EXAMINERS' REPORT

October 2021 examinations

Subject F203 — *General Insurance*

Fellowship Applications

INTRODUCTION

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

The intention of the report is to be used as a study guide – as such parts of the report have been colour coded:

- Feedback on the question marked in the colour

Subject F203 — *General Insurance*

Specialist Applications
May 2021
MEMORANDUM

Overall

Candidates should note that F203 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 as a qualified actuary. As such, we aim to design exam papers that are difficult to pass without displaying some capacity for independent, broad, and commercial thinking.

As with the majority of F203 papers, students failed to show the commercial thinking that is required to pass the exam. Most answers remain too generic and students fail to bring the context of the question into play – choosing to rather take a scatter gun approach.

Markers 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. Marks available for list items from bookwork are lower still.

For this exam in particular:

- *Candidates answered calculation type questions very poorly showing a clear lack of planning in most cases – with simple points missed in the exam.*
- *Candidates continue to undermine themselves by providing generic or off-topic answers. Specific observations are provided by question throughout this report.*
- *Candidates also did not exhibit much higher order thinking and questions were generally poorly answered considering the number of marks that were available.*

Candidates that planned their way through the exam did not appear to be under time pressure.

Taking a scatter gun approach to the questions will result in time wasting. Markers pick up the generic pattern of ideas applied and do not reward these.

Planning remains a very important part of the paper – but the majority of candidates do not train how to plan in an exam environment.

In conclusion, we would offer candidates two key pieces of advice – read the question properly and take the time to think about what is going on. 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 / incorrect calculations, regardless of whether they are relevant.

Examiners Feedback on Questions:

Overall:

- The exam contained generous amount of bookwork with application of the bookwork following the question. The bookwork tested in this exam is not considered difficult or abstract, yet students struggled to answer the questions.
- The calculation question was poorly answered – again. The examiners did not consider this question difficult, and students need to be prepared to answer similar questions in the future.
- The pass rate for the exam was low– but considering the quality of scripts received, a large number of students should not have entered the exam based on preparedness. Most students continue to apply their overall generic knowledge to each question – thereby not answering the question posed and not scoring marks. Furthermore, this approach wastes time which leads to students not being able to complete the paper.
- There is a fundamental difference between answering a F100 level paper and answering a fellowship paper. The fellowship paper focusses on commercial acumen in really applying your knowledge to the question – from the scripts received most students do not appreciate this when answering the paper.

QUESTION 1

This question had 4 parts with 9 questions. The scenario being set was within a start-up short-term insurer in South Africa writing 2 lines of business with the option of extending in the future (Motor & Property).

Questions were set to test the following:

- *The concept of average & the choice of rating factors*
- *The pricing process*
- *Reinsurance purchase & the use of RI*
- *Performing financial forecasts and overlaying a reinsurance scenario*

i) Explain the concept of average in relation to the start-up insurers pricing process.

Most candidates understood the concept of average (75%) well enough – but struggled to see how this is particularly relevant to the start-up insurers rating pricing process. The concept of average applies to equal the playing field between insurer and policyholder – in this case it is clear that by following their pricing process, both the policyholder and the insurer could be left in an unwanted position at claims stage.

Please note the following at fellowship level: discussing the Glossary term for Marine average will not score marks – the question did not deal with any marine cargo, vessels, or pirates. This wastes your own time – which leads to time pressure later.

ii) The question required candidates to discuss further considerations which need to be made in the pricing process given the minimal criteria required from the start-up.

Candidates performed relatively well with the generic side of the question.
Majority of the candidates could not comment sufficiently to score well in the question.

Use the information given in the question – clearly there are many factors not being captured which will lead to problems at claim stage and policy amendments.

iii) Candidates were required to outline potential problems with the following concepts applied by the start-up

a. Applying a discount in all cases to the policyholder's current insurer
b. If policyholder does not have a current insurer - pricing is set relative to a reference portfolio
c. All policies have the same T&C's as their prior insurance coverage
d. Prices are fixed for up to three years

A surprisingly small number of candidates had a well-planned answer to the 8 mark question. Most candidates could not provide the potential solutions to rectify the situation. The examiners considered this a very easy question with the structuring already provided in the question. The average score for the question was below 50%.

A question like this is easily answered in table format with listing the potential problems as well as then the possible solutions. Beware of repetition and being too generic with the solution.

iv) Question iv required candidates to complete the 2020 underwriting results for the Motor Portfolio on a gross and net basis with a table showing the 2019 gross results.

