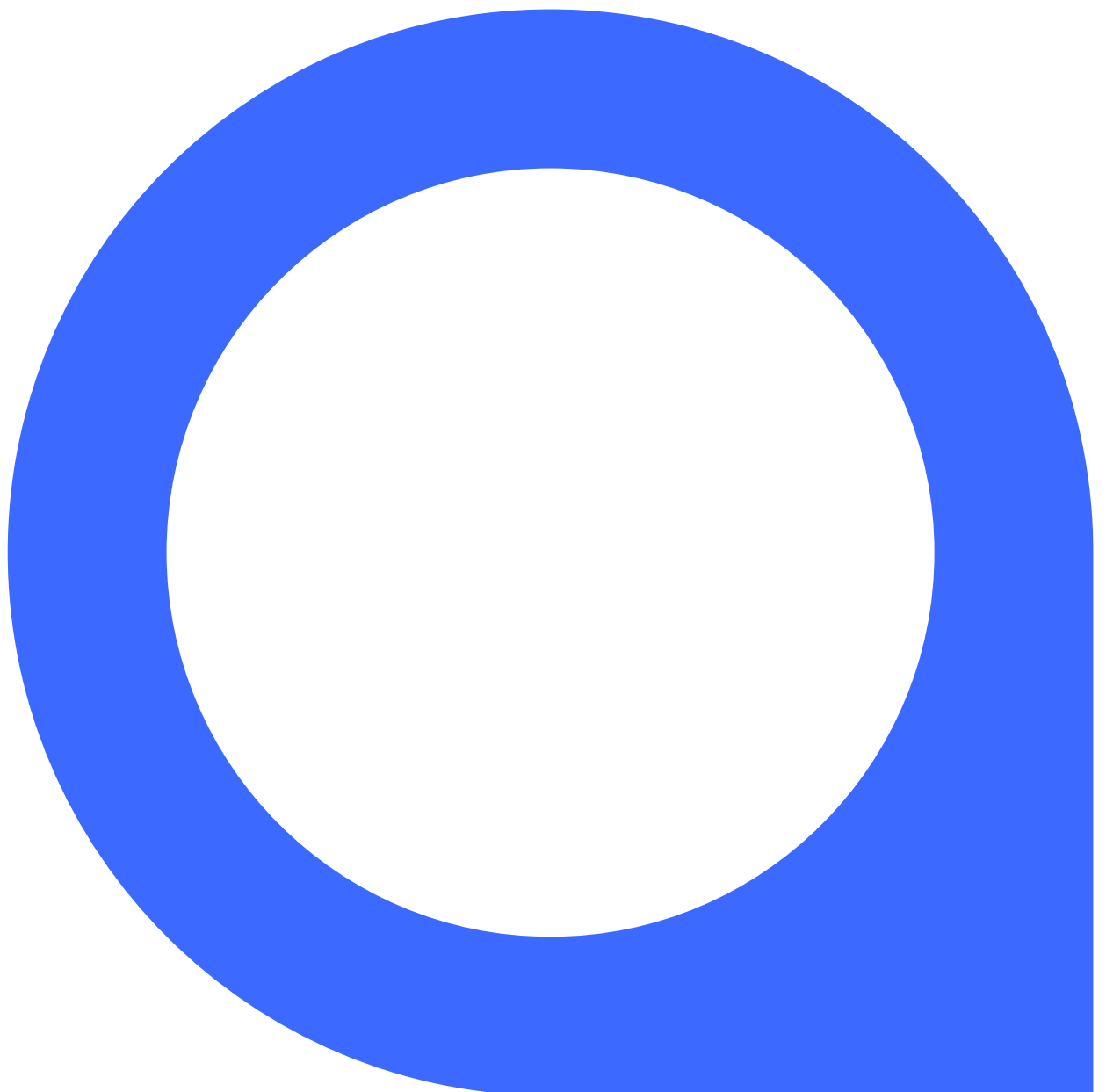


# Asset Liability Management

Exam Marking Guide Semester 1  
2025





### Marking Guide

This exam represents 80% of the available marks for the Asset liability management subject. The remaining 20% comes from the assignment.

