## COURSE COVERAGE

| Question | Unit | Syllabus Key Performance Objective(s) | Syllabus Learning Objective(s) | Page Reference in Course Notes/Textbook | SJ Marks | CJ Marks | Total Marks |
|---|---|---|---|---|---|---|---|
| 1 a) | 2 | 2.4 | 2.4.3 | Ch 24: pages 20-23 (section 5.2) | 16 | 0 | 16 |
| 1 b) | 2 | 2.4 | 2.4.3 | Ch 24: Sections 4 and 5 | 0 | 6 | 6 |
| 1 c) | 2 | 2.3, 2.4 | 2.3.2, 2.4.3 | Ch 23, section 6<br>Ch 24: pages 20-23 (section 5.2) | 2 | 6 | 8 |
| **Q1 Total** | | | | | **18** | **12** | **30** |
| 2 a) | 1 | 1 | 3 | 23-29 | 2 | 0 | 2 |
| 2 b) | 1<br>4 | 1<br>8 | 3<br>2 | 23-29<br>56 | 4 | 2 | 6 |
| 2 c) | 1 | 1 | 1,2,3 | 23-29 | 5 | 5 | 10 |
| 2 d) | 1 | 1 | 1,2,3 | 23-29 | 7 | 5 | 12 |
| **Q2 Total** | | | | | **18** | **12** | **30** |
| 3 a) | 3, 5 | 3,7, 5.10 | 3.7.1, 5.10.1, 5.10.2 | Ch 28 (all) | 7 | 0 | 7 |
| 3 b) | 5 | 5.10 | 5.10.1, 5.10.2 | Ch 28 (all) | 5 | 9 | 14 |
| 3 c) | 1, 4 | 1.1, 4.8 | 1.1.3, 4.8.1 | Ch 21 (section 5.4, page 12), Ch 27 (Section 4, pages 4-5) | 6 | 3 | 9 |
| **Q3 Total** | | | | | **18** | **12** | **30** |
| **Exam Total** | | | | | **54** | **36** | **90** |

## QUESTION 1: MARKING GUIDE

**a) i)**

| Solution Part a)i) | |
|---|---|
| Part (i) | |
| | |
| LPS 114 Stress | 2.50% |
| Equity Shock | -36% |
| | |
| Assets Pre-Stress | 50,000,000 |
| Net of Reins Liabilities pre-Stress | 30,800,000 |
| | |
| Assets Post-Stress | 46,428,571 |
| Net of Reins Liabilities Post-Stress | 30,800,000 |
| | |
| Gross of Tax Charge | 3,571,429 |
| Tax | 1,071,429 |
| | |
| Net of Tax Charge | 2,500,000 |

The equity stress component of the asset risk charge is $2.5m

**Marking Guide**

- **1 Mark for correctly determining the asset value post-stress**
- **0.5 Marks for determining the gross of tax charge**
- **0.5 Marks for determining the net of tax charge**

**a) ii)**

| **Solution Part a)ii)** | |
|---|---|
| Part (ii) | |
| | |
| LPS 114 Stress (Up) | 0.25 |
| Interest Rate Stress | 0.63% |
| | |
| Assets Pre-Stress | 50,000,000 |
| Net of Reins Liabilities pre-Stress | 30,800,000 |
| | |
| Assets Post-Stress | 49,250,000 |
| Net of Reins Liabilities Post-Stress | 30,392,750 |
| | |
| Gross of Tax Charge | 342,750 |
| Tax | 102,825 |
| | |
| Net of Tax Charge | 239,925 |
| | |
| | |
| LPS 114 Stress (Dn) | (0.20) |
| Interest Rate Stress | -0.50% |
| | |
| Assets Pre-Stress | 50,000,000 |
| Net of Reins Liabilities pre-Stress | 30,800,000 |
| | |
| Assets Post-Stress | 50,600,000 |
| Net of Reins Liabilities Post-Stress | 31,125,800 |
| | |
| Gross of Tax Charge | - |
| Tax | - |
| | |
| Net of Tax Charge | - |

