ACTUARIAL SOCIETY OF SOUTH AFRICA
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Actuarial Society of South Africa

EXAMINER'S REPORT

12 May 2026

Subject F201 – South African Health and Care Fellowship Applications

Examiner's Comments

This examiner's report is not intended to represent a model or typical response that candidates are expected to replicate. Instead, it is designed to offer an expanded view that includes a range of potential correct answers and valid approaches.

This approach aims to assist future candidates in their preparation by serving as a comprehensive resource that outlines alternative acceptable statements that examiners would recognise as correct. By doing so, the report functions as a valuable study aid, broadening candidates' understanding of the subject matter and enhancing their ability to tackle a variety of question types effectively.

QUESTION 1

Although largely bookwork and application for parts (i), (ii), and (iii), candidates were expected to apply their understanding of the trends seen in the graphs together with their industry knowledge. Candidates generally performed reasonably well for this question; however, several wrote 'too much' repetitive content, likely leaving insufficient time for other parts of the paper.

Question 1(i)

Part (i) was a relatively straightforward bookwork and application question about demographic trends in the medical scheme population, specifically open and restricted medical schemes. Data was shown visually, as has been done in several prior exams, so candidates would be familiar with interpreting graphs. This question was answered well.

Demographic Trend 1: Ageing of the beneficiary population

The average age of medical scheme beneficiaries has increased steadily over the period shown, reaching its highest level by 2024.

This change is occurring because the inflow of younger members has been low and decreasing over time, particularly in open schemes, while existing members tend to remain insured as they age.

Rising contribution levels relative to income growth discourage younger, healthier individuals from joining, and declining dependent ratios mean fewer children are added to the pool. As a result, the age profile shifts upward over time.

Older beneficiaries generally have higher healthcare utilisation, greater chronic disease prevalence, and higher average costs per beneficiary than younger beneficiaries, thereby increasing claims costs.

Demographic Trend 2: Growth in the proportion of pensioners and older adults

The proportion of beneficiaries in older age bands, including pensioners, has increased over the period, particularly within open medical schemes.

This reflects longer life expectancy, improved medical care that keeps beneficiaries alive and insured for longer, and the tendency for older members to retain medical scheme cover due to higher perceived health risk.

At the same time, affordability constraints limit entry by younger adults who cross-subsidise the older population.

Older beneficiaries typically require more frequent healthcare interventions, higher chronic medication usage, and more specialist and hospital care. This concentration of high-cost lives increases overall claims frequency and intensity and reduces the effectiveness of cross-subsidisation.

Demographic Trend 3: Shift in age profile between open and restricted schemes

Open medical schemes exhibit a higher and increasing average age compared to restricted schemes over the period shown.

Restricted schemes are largely employment-based and benefit from a steady inflow of working-age members through employer participation.

Open schemes, by contrast, rely on voluntary enrolment and face affordability and adverse selection pressures, leading to weaker inflows of younger lives and faster ageing of their membership base.

A higher average age and poorer risk profile in open schemes result in higher claims per beneficiary and greater volatility in claims experience, increasing contribution pressure relative to restricted schemes.

Other acceptable demographic trends include:

- *Reduced inflow of younger dependants and families;*
- *Declining affordability among younger households;*
- *Increasing longevity of scheme beneficiaries;*
- *Compression of risk pool diversity;*
- *Changing household and dependency structures;*
- *Differential demographic trends between scheme types;*
- *Ageing leading to growing prevalence of chronic conditions;*
- *Slowing overall beneficiary growth relative to population growth.*

[Question 1(i): 6 Marks]

Question 1(ii)

Many candidates referred to the increasing burden of disease, linked to the underlying demographics of an ageing population. Few candidates generated answers beyond fraud, waste, general over-utilisation, and member awareness of benefits, showing limited knowledge about the wide range of factors contributing to increasing medical scheme costs beyond demographics or demographic-related drivers. As a result, candidates generally did not perform well on this question.

Non-Demographic Trend 1: Benefit design features that weaken demand-side restraint.

Medical scheme benefit design increasingly includes fully funded in-hospital baskets of care and risk-funded specialist benefits with limited or no member co-payments.

When members face little or no out-of-pocket cost at the point of use, demand becomes less price-sensitive.

Members are more likely to accept hospital admissions, specialist referrals, additional tests, and extended treatment pathways, increasing utilisation per beneficiary.

Higher utilisation of hospital and specialist services results in greater claims volumes and higher total claims costs for medical schemes.

Non-Demographic Trend 2: Supplier-induced demand and provider behaviour.

Healthcare providers increasingly influence the volume and intensity of services delivered during hospital admissions and specialist encounters.

Pre-authorised admissions and guaranteed scheme funding reduce resistance to additional diagnostics, procedures, and supportive services.

Providers may therefore increase the number of interventions per admission, raising utilisation even when admission rates are stable.

Greater service intensity per episode increases the average cost per admission and drives higher overall claims costs.

Non-Demographic Trend 3: Increased use of advanced medical technologies.

There has been growing utilisation of advanced diagnostic and treatment technologies such as CT and MRI scans, PET scans, renal dialysis, and interventional procedures such as robotic-assisted procedures.

Advanced developments in medication, particularly biological treatments, significantly increase the cost of treating various conditions such as cancer and autoimmune diseases.
Improved availability and clinical adoption of new technologies expand diagnostic and treatment options, leading to more frequent testing, earlier detection, and additional follow-up care.

This increases utilisation both directly and through downstream services.

High-cost technologies and associated follow-on care significantly increase total medical scheme claims expenditure.

Other points that could be observed and deduced from the graph and industry knowledge:

Candidates ability to demonstrate knowledge of the specific major medical schemes in the industry should attract credit

The crossover between restricted and open schemes is attributable to the advent of GEMS, which began in 2006 (and became active around 2008), leading many younger public servants to migrate from open schemes to GEMS. Noting how the decrease in restricted average age is mirrored almost exactly by an increase in open average age (2006-2012).

