INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

September 2018

Subject ST1 – Health and Care
Specialist Technical

Introduction

The Examiners' Report is written by the Principal 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
December 2018

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

1. The aim of the Health and Care Specialist Technical subject is to instil in successful candidates the ability to apply, in simple situations, the principles of actuarial planning and control needed in health and care matters on sound financial lines.

2. Candidates who approach the questions, especially the more substantial elements of each question, in a methodical and detailed manner were 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. 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.

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

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

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

Well-prepared candidates scored well across most of the paper.

Questions that focussed on knowledge of the Core Reading were well answered by those who had prepared thoroughly. However, the paper included several part questions requiring wider thinking or application of core reading to specific circumstances, such as questions 3 and 6. Students should recognise that these are generally the questions which differentiate those students with a good grasp and understanding of the subject.

It was pleasing to see that many candidates provided their answers under subheadings, making them easier to follow and mark and also showing how they had applied their knowledge to the specific scenario described.

The comments that follow the questions concentrate on areas where candidates could have improved their performance. Candidates approaching the subject for the first time are advised to concentrate their revision in these areas.

C. Pass Mark

The Pass Mark for this exam was.58.

Solutions

Q1

(i) General points

The impact depends on how widely the drug is used, which will depend on: [½]
National campaigns to promote the use of the drug [½]
General practitioner policies to prescribe the drug [½]
And the proportion of claims arising from heart attack, cancer, Alzheimer's and arthritis. [½]
There may also be different impacts on different demographics (eg young vs old). [½]

PMI

The impact depends upon the cost of the new drugs against current treatments [½]
The following assumes that the new drugs are more expensive (*but credit was also given for the opposite arguments*)

There may be limits on the potential cost of the new treatment within the product [½]
If the cost of the new drug is high (as the drug company wants to recoup its

development costs) and there are no limits on possible claims the potential impact on the insurer's reserves and premiums could be very large. [½]

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 [½]

This could lead to legal challenge by policyholders and additional costs. [½]
The announcement of the new 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. [½]
Cancer might be excluded under the policy as it is a chronic rather than an acute condition [½]

In which case no change in reserves for this condition. [½]
If cancer is not excluded then assume that PMI policy benefits would include the new treatment. [½]

Policyholders who had pre-existing heart or cancer diagnoses would not normally be covered, [½]

Unless accepted business on medical history disregarded. [½]

For new referrals for cancer or heart attack treatments would be covered [½]
And with increased treatment costs the reserves increase. [½]
The Alzheimer's and arthritis conditions are likely to be chronic requiring ongoing treatment and so not covered by the PMI policy. [½]
Hence, no increase in reserves in respect of these conditions. [½]
Overall there would be an increase in reserves. [½]

This would impact specifically the Unexpired Risk Reserve (URR) [½]

As the risk of claims is now higher than when the premiums were set. [½]

However, if cancer / heart attacks decrease in future this will potentially reduce future claims and the required reserves. [½]

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. [½]

Greater uncertainty about the type of claims could require additional margins in pricing (say) for prudence. [½]
If there are fewer future claims this might reduce future admin costs, also reducing reserves. [½]
At renewal, cancer survivors may have poor health and so face increased premiums. [½]

New Business
The new drugs may promote PMI and so increase new business. [½]
Policies are typically annually reviewable so the premium could be reviewed at the next renewal date to reflect the higher expected future claims. [½]
Higher expected claims would lead to higher new business premiums [½]
which would also have an effect on new business volumes [½]
[Max 4]

(ii) IP

The key impact of the drug on IP claims depends on how the ability of the individual to work is impacted by the new drugs [½]

Existing Business
Alzheimer's and arthritis are conditions that generally affect older age groups so limited impact at working ages. [½]
Therefore, no significant impact on reserves. [½]
The announcement of the new drugs may lead to more people being worried about their health and seeking medical consultations that may result in their being signed off work … [½]
… leading to more IP claims and [½]
….earlier claims. [½]
The reduction in heart attacks is likely to reduce the incidence and duration of IP claims. [½]
Therefore leading to a reduction in reserves. [½]
The impact on reserves in respect of cancer changes depends on whether the drugs not only reduce death rates from cancer but also reduce the severity of incapacity. [½]
If severity reduced then claim durations may be shorter [½]
Leading to a decrease in reserves. [½]
If severity is not reduced significantly then claim durations may be longer with fewer claims ending due to death [½]
Leading to an increase in reserves. [½]
If reviewable terms then insurer may be able to adjust the premiums to reflect the change in morbidity experience. [½]

New Business [½]

