearly documented. [½]
Reinsurance arrangements: ensure there is a regular (e.g. quarterly, annually, every time a reinsurance premium is due to be paid) review of the reinsurance premiums [½]
and regular review of the reinsured sum at risk. [½]
Perform assessments of the underwriting process and principals to ensure that the targeted risk profiles of accepted insured lives for each product matches the profiles assumed in the pricing bases. [½]
Follow professional guidance (issued either by professional actuarial associations or by other reputable industry bodies) [½]
E.g. TASs – Technical Actuarial Standards in the UK – issued by the Financial Reporting Council. [½]
Maintain documentation as evidence that they have complied with professional guidance. [½]
Official documents such as valuation reports could have comments to say which technical standards or guidance has been followed during the preparation of the document. [½]

[Max 10]

[Total 28]

Most candidates scored very highly on part (iii) but for the other parts (i), (ii) and (iv) many candidates failed to generate sufficient breadth of answers to score well. For example, in part (i), whilst many candidates made relevant points relating to the professionalism of actuaries and their acting in the public interest, few candidates discussed that the existence of frameworks of professional standards for actuaries which change to reflect emerging regulation, the training of actuaries and the existence of disciplinary procedures means that extending such a framework to cover statutory roles would be easier than creating new statutory roles for those employed in areas where these did not exist. Few candidates mentioned the regulator wanting to ensure that individuals appointed were 'fit and proper'.

In part (ii) most candidates provided a reasonable list of the typical responsibilities of actuaries in statutory roles with regards to ensuring appropriate methodology, assumptions, calculating technical provision etc fewer candidates discussed topics such as conflicts of interest, managing risk or the possible need for new products to be preapproved by or discussed with the regulator.

In part (iv) the better candidates mentioned points such as maintaining good documentation, for example on assumption setting and model development and keeping records of decisions made and also to show compliance with professional guidance.

Parts (i), (i) and (iv) of this question were cross marked so that relevant points made in an answer to a different question part to that containing the point in the solutions were awarded the mark.

Q3

(i)

<u>Aims of underwriting</u>

By underwriting, the insurer attempts to classify the applicants into homogeneous risk groups [½]

And identify substandard risks [½]

So that an appropriate price can be placed on each of the groups commensurate with the risks undertaken. [½]

The insurer aims to refuse cover to the fewest possible number of people, generally where the applicant is in such poor health that the risk becomes impossible to quantify. [1]

Insurers use underwriting to assess the propensity to claim. [½]

To reduce anti-selection. [½]

To ensure the mix of insured lives is similar to that assumed in the pricing basis. [½]

To identify pre-existing conditions, if these are allowed to be excluded from cover. [½]

To identify high-risk applicants. [½]

This could also be defined for subcategories of the benefits. [½]

Different levels of medical underwriting are possible e.g full medical underwriting, [½]
Limited medical underwriting with follow up questions, if needed [½]
Where the level of underwriting needs to be appropriate for the risks the insurer is taking on. [½]

Underwriting may include the following:
At the proposal stage an applicant normally completes a fact-find to measure his/her healthcare needs against the benefits in the policy [½]
Financial underwriting might be undertaken to identify his/her continuing ability to pay premiums [½]
And reduce the chances of fraud [½]
And ensure that there is no over insurance. [½]
New technology could be used to enhance underwriting – some insurers are considering new data sources (although these are relatively unproven in health and care insurance) to improve the underwriting process. [½]
For example, using data from third parties to help assess health risks. [½]

A questionnaire for the applicant to complete, which will contain questions on the following topics: [½]
Demographic profile (e.g. age, gender, marital status) ; [½]
Health status (e.g. list the visits to hospital in the last 12 months; medication currently taking); [½]
Personal medical history (illness diagnoses during their lifetime; all hospital visits during their lifetime); [½]
Family medical history (e.g. parents or siblings with serious health conditions such as cancer or Alzheimer's Disease); [½]
Lifestyle and behaviour (e.g. alcohol consumption, smoker status, frequency and level of physical activity; participation in extreme sports such as sky diving). [½]

There may also be requirements to get additional reports focussing on specific issues from their doctor and/or dentist about their medical history. [½]
The insurer may require the applicant to attend specific medical tests. [½]
There may be limitations on what can be asked in certain jurisdictions. E.g. questions about results from genetic tests are prohibited in the UK. [½]
If the premium consists of defined components for different areas of health services (e.g. outpatient, inpatient, dental services), the underwriting may consider the risk of the applicant in respect of each of these areas separately. [½]
Alternatively, if the office premium is not built up this way then the underwriting will generate a risk score based on the overall expected claims from the applicant. [½]

The outcomes of the initial underwriting will be one of the following:
Accept the applicant on standard product terms and premium. [½]
Accept the applicant on standard product terms and but add a loading to the premium to reflect the higher risk of that individual. [½]

