EXAMINERS' REPORT

June 2019 examinations

Subject F101 — Health & Care Fellowship Principles

INTRODUCTION

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

QUESTION 1

This question featured bookwork and thus most students scored relatively well in this section provided they had studied the material. It was apparent when students had not prepared adequately for the exam. Part i was well answered by the majority of students.

Part ii differentiated students who had not prepared adequately from those who did study the course material. Candidates who answered poorly generated answers based on guesswork were outperformed by candidates who had studied the specific material. Very few candidates scored full marks for part ii.

(i) Cashflows:

- Premiums received
- Claims outgo
- Expenses
- Commission
- Investment Return
- Change in Reserves
- Profit
- Tax

(ii) Bookwork:

- Does not allow for the proper timing of events
- Does not allow for the accumulation of reserves
- Does not allow properly for capital needs
- Does not allow for the impact of net negative cashflows in any period
- Does not allow for separate inspection of premium related cashflows or claim-related cashflows
- Does not allow easily for the variation of assumptions over time
- Does not allow for changes in the assumed future experience and cannot be used to measure the sensitivity of profit to such variation
- Cannot allow easily for more complicated product structures, such as unit linked products or options and guarantees.

QUESTION 2

This question required students to apply their bookwork knowledge on PMI and CI cover to a group cover scenario. This question was answered reasonably well. Students who structured their answers managed to get most of the points under PMI and CI cover. Those who performed very well were able to discuss points relating to the terms of cover which required broader thinking.

- For PMI cover
    - Introduce/expand benefit limits to manage the cost of cover
    - Change benefits covered
    - Introduced exclusions

    - Use managed care techniques
    - E.g. pre-auth, referrals, formularies, disease management
    - Use networks and alternative reimbursement arrangements
    - Introduce/expand the use of cost sharing
- For CI cover
    - Review list of covered conditions
    - Review definitions of covered conditions
    - Include waiting periods
    - Or survival clause
    - Structure benefits on a tiered basis
- For both
    - Get alternative quotes in the market
    - Consider self insurance / reinsurance
    - Look at level of brokerage
- For terms
    - Reduce frequency of benefit changes to limit anti-selection
    - Introduce waiting periods for upgrading cover
    - Or only allow changes on occurrence of life events
    - Consider what competitors are doing
    - Could offer one level of benefit for all
    - Premium rates based on age bands
    - Apply actively at work requirement to be eligible for cover

QUESTION 3

For part (i), candidates often failed to come up with enough points or elaborate sufficiently on the points to score well.

For part (ii) candidates focused too narrowly on only medical underwriting, often not noting that it is unlikely that medical underwriting can be used at all for online sales, and very few thinking of ways to avoid/address this problem.

Overall, the question was fairly answered.

i) Reducing the DP:

- Pricing – premium rates will increase as:
    i. incidence rate increase as claims which are for hospital stays longer than 24h but shorter than 48hours are now admitted
    ii. an 'extra' day of payment is included in the benefit
    iii. the higher incidence of lower severity claims will likely shorten the average length of stay in hospital so this is likely to decrease the premium rate but overall an increase in rates is expected
- higher volume of claims will impact on claims resourcing and admin costs which will further increase the cost

- anti-selective risk is increased as policyholders are more likely to take out a policy offering shorter DP if they likely to claim. This is made worse if the competition is not offering 24h DP products and the fact that offering on website makes it possible to select the insurer and compare products this will increase premiums
- fraud risk may also increase as more claims causes are open to manipulation i.e. the shorter DP requires less severe causes which can be claimed for (example stomach bug) this will increase premiums
- the shorter DP is likely to be more attractive to the market and should lead to increase in policy sales. This will act to reduce per policy fixed expenses allocation which would reduce the overall rate
- policy documents and IT systems will need to be updated to reflect the change in benefit structure. This cost will need to be allocated across the policies (fixed per policy expense) thus increasing premiums
- the current in force book may lapse and re-enter to gain richer benefit; even worse would be selective lapsing – the risks more likely to claim would lapse and opt for the shorter DP even if more expensive; this would worsen overall experience and increase premium rates.