No obvious changes in terms and conditions required. [½]
The overall effect on claims incidence and duration is uncertain so premiums may be adjusted to reflect the revised expected claims. [½]
If premiums reduce this may increase new business. [½]
[Max 4]

(iii) CI

Existing Business

Heart attack and cancer are 'major' conditions that will be covered within the CI policy. [½]
Alzheimer's and arthritis may or may not be covered within the CI policy. [½]
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. [½]
But this fall in reserves may be offset by an increase in the risk of other types of CI claims covered under the policy [½]
The rate of diagnosis for CIs would increase as more people who are worried about these conditions will seek a medical consultation knowing that there are now new drugs available. Therefore the number of critical illness diagnoses would be expected to increase [½]
… and for these diagnoses to occur earlier. [½]
If the CI is standalone then more claims will survive the survival period so claims increase. [½]
So the reserves would increase. [½]
If reviewable business, then the increases may be reduced as insurer may increase morbidity charges/premiums. [½]
Arthritis - the age of arthritis sufferers is likely to be beyond the age limit of the CI policy. [½]
Assuming Alzheimer's condition is covered and age is young enough then the drug will reduce the incidence and so reduce reserves. [½]
Overall it is difficult to make a definitive view on whether reserves increase or reduce from an introduction of the drugs. [½]

New Business

The policy terms and conditions could be changed following the introduction of the new drugs. [½]
The premiums may be reduced to reflect any reduction in expected claims [½]
And hence increase new business. [½]
There might be a decrease in the number of people who perceive they need CI insurance, and so a decrease in volumes. [½]
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. [½]
[Max 4]

(iv) LTC

Existing Business

The reduction in Alzheimer's and arthritis is likely to reduce the future number of claims for LTC. [1]
The claim durations may also be affected as although Alzheimers and arthritis aren't 'killers', they might reduce life expectancy. [½]

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. [½]
A reduction in deaths due to heart attacks could increase future claims for other included illnesses. [½]
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. [1]
For pre-funded business there is likely to be a delay in the incidence of long term care, thereby reducing reserves. [½]
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. [½]
The overall impact is uncertain and will depend on the significance of each change. [½]

New Business [½]
No obvious changes in terms and conditions required. [½]
Likely to reduce the attractiveness of pre-funded LTCI and hence decrease new business [½]
Likely to reduce volumes of immediate needs annuity [½]
The overall effect on claims incidence and duration is uncertain; premiums may be adjusted to reflect the expected claims. [½]
There might be a decrease in demand for LTCI if people are less worried about Alzheimer's and arthritis. [½]
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). [½]

[Max 4]

[Total Max 16]

*Candidates generally scored well on all parts of this question. The better candidates mentioned that the impact will depend on how widely the drug is used and the proportion of claims in the various categories that arise from the specific diseases the drug will have an impact on or that t*he *announcement of the new 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, for PMI, or people being signed off work, it the case of IP or an increase in and earlier diagnoses of CI illnesses.*

In part (i) few candidates mentioned that part of the impact would depend on the cost of the new drugs compared to the cost of current treatments.

In part (ii) whilst most candidates said that there would be a reduction in cancer claims if the severity were reduced, not all candidates made the point that if the severity is not reduced the duration of claims may increase as there would be fewer deaths.

In part (iii) few candidates made the point that if the fall in reserves as a result of a reduction in severe heart attacks heart attacks may be offset by an increase in the risk of other types of CI claims covered under the policy.

In part (iv) few candidates made the point that for prefunded LTC there is likely to be a delay in the incidence of long term care, thereby reducing reserves

Q2

(i) Medical evidence can be obtained from the following sources:
Questions on the proposal form completed by the applicant. [½]
Reports from medical doctors that the applicant has consulted. [½]
A medical examination carried out on the applicant at the request of the insurer. [½]
Specialist medical tests on the applicant. [½]
e.g. cat scans (*half mark given for any suitable example*) [½]
Supplementary written questions if issues are identified on initial proposal form [½]
[**Max 2]**

2(ii) Questions about the Individual
e.g. Date of birth [½]
Gender (if allowed) [½]
Permanent place of residence [½]
Marital/civil partnership status [½]
Employment status [½]
Full time / part time [½]
Address [½]
Country of residence [½]
Information on any criminal convictions [½]
Other IP policies held [½]

Questions about the individuals employment details –
Details of the individual's occupation [½]
As some occupation may be more hazardous and may have direct impact on claims cost [½]
The name and address of the employer as they may have different level of safety measures at work place [½]
Types of duties at work [½]
E.g. administration, skilled, manual [½]
The net annual income for last 3 years from all sources. [½]
Outstanding period of employment [½]
Address of place of where he/ she has occupation [½]

