

# **INSTITUTE AND FACULTY OF ACTUARIES**

## **EXAMINERS' REPORT**

September 2019 Examinations

### **Subject SP1 – Health and Care Specialist Principles**

#### **Introduction**

The Examiners' Report is written by the Chief Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and using past papers as a revision aid and also those who have previously failed the subject.

The Examiners are charged by Council with examining the published syllabus. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the later subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision.

Mike Hammer  
Chair of the Board of Examiners  
December 2019

**(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 are far more likely to satisfy the examiners and receive a pass in the subject. Candidates will gain few marks if they do not address the question asked but merely write around the topic of the question.

3. The mark allocation for each question part gives an indication of the relative length of answer or number of points to be made to gain full marks. The Examiners’ Report covers more points than would be expected to get full marks. This is so that alternative approaches to questions by different candidates can be accommodated.

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

**(b) Comments on student performance in this diet of the examination.**

*The paper was a relatively straightforward one and well-prepared candidates scored well across most of the questions.*

*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 4(ii), 6 and 8. Students should recognise that these are generally the questions which differentiate those students with a good grasp and understanding of the subject.*

*It is pleasing to see many candidates providing their answers under subheadings, making them easier to follow and mark. This also helps show that they have applied their knowledge to the specific scenarios described.*

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

**(c) Pass Mark**

The Pass Mark for this exam was 60.

## Solutions Subject SP1

### Q1

#### Advantages

- Simplified online sales process could be preferable to customers. [½]
- Simplified processes for online purchase could lead to lower administration costs for the company. [½]
- Online sales only could reduce distribution costs (e.g. no longer paying commission). [½]
- The company already has an online proposition so the company will not be starting from scratch. [½]
- Possible greater focus on online sales could give the opportunity for the insurer to reach a wider audience..... [½]
- .....which could increase sales [½]
- And an increased contribution to overheads [½]
- And/or spreading fixed costs over more policies leading to lower, more competitive premiums [½]
- And/or higher profits. [½]
- This may improve the insurer’s reputation. [½]
- Being an established insurer should mean brand awareness would attract customers to the website. [½]

#### Disadvantages

- The existing online platform may not be easily or cheaply scalable to deal with increased volumes. [½]
- The insurer may need to pay additional sales and marketing costs to build up online sales presences. [½]
- The insurer could damage its relationship with existing brokers – which could possibly lead to increased lapses. [½]
- There may be increased lapse and re-entry risk from policyholders..... [½]
- ....particularly if online processes make this easier. [½]
- Uncertainty over online sales may mean higher margins in pricing, making premiums less competitive [½]
- And/or higher reserving, so more capital intensive. [½]
- Risk of less than required levels of volume.... [½]
- ....which could mean development costs are not recouped [½]
- ....and strain on capital which may not be supported by available free assets. [½]
- Risk of much higher than expected volumes if online sales are more successful than anticipated.... [½]
- ....which could lead to issues with insurer’s admin. [½]
- Online sales may not be as profitable as advisor sales – e.g. different target market. [½]
- There may be confusion over the different IP products by customers or staff. [½]

### Successful launch

IP insurance products are generally complex, and the most complex part is the policy conditions. [½]

A product designed to be sold online should be simple and easy to understand so it is therefore essential to simplify it [½]

to allow potential policyholders to see clearly and easily what they are and whether they are what the policyholder wants or needs. [½]

A less complex product design, through simplifications of the structure of existing products will be necessary. For example, [½]

- The level of replacement ratios could be restricted to a few predetermined options. For example, only offer the options of 55%, 65% and 75%.
- Consider simplifying the definitions of claims. For example, restrict the definitions to own occupation and any occupation only.
- Alternatively, just define the claim event in terms of an inability to perform various tests instead of an occupational definition.
- Examples of possible types of test could include: Function Assessment Tests (FATs), Activity of Daily Living (ADLs), Activity of Daily Working (ADWs) and Personal Capability Assessment (PCA).
- Restrict the options of deferred period. For example, just offer deferred periods of 26 and 52 weeks.
- Do not offer a “split deferred” period policy, or a policy that pays out different levels of payments depending on the length of sickness.
- Restrict the options of expiry age or term. For example, only offer expiry ages of 50, 55, 60 and 65, or policy terms of 5, 10, 15, 20 and 25 years.
- Restrict the options of escalating benefits. For example, only offer level, fixed percentage or linked to published index.
- Consider offering guaranteed level premiums only, i.e. do not offer policy with reviewable premium online.
- Restrict any residence conditions, where the policyholder may temporarily reside with full coverage continuing, to a limited number of territories.
- Do not offer no claims discounts, with profits or unit-linked designs online.
- Do not offer guaranteed insurability or any other options online.