Majority of the answers for the question were of a poor standard. Majority of the candidates did not complete the following:

- *65% of scripts marked did not recognise that the gross earned premium in 2020 will be 100. Rather explicitly assuming that it will again be 60. Where would the unearned portion of 2019 go since this is a new line of business?*
- *40% of candidates made the explicit assumption that the loss ratio will be the same at an insurer and reinsurer level – even though this cannot be given the loss participation clause.*
- *By making the above assumption, the loss participation clause could not be correctly allowed for.*
- *Furthermore, by not allowing for the loss participation clause, it would be impossible to determine the correct reinsurance commission. Over and above this, more than 30% of candidates did not consider the reinsurance commission in their calculations at all.*
- *65% of candidates did not recognise that the word "closing balance" in the paper refers to the balance sheet amount and that the movement between opening and closing would therefore affect the result.*
- *M&DP premium was calculated incorrectly in some circumstances, although mostly given. (2 solutions were marked here both the 1.2 and the 1.5)*
- *25% of candidates did not read or chose to ignore the following sentence: "Assume IBNR has not been taken into account, and can be estimated as 20% of incurred*

claims."

v) Question v was a simple bookmark question on why the reinsurer would insist on a loss participation clause

No surprises here – for those that did complete the calculation, enough could be said on the topic.

vi) Explored the usefulness of the aggregate XoL treaty by assuming an event of R30m happens during the year. Candidates were required to calculate the revised net underwriting results.

The calculations in the question were similar to those required at a F103 level. Marking on errors made in question iv were given credit. Again, minimal effort was made by candidates to show the effects of changing sliding commission structures.

Reinstatement premium was calculated incorrectly in more than 60% of the answers.

A large number of candidates did not even attempt the calculation questions, which is surprising given the simplicity of these calculations.

vii) Question vii asked candidates to comment on the efficacy of the RI treaty.

2 Mark question with the majority coming up with answers that relate to their calculations when performed.

viii) Required candidates to describe their approach to providing a definitive opinion on the effectiveness of the excess of loss treaty for Quicksure, with potential amendments which could be made based on your findings.

The average mark for the question was 3/8. Majority of candidates answered very generically – not allowing for the nature of the start-up. A few candidates mentioned possible amendments.

ix) Question ix required candidates to comment on how to allow for the addition of homeowners cover onto the current reinsurance structure.

Better candidates came up with sufficient reasons and justifications of how to change the structure. Majority of candidates did not really attempt the question – showing bad planning throughout the exam.

QUESTION 2

Question 2 examined a range of actuarial topics related to a general insurance company underwriting multiple lines of business and the effect of the SARS COV-2 virus & lockdowns on the portfolio performance.

Topics tested included:

- The effects on the frequency and severity of claims
- How to allow for the new trends in your reserving process
- How to allow for the new trends in your pricing process
- A proposal to enter a new line of business and the effects on your pricing & capital

i) Question i. required candidates to describe how the frequency and severity of a personal lines class of business are calculated by peril.

The bookmark question was not answered well. Several candidates decided to rather answer their own pricing question discussing burning costs ratios instead.

ii) Part ii required candidates to discuss how they would expect the frequency and severity of the personal lines classes to change during the lockdown.

The easy question was relatively well answered but al lot of candidates struggled to apply the required tailoring of their answer to the question – again opting for more generic type answers and not really getting into the details of the question.

iii) Part iii required candidates to discuss why a short-term insurer establishes IBNR reserves.

The bookwork question was relatively well answered. At fellowship level I would've expected most students to get full marks – but some candidates still struggled with why we need to establish provisions.

iv) Part iv required candidates to discuss three potential methods for setting the year-end provisions to allow for the lockdown period.

- *70% of candidates stated that the provisions will be too low by allowing for the latest cohort without further explaining that this is not due to lower claims but due to the potentially slower development. Lower claims in the last cohort alone does not mean that the provisions will be understated.*
- *Candidates failed to mention that the motor class is very quick to develop and hence that the methodology to include all development is probably sufficient with some allowance for slower than usual reporting. The only potential problem posed by the question is the income statement volatility which your CFO would likely want to avoid.*

v) Question v required candidates to think through the income statement effect of the provisions over the next year.

4 mark question with better candidates commenting on the decreasing and subsequent *increasing effect that the lockdown could have. Several candidates made suggestions that are just not commercially viable.*

vi) Question vi required candidates to discuss the pricing data they would consider when doing a rate review.

10 mark question with better candidates clearly structuring their answer. Some candidates repeated their answers for each of the datasets they were considering – not convincing the markers of their approach.

Some candidates (25%) felt that external data would be a much better substitute – this is very generic and unlikely to score sufficient marks to pass in a fellowship examination.

vii) Question vii required candidates to discuss pricing, operational and capital implications of trying to add the commercial Motor class to your portfolio.

The question was relatively well answered with the majority of candidates following the proposed structuring of their answer. Better scripts, i.e. well planned out papers completed the paper and sufficiently answerer the question. Scripts with a more generic approach, struggled for time at the last question. Planning is extremely important in the fellowship paper.

The proposed memo is set out below: For essay-style questions, the marking schedules contains open ended marks for other sensible suggestions. Overall, there are more than 50 marks available.

Candidates should be made aware that the proposed memo contains added parts where the examiners felt enough candidates made the suggestion in answering their question. Therefore, although not always 100% aligned to the question posed, enough students made the point to include in the memo and are therefore marked. Where this occurs, the amount of additional marks available will be minimal – but were given credit.