Accept the applicant on standard premium but exclude some particular benefits (e.g. no claims paid on treatments relating to existing chronic conditions). [½]
Accept the applicant but apply a risk loading to the premium and exclude some particular benefits.. [½]
Deferral of a decision/instigation of a waiting period. [½]
Refuse to cover the applicant altogether. [½]
[**Max 10]**

(ii)
Part of the strategy to increase/restore the profitability of any line of insurance will consider improving the risk environment in which the cover operates. [½]
The experience can be split into credible homogenous groups [½]
and the claims experience analysed (frequency and class) by class to determine the areas leading to the highest levels of claims [½]
And highlight where action needs to be taken. [½]
Analysis could also assess how accurate initial underwriting assessment was [½]
And the lapse assumptions. [½]

There are a range of possible actions to take
Redesign the product. [½]
Use excesses or coinsurance to reduce claims costs and discourage smaller claims. [½]
Offer no claims discounts. [½]
Don't offer indemnity products but apply monetary limits on claim amounts (or number of treatments) . [½]
Restrict the hospitals covered (e.g. not covering those in the centre of a capital city). [½]
Exclude particular conditions from the standard product if there are conditions which generate high claims (either as a result of high frequency of claim or the individual claims are rare but the amounts are very high) . [½]

<u>Changes to underwriting practices</u>
Change the underwriting approach. [½]
Medical underwriting procedures can be tightened by raising the levels of management status at which policies can be accepted. [½]
Thus, instead of the front-line junior underwriter approving everything that is deemed to be standard, a higher level of authority must double-check. [½]
Equally, it could be deemed appropriate to let applications for particular lines of healthcare insurance business be accepted at the point of sale. [½]
The argument here would be that the volumes accepted by this customer-friendly approach and the administrative costs saved would more than outweigh the extra risk undertaken. [½]
The vetting of applications at point of sale, however, still needs to be at least as good as by referring all applications to head office. [½]
The point of sale system would let the 'clean' cases through quickly but would still

refer others to medical underwriters so that the overall quality of the underwriting is not compromised. [½]
Change the underwriting process to accept more applicants from lower risk groups [½]
Information obtained from the underwriting process combined with the insurer's experience investigations would help to define the lower risk groups. [½]
Change the underwriting process to accept fewer applicants from higher risk groups [½]
Information obtained from the underwriting process combined with the insurer's experience investigations would help to define the higher risk groups. [½]
Change the mix of business. [½]
Change the sales/distribution process to target a lower risk segment of the population. [½]

The definition of the target population would be based on results from the underwriting. [½]
Incentivise brokers/intermediaries/advisors to promote and sell the product to lower risk segments of the population. [½]
A health insurer will set the filter for the business that it wishes to accept by establishing the medical underwriting criteria for cases accepted at ordinary rates, accepted with loaded premiums, accepted with exclusions or declined. [½]
The recommendations following an analysis of experience might be to alter these criteria in order to expand the portfolio by accepting more business on standard terms. [½]
The actuary will be aware that this can only be done if there is sufficient margin in the current rates being charged for the risk. [½]
Alternatively, if the current risk premiums are not adequately covering the claims outgo, the medical underwriting criteria might be tightened so that the body of lives accepted for new business are, on average, healthier. [½]

<u>Controlling claims costs</u>
For PMI, claims control has two dimensions — the acceptance of the validity of the claim and the agreement over the amount of the claim. [½]
Even in circumstances where the policyholder is entitled to receive his/her treatment without restriction (subject to the 'usual and customary' qualification), the insurer may seek to negotiate with the provider for the cost of services billed. [½]
Such negotiation may happen before the event e.g. in agreeing schedules of customary charges with a particular hospital chain or after the treatment has taken place, to clarify the amounts in the account for particular procedures and accommodation. [½]
In other circumstances, the insurer may require that all medical treatment which is to be indemnified under the insurance contract be pre-authorised. [½]
Finally, the insurer may review protocols with Provider ABC and its consultants, to ensure that procedures can be deemed appropriate and medically necessary to treat a particular condition. [½]

This review and other case management strategies will help to keep an insurer's claims frequency and average claims costs closer to the amounts estimated in their premium assessment. [½]

Other actions

Support public health initiatives to encourage healthier lifestyles amongst the population [½]

E.g. contribute to funds for anti-smoking campaigns or smoking cessation programmes. [½]

Encourage its existing policyholders to lead healthier lifestyles by targeting segments identified through the results from the underwriting process [½]

E.g. policyholder identified as being overweight could be offered dietary advice.