*[One half mark awarded for each of up to 4 reasonable examples of simplification, maximum 2 marks]*

The wording of the policy conditions will also need to be simplified so that potential policyholders will find it easier to understand. [½]

The underwriting process will need to be streamlined, possibly through limiting the total number of underwriting questions. [½]

The limit on the number of underwriting questions must still allow the insurer to carry out adequate risk assessment, without being too exhaustive and putting off potential policyholders. [½]

The online quotation system should be user friendly with all the technical terms and jargons comprehensively explained. [½]

The insurer could consider the introduction of budget plans, where benefit payments are restricted to a certain number of years to keep costs down. [½]

The insurer should carry out research on the potential market to estimate future business volume based on the market trend in the amount of non-advised protection products being bought online [½]

This would include the market share and price competitiveness of main competitors, and whether there will be increasing willingness and appetite for consumers to buy income protection products directly online. [½]

In order to be successful, the insurer needs to be able to offer ease and efficiency of access, simplicity of messaging and straightforward purchasing model to its potential policyholders. [½]

Consider the product design of competitors’ products so that they are comparable on price comparison websites. [½]

Consider the insurer’s existing capability in website design and seek appropriate external assistance if necessary. [½]

The aim is to design a system that will add value to potential policyholders’ experience while buying online, empowering them to make the right choice for them and their circumstances. [1]

This may include designing a system that also allows the customers to purchase the products on portable devices such as smart phone and tablets etc. [½]

Need to consider the implications on pricing assumptions. [½]

The relevance of existing data and pricing assumptions will depend on whether the profile of the online target market is markedly different to the insurer’s existing policy portfolio. [½]

The profile of customers who purchase insurance online are likely to be younger and more technically minded than the profile of the health insurer’s existing policyholders [½]

...but may also be less wealthy and less financially sophisticated than intermediary customers. [½]

Consider advertising (eg online) to maximise sales. [½]

Consider any implications on reinsurance. [½]

**[Max 10]**

*In general candidates scored well on this question providing a wide range of advantages and disadvantages for the proposal. The better candidates also gave a good selection of actions the insurer could take to try to make the launch a success, such as simplifying the product, having streamlined underwriting, carrying out market research. However, few candidates mentioned considering the likely profile of customers who might purchase insurance online.*

## Q2

### (i) Disability rates

- Disability rates should reflect the future disability claim inception experience of policyholders who purchase the policy via IFAs. [1]
- IFAs tend to deal with higher net worth clients e.g. higher proportion of class 1 and class 2 occupations. [½]

- Anti-selection risks may be higher so would need to allow for this in deriving disability rates. [½]
- As this is a new product the company has no historical data. [½]

Possible sources of data:

- Own data from other products may be useful [½]
- There may be national population statistics on disability rates [½]
- ..... but these are not the insured population [½]
- .....or use the specific claim definition [½]
- Industry data may be available – e.g. standard tables [½]
- Data from other countries [½]
- Reinsurers likely to have data available for this distribution channel [½]
- Consultants [½]
- Medical literature [½]

Data needs to be relevant [½]  
 And cover a reasonable period (e.g. 5 years) [½]  
 And of sufficient volume to be credible. [½]  
 Ideally data would be required for each rating factor used. [½]

Need to adjust for differences in the data source to reflect potential policyholders, for example:

- Occupational differences [½]
- Work environments [½]
- Work regulations [½]
- State benefits payable if use different countries experience [½]
- Underwriting practices of other companies [½]
- Claims practices of other companies [½]
- Claim definitions [½]
- Policy wordings and other product differences [½]
- Different type of policyholders targeted [½]
- Different distribution channels. [½]
- Differences between countries, territory or geographical region [½]
- Deferred periods [½]
- Adjust for trends [½]
- Advances in medicine e.g. key hole surgery [½]
- Social and Economic Influences [½]
  - Pessimism in the economy and levels of unemployment [½]
  - Changes in the inflationary environment [½]
  - Changes in attitudes to sickness and ability to work [½]
  - Changes in the nature of work e.g. from manual to non-manual [½]
- Experience will therefore be heterogeneous so trends maybe misleading [½]
- Need to add a margin to estimates of future rates because of the uncertainties introduced in estimating the rates. [1]
- Margin need to be balanced because of the need to be competitive. [1]

**[Max 9]**

**(ii) Termination rates**

- Benefit ceases on death [½]
- Or recovery [½]
- Or date policy ends (e.g. retirement age) so need assumptions for all of these. [½]

Possible sources of data:

- Industry data may be available – e.g. standard tables [½]
- Reinsurers likely to have data [½]
- Ideally data would be required for each rating factor used [½]

Need to adjust for differences in the data source to reflect potential policyholders for example:

- Death rates are for those who are disabled (so likely to be substantially higher than standard insured mortality). [½]
- Medical advances ..... [½]
- .... These can improve termination rates or extending life in disability [½]
- .... So overall impact not certain. [½]
- Policy conditions.... [½]
- ..... e.g. benefit ratio, rehabilitation, deferred periods [½]  
    *[One half mark awarded for any relevant example given, maximum 1/2]*
- Different definitions of recovery [½]
- Benefit Level.... [½]
- .... as claims for large amounts tend to continue longer than those for small amounts. [½]
- Strength of claims management processes [½]
- Economic environment [½]
- State of health care available to aid recovery [½]
- Linked claims period in the policy conditions [½]
- Termination rates are likely to vary by duration of claim [½]

**[Max 4]**

**(iii) Lapse**

- The lapse assumption should reflect the expected future experience of the policies taken out. [1]
- IFAs tend to deal with higher net worth clients so less affordability issues and.... [½]
- ....products to be most suitable across the market.... [½]
- .... so expect better persistency than policies from other distribution channels. [½]
- No experience data to use. [½]

Possible sources of data:

- Industry data [½]
- Reinsurer data [½]
- No population data will be available [½]
- Could look at experience of existing products as a starting point. [½]

Need to adjust for differences in the data source to reflect potential policyholder experience for example:

- Economic changes – making premiums less affordable [1/2]
- ..... or changes in unemployment rates [1/2]
- State changes to availability or changes in levels of incapacity benefits [1/2]
- New entrants or changes in commercial pressures by competitors [1/2]
- Policyholders more aware of their IP policy [1/2]
- IFA distribution channel [1/2]
- Target market [1/2]
- Territory [1/2]
- Product design [1/2]
- Policy wording [1/2]
- Premium payment term [1/2]
- Policy duration [1/2]
- Benefits [1/2]
- Underwriting practice [1/2]
- Claims management [1/2]
- Service standards [1/2]
- Commission terms – initial commission v renewal commission [1/2]

**[Max 5]**

**(iv) Investment Return**

Data source likely to be market data on assets for past returns. [1/2]

Gross redemption yields can be derived from current prices. [1/2]

Adjust for tax [1/2]

And investment expenses. [1/2]

Adjust return for credit default on bonds. [1/2]

- For regular premium IP business, the level of reserves will not be large so this is not a key assumption. [1/2]
- The pricing methodology.... [1/2]
- ....e.g. risk neutral or real world returns [1/2]
- Deterministic or stochastic [1/2]
- Take into consideration the asset mix of the fund [1/2]
- Assets are likely to be bonds, fixed interest assets and index linked bonds [1/2]
- Future expected returns of assets (influenced by past asset returns) [1/2]
- Depending on the degree of matching the duration of assets and liabilities a greater margin for reinvestment risks. [1/2]
- Consistency of investment return assumptions with other financial assumptions [1/2]

..... inflation rates [1/2]

..... risk discount rate. [1/2]

**[Max 3]**

**[Total 21]**

*Most candidates provided reasonable answers covering the possible sources of data; however, only the better candidates gave a wide range of adjustments that might be needed to the data.*

*Some candidates ignored the guidance given in the question and described the process to calculate crude experience rates which gained them no credit.*

*Part (i) was generally well answered although only the better candidates discussed the need to add margins because of the uncertainties in estimating rates and the balance required because of the need for premiums to remain competitive.*

*Part (ii) was reasonably answered although few candidates included discussion of termination rates because of recovery from ill-health or the date the policy ends.*

*Part (iii) was reasonably answered with candidates discussing the differences in lapse experience between the data sources and the business being written. For those candidates who included discussion of lapses as a termination under part (ii) credit was given for relevant points made in their answer to part (ii).*

*Part (iv) was less well answered. Few candidates discussed the types of assets likely to be held, the need to make adjustments to the data because of tax, expenses, matching requirements etc or consistency of investment return assumptions with other financial assumptions.*

### Q3

#### (i)

Underwriting is the process of consideration of an insurance risk. This includes assessing whether the risk is acceptable and, if so, setting the appropriate premium, together with the terms and conditions of cover or rejecting if not acceptable. [1]

Medical underwriting can be used to manage risk in the following ways:

It can protect an insurance company from anti-selection and in particular from lives whose health is so seriously impaired that it is impossible to assess the risk accurately. [½]

Anti-selection can lead to both higher than expected frequency of claims and average cost of claims. [½]

The medical underwriting process enables insurers to identify lives with a substandard health risk for whom special terms must be quoted. [½]

A company may, however, aim to write a large proportion of the business that it accepts at its standard premium rates. [½]

For the substandard risks, the medical underwriting process will identify the most suitable approach and premium level for the special terms to be offered [½]

E.g. exclusions, premium loadings. [*Half mark for relevant examples up to a total of 1 mark*]  
[1]