QUESTION 1

You are the newly appointed actuary of a start-up non-life insurance company, Quicksure, that began operating in South Africa in 2019. Quicksure aims to take advantage of the increasing trend in online insurance sales activity by selling products through digital channels. The initial products that Quicksure has launched into the market have been a household contents product and a motor insurance offering. The household contents product is priced based on geographical area, multiplied by a square meter sum insured factor (fixed per area), multiplied by the size of the property as an exposure measure.

i. Explain the concept of average, and how this may be relevant in the context of Quicksure's household contents product.

[3]

- Average is a term used when the claim made is scaled down for the sum insured, in relation to the actual sum at risk. It is particularly relevant to mitigate the effects of underinsurance (policyholders not disclosing the correct value of their items).
- It is relevant for Quicksure as the sum insured is estimated based on the size of insured area and a sum insured factor.
- Real sum insured may only have little relation to that estimated from the formula. In the case of a loss Quicksure can hardly apply the concept of average and be fair to customers, if they didn't ask for the sum insured to be confirmed
- The real Sum Insured could thus be verified at claims stage (but not be used to reject claims) and hence refine estimation over time

ii. Discuss further considerations which need to be made to the pricing of the household contents product, explaining how these could potentially be refined.

[5]

- Basic concept is that more information which is asked for, better ability to price effectively but also longer the sign-up process and hence lower conversion/higher drop off
- Could incorporate limits on minimum/maximum price and size of property, may be a non-linear relationship between sum insured and size of property
- If there is a mobile contents option, this will not be expected to be related to size of the property
- Individual high sum insured items could be listed separately, will ensure that the total estimate is more consistent
- Ask for policyholders view of the actual sum insured, at least as an option - will allow the area multiplier factors to be refined over time
- Additional rating factors, such as number of occupants; Rent/own; Property use; (and others)
- Not clear whether based on external data, how the relativities in geographical areas are derived
- Could perform market benchmarking exercise based on aggregators

The pricing of the motor insurance product is based on offering a discount to the premium rate charged by the policyholder's current insurer. For policyholders who do not have an existing insurance policy, reference is made to Quicksure's existing portfolio.
Policies are sold with the same terms and conditions as the existing policy.
Additionally, policies have a fixed price guarantee where premiums are fixed for up to three years where no claim exceeding the deductible is made.

iii. Outline potential problems with this pricing approach, suggesting potential solutions to each.

[8]

Discount to the premium rate of current insurer

- Places reliance on rate sufficiency and cross subsidies of reference insurer, as well as loadings over and above risk rates
- Will necessarily perform worse off than the market initially, may even be exaggerated as non-loyal customers more likely to switch, lowering customer lifetime value
- (Solution) - Limit discounts to only clients with no claims in recent history
- (Solution) - Limit to customers who've shown loyalty by being with their current insurer for several years
- (Solution) - Limit the discounts given to only a handful of current market players
- *<Other Valid reasons also marked>*

Reference to existing portfolio

- Existing portfolio may not be "rich" enough to be able to refer to exact segment which a policyholder would belong, requiring approximations
- Many different terms and conditions may make this even worse from a number of homogenous groups perspective
- (Solution) - Could scrape aggregator data to boost the size of reference portfolio
- (Solution) - use brokers or experienced underwriters in cases where the data does not exist?
- (Solution) - any other relevant solution or issue

Same terms and conditions as original policy

- Will mean a lot of different terms and conditions in the same data set, making it difficult to price individual covers and to glean insights from this
- At claims stage it will be a lot of effort to ensure that claims are paid correctly under the policy terms due to heterogeneity
- (Solution) - once off review of terms and conditions per source company (or only select a handful of companies to align to) to include into a claims/pricing manual/system indicator.
- (Solution) - after period of time or on new policy (such as new vehicle) transition policyholder to company own terms and conditions

Fixed price guarantee

- Inability to remediate mispricing in total (across the entire policyholder group) and can only reprice where claims are made
- This may mean price increases are too high for claimants causing selective lapse, impact will depend on how remaining policyholders perform
- (Solution) - will need to ensure any claim event (even small ones) are reported to Quicksure and can be classified to increase prices
- (Solution) - maybe modify to include all claims (including below deductible) as could indicate propensity for claims frequency in future

A quota share reinsurance treaty covering the motor product has been put in place which includes a loss participation clause. Effectively this means that if the ceded loss ratio on the motor portfolio exceeds 100%, the reinsurer will only reimburse 75% of the ceded claims above the 100% loss ratio limit. Where the loss ratio is below 100%, the quota share operates as per normal.
In addition to the loss participation feature listed above, the quota share treaty has a 60% base cession. Reinsurance commission is based on a sliding scale, with a minimum and maximum commission of 10% and 40% based on ceded loss ratios of 90% and 60% respectively. Commission is interpolated between these two figures.
An aggregate excess of loss reinsurance treaty in place has a cost of 5% of premium after the quota share (which applies before the excess of loss treaty), with a minimum deposit premium of R1.5m.

iv. For financial years 2019 and 2020, calculate the underwriting results for the motor portfolio, net of reinsurance, based on the figures provided below. Assume IBNR has not been taken into account, and can be estimated as 20% of incurred claims. Show all your calculations and state any additional assumptions that you make.