(ii) Underwriting measures:

- waiting period before policyholder becomes eligible to claim (example 6m or 12m) during which no claims for CI are admitted – suitable for simplified issue product
- moratorium on claims related to pre-existing conditions, where conditions for which medical treatment or advice was sought would not be covered for a specified period (example 12 months) – suitable for simplified issue product
- a staggered multiple of daily sum assured which increases as duration increases (for example 0x during first 12months, 10x in next 12months and 50x afterwards) – suitable for simplified issue product
- simple kick out questions at sales stage (example family history) where the rider benefit can only be taken if all answers are positive – suitable for simplified issue product
- full underwriting unlikely to be suitable given the high upfront cost involved against the low cost of hospital cash plan premiums

QUESTION 4

Overall candidates found this question quite straightforward. For part (i), some candidates lost marks for not expressing the result as an annual risk premium (i.e. not multiplying monthly salaries by 12). Other mistakes included rounding errors or not correctly adding incidence rates.

For part (ii), a wide range of marks were available. Some candidates missed out on easy marks by not including standard premium components such as tax, investment returns, profit loadings and regulatory constraints (bookwork).

Performance on part (iii) varied. Candidates are encouraged to consider a breadth of points rather than elaborating too much on a single aspect. Different points spanned benefit design, underwriting, admin & service as well as broker commission.

(i)

- Simply add all the incidence rates for each age and multiply this by average monthly salary multiplied by 12 multiplied by multiple of salary multiplied by the number of employees
- 25y.o: (0.0001+0.0002+0.001)*20000*12*5*100 = R156 000
- 35y.o: (0.0002+0.0003+0.002)*30000*12*4*80 = R288 000
- 45y.o: (0.0005+0.0004+0.007)*40000*12*3*50 = R568 800
- 55y.o: (0.001+0.0009+0.01)*60000*12*2*20 = R342 720
- = R1 355 520 p.a

(ii)

- Expenses – contribution to overheads
- Commission + other direct expenses
- Tax
- Reinsurance premiums
- Investment returns
- Solvency capital requirements
- Profit requirements (shareholders' required return)
- Marketability/competitiveness at the price given design
    - Rate charged by existing insurers in the group CI market
- Cross-subsidies with other products (loss-leader, e.g. to gain market share)
- Regulatory requirements/restrictions
- Free Cover Limit as well as other underwriting measures in product design eg. Pre-ex clause and Actively at work criterion
- Compulsory vs voluntary nature of membership – a loading for voluntary group might be needed

(iii)

- The insurer may have a strong brand, thus attracting business even at a premium
- Levels of underwriting may be different from competitors
    - Less stringent underwriting may mean higher premiums, but at the added convenience to the groups
    - Higher free cover limits – less underwriting, more convenience and may better suit group's needs
- Benefit levels may differ
    - Higher multiples of salary – attractive to group schemes
    - Structure of benefits may differ – i.e. tiered vs non-tiered and our design may be more appealing
    - Fewer exclusions, e.g. pre-existing conditions
    - May offer reinstatements
- Benefit definitions may differ
    - i.e. less strict claim definitions in policy wording

- Better administration and customer service or offering third party services (e.g. Claims support)
    - Fast claims settlement
    - Low levels of repudiation
- Commission rates may differ from other insurers – brokers may favour us given our commission structure
- Lack of comparability with other insurer's products – i.e. due to differences, can't really say ours is more expensive/doesn't know it is
- Legislative considerations – our product may meet certain standards as required for certain groups that may not be met by other insurers' products
- May use experience rating in pricing after experience emerges – may be attractive for a group if expectation that premium will decrease in future (i.e. if employer believes group is healthier on average)
- Other benefits, such as loyalty scheme membership, reduced rates on other group products, etc.

QUESTION 5

This question required candidates to consider factors such as the relative costs of new treatments as well as the cost of prevention vs. treatment. Candidates who organized their answers well, tended to score well. Some candidates seemed to suggest that medication and treatment would be covered under CI and LTC policies which adversely affected their conclusions. For PMI cover candidates needed to note that screening / preventative treatment has a high upfront cost that may not be realized through future savings in more serious treatment if the incidence is not high.