Adequate risk classification within the underwriting process will help to ensure that all risks are rated fairly. [½]

Medical underwriting will help in ensuring that actual morbidity experience does not depart too far from that assumed in the pricing of the contracts being sold. [½]

For larger proposals, financial underwriting is also used. This reduces the risk from over-insurance. [½]

PMI often uses pre-authorisation as part of claims management – where a policyholder contacts the insurer to accept the claim prior to agreeing to payment [½]

This manages risks by:

Timely reporting of claims (reducing IBNR) [½]

Ensuring use of surgeons/hospital with pre-agreed prices (reduces medical inflation) [½]

Ensuring policyholder expectations are in line with the policy benefits (increase renewal/reduce lapse and complaints) [½]

Ensuring policyholder is satisfied through provision of a claims handler or counsellor (increase renewal/reduce lapse and complaints). [½]

**[Max 4]**

**(i)**

**(a) Full medical underwriting**

Full medical underwriting is the most onerous and detailed form of underwriting. [½]

It is relatively costly and time-consuming, but gives the insurer the greatest opportunity to learn about the individual’s state of health. [½]

The insurer will obtain evidence about the health of the applicant to assess if they have the insurer's required standard of health. [½]

if the applicant’s health does not meet the insurer’s requirement, the insurer will need to assess how their health compares to that standard, i.e. what additional risk premium loading is required. [½]

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]

Besides the state of health of the applicant, other factors that can affect the sickness risk need to be investigated, for example any risks associated with: [½]

- The applicant’s occupation. [½]

- The leisure pursuits of the applicant. [½]

- The applicant’s normal country of residence (and possibly also overseas travel). [½]

[½]

**[One half mark awarded for any relevant example given, maximum 1/2]**

To counter the risk of over insurance, financial details of the applicant may be obtained.

[½]

[Max 3]

**(b) Medical history disregarded underwriting**

Medical history disregarded underwriting is the complete opposite of full medical underwriting, where there is no consideration of the individual’s past medical history, and

[½]

no exclusions are made for pre-existing medical conditions.

[½]

This form of underwriting is less costly and time-consuming in terms of process in comparison with full medical underwriting.

[½]

On the other hand, this creates the greatest potential for anti-selection and so the product would have to be priced accordingly.

[½]

It is most commonly used for group PMI business.

[½]

It may also be offered to an individual on transfer from a group to individual PMI policy.

[½]

[Max 2]

**(c) Moratorium underwriting**

Moratorium underwriting is where no formal underwriting is carried out at the point of acceptance, but past medical history is examined at the time of claim.

[½]

There are two defined periods that are relevant to the moratorium approach:

The applicant can claim for any condition other than those pre-existing in a defined period before acceptance.

[½]

This is effectively an exclusion of all conditions that have received treatment in a defined period prior to application to the insurer. This first defined period is often five years.

[½]

This exclusion is waived after a second defined period (usually set at two or three years) if the policyholder receives no further treatment for the condition.

[½]

However, if the policyholder does receive treatment, the moratorium exclusion period starts again, i.e. they must have a consecutive period of two/three years without receiving treatment in order to be given cover for that particular condition.

[½]

Moratorium underwriting is most suited to PMI because of the short-term nature of the policy (typically one year at a time).

[½]

Due to marketing considerations, the insurer can encourage purchase by offering the prospect of immediate cover subject only to a total exclusion of all pre-existing conditions.

[½]

Relative to full medical underwriting, the moratorium process can encourage sales and reduce new business costs.

[½]

Moratorium underwriting can cause confusion for the policyholder as to whether they will be covered or not (particularly for a claim that might be considered to be related to a pre-existing condition).

[½]

[Max 3]

**(iii)**

The purpose of claims management is to ensure that the claims accepted are consistent with the assumptions made when the product was designed and priced [1]  
And consistent with the policy provisions. [½]  
As such, the claims management team should be involved in the process of product development and there should be regular dialogue between the claims and pricing/design teams. [½]

There should also be close liaison between underwriting and claims managers to ensure that the medical conditions giving rise to a long-term care claim, for example, are consistent with the information provided at the proposal stage, i.e. that such health impairments were not present at initial application or were explicitly admitted. [½]  
The medical investigations required to substantiate a claim can sometimes contradict the information provided when the policy was taken out. [½]  
The insurer's decision will depend on the facts of the discrepancy and whether there have been attempts to act fraudulently or withhold information. [½]

**[Max 2]**

(iv) Information required

½ Policy information relating to the claim, which would include:

- ½ Policy number
- ½ Policyholder name
- ½ Gender
- ½ Date of birth / Age
- ½ Country of residence / Address
- ½ Policy type
- ½ Policy start date / inception date
- ½ Underwriting terms
- ½ Exclusions
- ½ Excess / Deductibles / Co-payment

