INSTITUTE OF ACTUARIES OF AUSTRALIA

COURSE 2A LIFE INSURANCE **OCTOBER 2008 EXAMINATIONS**

Marking Guide

Level of difficulty.

Question	Syllabus Aims	Units	Knowledge & Understanding	Straight-forward Judgement	Complex Judgement	Total Marks
1(a)	1,2	1		3		3
1(b)	1,7,9	1,2	4			4
1(c)	2,4,5,7,10,12,13	1,2,3,4		6		6
1(d)	2,5,7,8,14	1,2			4	4
1(e)	5	2	3			3
2 (1) (pg 8)	1,3,4,7,10	1,2,3		4		4
2 (2)			5			5
2 (3)				6		6
2 (4)					5	5
3(a) (pg 13)	7,8,9	2,3	3	2	1	6
3(b)	1,7,8,9	1,2,3		3	6	9
3(c)	1,2,7,9	1,3,4		2	3	5
3(d)	2,4,5,7,9,10,12, 14	1,2,4			5	5
4(a) (pg 21)	2,3,7,15	1,2,5	4			4
4(b)	7,8,10,14,15	2,3,4,5		5	2	7
4(c)	3,11	1,3			7	7
5(a) (pg 25)	4,5,7	2		3	2	5
5(b)	6,11	2,3		7		7
5(c)	6,11	2,3			5	5
TOTAL			**19**	**41**	**40**	**100**

Answer all 5 questions

QUESTION 1 **(20 Marks)**

You are the product actuary for Have-a-Go Life Insurance. Have-a-Go sells a range of insurance and savings products in Australia, with the majority of its distribution via independent brokers. In return for placing business with Have-a-Go, brokers are paid via commissions (which in turn depend on the premium of the business placed).

The idea has now been floated to launch an additional range of insurance products through a direct sales channel. The proposal is to partner with a large national supermarket chain, so that information and application forms for policies can be placed in a prominent place in the supermarket. The thought is that shoppers can fill in an application form at the counter when buying groceries, pay a first instalment for the policy as part of their overall supermarket bill, and upon doing this cover would immediately be in place.

You have been asked to comment on various aspects of this proposal.

(a) What would be the criteria for selecting products to be offered through the supermarket chain? What products would be suitable? What products would not be suitable and why? (3 marks)

(b) What policy features, including restrictions and conditions, would you expect to be associated with the products that would be suitable to be offered through the supermarket chain? (4 marks)

(c) What issues or concerns would need to be addressed by the following business areas with regard to this proposal and its implementation?

- **(i) Sales (2 marks)**
- **(ii) Marketing and Legal (2 marks)**
- **(iii) Finance and Financial Reporting/Valuation Actuary (2 marks)**

(d) In pricing products under this proposal, how would the various pricing assumptions differ from products that are sold through brokers? (4 marks)

(e) What would be the arguments for and against Have-a-Go seeking reinsurance support for the products offered under this proposal? (3 marks)

Solutions

a)

The criteria for such products should include:

- Must be amenable to very short-form underwriting ie where the product provides a reduced opportunity for anti-selection;
- Must be easily understood;
- Must be attractive to shoppers:
- Where there will be less chance of conflict with existing distribution channels.

Likely Products to be offered:

- Death-by-accident;
- Some simplified version of death-only insurance (such as Funeral Expenses cover);
- A very simplified DI or TPD policy.

Products those are not suitable:

- Trauma policies, due to anti-selection issues, and the complication of illness-definitions for simplified products. It would be hard to define something so strictly as to mitigate anti-selection issues, yet still offer something that could feasibly pay out;
- Nothing equivalent to that offered via brokers, in order to avoid “channel conflict”;
- Savings products unlikely as ongoing contributions could be more difficult to manage, if minimum levels of contributions are required.

Marking Guide:

0.5 marks for each point made and explained as above, to a maximum of 1.5 marks per section. To get full marks the candidate must include at least one point regarding each of the sections; criteria, suitable products and not suitable products.
To a maximum of 3 marks SJ

b)

Policy features expected to be associated with these products include:

- Relatively small sums insured would be necessary, with a very limited choice given to the customer (eg. in the form of a “tick the box”);
- Very simplified premium structure (broad age-bands, perhaps not even differentiated by gender or smoking status, depending on the policy);
- For a life policy, perhaps restricting cover to accidental death only in the first 2 years;
- Blanket exclusions on all claims for a fixed period, e.g. 3 months;
- Fairly comprehensive exclusion of pre-existing conditions (underwritten at claim time);
- Tight definitions of ability to claim (e.g. for TPD and DI, allowing claims only on Activities of Daily Living (ADL) definitions rather than ability to work);
- Proof of disablement is at Policyowner’s expense rather than Life company’s;
- Single or regular premium policies could be possible, though an obvious administrative attraction with single premium policies, as long as there is no associated surrender value;

- Usual restrictions of suicide, pregnancy, war, etc.

Marking Guide:

1 mark for each reasonable point with brief discussion;
0.5 marks can be awarded per point made with no or very limited discussion;

To a maximum of 4 marks KU.

c)

i) Issues or concerns from the Sales area include:

- Channel conflict with independent brokers, both in terms of actually contacting existing or future clients of the broker, and offering similar products at different rates to that through the broker. However this will probably not be a problem with the kinds of products likely to offered through the supermarket chain;
- Being able to contact the customer directly is welcomed, rather than via the broker who has the primary relationship with the client. As such may be opportunities for cross-selling of existing products;
- Setting minimum sales targets to achieve target profitability;
- Proper reporting of sales;
- Basic training of supermarket staff.

