INSTITUTE AND FACULTY OF ACTUARIES

EXAMINERS' REPORT

September 2015

Subject SA3 – General Insurance: Specialist Applications

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.

F Layton
Chairman of the Board of Examiners
December 2015

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

1. The aim of the General Insurance Specialist Applications subject is to instil in successful candidates the ability to apply knowledge of the United Kingdom general insurance environment and the principles of actuarial practice to providers of general insurance in the United Kingdom.

2. Consistent with previous examiners' reports, we would offer candidates two key pieces of advice – (i) read the question properly and (ii) take the time to actually think about what is going on. Further to previous reports, we would stress that candidates do not need to get the majority of the points included in this report in order to pass (there are significantly more than 100 marks available for the points in this report). Time spent making sure that you are answering the question that is asked is therefore more valuable than a panicked rush to put down as many points as possible, regardless of whether they are relevant.

3. On the first issue, candidates should always work on the assumption that the question wording has been carefully chosen. It is therefore essential to read the question properly.

4. If something is not asked for then candidates will waste valuable time writing answers that will gain no marks. These broader answers may be a logical next step to the question and so may be appropriate for candidates to discuss in a professional context. This is an exam however with a finite number of marks available and so the scope must necessarily be limited and specifically defined.

5. If a question does specifically mention something, candidates should also assume that there are definitely marks available for this aspect of the question. During the exam setting process, any content that is superfluous will have been removed. A clear implication of that is that if there are numbers provided in the question paper then there are marks available for comment and consideration of those numbers.

6. Wording of question sections should also be considered in the context of the position within the overall question. Where new question information is provided between sections, candidates should recognise that this information is specifically relevant to the following section or sections. When answering preceding question sections, candidates should not consider any subsequent information in their answers (although it may cover similar ground).

7. Various examples from this paper of recurrent failure to read the question are noted below. On the second issue, candidates should note that SA3 is the key paper at which we test candidates' broader thinking. This is generally the final paper before qualifying as a professional, and we consider a capacity for broader thinking to be one of the best indicators of a candidate's suitability to act in a professional capacity once qualified.

8. As such we aim to design exam papers so that it is difficult to pass without displaying some capacity for independent and broad thinking, as well as to heavily reward instances where these skills are displayed. When reviewing past papers, candidates should assume that the marks available for generic points are substantially less than those awarded for the more challenging points that would be the mark of high quality

professional insight in a practising actuary. Marks available for list items from bookwork are lower still.

9. We strongly recommend that candidates step back and take the time to thoroughly think about what is actually going on in question situations proposed rather than simply considering numbers to be analysed with standard techniques. For example, candidates might stop to think about what claims actually are for a particular class of business, considering factors such as what actually causes the claim, who brings the claim, how it is dealt with once brought, what makes one claim small while another is substantial etc.

10. This more grounded, real world perspective will help candidates to consider such things as practical issues, stakeholders involved and their potentially diverging objectives, wider impacts, regulatory or ethical issues, inappropriateness of certain actuarial techniques for the specific situation, current economic or cyclical effects etc. This is likely to lead to significantly broader point generation (and indeed reflects the thought processes of the examiners in drafting the questions and solutions) and a more rounded understanding of the underlying risks and dynamics which should also be of value to candidates when dealing with different stakeholders in their professional life.

11. Again, some examples of this failure to think more widely on the current paper are below. More generally, we would also advise candidates to employ basic exam techniques such as well structured answers and effective time management.

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

Performance on this paper was mixed with candidates scoring best on question 1 with similar but poorer performance in questions 2 and 3. In line with previous SA3 exams, a significant number of candidates undermined their performance in the examination by providing generic or off-topic answers. Specific observations are provided by question throughout this report.

C. Comparative pass rates for the past 3 years for this diet of examination

Year	*%*
September 2015	38
April 2015	33
September 2014	31
April 2014	45
September 2013	42
April 2013	36

Reasons for any significant change in pass rates in current diet to those in the past:

The pass rate for this examination diet is within the normal range for this subject. Some variation in the pass rate between sessions is expected as different cohorts of students sit the examination.

When using this report for exam preparation, candidates should note the following:

- There are significantly more than 100 marks available.
  - It would be extremely unlikely for any one candidate to single handedly come up with the collective range of valid points accumulated across the setting team, institute staff and assistant examiners (>10 qualified actuaries).
  - Even if a candidate somehow could come up with all the points on offer nobody has fast enough handwriting to actually get them all down on paper.
  - The marking schedules also tend to contain open ended marks for other sensible comments in some sections where they are deemed necessary.