*[One half mark awarded for each relevant example given, maximum 2 marks]*

½ Medical report / Claim information relating to the claim, which would include:

- ½ Claim notification date
- ½ Type of symptoms
- ½ Diagnosis if known
- ½ History of symptoms
- ½ Medical providers (specialist and hospital)
- ½ Treatment received so far
- ½ Date(s) of treatment
- ½ Length of hospital stay
- ½ Total costs of claim so far
- ½ Proposed further treatment (if any)
- ½ Date of proposed treatment
- ½ Total costs of claim so far
- ½ Estimated costs of further treatment

*[One half mark awarded for each relevant example given, maximum 2 marks]*

Checks

- ½ Check that all the policy information listed above are correct.
- ½ Check that all the claim information listed above are correct.
- ½ Check whether the condition is a pre-existing condition.
- ½ And that the claim is consistent with the policy provisions
- ½ Check that the applicant has signed the application. i.e. to conform that the policy is valid.
- ½ Check whether pre-authorisation has been obtained (if applicable).
- ½ Check whether the claim needs to be reviewed by the medical team.
- ½ If so, check with the medical team regarding the reasonableness of the costs.
- ½ Check whether there are any fraud/non-disclosure concerns.
- ½ Based on sales agent, region, hospital, region for example
- ½ Check if premiums have been paid
- ½ Check if treatment is recommended as a result of a GP referral
- ½ Check cost of procedure against policy T&C and against hospital price list
- ½ Check if claim is subject to any moratorium period

Further checks would be needed for certain types of claims, for example:

- Large / High cost claims
- Cancer claims
- Psychiatric claims
- HIV / AIDS claims
- Urgent cases (e.g. air ambulance medical evacuation)

*[[One half mark awarded for any relevant example given, maximum 1/2]*

[Max 5]  
[Total 19]

*In general, most candidates scored well on all four parts of this question.*

*In part (i) most candidates showed a good understanding of the purposes of underwriting and in part (ii) gave good description of the different types of underwriting listed.*

*Most candidates also scored well in part (iii).*

*In part (iv) most candidates gave a good range of information that would be required under the claims management process but only the better candidates gave a wide range of checks that would typically be required.*

**Q4**

(a)

The State promises a comprehensive system of medical services, but insurance can provide:

- a higher quality of service;
- choice over who treats the patient;
- choice over place and time for treatment;

- and possibly a significantly reduced wait for treatment.  
[One half mark awarded for any relevant example given, maximum ½] [½]

**(b)**  
The State provides a limited range of medical services [½]  
and leaves it to the individual to fund the balance. [½]

**(c)**  
The State provides everything for members of the population up to a certain salary/wealth level. [½]  
Healthcare insurance is obligatory for all those above this threshold. [½]

**(d)**  
The State provides certain healthcare procedures ‘free’ at the point of delivery. [½]  
Insurance is mandatory for all other procedures. [½]

**[Max 4]**

**(ii)**  
There is no single agreed definition / list of what is included in the “full range”. [½]  
E.g. is acupuncture / herbal medicine necessary? [½]  
Different approaches in different countries over what services should be provided by the state and what should be provided by individual [1]  
E.g. in the UK the National Health Service provides many health services (e.g. Accident & Emergency hospital departments) free of charge to all residents so there is no need to seek insurance cover [½]  
Or the State may provide cover at different ages or circumstances e.g very young (free dental treatment), the elderly free (flu vaccinations), pregnant women, disabled or low income individuals (free prescriptions), so these groups may not need fully comprehensive PM. [½]  
Lack of clarity on whether the state or the individual must make arrangements for cover. [½]  
PMI generally covers acute conditions, other products are designed to cover chronic conditions (such as critical illness, long term care insurance) or the State may cover these. [½]  
If PMI covered chronic conditions the cost may become unaffordable to many . [½]  
Economics: cost of PMI is expensive and considered unnecessary if the state delivers a wide range of health care. [½]  
Premiums too expensive: [1]  
E.g. In the USA, many health insurance plans include co-pays (deductibles/excesses) to allow the premium to be cheaper. [½]  
The very high costs of long-term nursing care in old age would make PMI premiums unaffordable so PMI policies are typically offered only to under-65s. [½]  
Hence there may be more budget policies sold which do not cover the full range of health and care treatments and services. [½]  
Personal provision: Simple, non-life-threatening conditions like coughs / colds / headaches can be dealt with by self care. [½]  
Insurers may be unwilling to take on full risk: Individuals who are assessed to be high risk during the underwriting process may have exclusions on their policy. [1]