Questions about the Health details of the individual
Smoking status [½]
Leisure activities [½]
Alcohol consumption [½]
Doctors details [½]
Height and weight, [½]
Disclosure of good health conditions (e.g. whether the applicant is taking or receiving any types of treatment or medication) [½]
Personal medical history including leave records [½]
Family medical history [½]

Questions about the policy
Policy start date (if the policyholder chooses this) [½]
Term / plan termination age [½]
Benefit level [½]
Type of cover – own occupation / any occupation (if the policyholder can choose this [½]

Level / indexation benefit (where policyholder has a choice) [½]
Deferred period (if the policy holder can choose this). [½]

Questions about the individual's previous insurance IP insurance history (if relevant)
Previous claims history under IP policies, if any [½]
Previous application for cover with insurer, if any [½]

[Max 7]

(iii) Cases that are considered to bring higher risks than acceptable at standard rates:
The insurer can offer higher (loaded) premiums [½]
or a lower benefit. [½]
The insurer can postpone the risk commencement date, if the period of higher risk is deemed temporary. [½]
The insurer can decline the application [½]
The insurer can offer a different type of policy (less risk intensive). [½]
The case can be offered to a reinsurer facultatively with zero retention. [½]
The policy can be offered with certain specific causes and/or conditions excluded [½]
Impose temporary exclusions for initial years for claims arising from certain risks [½]
The insurer can reduce the income replacement ratio [½]
Or offer longer deferred periods [½]
Or offer a stricter claim definition (e.g. inability to do any occupation rather than own occupation) [½]
Or reduce the term of cover [½]

[Max 3]

[Total Max 12]

All parts of this question, were very well answered.

Q3

(i) The current product's claim costs were variable only by duration but now claims costs will vary by:

Level of disability [1]
Inflation in accommodation costs and [½]
Inflation in the cost of nursing care. [½]
There is an overall limit to the long term care costs. [½]
The change in risk depends on the level the cap is set at. [½]
If the cap is set at a very high level the majority of policyholders may not be significantly impacted. [½]
The maximum costs faced by insurer will also be impacted by whether the cap is indexed or not. [½]

Political risk of the cap changing in the future [½]
There may be future changes in the State's long term care benefits [½]
Credit Risks – in respect of care homes used. [½]
Investment risks – asset classes may be more risky, e.g. higher proportion in equities 1
Reputational risk increased by the quality of care delivered by care homes [½]
Providers may inflate costs to insurers [½]
Increased sales risk as the form of the cover is becoming more complex. [½]
Administration increases in complexity so more operational risk. [½]

[Max 4]

(ii) **Business mix**

The mix of new business by premium size will change as the benefits will change. [½]
The product is more attractive so there may be other changes in mix, age, gender etc [½]
So new distribution of model points will need updating. [½]

Expenses

Expense loadings will require updating [½]
Administration will be more complex so ongoing costs increase [½]
e.g. having a process to check if the cap amount has been exceeded [½]
The product is more attractive so sales volumes will increase…. [½]
….so lower contribution to overheads required per policy [½]
There may be changes in commission paid [½]
New development costs for literature and system changes [½]
Development costs and other initial expenses spread over more policies. [½]

Inflation

Introduce various inflation rates e.g. [½]
Accommodation costs [½]
Nursing care, medical costs (or other relevant examples) [1]
The investment strategy and backing assets will change. [½]

Discount rate

Possible changes to discount rates depending upon pricing approach. [½]
Changes to the discount rate will affect reserving [½]

Capital

The new product has greater risk so higher capital required to support policies [½]
Increased charge to cover increased solvency capital. [½]

Modelling & assumptions

Modelling of benefits will change from fixed amounts to variable amounts according to the new product. [½]
Before, the benefit modelling would have involved a calculation of annual benefit amount x annuity [½]
Whereas now it will be more along the lines of the sum of benefit at time t x discount factor to time t [½]
The model will need to allow for the lifetime cap and how it changes over time. [½]
Assumptions are required regarding cost of care at different impairment levels and ages. [½]
Assumptions are required regarding cost of accommodation varying by impairment levels. [½]
Data on care costs will be needed. [½]
Any additional assumptions added could lead to material and possibly unexpected changes in premium rates. [½]

Reinsurance

Reinsurance arrangements will have to be reviewed [½]
Changes in reinsurance premiums will affect premiums charged [½]
The insurer may increase its desired profit margin, return on capital etc. [½]
Because of the increased risk and product complexity. [½]
The insurer may allow for uncertain risks through loadings in the premium for risks which cannot be managed simply through changes in the policy conditions or otherwise. [½]
Care is needed to ensure any additional margins in premium rates to reflect increased uncertainty of product do not lead to excessive margins….. [½]
…which could adversely impact competitive position [½]

[Max 9]

[Total Max 13]

This question was generally not well answered.