Marking Guide:

1 mark for discussion of channel conflict issue;
0.5 marks for additional points made with some discussion;

To a maximum of 2 marks SJ.

ii) Issues or concerns from the Marketing and Legal area include:

- Who else is in the market? Is this sort of thing already being offered? What research is required to actually show the potential success of this proposal?;
- The choice of Supermarket partnered with will be critical, want to choose a reputable, safe and successful brand;
- Choice of policy wording is critical, especially if a number of exclusions/restrictions will apply;
- Agreement with Supermarket chain needs to be precise to ensure that Have-a-Go's own interests are protected at all times, e.g. prominence of displays in stores, levels of remuneration agreed with Supermarket, etc.

Marking Guide:

1 mark for discussion of whether the market research has been done yet;
0.5 marks for additional points made with some discussion;

To a maximum of 2 marks SJ.

iii) Issues or concerns from Finance and Financial Reporting/Valuation Actuary include:

- Want an overview of nature of products and associated costs, particularly as to how the pricing assumptions relate to best estimate assumptions;

- A clear understanding of the nature of expenses used in pricing, e.g. are they aggressive in the face of competition (in terms of assumed per-policy expenses), do they incorporate what are likely significant start-up IT and training costs, are remuneration levels paid to the supermarket on a sales-only basis or also linked to persistency of business, etc?;
- How have mortality and morbidity assumptions been established;
- Lapse assumptions assumed and what were they benchmarked or established from;
- Aggregation of covers by unique client important, as Have-a-Go may be exposed on some lives more than anticipated;
- What arrangements need to be in place to facilitate ongoing reporting and reserving for this business.

Marking Guide:

1 mark for discussing the relationship between pricing assumptions and best-estimate for reserving purposes;
0.5 marks for additional points made with some discussion;
To a maximum of 2 marks SJ.

d)
Pricing assumptions may differ to products via brokers in the following areas:

<u>Lapses</u>

- *They may be higher due to*:
    - Lack of more intensive relationship (though this depends on the broker and their motivations and commission structures);
    - Less awareness of the policyholder of the value of the contract.
- *They may be lower due to*:
    - Smaller premiums, so less motivation to lapse (i.e. relying on inertia on behalf of the policyholder to keep policy in-force);
    - Policyholders have made their own choice to take out the insurance and may be more convinced about its value;
    - If cross-selling at a later date is successful and the insurance product is “packaged up” with a savings product, client may be unaware of the separate nature of the policy and not lapse it.
- Overall though it is reasonable to expect lapses to be higher.

<u>Mortality& Morbidity</u>

- *Experience may be heavier due to*:
    - Lack of underwriting, combined with direct sales approach;
    - General target market (general “shopper” versus typical higher-wealth broker target).
- *Experience may be lighter due to*:
    - Exact policy conditions – e.g. ADL definition for DI claims are only a very small proportion of typical DI claims, and own/any-occupation claims for TPD are far more frequent than ADL, so incidence rates might be very low;

- Time-based or pre-existing condition –based exclusions will, depending on their extent, limit claim incidence also.

Expenses & Commission

- *Expense assumptions may be lower due to*:
    - Minimal underwriting costs;
    - Simpler administration;
    - No sales force to maintain.
- *There will be a key dependence upon projections of sales volume*:
    - The incorporation of set-up costs if spread across anticipated policy numbers;
    - Sum insured and therefore premium size will be lower overall so recouping expenses in general is more of an issue than for broker business.
- *Commissions are going to be different to that paid to brokers*:
    - Possibly a fee-per-policy payment, though some % of premium could be used;
    - Payments relating to persistency are unlikely (supermarket has no control over this).

Marking Guide:

1 mark for each point in italics, if stated with some discussion/rationale;
2 marks maximum for any one assumption group above;
All 3 broad assumption groups above must be discussed to get full marks (i.e. if only 2 of lapses, mortality/morbidity and expenses/commission are discussed, there are 3 marks available as a maximum);

To a maximum of 4 marks CJ.

e)

Reasons for seeking reinsurance support include:

- New venture, new product line(s), so makes sense to have some financial support ie. reduced capital requirements & initial cash strain (via reinsurance commission) and claims volatility;
- New venture, new product line(s), so makes sense to have external expertise and experience;
- New venture, new product line(s), with likely heavier claims experience, so covering the mortality/morbidity risk to some degree is appropriate;
- Perhaps for relationship reasons it is useful to keep an existing reinsurer involved.

Reasons against seeking reinsurance support include:

- Low premium products, low sums insured, wide cross section of people being sold to, so reinsurance support perhaps not critical for morbidity/mortality risk;
- Cost of reinsurance – profit is reduced unnecessarily, particularly if products are priced conservatively;
- Extra administration costs and management time involved in administering reinsurance treaty (particularly for claims recoveries, premium payments and reinsurance commissions, etc).

Marking Guide:

0.5 marks for each point stated, or 1 mark per point with reasonable discussion;
2 marks maximum for either side of the argument;

To a maximum of 3 marks KU.

QUESTION 2 **(20 Marks)**

You are the Appointed Actuary for ABC Life Insurance Ltd. Over the past ten years ABC has acquired several other smaller Life Insurance companies. As a result ABC now manages and supports a large variety of traditional life, term life, disability income, TPD, trauma, and savings products.

Not all products are currently for sale as new business but each main product area has various forms or types of policies in-force which require ongoing management by ABC.

Although sales of new policies are at good levels and there is a large book of what should be profitable in-force business, ABC continues to struggle to produce reasonable levels of returns for shareholders.