If the PMI is a group plan, paid by an employer, the employer may have chosen a policy that does not cover everything.	[1/2]
Providers do not want to work with insurers: If there are a small number of providers for a specialist service, and these providers manage their business without accepting patients who pay via insurance.	[1/2]
Competition: competitor insurers may not cover certain conditions and so it is not necessary to offer a comprehensive range to be attractive / marketable.	[1/2]
The PMI product may have been designed to appeal to a niche market (not mainstream) and so would include only a selective range of treatments that best meet the needs of this market.	[1]
Fully comprehensive products may not be appropriate or affordable for a sufficient segment of population to make it commercially viable.	[1/2]
Possible market segments that may have particular appeal are	[1/2]
e.g. expatriates / employees / high earners / students.	[1/2]
The regulations and laws in some countries may not allow particular treatments and so there is no value in including them in a PMI policy	[1/2]
E.g. treatments or medicine	
Products that are considered experimental, or not fully proven to be effective, by the regulators.	[1/2]
Some rare conditions are viewed as being so unlikely that individuals are willing to accept the risk themselves.	[1/2]
Insurers may be unwilling to cover these because of the lack of data for pricing.	[1/2]
Some conditions are cheap to address	[1/2]
e.g. paracetamol for a headache / syrup for a cough/cold.	[1/2]
PMI insurance may be prone to high levels of fraud e.g. from policyholders or doctors or service providers.	[1/2]
	<b>[Max 8]</b>
	<b>[Total 12]</b>

*Part (i) which is bookwork was reasonably well answered.*

*Part (ii) was less well answered with only the better candidates providing a wide range of points. Few candidates mentioned the problems of there being no standard definitions, pricing difficulties, customer needs, the viability of fully comprehensive cover or the attitude of health care providers.*

## Q5

(i)

- Policy literature/ Terms and Conditions
- Marketing literature
- Any sales material including pre- and post- sales material
- Communication with policyholders, including what might be implied
- History and past practice of the company

- Published accounts/financial statements
  - Advertisements and press releases
  - Practices adopted by the insurance industry
- [1/2 for each point]  
[Max 2]

(ii) PMI

- Insurer may become insolvent [1/2]
- Long delay in claims being accepted/paid [1/2]
- Service standards very poor [1/2]
- Insurer does not meet contractual obligations [1/2]
- Change in lifestyle/policyholder needs and the policy cannot change [1/2]
- Medicine /treatment excluded from policy [1/2]
- Exclusion apply [1/2]
- Or limits on benefits paid out [1/2]
- Policyholder does not understand terms of policy coverage [1/2]
- Designated Hospital is far away [1/2]
- Claims not paid because they were not pre-authorised [1/2]
- Adverse changes in regulation, tax or legislation which result in policyholder not receiving what they thought they would get [1/2]
- Unexpected changes in PMI premium levels [1/2]
- Being refused cover at renewal [1/2]

[Max 3]

(iii) UL CI

- Illness not included in list [1/2]
- Illness not severe enough or not permanent to meet claim definition [1/2]
- Policyholder may not understand any survival requirement periods (e.g. need to survive for at least 28 days after diagnosis) [1/2]
- Expense charges and or morbidity charges increase faster than expected [1]
- Expense charges and or morbidity charges increase out of line with past practice [1/2]
- Lapse of policy if unit fund value becomes insufficient to pay for insurance charges. [1/2]
- Review basis/method or factors not set out clearly within policyholder documents [1/2]
- Premium reviews greater than expected (if reviewable) [1/2]
- Level of cover not sufficient for what was expected to cover due to inflation [1/2]
- Investment return from linked assets is poor [1/2]
- Unit pricing basis (tax or contracting/expanding basis) for unit-linked policies may be incorrect [1/2]
- Policyholder does not understand additional benefits (e.g. TPD) [1/2]
- Surrender values are low, either due to large surrender penalties or low unit values [1/2]
- Restrictions on switching funds [1/2]

[Max 3]

[Total 8]

*Most candidates scored well on parts (i) and (ii) of this question.*

*In part (ii) few candidates mentioned that the illness may not be severe enough to meet the claim definition or understand any survival period requirements or that premium reviews might be greater than expected (if premiums are reviewable).*

**Q6**

**(i)**

(a) Demographic factors

- Changes in the demographic profile of country with more people needing health care [½]
- or fewer people paying tax [½]  
For example:
- Changes in net migration, where the number of residents at older ages has increased [½]
- .... but less so (or net out migration) at younger ages, increasing health care costs but contribution to tax system is less.... [½]
- .... Or loss of highly paid residents who contribute more to tax system than they cost the State health service [½]
- .... Or healthier people tending to emigrate [½]
- Residents living longer so greater proportion of the residents is older and cost of medical care increase with age.... [1]
- ....and further into retirement where tax is lower than if working [½]
- Worsening population health e.g. due to pollution or climate change [½]
- Birth rates have dramatically increased so increase in population without an increase in tax in the short term [½]
- Changes to employment patterns – people work for shorter part of life, join work force later, and/or leaving work earlier. [½]
- Number of people working and paying tax has fallen e.g. due to structural changes in job market or long recession [½]
- Increased propensity to use the health service [½]