- As such these should not be viewed as "model answers".
  - We provide the full range of valid points considered by the team involved to provide the best possible material for candidates to use for their own personal learning.
  - In general the points on the schedule or similar equivalents should continue to be valid in similar questions for future exams (unless the specific question situation is designed to render those points invalid!).

- Judgement should be exercised when determining which are key points.
  - In general this report will show key points first, although it also aim to group points into broad categories for clarity so some supplementary points within a section may appear before key points from a different category.
  - However the points which are particularly key on similar looking questions may vary, where the design of the question / situation posed emphasises one aspect over another.

- We also provide a more comprehensive wording to answers than would be required in the exams.
  - Again this is to support use of the reports for candidate's own learning, hopefully making it easier to understand the points being made.
  - In the exams, candidates can write more concise answers and only need to write enough for it to be clear to the marker that they have grasped the point.
  - Excessive brevity is not advised however, outside of "list" command words a single word response will rarely be sufficient to demonstrate any meaningful understanding to examiners.

- The general style of the report is to be encouraged, namely:
  - Clear bullet point type answers, splitting separate elements of a point into different lines even where this means breaking mid-sentence. Candidates that write rambling paragraphs with multiple points put significantly more pressure on markers to

accurately identify that they have covered several points and usually score less well as a result.

- Grouping into broad categories for longer questions. It is surprising when candidates do not do this even when the question itself sets out the categories to use. Candidates that do not take this clear cue tend to perform less well on those questions.

Solutions

Q1 (i) **Standard rating factors**

Household

Any 6 relevant standard household rating factors e.g.

- sum insured
- number of rooms
- location
- flood risk
- the voluntary or compulsory use of excesses
- Type of cover
- No claims discount
- whether there is any business use of the property
- whether the policyholder owns or rents the property
- if the property is normally unoccupied during the day
- whether it is a house or flat or some other construction
- type and standard of construction
- age of the building
- type of locks and/or burglar alarms fitted

Motor

Any 6 relevant standard motor rating factors e.g.

- type of cover
- policy excess
- the use to which the vehicle is put
- the age of the vehicle
- No claims discount
- the occupation of the policyholder and other drivers
- whether there are additional drivers of the vehicle as well as the policyholder
- sex of main driver
- age of main driver and other drivers
- whether or not driving is restricted to certain named drivers
- make and model of vehicle
- the extent of any modification to the engine or body

- location of policyholder
- where the vehicle is kept overnight: on the road, on a driveway in a garage and so on

(ii) **Additional rating factors for big data**

Telematics supported rating factors which were previously unobservable (risk factors not rating factors) – Motor

- the number of miles driven
- the density of the traffic where the car is driven
- where the car is driven: town/city, countryside, motorway
- time of day the car is driven
- the speed at which the vehicle is usually driven and its general level of performance
- the theft risk based on precise locations not just home
- the manner in which the car is driven
- any other relevant big data / telematics motor rating factors

Telematics supported rating factors – home

- house occupancy (based on energy usage)
- water usage
- security systems installed as insurers will know whether this is being used when the house is unoccupied

Other rating factors – motor or home

- using social memberships or social media "friends" to detect fraud risk/associations with high risk individuals
- number / type of store/loyalty cards
- tweets regarding social habits
- membership of online network groups
- search history to supplement policyholder profile
- shopping habits
- any other relevant big data household rating factor

(iii) **No control**

Some items are clearly outside of the control of the policyholder e.g. sex of main driver, age of policyholder and other drivers, number of no fault claims, excess not permitted on compulsory insurance.

Low degree of control

Some items are within a limited degree of control of the policyholder e.g. marital status, time and day of driving, type of road, credit score for a given socio-economic group.

High Level of control

Some items are likely to be very much in the control of the policyholder e.g. type of cover, voluntary additional covers, various online activity and behaviour, criminal record, make and model of car, extent of modifications to engine or body.

Ambiguous

For most factors it is unclear the degree of control and whether these would be permissible.

It is unclear the extent of control policyholders have over the value of a house/number of rooms/location
… as extent of control may depend on other factors such as wealth, work requirements, size of family, location of school, state of the housing market.

The degree of control over whether to rent or buy may also depend on wealth, age, culture, availability of properties, economic conditions.

At an individual level purchasers may choose to buy a property in a flood zone

…however if there are a shortage of homes (for example like in the UK) and new homes are being built in flood zones then policyholders are being forced to buy in flood risk area.

Likewise the definition of a flood risk area might change over time
…would the regulator consider this at the policyholders' choice as in theory they could choose to move.
Many policyholders may already live in a flood plain…
. . . and if the home were to become essentially uninsurable may be unable to move.