Question	Syllabus Learning Objectives	Total Marks	SA	A	H
1	3.2, 3.4, 6.1,6.2,6.3, 6.4,6.5,6.6	20	8	6	6
2	1.1,2.3,2.5,3.2, 3.4,5.1,5.2,5.3,6.2,6.3,6.4,6.7	20	11	9	0
3	1.1,1.2,1.4,2.1,2.2,2.4,2.5,3.1,3.2,5.1,6.2,6.5,6.7,6.8	20	0	14	6
4	1.3,2.5,3.1,3.2,3.3,3.4,5.1,6.1,6.2,6.3,6.4,6.5,6.8	20	4	12	4
Total		80	23	41	16
% of total			28.75	51.25	20.00

**SA** – Simple Application 30%

**A** – Application 50%

**H** – Higher order/ Judgement/Evaluation 20%



### **Note to Markers:**

*An overarching principle is that marks should be awarded for necessary work undertaken by a student to arrive at an answer to a question. You may think of this as telling a story to answer the question that is asked. In respect of marking, please award marks for defining terms, describing background and context which is relevant to 'telling a story' to answer the question.*

*We give guidance to students that copying and pasting is allowed but they need to address the specified scenario to pass the examination. The marking guide for each question generally states whether marks can be awarded for generic points or whether the points given must be linked to the given problem context. If the marking guide does not specify otherwise, marks **SHOULD** be awarded for relevant comments that may appear to have been copy pasted from either the modules or another resource, such as a prudential or professional standard.*

**Marks may also be awarded for any other relevant point not included in the marking guide.**

**Where any such marks are awarded, the relevant point should be reported to the Chief Examiner so that they can confirm the validity, include it into the final version of the marking guide and ensure any other marker(s) for that question are aware of the change and award the mark to all candidates making the additional point.**

**As a rule, a complete sentence should be awarded 1 mark.**

*A complete sentence includes a clause and a connecting clause. An example sentence is 'The insurer pays a benefit on death' (0.5 mark for the clause) provided the premiums are paid (0.5 mark for connecting clause)'.*

*The exam questions each start with a 'command verb' that provides information to students and markers about what is expected in an answer to the question. Please watch the following short video for information about the learning levels and command verbs used by the Institute:  
[https://www.youtube.com/watch?v=g1Oyv\\_RpfU4](https://www.youtube.com/watch?v=g1Oyv_RpfU4). Definitions of each of these command verbs is also provided within this marking guide.*

*Please note that many of the answers in this marking guide go well beyond what is required to gain full marks in the question. This is done deliberately to give students and markers a sense of the wide range of acceptable answers that students might give to a question.*



### QUESTION 1: MARKING GUIDE

(20 marks)

- a) List four characteristics that investment objectives for a portfolio of assets should have.

(2 marks)

*Command verb: List (Level 1 – Remember): Present a number of connected items consecutively.*

#### **Learning objective covered in this question part: 6.4**

The investment objectives for each asset portfolio should have the following characteristics:

- be specific about:
  - return **(0.5 mark)**
  - risk **(0.5 mark)**
  - diversification of the portfolio **(0.5 mark)**
  - liquidity of the assets in the portfolio **(0.5 mark)**
- be measurable against relevant benchmarks **(0.5 mark)**
- be achievable **(0.5 mark)**
- specify a term or period for measurement against benchmarks **(0.5 mark)**
- be stated clearly **(0.5 mark)**

- b) Explain the two types of liabilities that are being provided for.

(6 marks)

*Command verb: Explain (Level 4 – Analyse): Give an account of something with the goal of clarifying it to someone or making something easier to understand. Calls for even more information than describe, showing that you can convey 'why' or 'how' or 'so what'. A connection is expected between the item(s) and something else.*

#### **Learning objectives covered in this question part: 6.1, 6.2**

**Note to markers: if only one type of liability is explained then the maximum that can be awarded is 3 marks.**

The liabilities that are being provided for are start at some uncertain date.

in the future **(0.5 mark for uncertain start date)** and continue for an uncertain period of a several years or more **(0.5 mark for uncertain term)** and they are:



- the cost of aged care accommodation which will increase in line with increases in land value **(0.5 mark)** and construction costs **(0.5 mark)** as well as the cost of expertise in land acquisition and real estate project management **(0.5 mark)** which may increase faster than the consumer price index (i.e. general inflation). **(0.5 mark)**. Taxes relating to real estate may also be increased and add to overall costs **(0.5 mark)**
- the cost of care (i.e. providing food and health care) will increase in line with increases in the cost of employing specialist catering staff and nursing staff, **(0.5 mark)** which are currently experiencing shortages **(0.5 mark)** due to increased regulatory requirements on the minimum ratio of staff to care recipients **(0.5 mark)** and which may increase faster than the consumer price index (i.e. general inflation). **(0.5 mark)** The cost of medical and dental specialists may also rise faster than overall consumer price inflation **(0.5 mark)**
- the cost of health care may also increase in line with the development of new medical devices and pharmaceuticals **(0.5 mark)** which are not entirely covered by government subsidies or insurance programs **(0.5 mark)**
- the cost of health care may also increase sharply during major public health emergencies (such as during COVID 19 in 2020 and 2021) **(0.5 mark)** and may not entirely covered by government subsidies or insurance programs **(0.5 mark)**
- the liability cash flows for both accommodation and care are likely to grow faster than the unit cost inflation of accommodation and care due to the increase in the number of aged members requiring care **(1 mark)**
- an additional upward pressure on accommodation costs may come from the desire for the relatives of aged care recipients to be located closer to the major population centres where land costs may be under increased upward pressure **(1 mark)**
- the rate of increase in either or both the cost of accommodation liabilities and the cost of care liabilities may be affected by changes in government policy in relation to subsidies. **(1 mark)**

- c) Propose investment objectives for each of the asset portfolios that will provide for the liabilities. **(6 marks)**

*Command verb: Propose (Level 6 –Create): Select and communicate a solution, action, or range of possible solutions/actions. Rationale, reasons, or justification must be included.*

**Learning objective covered in this question part: 6.4**

*Note to markers: The investment objectives proposed **should be specific, achievable, realistic and time bound**. The answers provided should be in an organised form similar to the answer set out below. Students need not agree with the numbers quoted below but should provide reasons for what they have chosen.*



***Note to markers: if only one set of objectives is proposed then the maximum that can be awarded for this question part is 3 marks.***

Two separate asset portfolios are required **(0.5 mark)** to provide for the separate liabilities in relation to accommodation and care which may have different characteristics especially in relation to cost inflation and volume increases. **(0.5 mark)** Each asset portfolio requires its own investment objectives in a form that is specific, measurable, achievable, relevant and time bound (SMART- which was covered in the subject tutorials):

Cost of accommodation portfolio: The proposed investment objective is to:

- Achieve a rate of return  $R\%$  p.a. , over rolling 5-year periods, where  $R\%$  exceeds the rate of growth of the consumer price index (CPI) by at least margin of  $A\%$  p.a. which reflects the expected excess rate of growth in land costs and constructions costs relative to growth in the CPI. **(1 mark)**  $A\%$  p.a. will be a blend of excess growth in each of construction (i.e. labour and materials) costs and land costs **(1 mark)**;
- Limit the risk of failure to achieve  $R\%$  over any rolling 5-year period of no more than 20% **(1 mark)** – 20% is chosen because it is not too severe to preclude recovery within a reasonable planning period of say 10 years **(1 mark)**;
- Maintain sufficient diversification **(0.5 mark)** and liquidity **(0.5 mark)** in the asset portfolio to allow the risk of failure to meet the return objective to be managed under conditions of uncertainty in asset markets **(0.5 mark)** and shifts in aged care demand **(0.5 mark)**;

Cost of care portfolio: The proposed investment objective is to:

- Achieve a rate of return  $R\%$  p.a. , over rolling 3-year periods, where  $R\%$  exceeds the rate of growth of the consumer price index (CPI) by at least margin  $C\%$  p.a. which reflects the expected excess rate of growth in the cost of providing catering (food), nursing care, medical equipment costs relative to growth in the CPI. **(1 mark)**  $C\%$  p.a. will be a blend of excess growth in each of the cost factors listed **(1 mark)** and their relative weighting may shift over time **(0.5 mark)**;
- Limit the risk of failure to achieve  $R\%$  over any rolling 3-year period of no more than 20% **(1 mark)** – 20% is chosen because it is not too severe to preclude recovery within a reasonable planning period of say 5 years **(1 mark)**;
- Maintain sufficient diversification and liquidity in the asset portfolio to allow the risk of failure to meet the return objective to be managed under conditions of uncertainty in asset markets **(0.5 mark)** shifts in aged care demand and significant shifts in supply of care staff and costs **(0.5 mark)**;