For the CI cover, some candidates seemed to suggest that the cover would include the treatment rather than paying a benefit only on diagnosis of the event. Similarly for LTC candidates needed to distinguish between benefits for custodial care and medical treatment when referring to indemnity benefits. For LTC many candidates also failed to note that while heart attacks and cancer may not be covered directly, these conditions may lead to LTC claims if they adversely affect ADLs.

(i) General points

The impact depends on how widely the scan and medications are used, which will depend on:

- National campaigns to promote use
- Accessibility

And the proportion of claims arising from heart attack, cancer, Alzheimer's and arthritis.
There may also be different impacts on different demographics (e.g. young vs old).

PMI

- It is likely the new drugs are more expensive as drug companies need to recoup their development costs.
- There may be limits on the potential cost of the new treatment within the product

Existing Business

- If the additional cost is high the insurer is likely to look very carefully at its policyholder terms and conditions to assess whether existing business will be covered by the new treatment.
- The announcement of the new scan and drugs may lead to more people being worried about their health and seeking medical consultations; the diagnosis rate may increase for all sorts of conditions.
- If screening is covered there will be an increase in take-up and the company may need to define eligibility criteria for the scan.
- May have a referral mechanism or pre-authorisation requirements to manage this but still likely to increase.
- If cancer is not excluded then assume that PMI policy benefits would include the new treatment.
- Policyholders who had pre-existing heart or cancer diagnoses would not normally be covered,
- For new referrals for cancer or heart attack treatments would be covered.
- And with increased treatment costs the reserves increase.
- Would need to define eligibility criteria for arthritis and Alzheimers preventative treatment, e.g. family history or other risk factors. But demand will increase claims.
- Overall there would be an increase in reserves.
- This would impact specifically the Unexpired Risk Reserve (URR)
- As the risk of claims is now higher than when the premiums were set.
- However, if cancer / heart attacks / arthritis / Alzheimers decrease in future this will potentially reduce future claims and the required reserves.
- This can be a net benefit but note that frequency of preventative treatment is higher.
- If more policyholders survive, this could lead to more claims for other reasons, which could change the types of claims the company sees and increase reserves.
- Greater uncertainty about the type of claims could require additional margins in pricing (say) for prudence.
- If there are fewer future claims this might reduce future admin costs, also reducing reserves.
- At renewal, cancer survivors may have poor health and so face increased premiums.

New Business

- The availability of new drugs and treatment may promote PMI and so increase new business.
- Policies are typically annually reviewable so the premium could be reviewed at the next renewal date to reflect the higher expected future claims.
- Higher expected claims would lead to higher new business premiums
- which would also have an effect on new business volumes

(ii) CI

Existing Business

- Heart attack and cancer are 'major' conditions that will be covered within the CI policy.
- Alzheimer's and arthritis may or may not be covered within the CI policy.
- Screening may reduce prevalence of heart attacks and so reduce costs
- Heart attacks of sufficient severity are covered and if these are the ones reduced then the drug will reduce the incidence of heart attacks and so reduce reserves.

- But this fall in reserves may be offset by an increase in the risk of other types of CI claims covered under the policy.
- The rate of diagnosis for CIs would increase as more people who are worried about these conditions will seek a medical consultation. Therefore the number of critical illness diagnoses would be expected to increase.
- … and for these diagnoses to occur earlier.
- If the CI is standalone then more claims will survive the survival period so claims increase.
- So the reserves would increase.
- If reviewable business, then the increases may be reduced as insurer may increase morbidity charges/premiums.
- Assuming Alzheimer's condition is covered and age is young enough then the drug will reduce the incidence and so reduce reserves.
- Overall it is difficult to make a definitive view on whether reserves increase or reduce from an introduction of the drugs and screenings.

New Business

- The policy terms and conditions could be changed following the introduction of the new drugs and screenings.
- The premiums may be reduced to reflect any reduction in expected claims
- And hence increase new business.
- The screening for heart attack risk could give rise to anti-selection and this would need to be accommodated in underwriting (which could be costly).
- It could also give rise to selective lapsation by those with no risk which would worsen the experience.
- There might be a decrease in the number of people who perceive they need CI insurance, and so a decrease in volumes.
- However, there is likely to be a continued need for cancer cover (perhaps more SACI than ACI), so the impact on volumes may not be great.