Noting that open and restricted schemes aged by roughly the same rate after GEMS was established around 2012.

Noting that the industry average remained relatively stable until about 2010-2012, after which it started to increase. Various reasons could be provided for this, predominantly due to stagnation in economic growth (GDP per capita) that began around 2009-2010 and persists today.

Regarding DHMS (the largest open scheme) and GEMS (the largest restricted scheme), in 2012, DHMS was younger than the other open schemes, and GEMS was younger than the other restricted schemes. However, as both DHMS and GEMS grew their membership over time, the mean reversion of average age was inevitable. This can also be linked to the trend of consolidation in the industry, in the open scheme environment.

Other acceptable non-demographic changes include (provided the rationale was sufficiently described):

- *Shift of care into hospital and specialist settings*
- *Weakening of managed care controls*
- *Increased frequency of hospital admissions*
- *Longer average length of stay*
- *Expanded screening and preventive care programmes*
- *Increased use of chronic disease management programmes*
- *Contracting and network changes*
- *Improved access to care through digital or administrative efficiency*
- *Changes in clinical guidelines.*

[Question 1(ii): 6 Marks]

Question 1(iii)

Candidates focused on bookwork rather than discussion of anti-selection trends. Not enough discussion about selective withdrawals and buy-downs reducing risk cross-subsidies. Stronger candidates discussed selective movements and the selective addition/withdrawal of dependents as needed for coverage.

Anti-selection arises in voluntary medical schemes because individuals with higher expected healthcare needs are more likely to join and remain members…

…while younger and healthier individuals with lower expected healthcare needs are more likely to delay joining, downgrade options, or exit due to affordability and low perceived value.

Over time, this leads to a deterioration in the average risk profile of schemes, higher utilisation per beneficiary, and increasing claims costs.

Rising contributions then exacerbate exits by lower-risk members, creating a self-reinforcing cycle of worsening anti-selection and claims escalation.

In addition, the choice of benefits within schemes can intensify anti-selection, as higher-risk members tend to select richer options…

…while lower-risk members gravitate toward cheaper cover or exit entirely.

This internal segmentation further concentrates claims risk and accelerates cost growth at both the option and scheme levels.

Anti-selection also occurs at a policy level where members may selectively enrol and retain dependents who are more likely to need medical care.

[Question 1(iii): 4 Marks]

Question 1(iv)

Candidates often gave textbook answers and showed little nuance in their thinking about long-term impacts. Stronger candidates highlighted the risks associated with each reform element, in addition to the well-researched positive impacts it could have individually and collectively. Despite this, reasonable knowledge of each of the 3 social solidarity structures previously proposed was demonstrated.

Risk equalisation

On the positive side, risk equalisation would redistribute funds across schemes based on differences in underlying risk profiles, reducing incentives for schemes to compete through risk selection and rather to compete on efficiency and value of healthcare delivery.

This would improve system-wide risk pooling and limit the impact of the concentration of high-risk members in specific schemes, moderating long-term claims cost growth driven by anti-selection and structural differences in risk profiles.

However, risk equalisation could weaken incentives for schemes to actively manage utilisation and benefit efficiency if a portion of claims experience is effectively socialised.

Poorly designed risk adjustment may blunt accountability, reduce innovation in care management, and limit cost containment, potentially dampening its long-term effectiveness.

In addition, the effectiveness of risk equalisation depends heavily on the accuracy and completeness of risk factors used for adjustment. If morbidity is imperfectly captured, residual risk selection may persist, leaving schemes with genuinely efficient care models at a disadvantage, which could distort incentives and limit long-term claims cost control.

Mandatory membership

Mandatory membership would broaden participation by requiring employed (or an equivalent definition) individuals, including younger and healthier individuals, to join schemes, thereby strengthening cross-subsidisation and lowering average morbidity in the insured population.

Over the long term, this larger and more balanced risk pool could stabilise utilisation patterns and slow growth in claims costs per beneficiary.

Conversely, mandatory membership could increase utilisation in the short to medium term as newly insured individuals access previously unmet healthcare needs.

Without appropriate benefit design, cost-sharing, and gatekeeping, this pent-up demand could offset expected long-term savings and place upward pressure on claims costs.

Furthermore, mandatory membership without sufficient income-based subsidies could strain affordability for lower-income groups, leading to benefit downgrading or non-compliance. This could weaken the intended risk-pooling effect and reduce the long-term impact on claims costs.

Overall, mandatory membership would likely have led to a reduction in claims costs for the medical scheme population, as those meeting the criteria for mandatory membership would have been required to join a medical scheme, resulting in more people being covered and lower levels of anti-selection. The impact of a younger, healthier demographic profile on the current risk pool would have resulted in lower claims costs per life covered.

Risk-based capital requirements

Risk-based capital would align capital requirements with underlying claims risk, incentivising schemes to manage benefit design, pricing discipline, and utilisation more prudently, thereby supporting sustainable, long-term claims control.

However, higher capital requirements may raise operating costs and barriers to entry, potentially increasing contributions and worsening affordability.

If affordability deteriorates, participation by lower-risk members may decline, indirectly aggravating anti-selection and limiting the intended long-term impact on claims costs.

In addition, schemes may respond to higher capital requirements by reducing benefit richness or increasing member cost-sharing to protect capital positions. While this may contain claims growth, it could also shift utilisation patterns or defer care, with uncertain long-term cost consequences.

[Question 1(iv): 6 Marks]

Question 1(v)

Candidates did not really convey an understanding of the interaction between the medical scheme and the health insurance market. Many candidates spoke about only one or more health insurance products and were therefore limited in their answers, as the objective was to explain how these markets interact and the impact on medical schemes. This question is topical, as these developments are currently well underway, and an actuary working on one or more products would be experiencing them and need to think about them in their day-to-day work.