The Real Interest Rate Stress component of the asset risk charge is:
$239,925 for real interest rate up
$0 for real interest rate down

**Marking Guide (Real Interest Rate up)**

- **1 Mark for determining the asset value post-stress**
- **1 Mark for determining the liability value post stress**
- **0.5 Marks for determining the gross of tax charge**
- **0.5 Marks for determining the net of tax charge**

**Marking Guide (Real Interest Rate down)**

- **1 mark for applying the Up-scenario logic to the Down scenario, reduced by 0.5 marks for each additional, distinct error (subject to a floor of 0).**

**(If Down stress attempted first, switch the order of the above two marking guides.)**
**a) iii)**

| **Solution Part a)iii)** | |
|---|---|
| Part (iii) | |
| | |
| LPS 114 Stress (Up) | 1.25% |
| Inflation Rate Stress | 1.25% |
| | |
| Assets Pre-Stress | 50,000,000 |
| Net of Reins Liabilities pre-Stress | 30,800,000 |
| | |
| Assets Post-Stress | 48,500,000 |
| Net of Reins Liabilities Post-Stress | 29,985,500 |
| | |
| Gross of Tax Charge | 685,500 |
| Tax | 205,650 |
| | |
| Net of Tax Charge | 479,850 |
| | |
| | |
| LPS 114 Stress (Dn) | -1.00% |
| Inflation Rate Stress | -1.00% |
| | |
| Assets Pre-Stress | 50,000,000 |
| Net of Reins Liabilities pre-Stress | 30,800,000 |
| | |
| Assets Post-Stress | 51,200,000 |
| Net of Reins Liabilities Post-Stress | 31,451,600 |
| | |
| Gross of Tax Charge | - |
| Tax | - |
| | |
| Net of Tax Charge | - |

The Expected Inflation Stress component of the asset risk charge is:
$479,850 for inflation rate up
$0 for inflation rate down

**Marking Guide (Inflation Rate up)**

- **1 Mark for determining the asset value post-stress**
- **1 Mark for determining the liability value post stress**
- **0.5 Marks for determining the gross of tax charge**
- **0.5 Marks for determining the net of tax charge**

**Marking Guide (Inflation Rate down)**

- **1 mark for applying the Up-scenario logic to the Down scenario, reduced by 0.5 marks for each additional, distinct error (subject to a floor of 0).**

**(If Down stress attempted first, switch the order of the above two marking guides.)**
**a) iv)**

| **Solution Part a)iv)** | |
|---|---|
| Part (iv) | |
| | |
| LPS 114 Stress (Reinsurance) | 2.00% |
| LPS 114 Stress (Outstanding Premium) | 4% |
| | |
| Assets Pre-Stress | 50,000,000 |
| Net of Reins Liabilities pre-Stress | 30,800,000 |
| | |
| Assets Post-Stress | 49,980,000 |
| Net of Reins Liabilities Post-Stress | 30,824,000 |
| | |
| Gross of Tax Charge | 44,000 |
| Tax | 13,200 |
| | |
| Net of Tax Charge | 30,800 |

The Default stress charge is $30,800

**Marking Guide**

- **1 Mark for determining the asset value post-stress**
- **1 Mark for determining the liability value post stress.**
- **0.5 Marks for determining the gross of tax charge**
- **0.5 Marks for determining the net of tax charge**