Note to markers: Some candidates may propose less specific or measurable objectives such as those set out below, and should be given some credit as indicated:

- Provide protection against inflation **(0.5 mark)**
- Need capital preservation of assets in portfolio **(0.5 mark)**
- Tolerance of volatility of returns on asset portfolio is low given nature of the cash flows to meet liabilities **(0.5 mark)**
- Achieve an investment return that provides stable and regular income **(0.5 mark)**

- d) Summarise an investment strategy for each of the asset portfolios showing indicative asset allocation percentages. **(6 marks)**

*Command verb: Summarise (Level 2 - Understand): Sum up or put things into your own words or create a précis of the information discussed.*

**Learning objectives covered in this question part: 3.2, 3.4, 6.2, 6.5.**

**Note to markers: if only one asset portfolio investment strategy is summarised then the maximum that can be awarded for this question part is 3 marks.**

Cost of accommodation portfolio: The investment strategy can be summarised as follows:

- To achieve a return that reflects a margin over consumer price inflation that will match the inflation of accommodation costs, **(0.5 mark)** the portfolio will need to be mainly ( i.e. 70% or more) invested in growth assets such as listed equities and/ or commercial real estate and/or inflation linked government bonds. **(1 mark)**
- While the investment in commercial real estate may in fact be in aged care accommodation facilities **(0.5 mark)** it is important to maintain at least 50% of the portfolio in assets which are liquid or readily tradeable to allow for shifts in demand for aged care and /or major shifts in asset market conditions **(1 mark)**
- Therefore, a suitable portfolio would be well diversified **(0.5 mark)** with an allocation such as:
  - Minimum 70% in growth assets which provide an equity or property risk premium that has historically provided total returns in excess of inflation **(1 mark)**
  - 30% to 50% in commercial real estate (including aged care facilities) **(1 mark)**
  - Balance of growth assets in public listed equities **(1 mark)**
  - A significant allocation to inflation linked government bonds **(1 mark)**
  - Minimum 15% in cash or short dated fixed interest to meet liquidity needs in times when public listed equity prices are low. **(1 mark)**



Cost of care portfolio: The investment strategy can be summarised as follows:

- To achieve a return that reflects a margin over consumer price inflation that will match the inflation of care costs, **(0.5 mark)** the portfolio will need to be mainly ( i.e. 70% or more) invested in growth assets such as public listed equities / and or inflation linked government bonds **(1 mark)** using a well-diversified portfolio of assets. **(0.5 mark)**
- Therefore, a suitable portfolio would be:
  - Minimum 70% in growth assets which provide an equity risk premium/ and or inflation linked government bonds that has historically provided total returns in excess of inflation **(1 mark)**
  - Minimum 15% in cash or short dated fixed interest to meet liquidity needs in times when public listed equity prices are low. **(1 mark)**

### END OF QUESTION 1: MARKING GUIDE





### QUESTION 2: MARKING GUIDE

**(20 marks)**

- a) List up to ten assumptions that you may need to make in assessing the liabilities and the different cash flows that may occur for each of the three time frames. **(5 marks)**

*Command verb: List (Level 1 – Remember): Present a number of connected items consecutively.*

**Learning objectives covered in this question part: 1.1, 2.3, 2.5, 6.3, 6.6.**

For all time frames:

- the standard of living expected from the client, whether it is basic or luxury **(0.5 mark)**
- required level of annual spending for basic living costs such as housing and food **(0.5 mark)**
- required level of annual spending and discretionary costs such as travel and entertainment **(0.5 mark)**
- expected timing of cash flows **(0.5 mark)**
- the appropriate discount rate if present values of future cash flows are to be assessed **(0.5 mark)**
- the size of the family, as this will inform the quantity of expenses required **(0.5 mark)**
- whether they are married **(0.5 mark)**
- do they have dependents? **(0.5 mark)**
- socioeconomic status (influences what they are used to spending) **(0.5 mark)**
- level of wealth **(0.5 mark)**
- health status / longevity prospects **(0.5 mark)**
- current age **(0.5 mark)**
- the risk tolerance of the client, i.e. the level of confidence they want around the probability they will have more than they need, e.g. 90%, or 70% etc **(0.5 mark)**
- whether the client would like to have a small chance of having less money to spend in the short term to enable potentially larger spending in the long term, i.e. their time preference. **(0.5 mark)**
- the region a client is living in, that will inform the size of expenses throughout all timeframes. **(0.5 mark)**