Policyholders may have some choice over whether their house is left unoccupied
…but this might be related to their employment or care responsibilities and therefore may not be easily controlled.

Basic security measures are generally within the control of the policyholder
…such as installing window locks, joining neighbourhood watch schemes
…but the decision to install sophisticated monitored alarm systems, expensive door locks may only be a choice for the more wealthy.

The decision to include additional drivers may be out of necessity or could be for social or convenience reasons.

Policyholders may have some choice over where/when they drive
…but this may also be affected by factors outside their immediate control (but within their ultimate control) for instance their employment.

It is arguable whether a policyholder's driving ability is within their control
…there may be an element of innate ability
…an amount which can be impacted by training
…an element of choice over factors such as speed , acceleration and braking activities.

It is not clear the extent to which a policyholders past claims experience is within their control, could be due to lack of care, level of litigiousness, bad luck, attitude to risk.

Some factors such as occupation, location, business use may be more controllable in the long-term but can be out of their control in the short-term.

Though some factors may be theoretically under the control of policyholders, e.g. gender, if the only motivation to change these were cheaper insurance then they would be effectively out of the policyholder's control.

Additional marks available for sensible discussion of other ambiguous rating factors.

(iv) ***The impact on policy holders of the ruling:***

- will depend on the how the rating factors are determined in accordance with part (iii).
  Policyholders who benefitted from lower prices as a result of factors out of their control will have to pay more for their insurance. This would include:
  - older drivers who have fewer motor claims due to typically being more experienced and cautious.
  - female drivers who tend to have better motor claims experience than men.
  - owners of houses in safer neighbourhoods or low risk flood areas.
- Policyholders for whom insurance was previously unaffordable may find that it is now affordable especially:
  - new drivers due to higher claim costs arising from lack of experience.
  - young drivers
  - policyholders who have had multiple no fault claims.
  - homeowners in flood zones
- Policyholders may find that the choices they may regarding factors in their control have a greater differentiating impact on the cost of their insurance.
- Policyholders may decide to move insurer as a result of the changes either because the change in premium motivates them to shop around or in protest at learning that their personal data was used in this way.
- Policyholders may be emotionally impacted by the change:
  - Some policyholders may feel angry the ruling does not go far enough.
  - Some may resent having to pay more for their insurance as a result of the changes.
  - Some may be confused by the ruling.

- Some may be angry to learn that insurers were previously making such intrusions into their privacy.

Many candidates identified sensible groups but needlessly lost marks by failing to precisely state the impact.

The impact on insurers of the ruling:

- Insurers will need to reparametrise their rating engines.
- There will be increased premium risk as the whole market is changing their rating algorithms and rating factors at the same time so a single insurer may find themselves out of line with the market which could be advantageous or disadvantageous.
- Depending on customer retention levels individual insurers could have a legacy advantage for example:
  - Products previously targeting female drivers may have a higher number of female drivers at renewal despite not using gender as a rating factor.
  - As female drivers tend to have lower claims cost the resulting portfolio will have a lower claims cost and the insurer may therefore be able to charge less than other insurers with more male policy holders.
  - Equivalent comments also on age or other factors outside control.
  - However, insurers relying on this could be subject to anti-selection if policyholders are able to switch easily between products.
  - Insurers may find that some permissible rating factors prove to be proxy measures for banned rating factors for example number of store cards could be a proxy for gender (or other appropriate example).
- Insurers will have to consider their conduct risk appetite for selecting such rating factors and also whether indirect proxies are allow by the regulator.
- The policy is likely to be unpopular with insurers.
  - They may have invested in accessing data sources
  - or in analytical capabilities
  - therefore there may be a high degree of lobbying against the new rules which will consume time and effort.
  - this could delay consultations and ultimately implementation with increased costs for all stakeholders.
- Underwriting cycle may be more pronounced if insurers have less information available to rate risks or the ruling impacts the level of competition or available capital due to changes in the attractiveness of the market.
- The type and amount of reinsurance may change if insurers seeks to cede away some of the additional premium risk and uncertainty.
- There may be changes to reserving due to changes to data grouping, quality, granularity and margins for uncertainty.
- If insurer sells worldwide policies or in other countries they may find themselves at a disadvantage to local insurers who are not bound by this ruling.

- Business mix may change or pricing may be out of line with the current business mix.
- Large insurers with significant volumes of data may be more resilient to the change if they have strong analytical capabilities and sophisticated rating models.
- The change will impact profitability which may have additional knock-on effects e.g. capital requirements, solvency, dividends, tax.