Motor portfolio (ZAR m)	**2019**	**2020**
Gross Written Premium	100	100
Gross Earned Premium	60	
Gross Paid Claims	30	60
Gross Claims Reserve (Closing balance)	30	35
Gross Commission	10	20
Gross Expenses	20	20

[12]

Formula	**Mark**
ep 2020 = GUPR + GWP x EP Ratio = 40 + 100 x 60% = 100	0.5
ri ep = 60% x GEP = 36 (2019) | 60 (2020)	1
incurred claims - gross = (Paid + delta OCR + delta IBNR) = 72 (2019) | 66 (2020)	1
incurred claims - ri = Min(GIC,GEP) x 60% + Max(GIC-GEP,0) x 75% x 60% = 41.4 (2019) | 39.6 (2020)	2
ibnr = (paid + delta OCR) x 20% = 12 (2019) | 13 (2020)	1
gross lr = GIC / GEP = 72/60 = 120% (2019) | 66/100 = 66% (2020)	0.5
ceded lr = Inc - ri / ri ep = 41.4/36 = 115% (2019) | 39.6/60 = 66% (2020)	0.5
gnep = ep - ri ep = 60 - 36 = 24 (2019) | 100 - 60 = 40 (2020)	0.5

Formula	**Mark**
xol prem = 5% x gnep = 1.2 (2019) | 2 (2020)	0.5
mdep = 1.5 (2019) | 1.5 (2020)	0.5
ri comm = Max(10%, 40% - Max(0%,ceded lr - 60%)) x ri ep = 3.6 (2019) | 20.4 (2020)	1
u/w results = gnep - max(mdep,xol prem) - inc gross + inc ri - gross comm + ri comm - expenses = -34.5 (2019) | -8 (2020)	2
Y2 same earning pattern as first year	0.5
ri earnings qs same as gross	0.5
	12

v. Why might a reinsurer insist on a loss participation clause? Refer to calculations made in part iv.

[2]

- Loss participation will result in reinsurer being protected against unprofitable business being written, this is particularly relevant due to the pricing strategy
- their loss ratio will be lower than Quicksure's because of the higher premium cession versus claims (above 100%)
- in 2019 gross incurred loss ratio is 120% vs 115% for reinsurer
- 66% in 2020 in both instances as business not loss making

The CFO has come to you with a question regarding the aggregate excess of loss arrangement. She does not see the sense in paying for cover which does not seem to be used in a normal year of claims.
The treaty has the following features:

- One reinstatement at 50%, pro rata to amount only
- Covers event losses of R8m in excess of R2m

You perform stress tests on the 2020 financial year, assuming an event loss of R30m in 2020 in addition to the information provided in (iv). To illustrate the impact of the treaty the first test assumes that the XoL treaty is not in place whilst the second test includes the current XoL treaty. You can ignore any knock-on IBNR impacts.

vi. Calculate the revised net underwriting result under both scenarios, showing your workings.

[6]

For this memo we have shown the proposed mark allocation available for the question.

Formula	Marks
ri claims incurred = Min(GIC+30,GEP) x 60% + Max(GIC+30-GEP,0) x 75% x 60% = 57.6	1
qs recovery = 30 x 60% = 18	0.5
xl recovery = Min(net of qs,8 + 2) - 2 = Min(12,10) - 2 = 8	0.5
qs lr = ri claims incurred / ri ep = 57.6 / 60 = 96%	0.5
reinstatement = 50% x qs recovery/cover x xol prem = 50% x 8/8 x 2 = 1	0.5
ri comm = Max(10%, 40% - Max(0%,ceded lr - 60%)) x ri ep = 6	0.5
u/w result = gnep - max(mdep,xol prem) - inc gross + inc ri - gross comm + ri comm - expenses = 40 - (66+30) + 57.6 - 20 + 6 - 20 = -32.4 | = -34.2 + 8 - 1 = -27.4 (xol)	2
quota share inures to benefit of xol	0.5
commission unaffected by xol	0.5

vii. Discuss whether the current excess of loss treaty is as ineffective as the CFO suggests by referring to your calculations in part vi.

[2]

- RoL = 0.25, rate = 0.05, seems commercially viable for a working layer, total loss 25% chance
- Additional loss would make even better recovery since reinstatement premium prefunds next loss i.e. with the RoL effectively halved for second loss
- Improves the underwriting result by 5m for 1 full loss, at a cost of 2m per year (fixed)
- Seems to prove there is some benefit depending on assumed loss distribution in the layer and frequency of occurrence
- Marks also awarded for Solvency/Capitalisation argument with the ROE being affected.

viii. Describe your approach to providing a definitive opinion on the effectiveness of the excess of loss treaty for Quicksure, with potential amendments which could be made based on your findings.

y [8]