It appears that expenses are relatively high compared to other companies of similar size in the industry. Because ABC has grown through acquisition more so than 'organic' growth of selling its own policies, the CEO, Mr Boss, is concerned that the inherited variety of products and associated administration systems are too expensive.

Mr Boss wants ABC to undertake a large scale project to rationalise products across the business. He would like your opinion on the benefits, associated costs, and potential risks that he should be aware of before moving further with this project.

Draft a note to Mr Boss outlining your thoughts. Your memo should cover the following broad areas on product rationalisation for ABC:

(1) Potentially beneficial outcomes. **(4 marks)**

(2) Likely nature and sources of potential costs associated with the product rationalisation. **(5 marks)**

(3) Risks associated with this product rationalisation. **(6 marks)**

(4) Your recommendation as to the initial steps in order to determine feasibility. **(5 marks)**

Solutions

<u>MEMO</u>

To: Mr Boss
From: Appointed Actuary
Re: Product Rationalisation for ABC Ltd

As requested, this memo sets out my views on the benefits, associated costs, and potential risks associated with a major product rationalisation.

I have also set out the next steps to be followed in order to determine the feasibility of the product rationalisation.

<u>(1) Potentially beneficial outcomes of Product Rationalisation (4 marks total)</u>

- Overall, legacy products consume time, resources and money. To mitigate these costs in general is beneficial;
- The simpler the business can be, the better, in terms of product understanding, systems maintenance, training of staff, etc;
- The types of direct costs likely to be reduced in a product rationalisation include:
    - Claims and policy administration staff;
    - A myriad of costs related to policy administration, such as retention, storage and retrieval of old policy documents, costs of producing different renewal letters and billing methods, paperwork and documentation, etc;
    - Maintenance costs of old and often inflexible IT/Mainframe systems, which if not too costly now will become that way as maintenance costs will increase on systems that become obsolete without technical support. Plus as less inforce policies remain on an old mainframe, the unit cost per policy goes up substantially.
    - Valuation and reporting time may be reduced if these products currently require special consideration or separate reporting.
- Indirect benefits of product rationalisation include:
    - Opportunity costs in not pursuing consolidation – it may cost more the longer it is left, and may be forced anyway via legislative or market changes. The simpler things can be now, the easier it is to be more flexible in the future. If not pursued, it may be difficult to grow the business in a cost-efficient manner in the future.
    - It is desirable to decrease the possibility of getting things wrong, which can occur through having too many products. E.g. not paying a claim when it is due and suffering reputation damage, or paying a claim when it shouldn't be, due to lack of familiarity and experience with a certain older product;
    - Limiting the risk of losing product/corporate knowledge through key staff leaving;
    - Risk based capital may be reduced due to the reduction in the risk of errors through having fewer products and systems and the reduced risks involving the loss of product/corporate knowledge through key staff leaving.
    - Service levels in general would improve with fewer legacy product and system knowledge requirements.

Marking Guide:

0.5 marks for each point, or 1 mark per point with reasonable discussion (max of 0.5 marks for the first "Overall" point);

To a maximum of 4 marks SJ.

(2) Likely nature and sources of potential costs (5 marks total)

There are a range of direct and indirect costs:

- IT consolidation is a risky and costly venture;
- Level of management attention required throughout the process will be significant and as such there may be a focus away from the growth and core business;
- When consolidating products, as a minimum requirement individual investors / policyholders will have to have new benefits that are at least as good as before – this introduces a minimum level of cost. Perfect matches of products with products is unlikely so there is a direct cost in terms of increased benefits, associated with ensuring no one is disadvantaged ("no detriment" test);
- A range of third party costs will be incurred for such things as advice and approval for tax neutrality of new investor / policyholder situations, assessment by independent experts to satisfy regulators, etc;
- Costs associated with full, open and regular disclosure to investors / policyholders;
- Loss of Funds under management or lost premium income if changes not favourably received;
- Time and cost of Investors' right to object, and the regulator's right to be heard;
- To be successful, need strong governance, planning, appropriately qualified staff, sufficient resources, all of which has a cost.

Marking Guide:

0.5 marks for each point, or 1 mark per point with reasonable discussion;
"No detriment test" must be stated for full marks, a maximum of 4 marks available if this is not mentioned;

To a maximum of 5 marks KU.

(3) Risks associated with product rationalisation (6 marks total)

Project Management Risks:

- Underestimation of the size and complexity of the project.
- The process may take longer than expected, with costs exceeding the initial budget – particularly with IT consolidation.
- May lose key and qualified staff, as well as resources, during the project.
- Keeping everyone engaged and motivated, as may not be able keep the process and the desired outcome simple enough for people to understand.

Process and Technical Risks:

- Mistakes in the process could be costly to fix.
- Complexity of taking into account reinsurance when consolidating products.
- Inadequate documentation or data management (process/technical risks) may result in errors of interpretation and specification of what needs to be done.
- If consolidation is at the product group level, may not consider the variations of product features within the product group.

Management Risk:

- Diverts management focus away from core business and new business strategies.

Customer Risks:

- Customers may object to any proposed changes.
- Changes may not be fair and equitable. For example may not maintain the consistency between products.
- Even if the changes are fair and equitable there may be a risk of reputation damage if the process is not transparent to customers and the communications with them are not clear and regular.
- If changes are not well received, long term reputation of company with customers and brokers may be at risk.
- Loss of funds under management or lost premium income if changes not favourably received.

Other Risks:

- Regulator may object to changes.
- May not maintain tax neutrality.
- Legal risks.

Marking Guide:

0.5 marks for each point, or 1 mark per point with reasonable discussion;

To a maximum of 6 marks SJ.