**[Max 3]**

(b) Other factors

- New expensive medications being used [½]
- New advanced medical treatments being allowed (eg IVF) [½]
- Better screening leading to a need to treat problems that the health service/people were previously unaware of [½]
- New illnesses [½]
- Increased inflation of medical costs more than general salary inflation [½]

- Modernisation of the hospitals [½]
- Increased costs due to medical practitioners’ salaries [½]
- Reduction in taxation due to government policy [½]
- Political pressure to improve the quality of healthcare [½]
- Increased unemployment [½]
- Benefit tourism [½]
- Less efficiency / more waste [½]
- Increase in immigration and travel bring new diseases to country. [½]
- PMI more expensive so less use of private hospitals [½]
- More market focused approach to providing healthcare [½]
- Changes to lifestyles – e.g. increased smoking, drugs, obesity [½]

**[Max 4]**

**(ii) Funding Situation**

- Government accepts costs are increasing and increase taxes [½]
- Reduce the cost of the State health service by rationing [½]
- ..... by funding less expensive treatments [½]
- .....or reducing those residents eligible for the State health service (e.g. minimum 1 year residence requirement) [½]
- Improve efficiencies in the State health service [½]
- Reduce service so increase waiting times [½]
- Educate the public on ways to stay healthy e.g. diet, exercise [½]
- Take steps to encourage or compel private health provision.... [½]
- .... achieved by tax incentives for purchasers [½]
- .... and providers [½]
- .... and regulation e.g. make certain private healthcare compulsory [½]
- Withdrawing some forms of care – e.g. mental health [½]
- Introduce specific health charges [½]
- Introduce more means testing to access certain healthcare [½]
- The State might stop providing health services entirely [½]
- Move from PAYG to a funded system [*A comment that this will increase costs initially but may provide greater certainty/control on costs was required for credit to be awarded for this point.*] [½]

**[Max 4]**

**[Total 11]**

*In general, most candidates scored well on both parts of this question, providing a wide range of points in each case.*

**Q7**

**(i)**

Describes the policy condition whereby the insurer is responsible for the first £x or \$x of any claim. [1]

It may operate not on individual claims but on the aggregate of claims over a policy year, [1]

or be applied per life or per policy. [½]

**[Max 2]**

**(ii)**

A stability clause may be used where inflation could have a significant effect on the cost of claims [½]

Or where benefits provided are increased by indexing [½]

To preserve the real value of the reinsurance cover, [1]

The excess point is indexed in line with a suitable inflation index to achieve a more equitable division between the reinsurer and the cedant of the inflationary element of the claim, [½]

Indexing the lower limit reduces the reinsurance premium as the reinsurer will not have to deal with the smallest claims, [½]

Indexing the upper limit ensures that the treaty continues to cover large claims, [½]

This also reduces or eliminates the need to renegotiate reinsurance each year, [½]

**[Max 2]**

**(iii)**

	Sum assured	Excess points	Inflation
01/01/2016	50000	10000	2.9
		40000	
01/01/2017		10290	1.5
		41160	
01/01/2018		10444	
		41777	

½ mark for 10,444, ½ mark for 41,777 [1]

To policyholder 50,000 [½]

Reinsurer pays 31,333 (= 41,777 – 10,444) [1]

Insurer pays 18,667 (= 50,000 – 31,333) [½]

*[1 mark was awarded for one of the insurer/reinsurer amounts being correct and an additional half mark for the other being correct. Credit was given for answers which are incorrect because of an earlier error, but otherwise correct if the error was assumed to be correct.]*

**[Max 3]**

**(iv)**

To policyholder 50,000 [½]

Insurer pays full amount of 50,000 [1]

Nothing is paid by the reinsurer [½]

[Max 2]  
[Total 9]

*In part (i) only the better candidates mentioned that the excess/deductible may operate on a claim or, alternatively on the aggregate of claims over a policy year or be applied per life or per policy.*

*Part (ii) was not well answered with only the better candidates discussing the objective of maintaining the real value of the reinsurance. Few candidates discussed using a stability clause to limit the number of small claims needing reinsurance or reducing the need to renegotiate the reinsurance every year.*

*Part (iii) was generally well answered. Some candidates assumed that the sum assured was index linked, although the question does not state this – in this case credit was given if calculations for the insurer/reinsurer were split correctly based on the index linked sum assured calculated.*

*There was an error in part (iv); this should have asked how the answer to part (iii) would change rather than the answer to part (ii). Whilst most candidates assume the reference was to part (iii) candidates who answered this question assuming reference to part (ii) were given credit for any sensible comment.*