In part (i) whilst most candidates discussed the risks leading to potential changes in claim costs, few candidates discussed other risks such as credit risk, investment risk, reputational risk, operational risk or that providers might inflate their costs.

In part (ii) only the better candidates discussed such points as the modelling of the benefits changing from fixed amounts to variable amounts and the need to allow for the changes in the level of the lifetime cap over time or that the insurer might increase its desired profit margin or return on capital because of the increased risk and product complexity.

In part (ii) a number of students described the calculation of incidence rates. However, this was not required as the claim trigger, underwriting or claims underwriting were not

changing. Further the distribution channels were not altering so there is unlikely to be any change in claim inception rates.

Q4

(i) This term generally refers to the annual increase in the average cost of medical treatment per insured life. [1]
It could reflect increases due to an increase in treatment costs [½]
And/or an increase in average incidence. [½]
[Max 2]

(ii) The insurer will want to understand the rationale for the group policyholder asking this as it is not standard. [½]
Is the large group policyholder threatening to mass lapse if it does not get what it wants or is it just 'a nice to have' [½]
The insurer will need to consider the operational aspects of the change [½]
e.g. need to change terms and conditions, systems, customer facing literature, valuation models [½]
Could add significant complexity to insurer's business and additional costs could be significant [½]
The insurer will consider its existing relationship with the employer. [½]

If renewed then premium income is guaranteed for the next 5 years so there would not be the risk of non-renewal. [½]
However, future claim costs are highly uncertain [½]
The further into the future, claim costs become even more uncertain [½]
The insurer has little control over claim costs and medical inflation [½]
And would have no ability to increase future premiums to cover higher than expected claims for 5 years [½]
As it is a large group then it is likely it has been priced using experience rating. [½]
If the credibility factor is less than 1, the insurer could consider a profit sharing arrangement to increase the incentive of the group to manage its claims experience well [½]
The premium is most likely community-rated, i.e. the same level premium is applied to all insured lives in the group, irrespective of age, gender or other rating factors. [½]
There is little risk of anti-selection by individual lives [½]
Although this is less true where it is a flexible (voluntary) benefit. [½]
The insurer will need to consider the length of historic experience data [½]
If the insurer has a long period of historic experience data for this group then it may be able to forecast the future claims with an acceptable level of confidence. [½]
Experience analysis will show if there has been a clear trend over the period for which data is available. [½]
If there is a trend, can this be explained. [½]
E.g. change in mix of membership such as more older members [½]
And mitigated in the new 5-year premium [½]
e.g. specifying and guaranteeing annual premium increases for the whole 5-year period. [½]

If the level of claims has been stable historically, then the insurer would have more confidence to set a longer contract length. [½]
The detail available in the experience analysis would be considered. [½]
E.g. does the data show detail of individual claims. [½]
If yes, can the unit costs of specific treatments or services be identified. [½]
If yes, are these showing a trend. [½]
Is the trend due to trends in unit cost or trends in claim frequency [½]
Expect there will be medical inflation so this should be put into the premium [½]
Setting a level premium for the next 5 years may mean a large increase from the current premium as it has to be sufficient to allow for 5 years' of future inflation [½]
Alternatively, a lower premium for the first year could be set but with pre-agreed increases for years 2 to 5 e.g. 5% increase per year, irrespective of claims experience [½]
The insurer would consider if the group membership will change much in future. [½]
E.g. size and mix (age, gender, employees, dependents, location) [½]
Review if the members within the group will be frequently changing or if the same individuals will remain within the group [½]
Longer duration of members typically leads to higher claims per members. [½]
Consider how to deal with employees joining and leaving over the 5 year period [½]
If the policyholder is a company, the membership will be dependent on the business plans of the policyholder so this will be discussed with the policyholder if possible. [½]
Estimate the saving from having renewal costs (Sales, Admin, Pricing, Underwriting etc) for just one year in 5 instead of every year. [½]
Reserves: must hold higher reserves due to longer period of future claims and higher margins due to uncertainty of future claims [½]
IBNR, UPR, expense reserves [½]
Higher solvency capital required. [½]
If capital requirements are higher the insurer needs to consider how much free capital it has [½]
And whether this is the best use of its capital [½]
Check if the country's insurance regulations allow 5-year contracts for PMI business [½]
E.g. different classification of insurance business for reporting purposes (no longer "short-term") [½]
If this is a strategically important client then factor this into the decision making process, i.e. discuss with senior management of the insurer. [½]
If the contract is currently profitable then there will be a strong desire to renew the policy. [½]
Consider how loss ratios have changed over last few years [½]
and if generally profitable, the view on future trends. [½]
Any contract must be viable to both the insurer and the policyholder. [½]
Consider if it is possible to set a premium that would generate sufficient profits with a sufficiently high probability [½]