- Start with modelling the ground up losses in order to be able to effect different reinsurance structures
- Exposure rating could be used as currently we have no/insufficient own loss experience
- A method of calculating the premium that is based on external data or benchmarks could be obtained from the reinsurance broker
- The total exposure of every insured from the products in question could be examined and loss models applied to these values.
    - Scenarios of losses of various sizes are analysed and the impact on the policies is determined showing the information on the sizes of risks written and the premium income.
- The size of each risk may be expressed in terms of sum insured, EML, PML, etc.
- Could simulate losses for the portfolio, in terms of a frequency of claim per policy and a severity per loss
- Alternatively, will need to estimate loss ratio per risk or band of risks first this means splitting total loss ratio into a base attritional loss ratio, and a loss ratio for large claims (gross)
- Sum insured bands cannot on their own contribute to individual excess of loss recoveries, as sum insured/EML of the policies is too low

- Loss ratio would be expected to vary throughout the cycle, and may not assumed to be same per risk/band

- Different limits and deductibles can then be applied to the gross losses to calculate the recovery
- Reinsurance broker could be used for indicative quotes in the market for various layer sizes
- Cost can be applied to GNPI and can give a view as to what the level of recovery would need to be to recoup cost
- Probability of each of these events occurring (return period) or likelihood of loss ratio would need to be attached (as well as internal company risk appetite and risk tolerances)

ix. The household product has been performing well, and management senses an opportunity for cross selling homeowners cover into the product base. Discuss the impact of this product on the reinsurance arrangements that you require.

- The generally higher sums insured will lead to higher individual losses
- Potential for catastrophic loss based on geographic accumulation such as fire, flood, earthquake & storm damage.
- Selling this line will increase total number of possible events
- Could look at adding individual XOL cover for the higher sum insured business
- Most likely we will require an increasing number of reinstatements
- We would need to widen the cover potentially, depending on expectation of losses
- No change on quota share required.
- Personal lines property likely to be homogeneous enough for surplus cover to be unnecessary

[4]
[Total 50]

QUESTION 2

You are the chief actuary of a medium sized short-term insurer which only operates in the South African market. The insurer only writes personal lines business.

Your financial year end coincided with South Africa emerging from a hard lockdown, implemented in an effort to reduce the spread of the SARS-COV-2 virus.
During the hard lockdown only essential workers were allowed to leave their houses for work purposes while the rest of the population could only leave their houses in order to buy essential products.

Your motor portfolio showed a sharp decline in claims frequency during the lockdown and as a result an increase in profitability.

i. Describe how the frequency and severity of a personal lines class of business are calculated by peril as well as illustrating the formula for the calculation for the frequency and severity.

[5]

- Select a suitable time period over which the analysis will be performed - monthly, quarterly, annually or more
- Decide on an appropriate exposure metric for the analysis. This could vary by the motor product that is being sold and could for example be vehicle years or mileage in the case of a telematics product
- Collect the number of claims over the period making sure to adjust for claims that have been closed at no cost and repudiated claims. Appropriate adjustment for IBNR claims if your are looking at very recent months
- Collect the total incurred claims over the period making sure to adjust for any IBNR claims that may not be on the policy administration system yet for recent months
- Perform the calculations below:

Formulas:

- Frequency = number of claims / exposure
- Severity = total cost incurred / number of claims

ii. Discuss how you would expect the overall frequency and severity of the following personal lines classes of business to change during lockdown:

a. Motor Comprehensive
b. Buildings Insurance
c. Personal Accident
d. Hospital Cash Plan [9]

Motor Comprehensive

- Frequency: The insurer will have far fewer vehicles on the road
    - The exposure of the insurer to own damage, windscreen and third party claims will be lower from both a vehicle year and mileage perspective
    - Exposure to theft claims will also probably be lower depending on where vehicles are parked
    - Overall, Frequency will be considerably lower

- Severity:
  - There will be far fewer vehicles on the road and as a consequence the remaining vehicles may be driving considerably faster. This could result in the severity of motor own damage and third-party claims increasing
- Windscreen and theft claims should be largely unchanged

Buildings Insurance

- Frequency:
  - The frequency of geyser claims will probably increase as insureds spend all their time at home and the geyser is continually used. Clients will not be showering at gyms and work so these frequencies will probably increase
  - Accidental Damage frequencies will probably also increase slightly as more time exposure and probably people are in the house
  - Fire and theft frequencies will probably be slightly lower as clients are at home most of the time
  - Overall, slightly decrease in frequency

- Severity:
  - Consequential damage claims from burst geysers will probably decrease as clients will notice the problems more quickly and report them to the insurers
  - Poverty related theft claims may become more severe in light of the downturn in the economy
  - Severity of other perils largely unchanged

Personal Accident

- Frequency:
  - Personal accident frequency will probably reduce as clients spend more time at home with less exposure to external factors

- Severity
  - Personal accident severity will probably reduce as clients spend more time at home with less exposure to external factors

Hospital Cash Plan

- Frequency:
  - Elective and even some acute reasons to visit the hospital will probably decrease as clients unwilling to go to hospital and with hospitals not having sufficient capacity
  - There will probably be an increase in Covid related claims
  - Overall the frequency will probably be slightly down

- Severity
  - Covid related claims may have long periods of hospitalization that may result in higher severity
  - Delaying procedures may also result in increased severity when they are performed

Your reserving actuary has approached you for advice, in finalising the year end provisions. She calculates the personal lines Incurred But Not Reported (IBNR) reserves based on monthly accident date triangles with monthly development. She is concerned that the latest diagonals of especially the motor triangles are showing very low development and that this will lead to a substantial decrease in IBNR reserves.

iii. a. Explain why a short-term insurer establishes IBNR reserves.