**a) v)**

| **Solution Part a)v)** | | | | | | |
|---|---|---|---|---|---|---|
| Part (v) | | | | | | |
| | | | | | | |
| RIR Up, INF Up | | | | | | |
| | | | | | | |
| | Value | Sign | | | | |
| RIR | 239,925 | - 1 | | | | |
| INF | 479,850 | - 1 | | | | |
| CUR | - | 1 | | | | |
| EQY | 2,500,000 | 1 | | | | |
| PROP | - | 1 | | | | |
| CSP | - | 1 | | | | |
| | | | | | | |
| | | | | | | |
| | RIR | INF | CUR | EQY | PROP | CSP |
| RIR | 57,564,005,625 | 23,025,602,250 | - | - | - | - |
| INF | 23,025,602,250 | 230,256,022,500 | - | - | - | - |
| CUR | - | - | - | - | - | - |
| EQY | - | - | - | 6,250,000,000,000 | - | - |
| PROP | - | - | - | - | - | - |
| CSP | - | - | - | - | - | - |
| | | | | | | |
| Total | 2,565,906 | | | | | |
| | | | | | | |
| Final ARC | 2,596,706 | | | | | |

The ARC is $2,596,706

**Marking Guide**

- **1 Mark for using the correct signs in respect of real interest rates and expected Inflation**
- **1 Mark for computing the diversified ARC (pre-addition of the default stress)**
- **1 Mark for computing the final ARC (after addition of default stress)**

**b)**

- **Run-off of Group Business.**

Over the next 3 years, it is expected that the majority of our group business liabilities will have run-off. We currently hold regulatory capital (the Prescribed Capital Amount or "PCA") for insurance and asset risks on this portfolio. This capital is in addition to our estimate of outstanding claim reserves.

The outstanding claim reserves represent our liability for claims that have been incurred but have yet to be reported (IBNR). As claims get reported, we will release the IBNR and the associated regulatory capital.

 

So, over the next 3 years and assuming the business runs off in line with our expectations, we expect **surplus assets to increase over this time**. The increase reflects the fact that, if the business runs off in line with expected, the PCA will not be required and hence will be available for use elsewhere in the business.

- **Expected growth in Level Premium Business**

As we are projecting the business to grow quite strongly, we require capital to fund this growth. This capital is to fund acquisition expenses such as advertising costs. This expenditure will **reduce surplus assets**.

In addition, given that ABC Life have limited capacity to raise capital, this growth needs to be funded from our existing shareholder capital as well as the earnings from our existing business.

- **Future claims vs Future premium pattern for Level Premium Business**

At the moment, our adjusted liability is based on our IBNR. At some point in the future, we may require that we need to hold an additional reserve. At the moment, we expect the value of our future premiums to exceed our claims. This is because the book is in the early stages of growth. As the book matures, there will be a time where the value of future claims exceeds the value of future premiums. This means that, in the future, our adjusted policy liability will be made up of the IBNR as well as the expected shortfall of premiums compared with claims and expenses.

The impact of asset stresses on the adjusted policy liability are based on the impact of interest and inflation stresses on the IBNR. The IBNR has a duration of 0.2 years. In the future, when the value of claims exceeds premiums, the duration of the adjusted policy liability will increase. This has the following implications:

  - At the moment, we incur a capital charge when interest rates and inflation increase. We may find that the reverse is true when the liability duration increases. Interest rate and inflation rate decreases will increase the value of both assets and liabilities. Until we have the projections complete, **it will be difficult to ascertain how surplus assets will change**

  - Based on the above, we will need to consider our Asset Liability Management strategy in order to ensure that it reflects the risks inherent in the business and the risk appetite of the Board.

- **Asset concentration risk of reinsurance asset**

The level premium business is heavily reinsured. Over time, and as the group business runs-off, the value of the reinsurance asset on the Balance Sheet will increase and the proportion of total assets related to reinsurance receivables will increase. At the moment, the level of the reinsurance asset is below the limits prescribed by the regulator. At some stage in the future, we may incur a capital charge, known as the asset concentration risk charge, due to our exposure to Global Re.

 

The charge represents the exposure level above the prescribed threshold. If we were to incur such a charge, **surplus assets would reduce**. This has implications for our reinsurance strategy and our overall insurance risk appetite

- **Operational Risk Charge**

Large premium income growth may trigger a non-zero (or higher) "growth component" of the Operational Risk Charge. As a result of the increased capital requirement, **surplus assets would reduce**.