Whilst also being low enough to be commercially attractive / affordable to the policyholder. [½]
Consider broker commission [½]
E.g. Initial only or payments every year [½]
Consider reinsurance implications (availability and cost) [½]
Consider impact on profitability of the remaining business if the large group policyholder lapses (overheads will need to be spread over the remaining policies) [½]
Consider if the insurer use this approach with other large group policyholders and write more business [½]
If so it can be reused possibly making it more attractive. [½]

[Max 15]

(iii) Consider customer needs [½]
Initial premiums will be higher [½]
High risk of anti-selection [½]
Unless rigorous underwriting is performed. [½]
Even then, underwriting at policy inception becomes a less and less useful indicator of risk as the policy duration increases. [½]
Current premiums likely to be age-based. [½]
The 5-year premium should be based on age at outset of the 5-year term. [½]
Decide whether to offer a level premium for the whole 5 years or a lower premium in the first year but with pre-agreed increases every year. [½]
Is it still appropriate to use an age-based table, or are other rating factors more appropriate. [½]
Consider other possible benefits [½]
Death benefit (probability of death over next 5 years is significantly higher than over just next 1 year) [½]
Maximum age restriction at outset, e.g. 60 or 80 [½]
Are dependents covered under a main insured member? [½]
Would need to consider what happens if the individual stops paying the premiums earlier. For example, would there be any surrender benefit, or penalty. [½]
Consider if the risk of moral hazard is higher/lower compared to a 1-year contract [½]
Review the cost of additional reserves and solvency requirements for longer-term business. [½]
Consider the broker commission, e.g. initial only or ongoing? [½]
Are there any other regulatory implications? [½]
Are there any tax implications (both for the insurer and for the policyholder, i.e. corporation tax, IPT, other)? [½]
Consider whether competitors currently offer guaranteed premiums [½]
Consider reinsurance implications [½]
Lapse experience will change [½]
There is the possibility of lapse and re-entry [½]

[Max 5]

[Total Max 22]

This was a higher skills type question, intended to make students think and apply their knowledge to the particular realistic situation outlined rather than just providing a checklist of general points.

Part (i) was generally well answered.

Part (ii) was less well answered. Most candidates mentioned points such as the potential savings in expenses, the uncertainty involved in setting a level premium to cover 5 years rather than 1 year, the availability of suitable historical data, potential changes in the mix of people covered over time. Fewer candidates discussed the need to understand why the request had been made and what the impact on the insurer would be if the group policy was lapsed, how employees joining and leaving during the 5 year period would be treated, whether the regulator would allow 5 year contracts or the operational aspects involved if the request was granted.

Part (iii) was also not well answered with many candidates not providing a wide enough range of points to score highly.

Q5

(i) IP is a complex product requiring trained expert knowledge to explain the product and risks. Suitable distribution channels are:

Insurance intermediaries (brokers) [½]
Insurance intermediaries act independently of the insurance company. [½]
They will tend to target wealthier individuals [½]
Their aim is to find the contract that best meets, in terms of benefits and premiums, the needs and situation of their clients. [½]
They may be remunerated by commission payments, by the companies whose products they sell, or [½]
They may alternatively receive a fee from their clients. [½]
It will often be the client who initiates the sale. [½]
However, intermediaries are also likely to promote themselves actively to existing clients [½]
For example, by instigating a periodic review of finances. [½]
Brokers can look at the whole market or a limited range of the market. [½]

Tied agents [½]
These are salespeople who are "tied" to one, or sometimes several, insurance companies. [½]
They offer to their clients only the products of those companies. [½]
Typically they may be the employees of a bank or other similar financial institution. [½]
Where the tie is to more than one company, the product ranges of the companies are usually mutually exclusive [1]
Tied agents are remunerated via commission payments from the companies to which they are tied. [½]
Often the prospective policyholder will initiate the sale, but tied agents may actively engage in selling. [½]

Own salesforce [½]
Members of an own salesforce will usually be employees of an insurance company and hence will only sell the products of that company. [½]
They may be remunerated by commission or salary or a mixture of both. [½]
It will usually be the salesperson who initiates a sale, making use of client lists or purchased leads. [½]
However, once he or she has built up a rapport with a particular client, the client often initiates further sales [½]

[Max 6]