The practicalities of enforcing the ruling:

- It will be difficult to set the criteria by which factors are deemed to be "within policyholder control".
- It will be difficult to determine how the regulator could monitor implementation.
  - The regulator may not currently require insurers to submit rating factors or profiles to them.
  - They may not have the systems to collect this information across the market.
  - There will therefore be a cost involved.
  - They may need to increase staff and/or training for staff.
- The regulator will need to be aware of some rating factors being used as proxy rating factors for banned rating factors.
  - For instance in the UK gender is not an allowable rating factor however number of store cards is.
- Increased number of disputes between insurers and regulators and potential increase in treating customer's fairly issues.
- Increased costs for insurers and regulators alike:
  - Implementation costs
  - Monitoring costs
  - Regulation and enforcement costs
- It would be impractical to require insurers to make the change without sufficient notice as it will take time to implement the change e.g. lead time on changing systems, rating tables, training and broker communications.
- It would be impractical to require insurers to implement the change during a policy term so waiting until renewal will delay the time until all policyholders are free from the influence of these factors.

Whether the social purpose and benefits of insurance are met under each scenario:

Insurance is designed to pool risk where events are uncertain.
…which at its extreme means charging everyone an average premium
…though it is generally accepted that it is ok to change a higher premium for higher risk.

- As insurers gather more data they are able to better segment the policyholder portfolio and charge an appropriate price as deemed by the expected claim cost.
- However, increased segmentation ultimately leads to a lack of risk pooling.

- It maybe that some elements of society become priced out of the insurance market.
- This may increase the number of people driving uninsured
  …or running the risk of financial ruin if they have a serious burglary, weather event or fire in their home.
- If insurers are restricted in their choice of rating factors premium risk will increase leading to increased premiums which may result in insurance becoming unaffordable for some socio-economic groups.
- The use of additional data in isolation does not reduce overall insurance premiums it just shifts the profits from those premiums to the insurer with the better model.
- Investment and research into data mining and data analytics could help drive improved risk management.
- Identifying and communicating the factors which may make a claim more likely – those that are within the policy holder's control allows the insurer to educate the policy holder to take less risks.
- This could be through:
  - changes to policy terms and conditions – e.g. exclusions.
  - changes to pricing based on factors within the insureds control.
  - informing wider stakeholders such as government and police so that policy can be changed:
    - e.g. more appropriate speed limits.
    - changes to the minimum driving age.
    - changes to driving courses/testes.
    - or other similar examples.
- This would ultimately reduce the overall claim costs to society as a whole. Correspondingly benefiting all policy holders.
- This investment is only likely to occur if insurers can use the results to price competitively and extensive restrictions on rating factors may discourage the investment.

Many candidates failed to identify the social purpose and benefit of insurance, even though it was alluded to in the question, making it difficult to score well in this section.

(v) Will depend significantly on other competitor's behaviours
…and the time between the company acting and the voluntary code coming into force.
If they are the only company to take this stance then their rating factors will be out of line with market competitors
…as they will be less granular and using less information than the market it is likely to lead to substantial anti-selection
…and competitors will be able to leverage extra data to select the better risks.

This company won't be able to discern between then better risks (where it is driven by 'big data') and so will have to:
…charge an average price for all risks
…meaning that the better risks will find competitors cheaper

…and this company will be left with worst risks which are underpriced at the average rate.
Impact of this will depend on factors such as:

- Loyalty / apathy of existing customers, customers might not switch therefore company will keep "good" and "bad" risks so can charge an average price.
- demographics of target market/existing portfolio – for instance if their target market is already "good" or "bad" risks they might already be charging the market price based on historical performance of the portfolio .

- This is unlikely unless they have a particularly niche portfolio.

If other companies choose to also voluntarily adopt the code then the impact will be less significant.

It may take time to build a credible customer history which combines claims data with 'big data' underwriting information. The impact of the decision may therefore take some time.

The company's image may be improved if customers approve of its voluntary decision this may improve its brand loyalty helping to retain better risks.

The company may decide to invest in other areas to combat the loss of rating factors:
- e.g. more advertising to improve brand loyalty.
- more focused target markets to attract better risks.
- more innovative underwriting methods – e.g. friendship pools, where friends by a single policy and share loss experience.

Other relevant impacts also acceptable.