The demarcated products that are available:

- gap,
- dread disease,
- accident,
- hospital cash plan,
- and more recently, exempted primary health care insurance

Nature of risk-rated premium structures in demarcated insurance products

Demarcated insurance products are permitted to apply risk-rated premium structures, where premiums vary by individual risk characteristics such as age, health status, claims history, waiting periods, or benefit limits.

This contrasts with medical schemes, which must apply community rating and open enrolment with very limited underwriting.

Risk rating allows insurers to align premiums more closely with expected claims costs, improving pricing accuracy and limiting cross-subsidisation between low- and high-risk policyholders.

Lower-risk individuals, therefore, face materially cheaper premiums than under a community-rated medical scheme for comparable, narrow benefits.

However, risk-rated pricing can result in exclusion, benefit limits, or prohibitively high premiums for higher-risk individuals. These individuals are less able to access demarcated products and are therefore more likely to rely on medical schemes for comprehensive cover.

In addition, risk-rated products often focus on specific events or services rather than comprehensive cover.

This allows insurers to manage exposure tightly and reprice rapidly as risk changes, reinforcing the segmentation between insurance products and medical schemes in terms of risk acceptance and pricing flexibility.

Interaction with and impact on medical scheme risk pooling

Risk-rated insurance products tend to attract younger, healthier, and lower-risk individuals who can obtain targeted cover at lower premiums than those offered by community-rated medical schemes. This encourages substitution away from medical schemes by low-risk lives.

As lower-risk individuals delay joining or exit medical schemes, the remaining pool becomes older and higher risk.

This weakens risk pooling, increases average utilisation, and raises claims costs per beneficiary, intensifying anti-selection within medical schemes.

Some demarcated products may complement medical schemes by covering gaps such as co-payments or limited primary care, potentially improving affordability for existing members.

However, this complementary role does not offset the systemic impact when insurance products are used as substitutes for scheme membership.

Over time, the coexistence of risk-rated insurance and community-rated schemes creates a dual market. Low-risk lives are concentrated in insurance products, while higher-risk lives are concentrated in schemes.

This structural separation undermines pooling efficiency and places persistent upward pressure on scheme claims experience.

Impact on medical scheme benefits and pricing

Competitive pressure from cheaper, risk-rated insurance products constrains medical schemes' ability to raise contributions.

Schemes may respond by reducing benefit richness, increasing managed care restrictions, or shifting costs to members through co-payments to maintain affordability.

Higher average risk profiles, combined with constrained pricing flexibility, result in higher contributions from remaining members.

This can trigger further exits by price-sensitive, lower-risk beneficiaries, reinforcing adverse selection and accelerating claims cost growth.

In addition, schemes may be forced to redesign benefit options to compete indirectly with insurance products, for example, by introducing entry-level options with limited cover.

While this may slow membership losses, it can also reduce cross-subsidisation and increase volatility in claims and contributions over the long term.

[Question 1(v): 8 Marks]

Question 1(vi)

This question was reasonably answered with candidates often extrapolating current trends into the future. Stronger candidates were able to comment on the health insurance market, not just medical schemes, and on the system-level implications. For the mark allocation, candidates underperformed on this higher-order question by not providing more detail on these trends and how they could emerge for the respective funding vehicles and the underlying members seeking private healthcare. Stronger candidates could discuss the various challenges and opportunities that could shape each product.

Likely evolution of the medical schemes environment over the next 5–10 years

If current healthcare industry trends persist and regulation remains unchanged, medical schemes are likely to face continued pressure from worsening risk pool composition.

Demographic ageing, combined with persistent anti-selection, would increase average morbidity and utilisation per beneficiary, driving sustained growth in claims costs.

Contribution increases are therefore likely to continue exceeding general inflation, as schemes seek to fund higher utilisation within a community-rated, open-enrolment framework.

Rising contributions would further reduce affordability for younger and healthier members, reinforcing adverse selection and accelerating exit or delayed entry into schemes.

In response, schemes are likely to intensify cost-containment strategies. These may include tighter managed care, increased pre-authorisation requirements, narrower provider networks, higher co-payments, and reduced benefit richness.

While such measures may slow claims growth, they also risk eroding perceived value and member satisfaction.

Benefit option design is likely to shift further toward segmentation, with entry-level options offering limited cover and higher-end options increasingly unaffordable for middle-income households.

This internal segmentation could concentrate high-risk members in richer options, increasing volatility and cross-subsidy strain within schemes.

Over time, the industry may experience consolidation as smaller or less efficient schemes struggle to remain viable under rising cost pressure and membership erosion.

The remaining schemes may increasingly resemble residual risk pools, covering members with higher healthcare needs who cannot access risk-rated alternatives.

As schemes focus more heavily on cost control, there is also a risk of deferred care or reduced access to certain services.

This could alter utilisation patterns in unpredictable ways, potentially leading to higher downstream costs if early intervention is delayed.

Overall, the medical schemes environment may become smaller, more concentrated, and more focused on higher-risk members, while ongoing tensions persist between affordability, benefit adequacy, and sustainability.

Likely evolution of the healthcare insurance market

In contrast, the healthcare insurance market is likely to continue expanding under unchanged regulation. Risk-rated, demarcated insurance products can offer targeted benefits at premiums more affordable for younger, healthier individuals than community-rated medical scheme contributions.

Insurers are likely to continue innovating within regulatory boundaries, expanding product offerings that cover primary care, limited hospital events, or specific cost components, such as co-payments.

Improved distribution, digital underwriting, and flexible pricing would strengthen their competitive position.

As these products grow, they are likely to absorb a disproportionate share of low-risk lives. This would deepen the structural separation between the insurance and medical scheme markets, with insurance products effectively skimming lower-risk members from the system.

Risk-rated pricing allows insurers to respond rapidly to experience, reprice products, or adjust underwriting criteria.

This flexibility enables insurers to protect profitability but also reinforces the exclusion of higher-risk individuals from these products.

Over the medium term, the insurance market may increasingly function as the first point of entry into private healthcare cover for younger individuals, while medical schemes become a secondary option accessed later in life when healthcare needs increase.