Support initiatives of Provider ABC to encourage healthier lifestyles amongst the population. [½]

Negotiate tariffs with Provider ABC that vary for different risk segments of the population so that services for policyholders which could have been avoided will receive a lower tariff. [½]

Take action to reduce surrenders . [½]

Free health checks

Possibly as part of the overall product package, or maybe as a benefit to existing policyholders, the insurer might offer free health checks. [½]

The advantage to the insurer is that the customer is getting expert analysis on their state of health, so that any particular impairment might be identified and put right at an earlier (and less expensive) stage. [½]

The customer will not, however, be under any compulsion to undertake treatments as a result of these findings. [½]

Additionally, the availability of these check-ups on a regular basis may encourage a healthier lifestyle and they will include advice in this regard. [½]

However, an insurer that offers free health checks may find that claims increase as a result of identifying more illnesses and impairments. [½]

Therefore, this risk of increase in claims must be weighed against the potential reduction in average claims costs from earlier detection and treatment of illness. [½]

In some jurisdictions health and care insurers are offering customers other benefits to encourage customers to follow a healthier lifestyle such as discounted cost gym memberships, or wearable technology. [½]

Within its experience investigations of existing business, split the analysis according to the policyholders within each category of underwriting, i.e. [½]

Policyholders accepted on standard product terms and premium [½]

Policyholders accepted on standard product terms but with a loading on the premium [½]

Policyholders accepted on standard premium but with some particular benefits excluded [½]

Policyholders accepted with a risk loading on the premium and some particular benefits excluded. [½]

The information could be used to introduce reinsurance or to amend current reinsurance terms. [½]

[Max 10]

(iii)

Health care providers are interested in the propensity of individuals to seek health and care services in order to plan their businesses. [½]
Health and care risks are complex and the propensity to seek health and care services is a function of many factors including: [½]

- current state of health;
- personal medical history;
- family medical history;
- occupation;
- area of residence;
- pastimes/leisure activities; and
- benefits covered.

[Half mark awarded for each relevant example, maximum 1.5 marks]

The ability to elicit such information from individuals is likely to be difficult for Provider ABC. [½]
Provider ABC may not have much information about the population which it serves; [½]
Provider ABC will have information about patients they have treated, in terms of the treatments provided [½]
And some demographic data (age, sex), but not lifestyle information [½]
e.g policyholder's lifestyle (marital status, habitation status, occupation, exercise, diet, alcohol consumption, smoking, hobbies). [½]
It will have little or no information for the policyholders who have not sought services from Provider ABC before. [½]
Hence, there would be much information from the insurer's underwriting process which Provider ABC would not have had previously [½]
Even for individuals who have received services from Provider ABC. [½]
The new information for Provider ABC could be: policyholder's lifestyle; family medical history; results of specific medical if these were done by a different provider.[½]

The underwriting process will generate medical, health and lifestyle information at the level of individual patients. [½]
Combining the underwriting data with the data of patients treated by Provider ABC could generate insights into the high risk segments of the population. [½]
It could help with specifying the most useful/meaningful definitions of risk segments. [½]
Further classification of the high risk segments could identify segments who could be offered preventative services. [½]
This could lead to an overall reduction in the number of patients seeking services from Provider ABC. [½]
The underwriting process will identify policyholders with particular diseases or at high risk of contracting particular diseases. [½]

If it becomes known there is a higher health risk in general for the population than previously thought, Provider ABC could plan to recruit or train more staff (including clinicians). [½]
If it is known there is a high risk of particular diseases for the population, Provider ABC could plan to recruit or train more specialist clinicians for that disease. [½]

It could invest in developing new technologies to diagnose and/or treat particular diseases/conditions. [½]
It could help to plan which medicines to stockpile. [½]
It could also initiate preventative and public health measures to improve the risk profile of the population [½]
e.g. target dietary advice programmes at segments with a high risk of contracting diabetes. [½]
Provider ABC could use the information to identify individuals who may require non-standard support / additional health and care resources. [½]
This could allow Provider ABC to target these individuals with early interventions whilst the disease/condition is still treatable [½]
And/or which could halt the disease/condition before it becomes too serious. [½]

It could use data on locations of those insured to plan where to build future medical facilities to ensure they are easily accessible to a large number of customers. [½]
Data on claim types could be used to ensure it has sufficient screening and treatment facilities and staff to meet the demand. [½]
It could also help prioritise areas for future research and development. [½]
It could also use the data from the insurer to help plan educational events to raise awareness of health issues based on demographics [½]
For example targeting sporting injuries, ante-natal care. [½]
The Provider could also use the data to support lobbying for policy change. [½]

[Max 6]
[Total 26]

Part (i) was generally well answered with candidates showing a good understanding of the aims and uses of underwriting at the application stage.

For parts (ii) and (iii), many candidates did not score highly because they failed to generate sufficient breadth of points. For example, few candidates made many points relating to controlling claims costs or the wider actions the insurer and the provider could foster to improve population health. In part (iii) several candidates failed to differentiate between the types of information the provider would already have on patients they had or are treating and useful information that they didn't have but the insurer could supply.

END OF EXAMINERS' REPORT