(4) Recommendation as to the initial steps in order to determine feasibility (5 marks)

- I would suggest that a full and detailed analysis of the business is undertaken to explicitly identify, wherever possible, whether the profit results are due to expenses associated with legacy products and systems;
- As such, need a comprehensive stocktake of current systems, processes and products that are both on-sale and closed to new business in order to begin assessment of “goodness of fit” matching; this should probably entail benchmarking possibly by external consultants.
- An initial look should be at where biggest gains are likely to be – for example, either with small numbers of policies on expensive systems, or large numbers of policies on other systems;

- This needs to be considered alongside the strategic/indirect aspects of the business. What are the overall plans for the future – new products/distribution etc? Active acquisition strategy? How do rationalising choices now impact that?;
- Look for lessons learned from the market – have others done or are doing this now? Can we learn from the market, policyholder, or regulator reaction to their moves? Not being first off the block has benefits;
- There is no harm in talking with APRA at an early stage, or potentially consultants who have been through this before (seek expertise of some form);
- These steps should enable an assessment of current and future costs of rationalising versus not, with full assessment of available resources, the commitment of general management as well as that in key business areas, and initial goals and plans with staged/phased achievables to deliver benefits (not all benefits should be merely "in the long term");
- Alternatives to consolidation can also be considered as part of this – is outsourcing possible for some lines? Or some other way to manage smaller blocks?;

Marking Guide:

1 mark for discussing that the biggest "bangs for buck" should be researched thoroughly prior to any action (many projects have failed for trying to do too much, so a staged/phased progress on the most material areas may be a sensible approach);

1 mark awarded for sensible discussion of seeking advice, from some combination of consultants, market observations, APRA, etc;

3 marks remaining, to be awarded as 0.5 marks for each point, or 1 mark per point with reasonable discussion;

Overall: Plus 1 bonus mark for answer presented in appropriate memo format, using appropriate language and the presentation is relatively formal and tidy.
To a maximum of 5 marks CJ.

QUESTION 3 **(25 Marks)**

XYZ Life Ltd is a provider of niche insurance products (mainly term life and disability income (DI) products), tailored predominantly, but not exclusively, for Australian professional workers in such fields as medicine, law and accountancy. The business strategy relies on forming excellent relationships with a select group of semi-independent brokers, who themselves target individuals with high levels of net wealth and who work in these professional areas.

Some concerns have been expressed about the emerging persistency experience across the business, as well as the morbidity experience.

You recently joined XYZ as a pricing actuary as part of a team that reports to the Marketing Manager (who is not an actuary). You have been asked to review various aspects of the business in relation to the pricing assumptions.

You have searched various product reports from several years ago, and although not comprehensive, they do provide some of the assumptions used in pricing. You have also got various policy and claim counts over the last few years. This information is below.

Policy data:

	Number of term life policies in force	Number of DI policies in force
1 Jan 2004	94,000	37,800
1 Jan 2005	93,800	37,900
1 Jan 2006	92,700	37,950
1 Jan 2007	91,500	38,200
1 Jan 2008	90,900	38,300

Calendar year	Term life policies sold	DI policies sold
2004	10,600	6,020
2005	10,800	6,000
2006	11,450	5,950
2007	12,720	5,920

Claim data:

	Open life claims	Open DI claims (claims in course of payment)
1 Jan 2004	37	69
1 Jan 2005	29	75
1 Jan 2006	37	85
1 Jan 2007	33	99
1 Jan 2008	28	123

Calendar year	New life claims admitted	New DI claims admitted
2004	98	54
2005	84	60
2006	89	55
2007	95	59

Pricing assumptions:

	Lapse assumption	Claims assumption
Term Life	12% p.a.	Given expected age/gender profile, approximate 0.1% claim rate.
DI	16% p.a.	Given expected age/gender/occupation profile, approximate 0.15% incidence rate. Termination rate basis could not be determined from available documentation

(a) Comment on the lapse experience of the term life and DI business, in particular any emerging trends you are concerned with. You must support your comments with analysis of the experience of the past four years including calculation of the lapse rates. Prepare your review in a format which could be readily understood by your manager. (6 marks)

(b) Comment on the claims experience of the term life and DI business over the past four years. Also comment on any emerging trends. You must support your comments with analysis of the experience of the past four years including (but not limited to) calculation of the incidence rates. Prepare your review in a format which could be readily understood by your manager. (9 marks)

(c) Suggest possible reasons for the emerging trends for the Term Life lapses and DI claims over the last 4 years. (5 marks)

(d) The Sales Manager is concerned with the overall trends in new business sales of DI policies. He suggests that offering a 30% discount off the premium for a DI policy, when sold in conjunction with a term life policy, would be a clever way to boost sales. He suggests that because the DI policy and term life policy would be sold together, this would assist profitability because (1) more sales overall would be expected, and (2) unit costs per policy involved with underwriting and new business/policy administration would decrease. Comment on this suggestion. (5 marks)

Solutions

a)

- Deriving the number of lapses in each calendar year is relatively straightforward - given by the formula:
  - Lapse numbers = no. of opening policies + no. of new policies – no. of claims – no. of closing policies.
- The lapses by year are :

	Term Life	DI
2004	10702	5866
2005	11816	5890
2006	12561	5645
2007	13225	5761

- Annual lapse rates could be approximated / established in various ways – e.g. as [policies lapsed]/[no. of policies at start of year], or [policies lapsed]/[average number of policies in year]. The latter is the better approximation.