This dual-market structure would persist and strengthen in the absence of regulatory reform, with insurance markets growing in scale and influence relative to medical schemes.

For the gap cover market specifically, more risk-funded benefits that are not PMB level of care may shift into these products, leaving schemes covering PMB level care mostly or only.

This would increase the costs of gap cover due to more benefit coverage and utilisation impacts and limit the benefit offering and differentiation of medical schemes.

Medical schemes may be forced to effectively partner or dovetail with insurance products to reintroduce some element of risk rating:

- Advertently, by creating gaps in cover and allowing a risk-rated insurance product to plug the gaps
- Inadvertently, consumers are advised to buy only a hospital plan from a medical scheme and get all day-to-day cover from exempted health insurance products.

Gap products erode a medical scheme's ability to maintain its networks or DSPs, impacting the mechanisms available to influence purchasing levels and, hence, affordability.

Implications for members and the healthcare system

For members, outcomes are likely to become increasingly stratified. Younger and healthier individuals may benefit from lower premiums and flexible insurance products, but with more limited benefits and weaker financial protection against major health events.

Older, higher-risk members remaining in medical schemes would face higher contributions, increased cost-sharing, and tighter benefit controls. This could place significant financial strain on households with chronic conditions or ongoing care needs.

Choice in the market may increase, but comparability and transparency may decline, making it more difficult for members to assess the adequacy of cover across products and over time as health needs evolve.

Equity concerns may intensify as access to comprehensive coverage becomes increasingly tied to income, age, and health status. Members moving between insurance products and medical schemes over their life course may face affordability shocks when transitioning to community-rated schemes, particularly if late joiner penalties are applied.

From a system perspective, weakened risk pooling in medical schemes could reduce their ability to cross-subsidise care effectively, potentially increasing reliance on the public healthcare system for higher-risk individuals who can no longer afford private cover.

Overall, the long-term outcome is likely to be a fragmented private healthcare financing system. While innovation and choice expand for some members, affordability, equity, and sustainability challenges intensify for others in the absence of regulatory change.

[Question 1(vi): 10 Marks]

QUESTION 2

While this question focused on cancer-specific insights, candidates were not expected to have any clinical knowledge of cancer; they were expected to apply a framework of first principles to any disease or condition and to the way a healthcare actuary should be thinking about funding implications.

Question 2(i)

Part (i) was reasonably answered – stronger candidates were able to decompose the claim cost increases into components, including prevalence, incidence, utilisation, and severity, as well as costs per cancer type and per cancer stage. Those who went into more detail could speak about the impact of new treatments, surgeries, and other costs emerging in cancer treatment.

Ageing and disease burden in the risk pool

Cancer incidence and treatment intensity rise strongly with age, and schemes are experiencing an ageing beneficiary base and higher utilisation overall.

As older, sicker members stay in schemes while healthier lives exit, a greater share of expenditure is concentrated on high-cost conditions such as cancer.

Regulatory requirements for PMB oncology cover

Treatable cancers such as cervical, breast (female and male), ovarian and testicular cancer are Prescribed Minimum Benefit (PMB) conditions.

Schemes must fund the full cost of diagnosis, treatment and care for these cancers on all options, including consultations, surgery, radiology, pathology, chemotherapy and radiation therapy (and reconstruction for breast cancer).

Please note that candidates are not required to demonstrate bookwork knowledge of the PMBs for cancer nor medical knowledge about the condition. Rather, candidates are expected to be aware of the PMBs and funding requirements and use first principles to demonstrate an understanding of the scheme funding environment for cancer (or any other health condition).

"Pay in full" PMB rules and tariff inflation

Regulations require PMB claims to be reimbursed "in full, without limits or co-payments", which the regulator has interpreted as payment of the invoiced amount.

After the statutory Reference Price List and ethical tariff guidelines were scrapped, providers gained freedom to charge any amount for PMB services, creating a "blank cheque" environment that some have abused, adding significant pressure to oncology claim costs.

Hospital- and specialist-driven cost escalation

Hospital benefits are the largest component of scheme expenditure and tend to grow faster than overall claims.

Cancer patients are heavy users of in-hospital care, particularly the use of theatre, ICU and specialist services in-hospital, so this structural shift in costs disproportionately inflates oncology spend.

Increased screening for cancer

Increased awareness, availability and funding of cancer screening have led to more people screening and cancers being detected more than before.

Supplier-induced demand and fully funded baskets of care

Supplier-induced demand is a key driver of health expenditure, especially within fee-for-service environments.

Many schemes provide fully funded "baskets of care" for pre-authorised admissions, but there could be increased utilisation of services unrelated to the primary reason for admission, which raises in-hospital

costs per admission. This applies for cancer patients but more generally to any PMB-related hospital admission.

For oncology episodes, this can mean more imaging, pathology and procedures per admission.

Rising use and cost of medical technologies

Use of high-cost medical technologies such as CT, MRI and PET scans, renal dialysis and angiography increased from 2023 to 2024, with PET scans showing the highest relative growth.

Technological advances improve cancer diagnosis and treatment but introduce new, expensive claim types; previous actuarial guidance explicitly highlights new technology as a major component of medical inflation.

Lack of a commonly accepted HTA standard in South Africa that can guide schemes and regulators in funding decisions.

General medical inflation and exchange-rate effects

Medical inflation in South Africa reflects not only normal CPI but also increased utilisation, ageing, and new technologies.

Rising prices of hospital services and medicines, aggravated by rand depreciation and lack of strong price controls, push up the unit cost of oncology drugs, devices and supportive care.

Expanded managed care and guideline-driven treatment *(candidates are not expected to know this)*

PMB definition guidelines and clinical algorithms define minimum oncology treatment standards and require schemes to fund comprehensive pathways of care, including monitoring and management of treatment-related side-effects.

While clinically appropriate, adherence to these pathways increases the volume of consultations, tests and supportive therapies that must be reimbursed for each cancer patient.