Part (i)	This was a standard bookwork question and was generally well answered. Some candidates lost marks through carelessness. Even though the answer calls for a list, care should be taken to not give single word answers where ambiguity is possible e.g. age rather than age of main driver and other drivers.
Part (ii)	This was well answered by candidates who included a brief justification for selecting the factors rather than simply listing social media or big data keywords.
Part (iii)	Better candidates recognised that the question called for a discussion of the extent to which rating factors were within the control of policyholders and that the majority of marks were available for factors where there was underlying ambiguity. Poorer candidates simply stated whether they believed the policyholder had control over a particular factor. Some appeared

	to misunderstand the question and thought it required them to state whether a policyholder could manipulate the factor by changing their online behaviour.
Part (iv)	See separate comments within solution.
Part (v)	Overall this question was well answered. However, many candidates misread the question thinking the proposal related to the prohibition of big data. These candidates missed many key points as a result.

Q2 (i) An agreement under the Lloyd's system of three-year accounting.

As an annual venture, a Lloyd's syndicate takes on business for just one year.

Under RITC the underwriting members (the reinsured members) for one year of account (the closing year) of a syndicate
…agree with another party (the reinsuring party) that the reinsuring party will assume responsibility for handling and paying all known and unknown liabilities of the reinsured members
…arising out of insurance business underwritten by the syndicate and allocated to the closing year.

The reinsuring party will usually be the subsequent open year of the same syndicate
…if the syndicate is re-formed in the following year the same members generally have the first opportunity to join that successor syndicate
…but could also be a later open year, an open year of another syndicate or a reinsurer outside Lloyd's.

Comment on whether RITC is really reinsurance.
It is legally a transfer of assets and liabilities from one group of members (the ceding syndicate) to another (the receiving syndicate).
Once RITC could only be accepted by another syndicate, but since 2007 the Lloyd's subsidiary, Centrewrite, has been permitted to accept a RITC from a syndicate.

The status of RITC as a transfer of assets is important, as it allows the members of the ceding syndicate to separate themselves totally and irrevocably from the insurance liabilities of that syndicate.
…This legal situation is specific to Lloyd's.

Under RITC, the managing agent of the ceding syndicate calculates a sum of money that is appropriate to meet all future liabilities and expenses, and the managing agent of the receiving syndicate likewise makes the same assessment.

Since managing agents are legally agents of the members of the syndicates that they operate, and must represent the interests of those members, they need to ensure that the RITC is fair.

Managing agents are required by Lloyd's to close syndicates by RITC at the end of the third year, if they can do so
There are two main causes of inability to conclude RITC: fundamental uncertainty and lack of a receiving syndicate.
The term is also sometimes used to refer to the premium paid to the reinsuring party by the reinsured members.

(ii) **Fundamental uncertainty arises**

It may happen that at the end of 36 months the uncertainty surrounding some of the liabilities or outstanding exposures is too high for the syndicate to be closed.

Examples of this are:
- large unresolved reinsurance disputes.
- claims that are under dispute.
- the influx of many late claims.
- or potential reinsurance failures.

Specific examples include: Atlantic hurricanes 2005, 2008 and 2012; hours clause disputes; "slab" disputes, consequential loss claims

Effect on RITC

If the fundamental uncertainty is removed within 36 months of the start of the underwriting year then there will be no impact on the RITC
…e.g. the 2009 underwriting year experienced fundamental uncertainty until the start of 2010 but as this occurred before the syndicate closed it had no impact on the RITC
…which was paid into syndicate 2010 as normal.

If it remains then the fundamental uncertainty can prevents the RITC process taking place after 36 months
…e.g. the 2007 syndicate did not close at the end of 2009
…and therefore no RITC premium was paid into the 2008 syndicate.

However, after the passage of more time, the uncertainty may be resolved and the RITC may become possible one or more years later
…e.g. the fundamental uncertainty for the 2007 syndicate was resolved at the start of 2012 the syndicate was able to close at the end of 2012 with an RITC payment into the 2011 syndicate.

Meanwhile the syndicate remains open and is treated exactly like any other open syndicate

. . . although the syndicate may well receive additional attention and oversight, particularly from Lloyd's open year management team.

The actuarial certificate will also indicate extreme uncertainty or may even be qualified.
The audit report will indicate if a syndicate is subject to fundamental uncertainty

There is no subsequent open year to accept the RITC premium from the 2013 year and the conditions which lead to the syndicating ceasing may also impact the fundamental uncertainty for this year.

(iii) The analysis will depend on the nature of the catastrophe exposed business.

If the syndicate is exposed to catastrophes at a working layer, i.e. relatively small amounts, then it may be able to use:

- stochastic reserving methods
- analytical model based on specified distributions e.g. Mack model.
- simulation methods e.g. Bootstrapping the over dispersed Poisson model.

However, these methods relay on large volumes of data to parametrise the uncertainty models
…and as such they are generally inappropriate for catastrophe exposed ranges.