**Marking Guide**

- **1.5 Mark for each valid factor that will drive the change in surplus assets over the short to medium term. Up to a maximum of 4.5 Marks.**
- **0.5 Marks for stating the correct directional impact. Up to a maximum of 1.5 Marks.**

**c)**

**Implications of Strategy**

**c) i) PCA**
The PCA will be expected to reduce following the implementation of this strategy. This is because the value of both assets and liabilities will change as a result of interest rate movements.

Furthermore, for a given change in the real interest rate, the assets and liabilities will move in the same direction. Under this strategy, the value of assets and liabilities will not change under an equity stress scenario.

In addition, there would be a reduction in the aggregation benefit offsetting some of the benefit with the lower ARC.

**Marking Guide**

- **1 mark for stating that the PCA would reduce**
- **1 mark for offset by reduction in aggregation benefit**
- **2 marks for stating that this is due to the fact that when interest rates change both assets and liabilities will move in the same direction.**
- **1 mark for any other relevant point.**

**Up to 4 marks**

 

**c) ii) Profit**

As the expected return for equities is higher compared to government bonds, we would expect profit over the next year to be lower as a result of this strategy.

However, we would expect that the profit outcomes are less volatile as equity returns are more volatile than bond yields.

**Marking Guide**

- **1 mark for stating that profit expected for the next year would reduce because of a lower expected return on assets.**
- **1 mark for stating that profit is expected to be less volatile, due to lower volatility in bond yields compared to equities.**

**Run-off of Group Business**

**c) iii)**
The run-off of the group business coupled with the growth of the level premium business will mean that the duration of the liabilities will reduce in the short-term. So, assuming that the duration of assets remains unchanged, the asset risk charge will increase as the duration mis-match will increase.

In light of the duration mis-match highlighted above, we may consider additional strategies that could be employed. One such strategy is to ensure that there is frequent re-balancing of the asset portfolio to match the duration of the liabilities. However, we need to balance this against the level of transaction costs and the complexity this brings.

**Marking Guide**

- **1 Mark for explaining that, in the short-term (until RFBEL dominates, as the IBNR runs off), the ARC would increase as the duration mis-match between assets and liabilities would increase.**
- **1 Mark for suggesting that frequent re-balancing occur to match the duration of assets and liabilities.**

## END OF MARKING GUIDE QUESTION 1

 

## QUESTION 2: MARKING GUIDE

**a)** Policy liability = BEL + PVFP for each RPG= (-$1bn+$0.5bn) + (-$0.6bn + $0.6bn + $0.3bn) = -$0.2bn

**Marking Guide**

- **1 mark for correct formula**
- **1 mark for correct answer**

**Up to 2 marks**

**b) i)**

- If the expected number of policies in force becomes the carrier, this means that profit margins will be released in line with the lapse (and to a lesser extent, claim) pattern of the policies.
- Claims runoff patterns depend also on lapses but are also dependent on the increasing age of the policyholders, with claims generally being higher for higher ages
- Hence policies in force runoff quicker than claims which means there will be more profit accelerated under Alternative A than the status quo.

**Marking Guide**

- **2 marks for explanation as to why claims occur in later years of the projection to a greater extent than policies in force being higher in the later years**
- **1 mark for linkage between more claims in later years relative to policies in force in that period implying faster profit release for Alternative A**

**Up to 3 marks**

**b) ii)**

- TEV is equal to the Adjusted Net Worth (ANW) of the entity + Value of Inforce (VIF). The ANW is not impacted by the shift to Alternative A.
- The VIF is based on distributable cash flows (shareholder profits and net capital release) and the only cash flow that changes is shareholder tax.
- The reason for this is that the excess capital is the primary driver of the distributable cash flow each year rather than the profit and capital has not changed.
- Higher profits in earlier years means higher tax is paid in earlier years.
- Higher tax in earlier years will reduce the TEV as the discounting effect applied to the cash outflows in respect of shareholder tax will be diluted.