[Question 2(i): 7 Marks]

Question 2(ii)

Candidates relied on bookwork knowledge about projections. Few used the building blocks from part (i) to identify the underlying components, project forward, and identify the factors influencing each of them.

Data and segmentation

Separate experience into at least:

- PMB oncology (all cancers covered in full) versus above-PMB / option-specific oncology limits;
- in-hospital versus out-of-hospital;
- by cancer site (e.g., breast, ovarian, prostate, colon, haematological);
- by cancer stage (e.g. tumour size and metastases).

because cost profiles differ materially.

Risk-adjust for age, gender and chronic/disease profile to avoid confounding utilisation trends with demographic shifts.

Incidence, prevalence and survival

Model both new cancer incidence and the growing pool of existing oncology patients (prevalence), as PMB rules guarantee continued funding for treatable cancers such as cervical, breast, ovarian and testicular cancer.

Allow for improving survival from better treatments, which lengthens time on active therapy, surveillance, and ongoing supportive care.

Severity, utilisation and unit costs

Project separately: frequency of oncology episodes (e.g., chemo/radiation cycles, surgery, imaging, hospital admissions) and average cost per episode.

Reflect medical inflation components: normal price inflation, increased utilisation, ageing, and particularly new technology.

Recognize that hospital and specialist claims are major cost drivers and are subject to volatility and supplier-induced demand.

Benefit design and PMB structure

PMBs for treatable cancers must be paid "in full" for diagnosis, treatment and care (consultations, surgery, radiology, pathology, chemotherapy, radiation, reconstruction where applicable), irrespective of option, so much of oncology spend is non-discretionary.

PMB cover may be conditional on using designated service providers; non-DSP use can trigger co-payments – behaviour around these rules affects cost.

Option-specific oncology limits above PMB create potential for selection between options; projections must allow for buy-down/buy-up behaviour and resultant risk-profile shifts.

Explicit allowance for new and uncertain treatments

Build an explicit "technology and protocol change" component into oncology inflation, drawing on past impact of new medical technology and treatment as a separate driver of claims.

Use horizon scanning (clinical guidelines, regulatory pipelines) to form qualitative scenarios for: new biologics, immunotherapies, gene-targeted drugs, new radiation techniques, and expanded indications of existing agents.

Consider that improved diagnostics (e.g., more sensitive imaging and screening) can increase detected cancer cases and change staging mix, initially raising claims.

Scenario testing and risk margins

Apply scenario and, where possible, stochastic testing on key oncology parameters: incidence, take-up of new high-cost regimens, changes in PMB definitions, and provider charging behaviour.

Include explicit margins for parameter uncertainty (especially future treatment patterns) rather than relying only on conservative point estimates.

Provider, regulatory and macro-economic risks

Allow for potential regulatory changes to PMBs or "pay in full" interpretations, which can materially alter liabilities.

Reflect currency and imported inflation risks for oncology drugs and devices, as highlighted for healthcare costs generally.

Consider managed-care programme design (DSP networks, oncology protocols, case management) and potential future tightening/relaxation, as these influence both utilisation and unit costs.

Capital, reinsurance and option-level sustainability

Assess the impact of high-cost cancer claims on solvency and cost-of-capital loadings in pricing.

Evaluate stop-loss or high-cost case reinsurance for oncology and quantify its effect under multiple scenarios.

Because each option must be financially self-sustaining, project oncology costs at the option level, allowing for demographic changes and movements between options driven by perceived cancer cover.

[Question 2(ii): 8 Marks]

Question 2(iii)

This question was well answered, as candidates demonstrated knowledge and understanding of oncology benefit design and the considerations involved in making changes to scheme benefits. For the mark allocation, candidates could have scored higher marks by considering various benefit designs and corresponding member needs and behaviours.

Strategic role of PMBs in benefit design

A primary consideration is that oncology PMBs must be fully funded for diagnosis, treatment, and care, regardless of the benefit option.

This means that large portions of oncology expenditure are non-discretionary and cannot be controlled through limits or co-payments.

Any redesign must therefore recognise that cost-containment levers primarily apply to provider choice, treatment pathways, and above-PMB benefits.

Failure to distinguish these layers can result in designs that appear restrictive but deliver little real cost relief.

Calibration of option-specific oncology limits

Where oncology benefits extend beyond PMB requirements, the actuary must assess whether option-specific limits are set at levels that meaningfully differentiate options without creating severe selection risk.

Limits that are too generous may dilute option pricing discipline, while limits that are too low can cause members with known or suspected cancer to migrate to richer options.

The redesign must ensure that each option remains financially self-supporting and that oncology benefits align with the intended risk profile and target market of the option.

Reimbursement structures and member cost sharing

The actuary must consider whether full reimbursement above PMB is appropriate, or whether co-payments, step-down reimbursement levels, or reference pricing could be introduced.

While oncology demand is relatively inelastic, cost sharing can still influence provider selection, treatment setting, and adherence to managed-care rules.

The impact on affordability, member experience, and potential hardship must be weighed carefully against any expected cost savings.

Designated Service Provider strategy

DSP arrangements are a central actuarial lever in oncology benefit redesign. The actuary must evaluate the breadth and quality of the DSP network, expected tariff reductions, and the enforceability of DSP rules.

Poorly designed DSP arrangements may lead to widespread exemptions, undermining cost control, while overly restrictive networks may create access concerns and reputational risk.

The balance between cost containment and clinical accessibility is therefore a key actuarial judgement.

Managed-care protocols and governance

The redesign must consider how oncology treatment protocols, pre-authorisation rules, and case management are embedded into benefit design.

The actuary must assess whether protocols are sufficiently clear, enforceable, and aligned with clinical best practice.

Weak governance can lead to protocol creep, where exceptions become the norm and erode the intended savings. The actuarial advice should therefore include consideration of monitoring, escalation, and review processes.