Lapses established as a % of the starting number of policies in a year:

	Term Life	DI
2004	11.39%	15.52%
2005	12.60%	15.54%
2006	13.55%	14.87%
2007	14.45%	15.08%

Lapses established as a % of the average number of policies in a year:

	Term Life	DI
2004	11.40%	15.50%
2005	12.67%	15.53%
2006	13.64%	14.83%
2007	14.50%	15.06%

- DI lapses look reasonably steady and in line with pricing assumptions so no obvious concerns at this stage;
- Trends in term life lapses are concerning as they are getting higher as time goes on, in the order of 1% of policies per year (or approximate increases in the *lapse rate* of 7-9% per year). This is significant.
  Also, when compared to the 12% pricing assumption, term life lapses have now been higher than that for 3 consecutive years. In 2007 the lapse rate as a % of policies was 2.50% worse than the pricing assumption, equivalent to the lapse rate being 21% worse than pricing. This is also significant.

Marking Guide:

<u>For DI;</u>

0.5 marks for lapse numbers calculated correctly;
1 mark for reasonable derivation of lapses as a % rate;

To a maximum of 1.5 marks KU;

1 mark for statement about the trend;

To a maximum of 1 mark SJ;

<u>For term life;</u>

0.5 marks for lapse numbers calculated correctly;
1 mark for reasonable derivation of lapses as a % rate;

To a maximum of 1.5 marks KU;

1 mark for statement about the trend;

To a maximum of 1 mark SJ;

1 mark for discussing the concern that the term life lapse is high relative to pricing (a mark should not be awarded for just saying "lapse rates are high");

To a maximum of 1 mark CJ;

Minus 1 mark overall if explanations are not clear, precise and if they include actuarial jargon (as manager is not an actuary);

To a maximum of 6 marks overall.

b)
<u>Life Claims</u>

- Average claim is open for about 4 months ([30 open claims at point in time]/[90 new claims per year] x 12 months), which isn't unreasonable – depends on the company policy and processes;
- Claim numbers and claim incidence have remained relatively steady over time. Claim incidence can be established by various approximate methods, such as below;

	[new claims] / [term life policies in force at start of year]	[new claims] / [average term life policies in force over year]
2004	0.104%	0.104%
2005	0.090%	0.090%
2006	0.096%	0.097%
2007	0.104%	0.104%

- As claim incidence is in line with the pricing assumption, this does not give any cause for major concern at this time.

Marking Guide:

1 mark for historical analysis of claim rate similar to above;

To a maximum of 1 mark SJ;

1 mark for comparing to pricing assumptions and deducing no major concerns yet;

1 mark for other reasonable comment (e.g. as per first two bullet points);

To a maximum of 2 marks CJ;

To a maximum of 3 marks overall.

DI claim incidence

- DI claim numbers and claim incidence have remained relatively steady over time;
- Or acceptable to say that there is no clear trend, with minor movements up and down;
- Claim incidence can be established by various approximate methods, such as below;

	[new claims] / [DI policies in force at start of year]	[new claims] / [average DI policies in force over year]
2004	0.143%	0.143%
2005	0.158%	0.158%
2006	0.145%	0.144%
2007	0.154%	0.154%

- As claim incidence is in line with the pricing assumption, this does not give any cause for major concern at this time (of itself).

Marking Guide:

1 mark for historical analysis of claim rate similar to above;

To a maximum of 1 mark SJ;

1 mark for comparing to pricing assumptions and deducing no major concerns yet;
1 marks for other reasonable comments (e.g. as per first bullet point);

To a maximum of 2 marks CJ;

To a maximum of 3 marks overall.

DI Claims: Terminations, claims open, length of claims

- Claim terminations can at best only be an approximation here, due to lack of knowledge about existing claim durations, etc. What can be measured is numbers of claims closed during the year, and express this as some ratio of policies or existing claims. Below are numbers of claims closed and a measurement of termination as a % of claims open at the beginning of the year:

	Number of DI claims closed	Claim closure as % of open claims
2004	48	69.6%
2005	50	66.7%
2006	41	48.2%
2007	35	35.4%

- It is concerning that numbers of open claims are increasing significantly, which appears to be happening due to claims closure rates decreasing significantly over time;
- Simply differencing the open claim numbers shows that open claim numbers have grown by 6, 10, 14 and 23 claims per year over each of the four respective years, which demonstrates that numbers of open claims are increasing faster over time;
- Because numbers of new claims themselves are not increasing, the increase in open claims could be due to not closing older claims;
- Or it could be that as claim volumes are increasing overall, less time is being spent closing new claims at short durations and hence the open claims are increasing;
- On the surface this appears to be a concerning trend. However we do not know what the pricing basis was and whether we have the right measure / information yet to be concerned. But it clearly needs to be investigated in more depth.

Marking Guide:

1 mark for establishing numbers of claims closed and/or expressing this as an appropriate ratio, or for establishing the growth in numbers of open claim numbers over time;

To a maximum of 1 mark SJ;

1 mark for commenting that open claims are increasing/claims closure is decreasing;
1 mark for discussing the complexity of measuring claim terminations, and/or the difficulties to do so with the data presented in this question;
1 mark for mentioning that the pricing basis is unknown and so firm conclusions cannot yet be drawn;

To a maximum of 2 marks CJ;

To a maximum of 3 marks overall.

Overall question to a maximum of 9 marks;
Minus 1 mark overall if explanations are not clear, precise and if they include actuarial jargon (as manager is not an actuary).

c)
<u>Term Life lapses – possible reasons are:</u>
- Some brokers may be moving their clients to gain higher commissions elsewhere;
- XYZ life premiums may be high relative to the market and so policyholders are moving;
- Some brokers may have sold their books of business to another broker, who is now systematically moving their healthy clients to another company;
- XYZ's reputation may have been impacted recently – clients don't want to stay with the company;
- With most clients being professional workers, they may have had subsequent term life cover with job movements, new group covers, etc, and feel that individual term life cover is surplus to requirements;
- A deterioration in economic conditions.