- IBNR reserves are established for claims that have occurred, but which have not been reported as yet
- The delay in reporting these claims may be the result of a lag in claims reporting or latent claims that emerge over the course of time
- The quantum of the IBNR claims is set to ensure that the Insurer has adequate funds available to pay these claims as and when they are reported
- Insurers often elect to hold a margin over and above the best estimate of these liabilities to allow for adverse development and potentially align the insurer to the statutory requirements that the relevant are may have

b. How does IFRS 4 view a change in the level of reserves that have been established?

- IFRS 4 requires the provisions established in the financial statements and demonstrate that they have been established using a recognised methodology and that they represent a sufficient estimate of the risk.
- Any additional margins should be noted
- If the insurers elects to hold an additional margin over and above what was previously held, this will need to be justified as there are implications for the emergence of profit and taxation
- The additional margin would need to be quantified and the methodology accepted by the auditors

[4]

Your reserving actuary has outlined three options that she is considering for setting the reserves. The three options are:

- Allowing full credibility for the latest development in establishing the level of reserves using the Chain Ladder Method
- Ignoring all the diagonals that emerged during the lockdown period and using an expected ultimate loss ratio approach for those months
- Including the diagonals that emerged during the lockdown period but weighting the results using the Bornhuetter Ferguson (BF) method

iv. Outline the advantages and disadvantages of each approach that she is suggesting.

[10]

Allowing full credibility for the latest development in establishing the level of reserves

- Advantages:
    - The method will project similar reporting pattern to what has been observed in the past
    - The lower level of initial claims that have been reported will be projected to ultimate thus applying full credibility to the experience that has been observed to date

- Disadvantages:
    - The CLM assumes that past experience will be observed in the future
    - Any changes to reporting patterns as a result of staff working from home and problems in the operational environment will therefore not be included in the claims that are being projected
    - Delays in repairs and assessing of claims will also not be taken into account in the most recent development
    - This method runs the very real risk of under projecting ultimate losses
    - There could be tax implications of the accelerated profit

Ignoring all the diagonals that emerged during the lockdown period and using an expected ultimate loss ratio approach for those months

- Advantages
    - This method assumes that the overall claims for a period will reach an ultimate level that is set by the actuaries in probable consultation with the audit and claims teams
    - The risk of under-reserving is much reduced under this method as the ULR will probably be set quite conservatively
- Disadvantages:
    - The level of reserves will be set relative to the premium earned for a particular month. The earned premium is unlikely to have dropped significantly over the short term as the economic impact of the lockdown will not have been fully experienced
    - Given that the development to date will be quite low, chances are that substantial IBNR reserves will be set using this methodology depending on the ULR that has been selected.
    - Selection of the ULR may also be quite subjective and this method may result in a strain in IBNR that will have to be explained to the auditors
    - There could be Tax implications of delayed profit

Including the diagonals that emerged during the lockdown period but weighting the results using the Bornhuetter Ferguson (BF) method

- Advantages:
    - The method is a blend between the actual experience during lockdown and the insurer's reasonable expectation of the ultimate level of claims
    - The BF can be adjusted to allow for development that the actuaries believe is slower than expected
- Disadvantages:
    - For classes of business with very quick development, the BF method will allow limited credibility to your ratio and as a result this will have a limited impact on the overall level of IBNR reserves that you are setting
    - Selection of the BF ratios may also be quite subjective and hence difficult to explain to the auditors
    - Chain ladder development will be affected by lockdown and as it assumes past experience will be observed in future, credibility levels may be inaccurate

After consulting with your Chief Financial Officer (CFO) you have decided to implement the third approach which is weighting the results using the BF method. This has resulted in a release of IBNR reserves at year end.

v. What do you think the income statement effect will be for the insurer's reserves over the next financial year as South Africa emerges from hard lockdown and how can this be prevented?

[4]

- As South Africa emerges from lockdown, client behavior will gradually return to normal. Traffic volumes will increase, and fewer people will be working from home
- This will mean that claims levels will rise and gradually reach the levels that they were prior to lockdown
- One factor that may decrease the overall claims levels is a lower level of earned premium if South Africa goes into a deep recession and clients are unable to afford their instalments
- If IBNR reserves had been decreased in the wake of the lockdown, I would expect these to be increased through the course of the year as claims increase and therefore result in an income statement strain
- A mechanism to prevent this is the establishment of a Covid reserve to allow for the uncertainty of claims development. This reserve can then be released over time to decrease the IBNR strain as uncertainty around the Covid reserve requirements wind out
- Adjust your BF assumptions in such a way not to decrease "too much" of the IBNR reserve (i.e., try to keep it close to prior year levels noting the uncertainty – which will reduce the volatility.