(iii) LTC

- *Existing Business*
- The reduction in Alzheimer's is likely to reduce the future number of claims for LTC.
- The claim durations may also be affected as although Alzheimers may reduce life expectancy.
- The reduction in the number of heart attacks may reduce the future number of claims for LTC if heart attacks leave policyholders with severe impediments that qualify them for LTC.
- A reduction in deaths due to heart attacks could increase future claims for other included illnesses.
- The reduction in the number of cancer deaths. especially if at old ages, will increase the duration of LTC claims, hence increasing the reserves for in force and future claims.
- For pre-funded business there is likely to be a delay in the incidence of long-term care, thereby reducing reserves
- If reviewable pre-funded business, then the changes in experience may be reflected in existing premiums and this could help fund the required increase in reserves.
- The overall impact is uncertain and will depend on the significance of each change.

New Business

- No obvious changes in terms and conditions required.
- Likely to reduce the attractiveness of pre-funded LTCI and hence decrease new business
- Likely to reduce volumes of immediate needs annuity
- The overall effect on claims incidence and duration is uncertain; premiums may be adjusted to reflect the expected claims.
- There might be a decrease in demand for LTCI if people are less worried about Alzheimer's.
- There might be an increase in demand for LTCI if people are more worried about living longer while needing care (due to reduced heart attacks and fewer deaths from cancer).

QUESTION 6

This question was a reasonably straightforward bookwork question with some light application. Part (iv) seemed to confuse a number of students. These students focused on various risk management techniques the state could employ, e.g. waiting lists, means testing, etc. which was not what was being asked. Overall, most candidates scored reasonably well.

i) .

- Protecting the nation's health
  - Ensuring happy, healthy, productive workforce
- Subsidising the poor
  - Provide benefits to those who need it most; not those who can afford it
- Balancing the budget
  - Competing needs - education, housing, infrastructure, etc.
- Following social culture or keeping political promises
  - Party ethics; remaining popular in the nation's eyes for future elections

ii) .

- Optimal complement
  - Some basic service provided by the state; the rest needs to be paid for, and can optionally insure for these
- Compulsory alternative
  - State resources only available to some (i.e. the indigent), the rest need to purchase health insurance and access private resources
- Compulsory complement
  - Certain services provided by the state, all others privately and those who can afford need to take out insurance for this

iii) .

- Demographic challenge
  - Ageing population, meaning increased healthcare requirements, meaning increased costs, putting strain on the level of care the state can offer and potentially quality when demand exceeds supply – developing economy likely to have significant budget constraints

- Technological challenge
    - New technologies are very costly. Drives up demand and expectations. Developing countries may not be able to afford, and if they can, at the cost of sacrificing other services
- Challenge of Sisyphus
    - *Pushing a rock up a hill, watching it roll down and repeating the process* – better technologies and treatment for serious illnesses means life expectancy gains, and increased future demand for care, meaning higher costs on higher costs – a compounding problem resulting in constant budget pressure
- Burden of disease
    - Overall health status of population impact the level of demand for care and costs – in recent decades the rise of non-communicable diseases has put significant pressure on healthcare systems, coupled with ageing and technology above (very apparent in developing countries, coupled with HIV/Aids
- Medical professionals
    - Long and expensive to train professionals. Big risk is them leaving the state service or worse, the country, after completing subsidised training. In developing country exacerbated by there not being enough professionals to cater for the need/demand
- Infrastructure
    - Limited budget means limited scope for maintaining, upgrading or expanding infrastructure, resulting in poorer quality and lack of capacity to treat the ill.
- Competition
    - State budget has competing needs for very worthy causes. If more is to be spent on healthcare, less has to be spent on other initiatives (poverty alleviation, education, etc.) *OR*
    - Due to market failure (information asymmetry, irrational behaviour, etc.), normal free market economic theory does not apply to healthcare goods and services. And normal competitive forces in the demand and supply of healthcare and the interaction between state and private don't function optimally
- Regulation
    - Due to the above, significant regulation is required to protect the industry, and the consumer. This comes at a significant direct cost, and also indirect cost due to efficiency lost.
    - Level of competition vs level of regulation – balance needs to be struck

iv)