Marking Guide:

0.5 marks for each valid point;
To a maximum of 1.5 marks (1 mark SJ and 0.5 marks CJ).

<u>DI Claims: Terminations, claims open, length of claims</u>

- Generally, as the book of claims increases, if the levels of claims staff do not increase (and claims per assessor go up), then they will not have the time to close claims as early as would be ideal, which harms termination rates;
- There may have been an exodus of key and experienced claims staff;
- Resource constraints in the claims area (e.g. to hire expert medical opinion, private investigators) has led to a deterioration in claims management;
- Less management attention in general to managing longer-term claims;
- XYZ may have been impacted by legal cases going against them and are reluctant to pro-actively look to close some claims;
- There may be loopholes in policy wordings/conditions that have caught XYZ unawares;
- There may be only minor reinsurance support for DI in which case there is little pressure or technical assistance from reinsurers to pro-actively manage claims;
- May be pressure from key brokers who have key clients on claim;
- The claims that are remaining open may only be for smaller covers / sums insured, so XYZ is not too worried about them (unlikely as most covers are sold to a relatively homogeneous pool (professionals)) – but the fact that we only have claim numbers rather than claim amounts or full claim data suggests caution be taken.

It is reasonably difficult to ascertain whether the experience is bad, as distinct from just getting worse over time, due to the lack of pricing information and more specific or useful claim data. Assuming that the termination rates and overall claims experience is “bad” relative to pricing, then reasons may be:

- The profile of the business sold may be different to that assumed in pricing;
- Some white-collar professions have poor morbidity overall – perhaps this experience is only coming to the fore now after a selection period has elapsed. Professionals may have worse claims experience because:
    - They know how to work the system;
    - They may have higher sum insured’s and therefore less incentive to go back to work;
- There may have been changes in underwriting standards/personnel at key times in the recent past;
- General economic conditions may be deteriorating – there is less incentive for claimants to come off claim depending on long term employment prospects.

Would need more analysis to make judgments on the DI experience. Analysis by duration, cause of claim, etc to make firm conclusions.

- In particular, is there an underlying issue such as a large number of mental illness claims, which can tend to have long duration.

Marking Guide:

0.5 marks for each valid point stated without explanation;
1 mark for each valid point stated with explanation;

To a maximum of 3.5 marks (1 mark SJ and 2.5 marks CJ);
To a maximum of 5 marks overall.

d)

- Obviously all proposals to increase sales of profitable business should be given due consideration;
- It is true that packaging policies in this manner should incur less cost in terms of underwriting and policy administration, than selling them at separate times. However:
  - With brokers selling to a professional client base, it is likely that most policyholders with both Term Life and DI bought them at the same time, so the same unit cost reductions are possible without any reference to a premium discount, and may in fact already be incorporated within pricing;
  - The issue is really whether the benefits of increasing such sales overall offset the premium reduction suggested.

Other points:

- Research would be needed to ensure sales will increase, and estimates need to be made as to how much. This could be established through talking with key brokers, looking at previous or similar schemes in the market, etc. The increase in sales and the impact on overall profitability together with the discount would need to be modeled;
- Is it a price issue that has been impacting DI sales in the last few years? Or is it something else? How do the existing DI premiums compare in the market? Is a premium reduction really necessary?;
- Offering DI with such a large discount may encourage “policy cannibalism” from existing clients (lapse existing DI policy and take out a new discounted policy). Although this is always a risk when any product is re-priced, it is more obvious to the market here with an explicit and large discount. In this case additional premium is lost unnecessarily;
- Term life policies have been showing marked increases in lapses in recent years. This may mean that the pricing of Term Life itself may require revisiting – if a Term Life/DI package is required at competitive rates, then a full market analysis of such packages should be undertaken as a first step, rather than an ad-hoc discount off DI;
- There would be significant IT and Policy administration implications. For example, if such a package was sold, and then the Life policy lapses, rules would have to be in place for the treatment of the ongoing DI premium, and the systems able to deliver it;
- DI policies appear to be showing deteriorating morbidity experience in recent years, as represented by claims lasting longer. It would be a risky response to try to encourage more sales of this product at heavily discounted rates without first understanding the key drivers of the experience.

Marking Guide:

0.5 marks for each of the first two bullet points, plus 1 mark for expanding / discussing the second bullet point as above;
1 mark for each other point made with reasonable discussion;
To a maximum of 5 marks CJ.

QUESTION 4 (18 Marks)

You recently qualified as an actuary and are working in Australia for Let Me Out Life Insurance Ltd. There is some pressure from within your company to increase surrender values on its with profit whole of life policies and its unit-linked policies. The unit-linked policies have surrender penalties in the first 5 years to cover initial expenses. You are slightly concerned with this because you have noticed that the rates of surrender on these policies appear to be in line with industry 'norms'.