Behavioural responses and option migration

Changes to oncology benefits can materially influence member behaviour. The actuary must assess how members may respond to changes in limits, DSP rules, or reimbursement levels, including changes in options, lapses, or delayed care.

Behavioural responses can alter the risk profile of options in ways that are not immediately apparent from benefit design alone. These effects must be considered to avoid unintended destabilisation of the option structure.

Equity, cross-subsidy and scheme-wide consistency

As an open medical scheme, the redesign must balance equity across options with the principle that each option is financially self-supporting.

The actuary must consider whether oncology benefits result in implicit cross-subsidies between options, particularly where PMB costs are pooled, but above-PMB benefits differ materially.

Transparent alignment between contributions, benefits, and expected risk is essential to maintain member trust and regulatory credibility.

The actuary should ensure that the benefits are affordable for members, offering clinically meaningful coverage while managing anti-selection and cross subsidy risks. This means that there would need to be selective rationing of the benefits, particularly for high costing drugs which can be unaffordable, to ensure that the benefit is sustainable.

Affordability, sustainability and Board decision making

Ultimately, the actuary must frame the redesign in terms of trade-offs between affordability, sustainability, and access to care.

The Board requires clear articulation of how each design lever affects contributions, financial risk, and member outcomes.

Actuarial advice should therefore focus on comparative outcomes across design alternatives rather than on technical projections, enabling informed and defensible strategic decisions.

[Question 2(iii): 10 Marks]

Question 2(iv)

This question was answered reasonably, with candidates attempting to explain the various methods and considerations. Few demonstrated a working understanding of the measures and how to interpret them in the context of cancer.

The solution for evaluating the cost-effectiveness and affordability of *OncoLife* uses a structured health economic framework. The analysis would be conducted in three stages: defining the decision problem, assembling the required data, and constructing a formal cost-utility model with transparent assumptions.

Defining the decision problem and evaluation framework

Perspective and decision context

The evaluation would be performed from the medical scheme perspective. Only direct healthcare costs borne by the scheme would be included, such as drug acquisition, administration, monitoring, hospitalisation, adverse-event management, and subsequent cancer care.

Indirect costs such as productivity losses would be excluded, as they do not affect scheme affordability or contributions.

Target population and comparator

The eligible population would be clearly defined based on the approved clinical indication for *OncoLife*. This would include cancer site, disease stage, line of therapy, and any biomarker requirements.

The comparator would be the current standard of care funded by the scheme for the same indication, reflecting real-world treatment protocols rather than idealised trial regimens.

Time horizon

The time horizon would be long enough to capture meaningful differences in survival and downstream costs. For advanced cancers, this would typically be a lifetime horizon, implemented as a finite period such as 10 to 20 years, until survival becomes negligible.

Type of economic evaluation

Given that *OncoLife* claims improved survival and potentially better quality of life, the solution below sets out a **cost-utility analysis**.

Examiner comment: Other valid approaches would also attract credit, provided they are sufficiently justified.

Outcomes would be measured in quality-adjusted life years, which combine survival duration and health-related quality of life into a single metric. This allows comparison of additional health gains against incremental costs in a consistent way.

Data requirements

Clinical effectiveness and survival

Clinical trial data on overall survival and progression-free survival for OncoLife and the comparator would be required. This would include Kaplan–Meier curves, hazard ratios, or parametric survival estimates where available.

Adverse events

Data on the frequency, severity, and duration of treatment-related adverse events would be required, particularly those leading to hospitalisation or additional specialist care. These events affect both costs and quality of life.

Health-related quality of life

Utility values would be required for key health states such as progression-free disease, progressed disease, and end-of-life care.

If the clinical trial collected health-related quality-of-life data, these would be mapped to utility values using a recognised instrument. Otherwise, utilities would be sourced from published studies in comparable cancer populations.

Cost and resource use data

Drug costs would be based on the scheme's expected acquisition price for *OncoLife*, including dosing assumptions and average treatment duration. Comparator drug costs would be sourced from the scheme formulary.

Additional costs would include administration, routine monitoring, imaging, laboratory tests, specialist consultations, adverse-event management, and downstream care after disease progression. Scheme tariffs and negotiated provider fees would be used wherever possible.

Epidemiology and utilisation

Scheme-specific data would be required on the number of beneficiaries meeting the clinical criteria, current treatment patterns, and average duration on therapy. This ensures that the model reflects realistic utilisation rather than trial-specific protocols.

Modelling approach

Model structure

Construct a **state-transition model**, typically a Markov model, with mutually exclusive health states such as progression-free disease, progressed disease, and death. The model would be run in monthly cycles to reflect chemotherapy and monitoring schedules.

Examiner comment: Other valid model structures would also attract credit, provided it is sufficiently justified.

Translation of clinical data into model inputs

Survival data from trials would be fitted to appropriate parametric survival functions to estimate transition probabilities over time. The choice of distribution would be guided by statistical fit and clinical plausibility. These functions determine how patients move between health states over the model horizon.

Calculation of QALYs

Each health state would be assigned a utility value representing the average quality of life in that state. QALYs would be calculated by multiplying the proportion of patients in each state by the corresponding utility and the length of time spent in that state, as follows:

$$QALYs = \sum_{t} (Proportion\ in\ state\ at\ time\ t) \times (Utility\ of\ state) \times (Cycle\ length)$$

Utility decrements would be applied in cycles where serious adverse events occur.

Costing within the model

For each cycle, expected costs would be calculated based on state occupancy. This would include drug and administration costs for patients on active treatment, monitoring costs, expected adverse-event costs, and downstream care costs in progressed disease. Costs would be summed over the full model horizon.

Incremental cost-effectiveness

The model would produce total expected costs and total QALYs per patient for *OncoLife* and for the comparator.

For example, the **incremental cost** can be measured as follows: $\Delta C = C_{OncoLife} - C_{Comparator}$

For example, the **incremental QALYs** can be measured as follows: $\Delta E = E_{OncoLife} - E_{Comparator}$

The incremental cost-effectiveness ratio would then be calculated as the additional cost per additional QALY gained to summarise the value for money in one measure.