(ii) **Brokers**
Mis-selling risks – the insurer has limited control over what the customer is actually told where business is sold. [½]
Credit risks/counterparty default - insolvency of IFA. [½]
Non-recovery of unearned commissions. [½]
Non-payment of customer premiums. [½]
Selection risk - selection against insurer in terms of charges, policy terms and underwriting. [½]

Churning of business. [½]
Risk that the cost of business acquisition is higher via brokers – if the insurer has to pay higher levels of commission than expected to win business from the competition [½]
It could be difficult to predict sales volumes from brokers. The insurer could end up either getting all or none of the business from the broker depending on the relationship with the broker. [½]

Tied agents
Mis-selling risks lower than for broker as insurer sheltered for mis-selling costs. [½]
Credit risks - non-recovery of unearned commissions. [½]
Non payment of customer premiums. [½]
Reduced or no selection against office in terms of charges, policy terms and underwriting. [½]
Churning of business. [½]

Own salesforce
Mis-selling - insurer has exposure to mis-selling but has control over the sales process. [½]
No selection or credit risks. [½]
Less scope for churning of business. [½]

[Max 6]
[Total Max 12]

Part (i) which is knowledge based, was very well answered.

Part (ii) was less well answered. Most candidates discussed mis-selling risks, churning and the potential non-payment of customer premiums, but fewer candidates discussed the selection risks or the potential non-recovery of unearned commission or that the cost of acquiring business via intermediaries could be high and the sales volume via this source difficult to predict.

Q6

(i) General Principles

The parameter values for expenses should reflect the expenses expected to be incurred in processing and subsequently administering the business to be written under the product being priced. [½]
The values will be determined after analysing the company's recent experience for its CI business. [½]
Need to check if this is the only product line; if so, then all expenses of the company are attributable to the CI business. [½]
The company should have sufficient recent experience to provide meaningful results. [½]
If suitable recent experience is not available, the parameter values may be based on any industry data or data from a reinsurance company. [½]

The results of the expense analysis (including inflation adjustments) should be compared against the assumptions in the current pricing basis and structure [½]
(specific policy fees, premium % loadings, sum assured % loadings) [½]
and revisions made where appropriate. [½]
Check if the current per-policy expense loadings, when summed up across all policies, are sufficient to cover the actual annual operating costs of the insurer. [½]

Expense inflation must be considered. [½]
To set the expense loadings for the future period, the results from the historic expense analysis should be inflated at an appropriate rate [½]
From the mid-point of the historic observations to the mid-point of the future period for which the expense assumptions will apply. [½]
Rates of inflation will be partly related to prices [½]
And partly related to salary costs. [½]
The recent expense inflation experience of the company (or, if not available, of the industry) should be analysed to determine the basis for future projection. [½]

The following may be considered when setting the value of this parameter:
Current rates of inflation, both for prices and earnings. [½]
Expected future rates of inflation. [½]
The differential between the return on government fixed interest securities and on government index-linked securities, where such exist. [½]
Recent actual experience of the company/industry. [½]

The expense assumptions may need to be adjusted for known changes e.g. [½]
changes in business mix, [½]
changes in underwriting/claims management procedures, [½]
changes in policy terms and conditions that might affect expenses, [½]
changes in distributors [½]
Past expense analyses could be looked at to identify (non-inflationary) trends over time and project these forwards if expected to continue. [½]

Expense loadings need to allow for the volume of existing business [½]
And the likely volumes of business to be sold in the future planning period. [½]
This is a particular area of uncertainty for a competitive product line. [½]

In particular per policy expenses may need to be respread if a materially different volume of business is expected in the future. [½]
Even though the insurer has a well-established CI business, it could still be difficult to forecast the future new business volumes reasonably well. [½]
The insurer also needs to forecast the lapse/termination rates of existing business in order to forecast the volume of existing business that will remain in-force. [½]

The results of the expense analysis may in some circumstances not be applied fully to the policy expense loadings: [½]
The expense loadings can be used as the optional margin to secure competitiveness; [½]
This can only be done with careful monitoring and on a very short-term basis. [½]
Alternatively, an additional margin for risk or uncertainty may be included. [½]
The appropriateness of any margins in expense basis would be considered. If the CI business has been written for many years the insurer may have a very good idea of its costs and therefore no margins may be required. [½]

Consistency with valuation assumptions would be checked. [½]
The insurer is unlikely to be able to compare its assumptions with competitor assumptions, but there may be some industry data available or it may be able to check with a reinsurer. [½]
The existence of any cross-subsidies would be considered. [½]
[Max 8]

(ii) General

PMI business is substantially different to CI business. [½]
The competitiveness of PMI premiums may be more or less sensitive to the expense loadings than CI business. [½]
The profitability of PMI business may be more or less sensitive to the expense loadings than CI business. [½]