 

- Uncertain imputation credit effect (if any) – this depends on whether the same tax rules as the current standard apply.

**Marking Guide**

- **1 mark for demonstrating knowledge of the components of TEV**
- **1 mark for identifying that tax is the only item impacted**
- **1 mark for identifying that accelerated tax will mean a lower TEV due the discounting effect**

**Up to 3 marks**

**c) i)**

Lump sum death RPG:

- PL = BEL + PVFP = -$1bn + $0.5bn = -$0.5bn
- BEL = PV claims + PV expenses + PV commission – PV premium

  = PV claims + PV expenses – (PV premium - PV commission)

  -$1bn = PV claims + PV expenses – $3bn

  PV claims + PV expenses = $3bn - $1b = $2bn
- CEL = PV claims & expenses * 110% - PV premiums (net of commissions) = $2bn* 110% - $3bn = -$0.8bn
- Given no impact on transition, PVFCP = LP3 340 Policy Liability - CEL = -$0.5bn --$0.8bn = $0.3bn

**Marking Guide**

- **1.5 marks for calculating PV claims and expenses on a best estimate basis**
- **1.5 marks for calculation of CEL**
- **1 mark for calculation of PVFCP**

**Up to 4 marks**

**c) ii)** Dear CFO,

In response to your concern regarding profitability for the next 3 years in the event Alternative B were implemented, please note the following

- There will be a reduction in the planned profit release given the PVFCP is lower than the PVFP

- However, we should see an increase in profit from cash outflows for claims and expenses being lower than the corresponding CEL movement. This is because there is now prudence built into the projected CEL cash flows for claims and expenses.
- These two effects (from reduced planned profit release and higher variance between actual and planned profits) are expected to largely offset one another such that any residual impact on actual profits is small relative to the change in planned profit release (although there will likely still be some change)
- Note that given the business is highly profitable it is unlikely to go into loss recognition as a result of Modification B

Kind regards,

Planning Actuary

**Marking Guide**

- **1 mark for identifying reduction in planned profit release.**
- **1 mark for identifying increase in profit from release of prudence (i.e. cash outflows for claims and expenses being lower than the corresponding CEL movement)**
- **1 mark for identifying that these two effects largely offset OR impact on profits is small**
- **1 mark for summary response saying limited impact on profitability**
- **1 mark for comment about being unlikely to go into loss recognition**
- **1 mark for memo format and clear, concise communication style**

**Up to 6 marks**

**d) i)**

Disability income RPG NB:

At inception, PVFP is determined as –BELExAcq = – (BEL – Acq expenses) (so that BELExAcq + PVFP = 0).

Policy liability immediately after Acq Expenses = (BEL – Acq Expenses) + PVFP = (BEL – Acq Expenses) + (-BELExAcq) = (BEL – Acq Expenses)– (BEL – Acq expenses) = nil

Note this assumes zero loss recognition.

**Marking Guide**

- **1 mark for recognising need to still apply basic policy liability formula, just with different PVFP**
- **1 mark for correct answer**

**Up to 2 marks**

 

**d) ii)**

- The new business will show a substantial loss in the first year given that there is effectively no deferral mechanism for the acquisition expenses
- Given the PVFP is higher at outset this will mean that the profit in year 2 and each subsequent year will be higher under Alternative C than under LPS 340.

**Marking Guide**

- **1.5 marks for mentioning high loss in first year due to acquisition expenses**
- **1.5 marks for noting that future years will be higher**

**Up to 3 marks**

**d) iii)**

Dear Industry Body,

Please find below our view of the advantages and disadvantages of adopting Alternative C which we would like incorporated into an industry response:

First of all we would note that any change in the reserving process does not impact the overall profitability of the business over the lifetime. The same total profit will be earned, just the timing will be different. The same cashflows will be incurred at exactly the same point in time.