## Q8

### (a) Product / Customer identification

The insurer could analyse the trend in spending of customers through banking data and identify any insurance gaps. [1]

Data analytics could help identify customer segments and needs through lifecycle. [1]

Data analytics allows insurers to evaluate the combination of policyholder characteristics and life events. [½]

The evaluation helps insurers to assess policy lapse / persistency propensity, and [½]

The propensity to purchase additional products. [½]

Examples of purchase (and lapse) triggers include:

- Marriage / Divorce
- Birth or adoption of a child
- Death of a close relative
- Purchase a new home
- Starting a new business
- Changes in jobs
- Changes in job benefits
- Changes in personal finance
- Retirement
- Working overseas

*[One half mark awarded for each relevant example, maximum 1 mark]*

Can be used to identify people who can actually afford the cover by looking at their bank accounts. [½]

Data analytics could help the insurer to analyse customer spending on competitor products. [½]

The analysis could indicate which competitor products are attracting the most customer spending, and [½]

How much competitors are charging for those products. [½]

**[Max 2]**

**(b) Customer experience**

Data analytics could help the insurer to tailor communication to customers [1]  
And how to target them (e.g. online advertisements on Facebook, a TV campaign). [½]

This could be achieved through analysing customer digital experience. [½]

The analysis could then help the insurer to understand sales style and digital behaviour for each customer based on their historical interactions and website experience. [½]

Data analytics could enable the insurer to have active interactions and anticipate customer needs. [1]

Customer experience could then be enhanced through timely advice based on their profile. [½]

Can link policy straight to their bank account so no need to set up payments. [½]

The insurer will be able to intervene and influence customer behaviours if any early indication of changes in individual insured risks is identified. [½]

Data analytics could ensure accurate evaluation of customer needs to reduce the risks of under or over insurance. [1]

Customer experience is enhanced as there will be lower possibility of surprises at the claim stage. [½]

**[Max 2]**

**(c) Underwriting / pricing**

Data analytics could be used for automated underwriting, which helps simplify the underwriting process with no human interaction unless it is flagged as a complicated case. [1]

Data analytics can be used to pre-fill application form. [½]

Banking data could be used for risk classifications, allowing more accurate rating for each individual customer. [½]

The insurer also then has greater ability to select the preferred risks. [½]

Data analytics could be used to identify health indicators/risk factors e.g. through: [½]

- Customer spending on medicines / medical treatments [½]
- Spending on tobaccos and alcohol [½]
- Spending on gym membership and health products [½]
- Health statistics and level of exercises through wearables [½]

Can offer special benefits to attract certain people and target these (e.g. discounted gym membership to people keen on going to a gym and/or who are not current members). [½]

Social media could be used for identifying any changes on smoker status, drinking habits. [½]

Facial recognition devices could be used for verifying age, gender, BMI, evidence of smoking etc. [½]

Rolling sum assured relating to critical illness policies to be based on mortgage, income

or annual outgoing. [½]  
Automated premium size based on income for income protection policies. [½]  
Identify level of lapse risks through customer risk-taking activities such as bank overdrafts, tendency to move across different products. [½]  
**[Max 2]**

**(d) Claims management**

Predictive analytics could help reduce claim processing time. [1]  
Faster claim process would in turn enhance customer experience. [½]  
Improved consistency of claims processing. [½]  
It could help identify data factors and apply machine learning to identify false / fraudulent claims. [1]

For IP can check replacement ratio by looking at salary and other income coming into bank account [½]

For private medical insurance, it could help identify those claims that have severity potential early on. [½]  
This could enable the insurer to employ early intervention strategies / actions on the right claims. [½]  
**[Max 2]**

**(e) Reserving / experience analysis**

Data analytics could help the insurer to develop more efficient and faster reserving processes. [1]  
This could be achieved through automating modelling inputs, outputs and workflow. [½]  
Data automatically pushed through actuarial models using pre-defined rules. [½]  
Expert manual actuarial judgements are then only limited to material review points, thus saves time. [½]  
Automation of data extract and reconciliation processes. [½]  
Automation of experience analysis and assumption setting. [½]

Automation of model point production process if model points are used for reserving. [½]

Automation of capital model runs or reserving across a number of different metrics. [½]  
Large volume of historical data could be processed to enable more granular experience analysis to be conducted [1]  
E.g. by detailed customer segmentation. [½]

Predictive analytics could help to predict future trends implied in historical data more accurately [½]  
And spot trends sooner than otherwise. [½]

**[Max 2]**  
**[Total 10]**

*This question, which required candidates to apply their knowledge to a particular situation was not well answered (in particular parts (d) and (e)). The better candidates who grasped the extent of the data available to the insurer included a good range of relevant points.*

**END OF EXAMINERS’ REPORT**