Six months after hard lockdown has ended, you request your pricing actuary to do a review of your motor comprehensive pricing structure as you have noticed that your sales conversion rates have dropped and you are experiencing high levels of lapses. The recent claims frequencies for the portfolio are still slightly lower than pre-lockdown levels. Your pricing is generally based on 4 – 5 years of experience.

Your pricing actuary has expressed his concern regarding the inclusion on all the data in the pricing exercise.

vi. a. Outline three alternative approaches to the ranges of data that you could include in the exercise and describe the expected market competitiveness of each of these approaches?

[8]

Approach 1 - Inclusion of all data that has been fully developed

- This approach will include 4 to 5 years' worth of data and probably end at the end of the hard lockdown period as it would take motor comprehensive data about 6 months to run off and allow for salvages and recoveries
- The approach will show a substantial decrease in claims frequencies in the latest rating year
- This reduction in frequency will be offset by the frequencies in the other 3 - 4 years of rating data and the overall impact of the lockdown data will probably be lower than 10%
- The frequency rates may also be offset by slightly higher severity rates as discussed earlier
- The approach will result in your premiums being more competitive but may be a bit of a blanket discount as all rating factors will have been affected by the lockdown

Approach 2 - Exclusion of all data during the lockdown period

- This approach will ignore all data from the lockdown period and will therefore base the pricing on data that is 9-12 months and older
- The data will make no allowance for changes in behaviour from clients and or changes to processes at the insurer (these may be lockdown related or just general improvements to processes)
- This set of rates are unlikely to address the competitiveness issues that have been identified and will probably only be a refresh of the current rates that have been deployed

Approach 3 - Using the lockdown data and potentially developing a new product

- Approach 3 would entail a hybrid of using the model developed in approach 1 and trying to identify factors that could be driving the lower frequency that has been observed
- Using the latest year's data a smaller frequency model can be built to try identify factor level changes that have resulted in lower frequencies.
- These factor level changes can then be included in approach 1 to see whether a more competitive set of rates can be developed using a rate impact or optimization technique
- Quote to conversion data at a rating factor level can also be used to assist with this process and adjust loadings at within rating factor levels
- The approach should result in the most competitive set of rates of the 3 approaches
- Certain months of frequency data can also be selectively removed while all severity data can be included in the modelling process to make allowance for months with very low frequency experience

<Please note that other suitable answers were also marked and considered>

b. Are there any motor comprehensive rating factors that you suspect would become more explanatory in a post hard lockdown environment?

[2]

Occupation:

- Certain occupations will be more likely to continue working from home such as the financial services industry as opposed to the medical or construction industries

Vehicle Use:

- There may be further distinction between the use of a vehicle when comparing private to business to commercial as clients working from home move to private use

Your Chief Marketing Officer (CMO) has approached you with a proposal to enter the Heavy Commercial Vehicle space as she feels this would be a good opportunity to do so in view of the lighter traffic volumes on South Africa's roads. She feels that this would be an excellent opportunity to build market share in this segment of the insurance market.

vii. Draft a response to your CMO considering the following aspects of a product launch:

- Pricing
- Operations
- Capital Implications

[8]

Pricing:

- Our current pricing experience is limited to motor comprehensive policies. Heavy Commercial vehicles will be based on very different experience and rating factors
- The pricing of HCV is often more market driven than motor comp which is priced as a commodity. Brokers will often influence an insurer to get preferable rates for a perceived good portfolio
- Rates are often a blend between a theoretical rate and the specific experience of an HCV portfolio. Do we have the expertise to evaluate this?
- As the CMO mentions, traffic volumes are lower on the roads which will imply that good portfolios will probably be performing better. The UW cycle will also be at a low point meaning that it is more difficult to acquire business at a suitable margin
- Do we have enough experience to exclude risks we do not want to write? Hazchem, Buses etc
- Will our current reinsurance treaties allow for the inclusion of this product?

Operations:

- Investigate whether we have access to brokers who are currently selling suitable volumes of quality HCV business? Do brokers we currently use sell HCV products and how do they perform?
- We will need to set up contracts and outsource agreements with these brokers
- HCV requires a totally different claims infrastructure to motor comp. We will need different towing, repairs, and salvage arrangements. Legal claims are also quite likely in this environment
- Are our staff sufficiently trained / capable to sell and administer this product?

Capital Implications:

- The launch of a new product will require additional capital and new business strain for an HCV product during early years of launch will result in probable initial losses
- Premium and Reserve Risk will increase under SAM - volume measures
- CAT charge will probably increase
- Reinsurance could reduce capital requirements
- Capital may reduce from improved diversification
- Overall, there will be an increase in capital required and you need to check whether required ROC hurdle rates are met over a stipulated timeframe

END OF REPORT

F203 Exam specific concerns

The purpose of this note is to provide additional feedback on features observed during the present exam that contributed to disappointingly low results. We hope that the factors described below will assist towards better preparation and better results in future exams.

When determining the pass mark, examiners consider the amount of fully vs partially completed scripts to form a view on the level of time pressure in the exam. We note that candidates that run out of time often revert to poorly structured and long-winded generic responses, including many superfluous and trivial and even repetitive points, perhaps aiming to write as much as possible in the hope that some points on the marking schedule will be accessed as a result. This approach is indicative of a lack of insight and/or confidence. Stronger candidates display an understanding of the theme being examined by being focused and concise and capable of touching on several non-trivial ideas, including relevant second-order points that may not be immediately obvious on face value when considering the question in isolation.