However, regarding advantages we see that there could result a change in company behavior that would be advantageous to all parties

<u>Advantages</u>

- Encourages lower acquisition costs: By forcing acquisition expenses to come through as a loss in the first year, one might expect companies to focus more on reducing up front commissions paid to advisors over time and pursuit of cheaper distribution channels. If this occurs it should ultimately flow through as a benefit to consumers, with increased servicing by advisers to ensure policies are maintained and not lapsed.
- Closer alignment to capital standards: Adoption of Alternative C would create a profit signature which is much closer to the signature of distributable profits generated by the YRT business, and remove a disconnect which can cause confusion for some stakeholders.

<u>Disadvantages</u>

- The main disadvantage is that it will not reflect a realistic measure of profitability. Companies growing rapidly will look less profitable and will have to adopt other measures such as embedded value to explain themselves to the market.
- Short term profit reduction: The change is likely to mean substantially lower profits for the next 3-5 years compared to what was previously expected by shareholders and may cause unnecessary concern for investors who are not accustomed to taking a long-term view.

 

- Whilst it may be possible to restructure the commission, it is not possible to restructure other operational acquisition costs such as underwriting, medicals, sales support and policy issue administration. These costs are often equal to the first year's premium.
- Profit volatility: Profits will be directly exposed to the quantum of acquisition expenses in any given year, and so volatility in acquisition expenses will flow straight through to reported profit implying more volatility.
- Usage of taxable losses: The change may mean substantial taxable losses for some entities in early years which may not utilised, and reduces Government taxation revenue.

Kind regards,

CFO of Safe4Life

**Marking Guide**

- **1.5 marks for recognizing no change in profit over the lifetime of a policy**
- **1.5 mark for one advantage**
- **1.5 mark for each disadvantage, up to two disadvantages**
- **1 mark for writing in a format which CFO can relatively easily pass onto the industry body**

**Up to 7 marks**

## END OF MARKING GUIDE QUESTION 2

 

## QUESTION 3: MARKING GUIDE

**a) i)**

The drivers of the PRP change in SF1 are:

- No bonuses were paid out of the PRP over the year. Bonuses are only paid out at maturity and there were no maturities over the year. As no bonuses were paid, there was no change to the PRP (and hence no cost of declared bonus).
- Policyholders are entitled to 80% of the profits on the conventional book. As profits emerged over the year, the PRP increases by 80% of the profit ($2m) earned in the year.

**Marking Guide**

- **1.5 Mark for each point with a total of 3 marks**

**a) ii)**

Profit for the year can be different to the change in net assets as a result of:

- Net Assets (t) = Net Assets (t-1) + Profit (t) + Capital Injection – Dividends
- So, in this instance, the additional information needed would be details of any capital injection or dividend paid to its parent.
- In this situation, as the change in net assets is bigger than the change in profit, a net capital injection occurred. This is not unexpected for SF2 of SYD Life given the business needs capital to grow so strongly.

**Marking Guide**

- **1 Mark for highlighting dividends**
- **1 Mark for highlighting capital injections**
- **2 Marks for highlighting a possible reason for the net capital injection**

**b) i)**

- The lapse experience on disability income business only impacts active lives as those on claim will not lapse (as they are receiving a payment)
- The DI book is in loss recognition and the policy liability for the active lives is positive. We expect that the net cashflows that we pay out over the year (including interest on the opening liability) will offset with the reduction in liability over the year.
- If more people lapse compared to what we were expecting, this liability will run-off (reduce) faster and we won't pay out as much than what we were expecting thus creating a profit in the period.