For example, the **incremental cost-effectiveness ratio (ICER)** can be measured as follows to assess the cost per QALY gained: $ICER = {}^{\Delta C}/_{\Delta E}$

Basis for assumptions

Survival extrapolation

Because trial follow-up is often limited, assumptions about long-term survival are required. These would be based on parametric model fits, external epidemiological data, and clinical expert input. Alternative extrapolation assumptions would be tested in sensitivity analysis.

Treatment duration and real-world practice

When trials specify treatment until progression or toxicity, the average treatment duration would be calibrated based on the scheme's experience with similar therapies. Adjustments would be made if trial protocols are more intensive than typical clinical practice.

Utility values

If trial-based quality-of-life data are unavailable or incomplete, published utility estimates would be used. The chosen values would be consistent with standard QALY methodology and clearly justified. Utilities are generally assumed to be constant within each health state unless evidence suggests otherwise.

Costs and price basis

All costs would be expressed in current-year prices. Cost-effectiveness results would be presented in real terms, with medical inflation handled separately in affordability and budget-impact analyses.

Discounting

Future costs and QALYs would be discounted at a consistent annual rate in line with accepted local practice. This reflects time preference and ensures comparability of future streams of costs and benefits.

Handling uncertainty

A deterministic sensitivity analysis would be performed on key parameters, including drug price, survival benefit, utility values, and time horizon. This would identify the main drivers of the cost-effectiveness result.

Probabilistic sensitivity analysis would be used to quantify overall parameter uncertainty by assigning probability distributions to key inputs and running repeated simulations. This would allow estimation of the probability that *OncoLife* is cost-effective at different willingness-to-pay thresholds.

[Question 2(iv): 12 Marks]

Question 2(v)

Several candidates did not answer this question, unclear whether due to time constraints or the level of difficulty. It was critical to identify the funding constraints that schemes have, and that one scheme's funding of new treatments may have industry-wide implications.

Scheme-level affordability

Impact on claims ratios and contributions

The actuary would quantify the incremental oncology spend arising from funding OncoLife and assess its impact on option-level and scheme-level claims ratios. Oncology expenditure is already a high and fast-growing component of risk benefits.

If overall healthcare expenditure continues to grow faster than contributions, the inclusion of a substantially more expensive cancer drug may necessitate contribution increases above inflation or offsetting benefit reductions elsewhere.

Each option must remain financially self-supporting, and sustained deterioration in claims ratios would require corrective pricing or benefit actions.

Reserves, solvency and capital strain

High-cost oncology drugs increase both expected claims and claims volatility, as a small number of beneficiaries can drive a disproportionate share of expenditure. This increases the capital required to maintain compliance with the minimum statutory solvency level.

While schemes may be tempted to rely on investment income to absorb short-term cost pressures, this weakens long-term solvency and is not sustainable if medical inflation consistently exceeds contribution growth.

Trustees must therefore consider whether the scheme's reserve position can absorb the additional risk without compromising financial stability.

Constraints imposed by PMB legislation and benefit design

If *OncoLife* becomes part of the evidence-based standard of care for a PMB cancer, the scheme may be legally required to fund it in full for eligible indications, with limited scope to apply limits or co-payments.

In this case, affordability levers shift toward provider tariffs, DSP arrangements, and managed-care protocols.

If the drug falls outside PMB requirements or above PMB limits, the scheme has greater flexibility, such as restricting funding to specific indications, applying step-therapy rules, requiring DSP use, or imposing co-payments. These measures preserve affordability but raise considerations around access, equity, and reputational risk.

Risk transfer and reinsurance

Given the high severity and uncertainty associated with oncology claims, the actuary would consider whether risk transfer mechanisms such as reinsurance or outcomes-based agreements are appropriate.

Transferring some risk can stabilise results but introduces additional cost and may reduce incentives for active utilisation management.

Trustees must balance the cost of risk transfer against the capital required to retain the risk internally.

Industry-wide affordability considerations

Contribution affordability and membership sustainability

At the industry level, healthcare expenditure has been increasing faster than contributions, and some schemes rely on investment income to generate overall surpluses.

Widespread funding of expensive new oncology drugs like *OncoLife* would place upward pressure on contributions across the market.

Higher contributions reduce affordability for members, particularly lower-income groups, and may suppress membership growth or lead to lapses, undermining the long-term sustainability of the medical scheme environment.

Risk pool stability and adverse selection

Sustained increases in contributions can accelerate adverse selection, as healthier members switch to cheaper options, exit medical schemes, or move to alternative insurance products.

This leaves a sicker, higher-cost risk pool behind, further increasing average claims and contributions.

If only some schemes fund *OncoLife*, those schemes may attract a disproportionate share of high-risk oncology patients, destabilising their risk profiles and potentially prompting regulatory or industry-level responses.

Accumulation of high-cost technologies

OncoLife represents part of a broader trend of increasingly expensive medical technologies delivering incremental improvements in outcomes. If schemes fund such treatments without consistent affordability thresholds, cumulative cost pressure can become unsustainable at the industry level.

This highlights the importance of structured health technology assessment, common evaluation frameworks, and coordinated pricing approaches to avoid an uncontrolled escalation in funded benefits.

[Question 2(v): 8 Marks]

QUESTION 3

This question has no sub-questions, so candidates can focus on a single question. The design was intended to allow candidates to demonstrate an understanding of the connections among contribution increases, reserve levels, expenses, investment income, employer subsidies, and member affordability. These dynamics play out for several schemes in the current environment. The inclusion of amalgamation considerations was intended to prompt candidates to consider the longer-term attractiveness of the scheme and was another way to highlight the importance of sustainability and long-term solvency strength against pricing affordability for members and the employer.

The question was answered well by a few who attempted it properly and poorly by others. It appears to be partly a time constraint (particularly if spending 'too much' time on earlier questions) and partly candidates struggling to interlink these dynamics with sufficient detail.