The expenses will need to be divided into direct and overheads. [½]
And these allocated to either the PMI or CI businesses. [½]
Expenses will need to be split appropriately between the 2 product lines. [½]
Staff costs (salaries and salary-related expenses) can be split into four groups: [½]

(i) staff whose work applies directly to PMI business. [½]
(ii) staff whose work applies directly to CI business. [½]
(iii) staff whose work applies to both PMI and CI business. [½]
(iv) other staff [½]

The salaries etc. of staff in (i) and (ii) can be directly allocated to the appropriate product line. [½]
For group (iii), staff time-sheets can be used to split their salaries etc. between PMI and CI. [½]
The work of the group (iv) staff will straddle both overheads and direct expenses. [½]
The split between the two is likely to be made pragmatically. [½]
The direct part can be split further in proportion to the overall split of the group (i), (ii) and (iii) staff. [½]

Property costs can be allocated between PMI and CI according to the floor space occupied by the proportions of staff for each product. [½]
Computer and telephone costs can be allocated based on the staff split between the 2 products. [½]

Pricing structure
The expense loadings for a PMI policy are typically set as a % of the gross premium. [½]
Usually the policyholder will not be aware of the expense loading in the premium. i.e. they see only the gross premium. [½]
Unlike for CI products where there may be explicit policy fees. [½]

If the total initial costs were included in the premium for the first year then this would typically be commercially too high. [½]
Therefore, the expense loading is usually set at a level which is insufficient to cover the full initial expenses in the first year but higher than the annual ongoing costs. [½]
Thus, the initial costs are recouped by the business that renews year after year. 1
Assumptions will be needed about the renewal rate of this business. [½]
So that initial expenses can be spread sensibly across the policy lifetime. [½]
Forecasts are needed for both the overall portfolio size and also the average policy durations within the portfolio [½]
In order to understand the split of initial/renewal/claim/termination costs [½]
e.g. if a policyholder is expected to keep the policy for an average of 5 years then there would be: [½]
1 set of initial costs [½]
4 sets of renewal costs [½]
1 set of termination costs [½]
Ongoing claim costs could occur throughout the policy lifetime [½]
The per-policy expense loadings over 5 years should be sufficient to cover all these costs. [½]

Business Volumes
New business volume forecast is a critical assumption for a new line of business such as this. [1]
As the costs for administering the business will need to be spread over the book of business written, i.e. specified in terms of a per-policy expense assumption. [½]
The new business volume forecast should be arrived at after discussion with experts in the business, including senior sales and product development colleagues and senior management [½]
And based on realistic expectations of new business volumes (e.g. not necessarily the volumes in the sales targets) [½]
The mix of new business between large and small premiums will need to be considered as the per policy expense loadings will be specified as a percentage of the premium, rather than a fixed policy fee. [½]

Refinement and testing assumptions for robustness
Scenario testing: given the sensitivity of per-policy expenses to the business volumes, expense loadings should be tested against a range of business volume scenarios (i.e. different new business volumes and renewal rates). [½]

After the original expense assumption setting exercise, costs and new business volumes should be monitored as they materialise to see if they are in line with the expense assumptions. [½]
The expense assumptions should be revised and fine-tuned as the PMI experience and more market information emerges. [½]

New Operational costs
The cost of any new resources to support the PMI business must be included in the PMI policy expense assumptions, for example. [½]
Expertise: The development and launch of the new PMI product will require specialist expertise and guidance in many different departments: systems development, sales, underwriting, claims and customer service. [½]
Operational readiness: The administrative and claims systems must be fully operational from launch date, which means that they should ideally be fully tested and in place comfortably in advance of that date. [½]
Key staff must be recruited and trained before the product launch. [½]
Health providers: There is a need to have strong relationships with hospitals and consultants, as their costs and behaviour in deciding upon medical treatment will directly impact the claims cost. [½]
Underwriting: The underwriting for PMI business will have a different emphasis compared to underwriting CI business [½]
i.e. risk of needing acute medical treatments rather than risk of acquiring a critical illness [½]
More information about existing medical conditions may be required and more time is taken to assess the morbidity. [½]
There are likely to be different underwriting approaches for individual business compared to group business and the chosen method will impact the expected costs. [½]
e.g. individual policy applications may require full medical history whereas group business may be much lighter or even disregard medical history altogether, depending on the group size. [½]

Reallocated Operational costs
Expense assumptions must reflect how the company will manage its operations across the two product lines. [½]
Consider if any existing staff will be re-deployed from the CI business to the PMI business. [½]
E.g. administration and underwriting staff roles could be redeployed from the CI business to the PMI business [½]
Training may be required, which would generate costs. [½]
There could be some efficiency savings if the existing staff were under-utilised and so their spare capacity is filled with the PMI work. [½]