 

**Marking Guide**

- **1 Mark for stating that lapse experience only impacts active lives**
- **1 Mark for highlighting that we expect that the net cashflows paid out will offset with the reduction in liability if experience is as expected**
- **1 Mark for recognising that if more people lapse than what is assumed, we will pay out less than what we expected and the liability will run-off faster compared thus creating a profit**

**b) ii)**

- The total investment income in the P&L and earnings on shareholder capital and retained earnings are not equivalent measures. However, they are related.
- The investment income in the P&L reflects the actual investment income that we have earned in the period based on the actual assets we hold. In our case, it would be interest/coupons received and any realised/unrealised capital gains and losses.
- In the AoP, we divide investment earnings into 2 parts:
  - Earnings on the opening policy liability. This is based on the discount rate used to determine the opening policy liability. These earnings are included in the planned profit margins; and
  - Actual investment earnings earned in excess of these earnings on the opening policy liability.
- For the lump sum business, the earnings on the policy liability will be negative as the liability is negative but will be positive for disability income business.
- There is no error in the AoP. The dynamic is just presentational. The total profit from the AoP matches the profit in the P&L

**Marking Guide**

- **1.5 Marks for highlighting that the two measures are not equivalent but are related**
- **1.5 Marks for highlighting what the actual investment income in the P&L represents**
- **1.5 Marks for highlighting that the planned profit margins include the expected earnings on the policy liability**
- **1.5 Marks for highlighting that the earnings on SH Cap and retained profits include the actual earnings in excess of the PL**
- **1.5 marks for any other key point**

**Up to 6 marks.**

 

**b) iii)**

- The assumptions underpinning the policy liability did not all eventuate in the current year.
  - There were no non-economic experience profits in the period.
  - However, the discount rate turned out to be different compared with the expected position last year.
- The loss has arisen due to the asset liability mis-match for assets backing the DI RPG. In particular, the change in the discount rate used to determine the policy liability did not fully offset with the change in the value of assets backing the business.
- In particular, the net policy liability is bigger than the size of the total fixed interest assets with SF2.
- The loss could be mitigated by:
  - Allocating assets to the DI RPG sufficient to cover the total policy liability (active lives and disabled lives)
  - Matching the duration of the assets to the duration of the liability. This may need to be done in 2 parts as the duration of the active lives and disabled lives portfolio may be different.

**Marking Guide**

- **1 Mark for highlighting that there were economic experience variances this year as the discount rate changed**
- **1 Mark for highlighting that the assets and liabilities were mismatched**
- **1 Mark for noticing that the net policy liability (PL) exceeds the total fixed interest assets for SF2**
- **1 Mark for recommending that assets sufficient to cover the total liability be allocated to the DI RPG**
- **1 Mark for recommending that the assets be duration matched to the liabilities**
- **1 Mark for highlighting that the durations of the active and disabled lives may be different**

**Up to 5 Marks**

**c) i)**

- No impact to profit in the current period. The increase in BEL of $10m can be absorbed in the current profit margins leaving the liability unchanged (and hence no profit impact). The value of margins after the model correction are $31.8m

**Marking Guide**

- **1.5 Marks for determining PVPM and PL after the model change**
- **1.5 Marks for determining no impact to profit**

 

**c) ii)**

- EV will reduce as the value of future profits is reducing. There will also be a cost of capital impact but this has not been considered.
- EV impact will be less than the BEL impact as, under a Traditional EV, future cashflows are discounted using a risk discount rate which is higher than the risk free-rate used in the BEL

**Marking Guide**

- **1 Mark for stating that EV will reduce**
- **1 mark for determining impact will be less than the BEL impact**
- **1 mark for highlighting reason EV impact is less than BEL impact (i.e. highlighting higher discount rate in EV)**

**c) iii)**

- The DI BEL would increase as the model change is adverse
- If the model error impacted DI, there would be no profit margins to absorb the change in BEL since the RPG is in loss recognition
- Loss recognition balance would increase with the increase impacting profit in the current period. That is, profit would reduce by the size of the BEL change.

**Marking Guide**

- **1 Mark for stating that BEL for DI RPG increases**
- **2 marks for stating that the change in BEL would reduce profit in the current period as there are no margins to absorb the change since the book is in loss recognition**

## END OF MARKING GUIDE QUESTION 3

## END OF MARKING GUIDE

 