Many candidates performed poorly in pure bookwork questions, pointing to inadequate preparation.

Students are reminded that the context of the question needs to be considered when answering the paper. Some examples are provided.

- The first question tested the concept of average (for a General Insurer selling Household contents products). 10% of students gave the Marine definition of average. This has no bearing on the question and cannot be awarded credit.

- The second question started with a bookwork question asking students to describe how the frequency and severity of a personal lines class of business is calculated by peril as well as illustrating the formula. In this case, 20% of students provided a burning cost pricing formula, which was not asked, resulting in minimal marks being scored for a simple bookwork question.

Calculation question

Question 1 required candidates to determine the net underwriting results for the motor portfolio by completing the below table and considering the details of the reinsurance structure:

Motor portfolio (ZAR m)	**2019**	**2020**
Gross Written Premium	100	100
Gross Earned Premium	60	
Gross Paid Claims	30	60
Gross Claims Reserve (Closing balance)	30	35
Gross Commission	10	20
Gross Expenses	20	20

Further details on the question: "*A quota share reinsurance treaty covering the motor product has been put in place which includes a loss participation clause. Effectively this means that if the ceded* *loss ratio on the motor portfolio exceeds 100%, the reinsurer will only reimburse 75% of the ceded claims above the 100% loss ratio limit. Where the loss ratio is below 100%, the quota share operates as per normal.*

In addition to the loss participation feature listed above, the quota share treaty has a 60% base cession. Reinsurance commission is based on a sliding scale, with a minimum and maximum commission of 10% and 40% based on ceded loss ratios of 90% and 60% respectively. Commission is interpolated between these two figures.

An aggregate excess of loss reinsurance treaty in place has a cost of 5% of premium after the quota share (which applies before the excess of loss treaty), with a minimum deposit premium of R1.5m."

Students are reminded that calculation questions are often asked on an F200 level, but that the nature of calculations typically examined will focus on logic and interpretation and general insurance principles to be applied rather than complex mathematics. Furthermore, marks in a calculation type question should be easier to attain, as half a mark is generally given per calculation performed.

The average mark for this question was 5 out of a possible 12 marks. We provide some salient observations on the nature of responses received to this question:

- 65% of scripts marked did not recognise that the gross earned premium in 2020 will be 100, assuming instead that it will again be 60. This displayed a disturbing lack of understanding of basic accounting principles, which is not acceptable on an F200 level. Where would the unearned portion of 2019 go since this is a new line of business?
- Only one Candidate scored full marks for the entire calculation. This candidate also passed the exam.
- 40% of candidates made the explicit assumption that the loss ratio will be the same at an insurer and reinsurer level – even though this is clearly impossible given the loss participation clause.
- By making the above assumption, the loss participation clause could not be correctly allowed for.
- Furthermore, by not allowing for the loss participation clause, it would be impossible to determine the correct reinsurance commission. Over and above this, more than 30% of candidates did not consider the reinsurance commission in their calculations at all.
- 65% of candidates did not recognise that the word "closing balance" in the paper refers to the balance sheet amount and that the movement between opening and closing would therefore affect the result.
- 25% of candidates ignored the following sentence in their submissions: *"Assume IBNR has not been taken into account, and can be estimated as 20% of incurred claims."*

A follow-up calculation question which incorporated a significant loss and reinsurance event was considered in Question 1(vi). For the calculation type questions, errors made in methodology/calculation in the previous question were given follow-up credit for in the subsequent calculations. However, by not allowing for the different loss ratios between cedant and reinsurer and by again assuming that reinsurance commissions do not apply, candidates could not score well in this question.

Further commentary on exam performance

- Question 2(iv) – 70% of candidates stated that the provisions will be too low by allowing for the latest cohort without further explaining that this is not due to lower claims but due to the potentially slower development. Lower claims in the last cohort alone does not mean that the provisions will be understated.
- Several candidates failed to mention that the motor class is very quick to develop and hence that the methodology to include all development is probably sufficient with some allowance for slower than usual reporting. The only potential problem posed by the question is the income statement volatility which your CFO would likely want to avoid.

Conclusion

The F203 examiner team derives no satisfaction from the poor pass rates observed over the past few seasons.

Candidates should note that F203 is a Fellowship paper which tests candidates' broader thinking. This is generally the final paper before qualifying as a professional, and we consider a capacity for commercial awareness to be one of the best indicators of a candidate's suitability to act as a professional actuary. As such we aim to design exam papers that are difficult to pass without displaying some capacity for independent and broad thinking, as well as to reward instances where those skills are displayed.

We conclude by encouraging candidates to read the question properly and take the time to think about what is being examined – marks are not available for going down an irrelevant tangent. It is often tempting for candidates to display an understanding of an adjacent but irrelevant topic on which the candidate may have more experience, but candidates should carefully consider the relevance of any points made to the question to avoid wasting time.