A top-down approach could be used particularly if the uncertainty is due to few losses being notified in the immediate aftermath of an event or to validate a more sophisticated bottom-up approach.

A bottom-up approach could be employed by reviewing notified claims allowing for IBNR or reviewing each exposed policy written and estimating likelihood of claim and severity, working with the claims department to come up with a range of possible outcomes.

Approaches will ultimately depend on the cause of the uncertainty.

These methods may also be used with:

- scenario testing:
  Useful where there is large uncertainty on one or two large policies
  …or where the reinsurance recoveries are in dispute

It can be used if the number of underlying claims or exposed policies are unclear and can be performed in conjunction with in-house or proprietary catastrophe models used for capital modelling.

- stress testing:
  where a model (e.g. top down or bottom up) has been used to derive the central estimate, stress testing of the parameters can be used to understand the sensitivities but also to produce a range of likely outcomes.
- sensitivity testing:

to identify the parameters that have greatest impact on the result and therefore the most important to focus efforts towards identifying and quantifying uncertainty.

In considering the fundamental uncertainty of the loss to the syndicate it is also necessary to consider the uncertainty of the event in the context of:

- it's materiality to the overall syndicate
- whether the uncertainty of the loss itself is higher than the uncertainty in the remainder of the syndicate
- whether the combination of the materiality of the loss and it's relative uncertainty to the rest of the syndicate is sufficient to increase the overall level of the syndicate.

To consider these it will be necessary to:

- quantify the loss and the uncertainty.
- calculate the uncertainty in the remainder of the syndicate excluding the loss.
- consider the overall combined uncertainty level.

(iv) Funds at Lloyd's: Each member must provide an amount of capital specified by Lloyd's.

The capital is held by Lloyd's in trust, and Lloyd's has absolute authority to use it to pay claims or other liabilities arising from the member's activities at Lloyd's.

In line: A member is in line if his or her FAL is at least equal to Lloyd's capital requirement.

The requirement is based on an individual capital assessment (ICA) with a 35% uplift.

Ordinarily there is a minimum capital requirement of 40% of the member's capacity.

In this context, "capacity" is (in most instances largely in line with) the maximum premium, gross of reinsurance, but net of commission, that the member is permitted to underwrite in the current year.

Solvency deficit: If the liabilities, including claims reserves and incurred but not reported (IBNR) claims, in an open syndicate exceed the Premium Trust Funds (PTFs) of the syndicate, members suffer "solvency deficits".

Coming into line: If the member has failed to come into line that means that the member's FAL less solvency deficits are less than the Lloyd's FAL requirements.

Lloyd's is able to sanction members who are not in line by limiting or stopping their underwriting.

As this Syndicate has already stopped underwriting voluntarily Lloyd's cannot compel the member to lodge further FAL (unless they are also participating on other syndicates) and there is no immediate impact on the Syndicate.

However, if the Syndicate wished to commence underwriting in the future it would need to do so without this member.

If the member is one of the rare legacy names with unlimited liability, their capital contribution could be sought by Lloyd's through pursuit of their personal assets.

The central fund would potentially be exposed to any losses not covered by the member who has opted not to come into line.

This may lead to indirect impacts on the managing agency through increased regulatory oversight.

Part (i)	This was a standard bookwork question and well answered by most candidates.
Part (ii)	A frustratingly large number of candidates gave a generic answer without any reference to the specific information provided in the question. Many did not refer to the table provided and focused on the distribution of profit/loss despite the question relating to the impact of uncertainty on the RITC process. It seems that some candidates did not understand what was meant by catastrophe exposed business and believed it to include any business which could suffer catastrophe losses. Such candidates lost marks by providing examples relating to long-tailed business, latent claims and terrorist attacks.
Part (iii)	This was the worst answered section of the paper. Weaker candidates failed to appreciate the significance of the nature of the business, the limitations of historical data and the fundamental uncertainty context. Candidates who wasted time describing standard reserving techniques or expense investigations did not score well.
Part (iv)	As with part (ii) a significant proportion of students provided a generic answer. Many suggested that the member would need to come into line is they wished to participate in the syndicate's next underwriting year in spite of the syndicate ceasing to write business at the end of 2013. Curiously some students seems to think the setting for the question was the end of 2013 even though there was information provided to the contrary. Some seemed to lack basic Lloyd's knowledge suggesting that the

credit rating of the syndicate could be affected or that syndicate members had joint liability.

Q3 (i) Prescribed formula is a "one size fits all" approach, so is unlikely to fully reflect differences in risk between insurers.

If a prescribed formula has been in place for many years, it may no longer be a good measure of the nature of risks to which insurers are exposed.