Reserving implications

Impact on the statutory solvency requirement

Higher contributions mechanically increase the statutory reserve requirement. Solvency is measured as accumulated funds relative to gross contributions, with a minimum of 25%. A sharp increase in contributions raises the required rand value of reserves.

If the scheme prices only to break even at the operating level, without generating an underwriting surplus, the solvency ratio may deteriorate unless supported by investment income or explicit reserve margins.

Need for explicit reserve building

Break-even pricing is insufficient for long-term capital adequacy. While schemes often set contributions to broadly cover expected claims and non-healthcare expenditure, sustainable solvency requires an explicit reserve-building component in contribution rates.

Without such a margin, reserves cannot recover from prior drawdowns and don't keep up with the 25% of gross contribution requirement as these contributions increase, leaving the scheme exposed to adverse experience and ongoing capital weakness.

Post-COVID reserve depletion

The COVID-19 period exacerbates this challenge. Many schemes are deliberately under-priced to support affordability, funding shortfalls through reserves. These actions weakened solvency positions.

Above-inflation contribution increases are therefore corrective rather than discretionary, and failure to rebuild reserves increases the risk of regulatory scrutiny or intervention.

Implications for amalgamation

From an amalgamation perspective, a stronger solvency position improves negotiating leverage and protects members when assets and liabilities are combined.

A weak reserve position may result in a defensive amalgamation under less favourable terms or regulatory pressure.

Investment strategy implications

Increased reliance on investment income

When contributions are priced to break even, investment income becomes the primary source of reserve growth. This increases dependence on financial markets to maintain solvency.

For a small, restricted scheme, this reliance is inherently risky due to higher claim volatility and limited asset diversification.

Risk appetite and asset allocation constraints

The scheme's risk appetite should therefore remain conservative. Small schemes typically require higher liquidity buffers to absorb claims shocks, limiting their ability to invest in higher-yielding, illiquid assets.

A capital-preservation-focused asset mix is appropriate when solvency is close to the regulatory minimum.

Shift in investment objectives post-COVID

The pricing correction should be accompanied by a shift in investment objectives. During the Covid period, investment income was often used to subsidise contributions and maintain affordability.

Under the revised pricing strategy, investment returns should be directed toward rebuilding accumulated funds rather than offsetting premium shortfalls.

Implications for amalgamation readiness

From an amalgamation perspective, a clear, conservative investment strategy explicitly aligned with a credible reserving plan signals sound governance and financial discipline.

This reduces perceived integration risk for a potential amalgamation partner and supports smoother alignment of investment policies post-merger.

Effects on members

Affordability pressure and immediate financial impact

Above-trend contribution increases directly reduce member affordability, particularly following a period of Covid-related relief when contributions were deliberately suppressed.

Members experience a step-change in out-of-pocket costs, which may strain household budgets and reduce the perceived value of scheme membership, even if benefit structures remain unchanged.

Behavioural responses and anti-selection risk

Higher contributions increase the likelihood of behavioural responses such as option downgrades, reduced dependants, or exits from the scheme where membership is not compulsory.

Healthier and younger members are typically more price-sensitive and more likely to leave, while higher-risk members remain. This deteriorates the risk pool, increases average claims cost, and places upward pressure on future contribution increases.

Benefit utilisation and deferred care

Members facing affordability constraints may defer or avoid healthcare utilisation, particularly discretionary or preventative services. While this may temporarily suppress claims, it can lead to higher downstream costs if conditions worsen, increasing future claims volatility and undermining pricing stability.

Perceived fairness and trust in governance

Sharp increases following a period of relief may be perceived by members as punitive or poorly communicated if not clearly explained.

If members do not understand that increases are corrective rather than opportunistic, trust in trustee decision-making may weaken. Conversely, transparent communication that links increases to long-term solvency and benefit security can improve acceptance.

Implications in the context of amalgamation

Ahead of an amalgamation, member stability is critical. Large contribution increases that trigger member losses can weaken the scheme's demographic profile and reduce its attractiveness as an amalgamation partner.

Conversely, a stable membership base supported by credible pricing enhances member protection during amalgamation, as assets and liabilities are combined on a more equitable basis.

Effects on the sponsoring employer and amalgamation prospects

Direct financial impact on the employer

Above-trend contribution increases raise the employer's immediate cash outflows, where the employer subsidises a portion of member contributions. This increases benefit costs per employee and may place pressure on remuneration budgets, particularly in an environment of broader wage and cost containment.

Impact on post-retirement medical aid liabilities

Where the employer provides post-retirement medical subsidies, higher current contribution levels are reflected directly in the actuarial valuation of the PRMA liability.

This increases the employer's balance-sheet obligation and may adversely affect reported financial position, funding ratios, or covenant metrics.

Workforce and industrial relations considerations

Significant increases in contributions can affect employee morale and perceptions of total reward competitiveness.

Employees may view rising medical scheme costs as an effective reduction in take-home pay, increasing the risk of dissatisfaction or industrial relations challenges, particularly if increases follow a period of perceived stability.

Positioning for amalgamation

From an amalgamation perspective, disciplined pricing, improving solvency, and a coherent investment strategy signal good governance and financial control.

This makes the scheme a more credible and attractive partner and may strengthen the employer's negotiating position on contribution harmonisation, benefit design, and future subsidy arrangements.

Freedom of choice pressure within the employment environment might threaten an existing employment condition, and if the employer opens up freedom of choice, the risk profile and, hence, the attractiveness of the scheme as an amalgamation partner could deteriorate rapidly.

Risks if member losses accelerate

If higher contributions lead to material member attrition, the active payroll base may shrink. This weakens the scheme's risk pool and reduces economies of scale, potentially undermining the employer's strategic objective of achieving stability through amalgamation.

It may also reduce the employer's influence in negotiations if membership numbers decline.

[Question 3: 15 Marks]