(a) Why might there be pressure to increase surrender values? (4 marks)

(b) What factors should be considered before increasing surrender values? (7 marks)

(c) Let Me Out Ltd decided to increase surrender values, and 6 months later you have noticed that the rates of surrender have increased significantly. A survey of those who have surrendered has shown that over 80% wanted to effectively "cash up" as soon as possible. Their reason was to have funds to invest in the local stock market which has been delivering record levels of returns in the last 12 months. Senior management at Let Me Out Ltd are concerned with the loss of business and want you to draft a series of key points that policyholders should consider before surrendering their policies. Your points would form the basis of an information card that would be given to policyholders who are considering surrendering their policy. Discuss the key points you would make. (7 marks)

Solutions

a)
There may be pressure to increase surrender values because:

- The current surrender values may be lower than similar products in the market for certain key competitors, and there is pressure from sales and/or marketing to become more competitive in this area;
- Current surrender values may not be lower than similar products in the market, but there is pressure nonetheless from sales/marketing to generate a competitive advantage (or differentiated product) in the market;
- The current surrender values may be lower than other product lines offered by Let Me Out, so there is a need for consistency across the business;
- There may have been recent regulatory change, or anticipation of pending changes, that require a business decision to increase surrender values;
- The original policy documentation, benefit projections, advice at point of sale, or subsequent advice from Let Me Out to the policyholders may have been ambiguous or vague with regard to Surrender Values. As such policyholders' reasonable expectations may not be met with current surrender values, leading to pressure and potential legal challenge;
- There may be customer complaints about the level of surrender values, even if it was well explained and unambiguous – the business may make a decision to protect its reputation ahead of strict policy interpretations.
- Surrender profits – if too high lead to next point re equity.
- Equity – eg if appointed actuary felt there were some issues.
- Brokers want the policyholder to get the cash out to invest in other products that appear attractive.

Marking Guide:

1 mark for each point made and explained well;

To a maximum of 4 marks KU.

b)
Factors to be considered before increasing surrender values include:

- Are the increased surrender values going to be applied to existing business or just new business; (CJ)
- Who will be paying the cost for these increased surrender values?
  - For the with profit whole of life policies it may be the other policyholders resulting in decreased future bonuses; (CJ)
  - For the unit linked policies it will presumably be the shareholder possibly offset to some degree by reduced initial commission on new business if this change can be negotiated with the distribution channel; (CJ)
- As long as the surrender value basis has been made clear in policy documentation, sales process, subsequent information and correspondence, etc, then to increase surrender values on existing policies is likely at face value to simply be an additional expense above that planned for (i.e. impacts profit);
- Profit tests would have to be re-run in the event of any change to see what the overall impact is, and whether this is acceptable (this may mean modelling increases in surrender values, offset by increased sales, for example);

- The surrender values offered by competitors for similar products should be considered. If existing surrender values are competitive but there is pressure to differentiate the on-sale products in some manner, are there alternative ways of achieving this?;
- The likely impact of increased lapses should be considered (also in the form of a profit test, but also with secondary effects such as lapsing and re-entry into a different product);
- There may be benefits – less staff time dealing with customer complaints, better relations with sales agents/intermediaries, better brand name, etc;
- Other assumptions used in pricing could be reviewed such as per-policy expenses and mortality – have these improved to the extent that a higher surrender value can be accommodated without impacting profit beyond that assumed in pricing?;
- Should isolate/determine the actual source of pressure to increase Surrender values, and determine whether such an increase is the best method to address the underlying problem/issue;
- Any implications for capital requirements.
- How much will it cost to make the change, including admininistration and system costs?

Marking Guide:

1 mark for each point made and explained well;

To a maximum of 7 marks (5 marks SJ, and 2 marks CJ as indicated above).

c)
Key points the policyholder should consider before surrendering:

- It is important to seek independent financial advice for such a decision;
- This is particularly so with regard to any tax implications of the proposed surrender (and implications of what will be done with the resulting funds);
- There is a substantial protection/insurance benefit to the policyholder with a whole of life policy which is guaranteed upon death, this protection element/benefit is higher than the surrender value;
- For the with profit whole of life policies the value of future bonuses which may be at least partially forgone needs to be considered;
- If the policyholder is not able or intending to take out a similar protection policy, then there is a substantial loss of benefit for them beyond short-term cash requirements;
- The policyholder needs to be careful about the use of subsequent funds. In particular, in going from a guaranteed-benefit type of policy to one based on high risk such as equity investments, this represents a substantial change in the individual risk/return profile;
- Unit-linked policies, depending on the particular investment approach chosen, offer a diversified approach to investing. Investing funds in a more concentrated manner opens the investor to substantial concentration risk;
- It is true however that in the long term, equity investments may provide excellent returns for some investors. However other aspects need to be given careful consideration also, such as liquidity requirements and time horizon of investment;

- It should be noted that equity markets are volatile, and strong returns over a short time period (i.e. the previous 12 months) are no indication of future returns;
- Bonuses provide relatively stable long term returns compared to returns in a volatile sharemarket;
- Traditional with profit policies provide a higher return than just the bonus rates as the value of the underlying contract increases.
- As well as incurring termination charges on the surrender of life policies, new investment would incur setup costs.
- If sharemarket investments suit the investment profile of the investor, they can invest in the sharemarket through the unit linked contract with lower fees (eg no surrender penalty and potentially lower transaction costs);
- Also, I would make it clear that I would like to see the final draft overall note that the policyholder will see. This is particularly so to ensure the points made are interpreted correctly (and not selectively), and that it is presented clearly and in an understandable manner.

Marking Guide:

1 mark for each point made and explained well;

To a maximum of 7 marks CJ, but if the loss of protection benefits is not elaborated on, there is only a maximum of 6 marks available.

QUESTION 5 **(17 Marks)**

You are a recently qualified actuary and work for LotsOfCash Consultancy Ltd. LotsOfCash has been approached by Sporting Life Ltd, an Australian life insurer, for some advice.

Sporting Life Ltd has an unusual business strategy in that it deliberately seeks clients who are heavily involved in following sports. In particular, they target those who watch lots of sport on television, have hobbies such as collecting sporting memorabilia, belong to Sporting Fan Clubs and other non-playing organisations, and undertake a lot of international travel in organised Groups, in order to follow the fortunes of their particular sports team.