With prescribed formulae, there are generally only a small number of categories of business or asset for which assumptions are provided.

The factors themselves may no longer reflect observed volatility levels.

An internal model can consider a wide range of scenarios and return periods.

Gives confidence to the regulator and the market that they are using sophisticated modelling techniques.

It may be consistent with how requirements they have in place for other areas of the financial sector e.g. banking.

They are more adaptable and therefore capable of reflecting changing risk.

Regulator will like that it makes the most of an insurer's expertise and knowledge.

The level of risk will vary significantly between different insurers, reflecting classes written, types of insured covered, limits offered, level of reinsurance purchased, matching between assets and liabilities (or other relevant examples).

The model should be more relevant and complete through the more sophisticated treatment of areas such as underwriting, reinsurance, credit risk, market risk, operational risks, correlations, etc.

The regulator may desire the additional discipline required by companies who operate an internal model.

Modelling underwriting and asset risk together allows insurers to consider any correlation between the underwriting result and investment return.

By preparing an internal model, the understanding of risk / sophistication of insurers may increase.

This may allow insurers to better identify the key drivers of risk in the business.

This will allow insurers to better manage risks in the business, and therefore reduce the risk of insurer failure.

There is an additional incentive to manage and control risk under an internal model approach, as this should reduce the regulatory capital requirements.

Move to internal models could be consistent with any government focus on deregulation.

Regulatory costs may reduce if the time spent assessing each company's regulatory capital reduces due to having more appropriate models with better quality company information
… or passing some of cost of compliance back to the companies.

(ii) If insurers do not already have models, compliance costs are likely to be higher if internal models are required. Costs include:
staff to build and maintain the model;
consultancy costs
software costs.
Cost of increased management/board time to review and understand the model results.
Companies that already have models will also have higher compliance costs as additional model review / documentation may be required by the regulator.

There could also be costs associated with any review / audit of models by (or on behalf of) regulators
Model assumptions will need to be recalibrated periodically to reflect the emerging experience.
This will change capital requirements, and these changes could be material

A prescribed formula does not require as much expertise,
does not involve as much validation,
has less scope for criticism by stakeholders,
may be a good fit if the company has a reasonably standard risk profile,
or it is sufficiently adaptable to fit the company's risk profile.

The company may plan to move to an internal model at a later stage when their circumstances are more suited to the change.

Companies may not have sufficient data to produce a credible estimate using an internal model.

An internal model is arguably more complex than applying a prescribed formula.

The drivers of changes in capital requirements may be more difficult for the board and senior management to understand (with an internal model)
…although this will depend on the modelling approach and how well this is documented and explained.

Insurers may prefer the prescribed approach if it leads to lower capital requirements.
…although we do not know the probability of sufficiency targeted by the prescribed formula.

The insurers may not wish to incur the opportunity cost of an internal model and deploy the resources to other activities that produce a higher return on capital.

(iii) Insurers may need to hold more capital
…though some insurers may hold much higher capital than the regulatory minimum.
Insurers may reduce the amount of capital held in excess of regulatory minimum, given the regulatory minimum targets such a high probability of sufficiency.
However, insurers would still likely hold at least some level of margin over the regulatory minimum, for example, to avoid falling below the minimum if experience is worse than forecast.
Companies would need to earn a return on the capital at risk, so higher capital levels could result in higher premiums for policyholders.
A high probability of sufficiency would mean there is a very high confidence of companies being able to pay claims, which benefits policyholders.
Some companies may not be able to remain in business with high capital requirements
…or may choose to leave the market because they cannot earn an adequate return on capital
or may exit the classes most impacted by the change
resulting in lower levels of competition (due to there being fewer insurers) which could increase prices.

Some coverages may be difficult to renew resulting in reduce freedom of choice for some policyholders.

While the old standards were intended to target a 1 in 200 probability of sufficiency, this may not have been the case in practice.

- Because the factors have not be changed for many years, and the nature of risk may have changed.
- Unlike the internal model, the prescribed factors are "one size fits all", so may result is a different probability of sufficiency for some insurers.
- Other relevant reason.

A risk-based capital requirement may result in lower regulatory capital requirements for some insurers
particularly as the rules are quite simple and give insurers considerable freedom of choice over model design and parameterisation.

These insurers may decide to hold less capital overall.
Holding lower levels of capital could lead to lower premiums for policyholders.

The capital / premium impact will likely vary by line of business – so the effect on policyholders will also vary by line of business.
Some business lines may need to hold more under the new standard, and others hold less.

Capital requirements have a greater impact on premiums for some lines for business than others, regardless of the capital standard applied.