- Cost analysis
    - Simplest method of evaluation of system/interventions – compare costs of A vs B and choose cheapest – no consideration given to effectiveness or improvement in outcomes as a result thereof.
- Cost-effectiveness analysis
    - Considers non-monetary benefits of the system/intervention – measured on a 1-dimensional scale against costs, and then a decision is made. Simple to understand but does not reflect the utility of the system/intervention to the population
- Cost-utility analysis

    - Cost of the system/intervention is analysed relative to changes to mortality (quantity) and quality of life (QALY). Sensitive to the choice of utility function.
- Cost-benefit analysis
    - For CBA, a monetary value is placed on the outcomes achieved and the costs is compared directly. Lowest CBA ratio is the best system/intervention. Allows each system/intervention to be analysed on its own merit. Main criticism is attaching a monetary value to life/health.
- Analysing willingness-to-pay
    - Measures the value that an individual places on a particular intervention (system in this case), and balances this willingness against other spending given a limited budget. However, criticised for not being reflective of reality as in times of crisis behaviour isn't rational/measured/balanced.

QUESTION 7

Many candidates approached part (i) as if the question referred to an insurer rather than a state-provided benefit, including references to assets and reserves. Those that followed the aspects of projecting cashflows for the population scored well.

For part (ii) candidates needed to balance the impact on those eligible for benefits (low proportion of population) vs. the impact of reducing social security costs.

Part (iii) was reasonably generally well answered but credit was only given where risks were applied to the specifics of the question rather than a list of general risks. Many candidates made unsubstantiated points such as referring to new business strain without clarifying how this would arise.

Responses to part (iv) were disappointing with very few candidates distinguishing between pre-funded and immediate needs cover as well as referring to financial underwriting in the context of the level of cover (not appropriate) rather than affordability.

(i)

- The value of the liability will be determined as the present value of future net cashflows.
- This will required a population forecast
    - select an appropriate projection period
    - 20-50 years
    - need a population projection
    - to determine retired population (and survival)
    - use census / country statistics as starting point
    - project mortality trends
    - and fertility, migration for longer term forecasts
    - May use lower mortality to project population in facilities
- Liabilities
    - Assess current eligibility criteria
    - Determine appropriate inception rates for cover

    - As well as transition rates allowing for trends
    - Assess current costs of provision
    - Use appropriate period for existing approved facilities (2-5 years)
    - Set appropriate assumption for inflation in costs of care
    - Project cashflows in terms of benefit payments
- Discounting
    - Need to discount at an appropriate discount rate on best estimate basis
    - Could use government bond yield (medium to long term if market deep enough)
    - Or risk free rate
    - Higher discount rate will be less prudent
- Sensitivities
    - Will need to do sensitivities on key assumptions
    - Probably population forecasts (mortality)
    - Discount rate (financial assumptions)

(ii)

- The change in benefits is likely only to apply to new cases rather than existing recipients.
- Lower cover at facilities means citizens need to fund the balance if they are eligible.
- May mean they can't afford cover even if they need it.
- The reduction in recipients may affect the viability of facilities – hence affecting cost and availability of care.
- Option to access cash benefits for home care may cause moral hazard.
- Can fund family members providing care.
- Or create employment opportunities.
- Less severe cases may still require care but not eligible for benefits and so need to purchase cover for this.
- Needing to provide care may affect quality of life / burden on family members.
- The reduction in cost of social security benefits may improve disposable income.
- And stimulate economic growth benefitting majority of population.

(iii)

- Key product risks are inception rate
- And longevity affected by technology advances
- May not have adequate data to assess inception rates
- Will be affected by change in benefits
- Risk of anti-selection by those with family history etc.
- Risk of business volume (too high may cause capital strain and too low may mean overheads not covered)
- Need to educate market about need to fund the gap.
- Risk of expenses (operational risk).
- Benefit is indemnity so risk of escalation in the cost of providing care
- Investment risk associated with pre-funded long term care
- And with immediate needs cover.
- Reputational risk associated with product distribution.
- Also availability of reinsurance.

(iv)

- For prefunded product would need medical underwriting
- Consider family history
- Needs to address risk of inception
- But not be barrier to entry (high cost)
- For immediate needs need to assess longevity
- Level of competition in the market will affect how mortality adjusted (impaired)