Sporting Life Ltd is not so interested in having active sporting participants as clients because of the perceived risks associated with injuries. They are comfortable with their target market because they consider them wealthy clients, who can afford the policies offered, and are unlikely to change policies/companies once they have settled on a familiar and trusted brand (which Sporting Life Ltd considers itself to be).

Sporting Life Ltd wants your advice on various risk and investment matters.

(a) Sporting Life Ltd recognises that their main client base has, on the whole, relatively sedentary lifestyles and often prolonged periods of high stress. Also there are risks associated with the large amount of international travel undertaken, to many different locations, which involves substantial amounts of time off work. Suggest ways to manage the mortality and morbidity risks that they face. **(5 marks)**

(b) Sporting Life wants your advice on its investment strategy in relation to its four main in-force products. The current investment allocations are as follows:

Product type	**Investment allocation**
Traditional Life (with profits)	**40% corporate bonds; 40% government bonds; 20% australian equities**
Yearly Renewable Term Life	**50% australian equities, 25% fixed interest high-grade corporate bonds, 25% property**
Disability Income (for both claims in course of payment and other liabilities)	**50% cash, 50% inflation-linked corporate bonds**
Unit-linked contracts	**75% overseas equities, 25% cash**

State with reasons which of these allocations you would change or require more information about. **(7 marks)**

(c) In response to demand from the target market wanting a product that both finances their lifestyle well into old age and ensures security for their spouse, Sporting Life has decided to offer a new annuity product. This will pay a monthly amount for the greater of the policyholder's life, or their spouse's life, with the payments increasing in line with inflation. Suggest, with reasons, an appropriate asset mix to back this product. (5 marks)

Solutions

a)
The general forms of risk mitigation are applicable here, but with some considerations specific to Sporting Life given their policyholder base. These include:

- Medical underwriting standards/training need to be high, particularly to pick up on the risk factors likely to be associated with the target market (such as BMI measures, blood pressure, immunisation records, previous ‘exotic’ diseases, etc). Associated medical loadings on premiums should be appropriate;
- Financial underwriting standards/training need to be high and relatively stringent. With such a strong focus on lifestyle/hobby rather than work, the typical client may present a strong risk of a disability claim; a low replacement ratio would discourage claiming rather than working
- Policy & product features. Competitiveness in the market needs to be balanced with reasonable restrictions/exclusions;
- Setting of premiums and fees need to account for the underlying risks, and if necessary need to be higher than with other target markets (with due regard to competitiveness, though the loyalty to brand/reputation as trusted provider issue assists here);
- Reinsurance is useful here, particularly on morbidity risks. Not only does this provide financial protection, but also much needed technical assistance and accountability around underwriting, product design, and claims management. All at a price, of course;
- Catastrophe reinsurance is also essential here as there is a lot of international travel in organized groups. This may or may not be through the reinsurance provider on the underlying/base business lines; (CJ)
- There should be exclusions for travel to dangerous countries.
- Diversify client base where possible – with the target market being Sporting Groups, some diversification can be achieved by way of geographic spread, the sport in question (e.g. Equestrian versus Rugby League supporter’s clubs would have different demographic and socio-economic profiles), and the nature of the interest group itself (e.g. a group that is formed to travel to cricket games in Asia, is different in nature to a group that meets together monthly to exchange sporting collector’s cards); (CJ)
- Diversify product range sold. If a client has mortality/morbidity covers as well as savings products or annuities, then this helps mitigate the overall risk to the business. (CJ)

Marking Guide:

1 mark for each point made and explained well;

To a maximum of 5 marks (3 marks SJ and 2 marks CJ).

b)

- For traditional life – doesn’t look unreasonable but will depend on policy documentation and historical disclosures made in order to ascertain suitability – need this information;

- For term life, the key is to have assets that match the expected duration of the liabilities. The overall allocation is too risky, particularly with the high equity and significant property exposure. The allocation should be heavily weighted towards short dated fixed interest. Cash is needed in order to pay claims (liquidity);
- For DI (active lives & claims) the cash allocation is far too high;
- For DI active lives would be similar to the Term Life product;
- For DI claims in course of payment additional information needed would include to what degree there is claim indexation and at what rate and what is the profile of benefit terms involved;
- For DI claims in course of payment the asset allocation should be selected to match the expected claim payments with appropriately dated fixed interest and index-linked fixed interest to match the claim payments which have indexation;
- For Unit-linked, it depends on the aggregate, average strategies chosen by investors. So need this info – though the mix above does look unusual, to have the riskiest and least risky allocations but nothing else.

Marking Guide:

1 mark for each point made and explained well;
Minus 0.5 marks for each comment that is a poor suggestion;

To a maximum of 7 marks SJ.

c)
Main points to be made include:

- Average duration will be long, so long term assets are required;
- These may be hard to find though, so possibly the best proxy is long dated bonds with possibly a smaller amount of equities also;
- CPI-increases require growth well into the future;
- Index-linked bonds and possibly equities will provide the best possibility of this;
- Liquidity is also an issue, so need appropriate matching of assets with expected payments;
- Again, appropriate mix of bonds with characteristics that match payments due is required. Only a small amount of cash as longer-term growth is needed;
- Overall, a range of index-linked bonds ranging in duration from medium to very long term are going to dominate. This can be supplemented with equities for longer-term growth prospects. Only small amount of cash required;
- A mix of 0-10% Cash, 70-90% index-linked bonds of varying durations, 10-20% equities is the approximate benchmark.

Marking Guide:

1 mark for each point made and explained well;

To a maximum of 5 marks CJ.

END OF PAPER