For example, liability claims require more capital relative to premium, so any policyholder impacts would be greater than for travel insurance (or other relevant example).

Whilst the expense of preparing regulatory returns will reduce.
… the cost of building and maintaining the required internal model will increase.
This cost may not be significant for companies who already have a sufficiently flexible internal model.
…but companies who do not have an internal model e.g. new, small companies, simple mono-lines, may incur significant additional costs.
Any additional costs may be ultimately passed on to the policyholders though higher premiums.

Some insurers may calculate a regulatory capital requirement corresponding to a less than 1 in 500 probability of sufficiency.

- Because of inadequate data.
- Because of an error in the model.
- Any estimate at such a high probability of sufficiency will be uncertain, and there will be a range of estimates which could be regarded as reasonable
- Management may intentionally use the model to produce a low result.
- Other appropriate reason.

An insurer may hold less capital than under the current standards, and charge lower premiums, because they (inadvertently) target a lower than 1 in 500 probability of sufficiency in their internal model.

The regulatory regime increases the likelihood of this happening.

- Some models may not be reviewed by the regulator for 10 years or more
- whilst others may be randomly selected to be reviewed more often
- with the lack of or increased oversight possibly impacting capital and premium levels.

Without quarterly returns the regulator they may be less able to identify and respond to issues arising thereby reducing policyholder security.

As the regulator randomly selects firms for review they may not look at high risk firms or insurers on problems insurers until it's too late.

The regulatory may not know what is best practice until they have done a couple of years of review.

The regulatory may not have sufficient expertise to review the models and the probability of sufficiency targeted.

This would impact policyholders by increasing the likelihood of insurer insolvency.

(iv) Review more models each year (greater than the intended 10%).
While the regulator's budget is limited, it may be able to accommodate more reviews than envisaged.
May be value in reviewing all the models in the first year, to the extent funds allow.
While increasing the number of number of reviews will increase the likelihood identifying problems (first objective), it makes it difficult to achieve the second objective (operate within regulators budget).

Regulator could use part of its budget to conduct high-level reviews of a large number of insurers, say 25% each year.
Could then use the remainder of the budget to undertake more detailed reviews of any issues arising during the high-level reviews.
This balances both the risk identification and budget objectives.
Require each insurer to commission an independent third party to carry out a model review, and prepare a report for the insurer's board and the regulator
This could be undertaken by an external actuarial advisor.
Regulator could then identify insurers to review based on these reports
By requiring insurers to meet the costs of the review, the regulator increases the likelihood of identifying risky insurers without increasing the regulator's expenses.
Develop an approach to better identify insurers at greater risk of insolvency, compared to selecting at random. For example:

- insurers writing high-risk lines of business (volatile large loss claims experience).
- new insurers.
- insurers experiencing high rates of premium growth.
- insurers which have recently gone into run-off.
- insurers with high-risk liabilities, for example, historic latent claims exposure.
- insurers that have high risk investment strategies.
- insurers that are identified as risky in any other regard e.g. credit agency downgrade, poor corporate behaviour, inadequate levels of reinsurance.

Reintroducing regulatory returns would help the regulator identify insurers which should be reviewed.
Alternatively a periodic survey could be used.
Prioritise review for companies that have had solvency problems before.

Review though companies that are holding close to the minimum requirements.
Review those companies that are changing in anyway e.g. mergers, significant mix change.
Any other sensible approach relating to selection of models.

Part (i)	This question required consideration from the regulator's perspective and was reasonably well answered. Some candidates mistakenly thought they could include company preferences as anything which ultimately benefited the company would also be ranked highly by the regulator. Others lost marks by interpreting this as a Solvency II question and being too UK specific.
Part (ii)	This part was also well answered. However, a surprisingly large proportion of candidates seem to believe that as a prescribed formula is the same for all companies it is better than an internal model for making comparisons across the market.
Part (iii)	This question contained a lot of important information and those candidates who worked through this in a thoughtful manner considering the impact of each item scored well. Unfortunately many lost marks by not considering the information provided. Few candidates appreciated that targeting a higher return period did not automatically lead to a higher capital requirement as the models being considered were profoundly different. Many also failed to consider the possibility that some companies choose to hold capital in excess of the statutory minimum and therefore would be less effected by the change.
Part (iv)	This was well answered by those who had sufficient discipline to not run out of time. Candidates should always consider the practicality of any suggestions they make and be careful that they are permissible within the context of the question. A large number of candidates considered alternative approaches rather than alternative approaches to selecting the insurers' models thereby reducing their chances of scoring well.

END OF EXAMINERS' REPORT