Allocating costs between the CI and PMI business
The PMI expense assumption should include a portion of the overhead expenses of the business [½]
e.g. cost of HR and Finance departments. [½]
Company overheads will be spread across a larger book of business (i.e. both CI and PMI business). [½]

An appropriate method would be needed to split the overheads between CI and PMI business [½]
E.g. split rent based on floor space occupied by each team, split per desks/headcounts allocated to each product line. [½]
There could be a reduction in the CI per-policy expenses due to allocating some of the overheads to the PMI business. [½]
But only if the planned PMI new business volumes are achieved. [½]
It should not lead to detrimental impact, e.g. lower service standards for the CI policyholders. [½]
Capital: If the cost of capital for the PMI business is not fully supported by the PMI policy expense loadings then the insurer could divert capital from supporting CI business towards the new PMI business. [½]

Development costs
Product development costs for the PMI product are significant [½]
e.g. effort is needed to derive incidence rates, develop policy literature and train sales staff. [½]
These development costs typically won't be included in the policy expense loadings but would be accounted for as development costs in the accounting period in which the work occurs. [½]
If existing permanent staff are working on the development then need to consider how their salary and salary-related costs will be treated after the development is completed [½]
e.g. if they return to regular work then their costs can be attributed to ongoing/renewal costs. [½]

Impact on capital requirements
Capital will be required to fund the product launch (since no premiums and therefore no per-policy expense loadings are received before the product launch): [½]
to support reserves; [½]
to support regulatory solvency requirements; [½]
to pay for the PMI product development and marketing costs. [½]
There are likely to be expense allowance overruns generated in the early years of a new product [½]
i.e. the actual expenses incurred are higher than the expense loadings recouped from the PMI premiums received. [½]
Unless the company has substantial capital resources, it will want the PMI premium expense loadings to be designed so as to minimise its financing requirement. [½]
This will be balanced against the requirement for a commercially attractive premium. [½]
There is less scope with non-linked products, such as PMI products, than under unit-linked products to adjust the product design to achieve this [½]
E.g. The existing long term CI products may have been designed as a unit-linked product in order to match, as closely as possible, the pricing structure with the expected pattern of policy expenses. [½]

Cost of capital: It is appropriate to charge each new policy for the cost of the additional capital required to support it, via a premium loading. [½]

The charge is the investment cost arising from holding the underlying assets as "locked in" statutory capital rather than investing them directly in business acquisition. [½]
Some companies, which are adequately capitalised, decide not to charge some policies with the cost of their solvency requirement. [½]
This would be done to make the pricing of the new PMI business as competitive as possible. [½]
However, this means that somewhere else within the company that charge is being levied, i.e. that funds which might otherwise earn a relatively high return are being invested to earn a lower return. [½]

Reinsurance
It may be possible to reduce the capital requirements for the new PMI product through the use of suitable reinsurance arrangements. [½]
If doing this, the ongoing costs of the reinsurance (i.e. the reinsurance premiums) must be covered by the PMI policy expense loadings. [½]

Inflation
Inflation of expenses related to operating PMI business could be different to inflation of expenses related to CI business. [½]
e.g. underwriting costs linked to claim amounts, which are driven by the salaries of medical professionals and the medical testing costs. [½]
As the expense assumptions are set as a percentage of the premium then need to consider how the premiums increase in future in relation to the per policy expenses. [½]

C**ommission**
Sales commission would be typically be agreed with the intermediary/broker and specified as a percentage of the premium for PMI business so it would be straightforward to apply this to the premium. [½]

[Max 17]
[Total Max 25]

Part (i) was generally not well answered. Several candidates described the steps required to carry out an expenses analysis; however, the question asked how the results of an expenses analysis would be adjusted to produce product expenses assumptions not how an expenses analysis would be carried out. Few candidates mentioned points such as checking that the current per-policy expense loadings, when summed up across all policies, are sufficient to cover the actual annual operating costs of the insurer, checking consistency with valuation assumptions, reducing expense loadings for competitive reasons

Similarly part (ii) was also not generally well answered. Here, candidates often failed to make a sufficient and wide range of points to score well. Although candidates generally made some points on splitting expenses between PMI and CI, the treatment of new development and operational costs, the need to project new business volumes and the spreading of expenses over future renewals, fewer candidates discussed points such as capital requirements, the use of reinsurance, how operations between the two product

lines will be managed, the likelihood of expense overruns in the early years of the new business, expenses inflation, the treatment of commission and scenario testing.

END OF EXAMINERS' REPORT