For time frames 2 and 3:

- expected rate of inflation for basic living costs **(0.5 mark)**



- expected rate of inflation for discretionary costs **(0.5 mark)**
- cost of purchase of potential large items such as replacement of major household appliances, and motor vehicles **(0.5 mark)**
- expected rate of inflation for such purchases of large items **(0.5 mark)**
- cost of housing changes or renovations (e.g. for disability access) **(0.5 mark)**

For time frame 3:

- major health care costs (such as orthopaedic, dental, nursing assistance at home, net of any insurance claims) **(0.5 mark)**
- aged care costs (accommodation and care) **(0.5 mark)**
- expected rates of inflation for major health care **(0.5 mark)**
- expected rates of inflation for aged care **(0.5 mark)**
- expected mortality rate year by year **(0.5 mark)**
- planned or expected amounts of major gifts or legacies **(0.5 mark)**

- b) Describe a set of investment objectives for each of the three time frames having regard to the risks relating to inflation for various types of planned expenditure **(6 marks)**

*Command verb: Describe (Level 2 – Understand): Provide information about specific items, showing that you understand what those items mean. A description is not a list; each item needs supporting information.*

**Learning objectives covered in this question part: 6.1, 6.2, 6.4.**

**Note to markers: If the investment objectives for only one time frame is described then the maximum that can be awarded for this question part is 2 marks. If the investment objectives for only two of the time frames are described, then the maximum that can be awarded for this question part is 4 marks.**

For time frame 1:

- Primary objective: preservation of capital value for funds allocated to spending in time frame 1 **(1 mark)**
- Secondary objective: a return that matches inflation in the first three years **(1 mark)**

For time frame 2:



- Primary objective: preservation of capital value for funds allocated to spending in time frame 2 in real terms **(1 mark)** i.e. return matches inflation of cost of basic living expenses and discretionary spending items so that there is no loss of standard of living **(1 mark)**
- Secondary objective: achieve a higher rate of return such as CPI plus 2% p.a. to provide a safety margin in case inflation is higher than expected on basic and discretionary spending items during time frames 1 and 2. **(1 mark)**

For time frame 3:

- Primary objective: achieve a rate of return substantially above inflation (i.e. CPI plus 4% p.a.) to provide a safety margin in case inflation is higher than expected on basic and discretionary spending but also on aged care and health care costs in the longer term. **(1 mark)**
- Secondary objective: limit the volatility of returns as much as possible, consistent with the primary objective, **(0.5 mark)** to provide a degree of comfort on preservation of capital in the long term (life expectancy) **(0.5 mark)**

c) Explain an investment strategy for each of the three time frames **(9 marks)**

*Command verb: Explain (Level 4 –Analyse): Give an account of something with the goal of clarifying it to someone or making something easier to understand. Calls for even more information than describe, showing that you can convey ‘why’ or ‘how’ or ‘so what’. A connection is expected between the item(s) and something else.*

**Learning objectives covered in this question part: 3.2,3.4,5.1,5.2,5.3, 6.2, 6.5, 6.6.**

**Note to markers: If an investment strategy for only one time frame is explained then the maximum that can be awarded for this question part is 3 marks. If the investment strategies for only two of the time frames are explained, then the maximum that can be awarded for this question part is 6 marks.**

For time frame 1:

- Invest 0% in growth assets such as equities as they can have short term capital losses which may not be fully recovered within a three year time frame. **(1 mark)**
- Invest 100% in defensive assets such as cash , bank term deposits and short dated fixed interest of less than 1 year to maturity so that investments can be used at short notice to fund discretionary spending as well as basic living costs. **(1 mark)**

For time frame 2:



- Invest 30% in defensive assets such as fixed interest **(0.5 mark)** with maturities up to ten years so that the duration of the assets ( 5 to 8 years) **(0.5 mark)** is close to matching the duration of the spending ( 5 to 7 years). **(0.5 mark)** It also provides some stability in the value of the asset portfolio for this time frame **(0.5 mark)** while achieving sufficient return to compensate for inflation out to 8 years. **(0.5 mark)**
- Invest 70% in growth assets such as equities which will provide returns that have the benefit if the equity risk premium (which has averaged c 4% to 5%p.a. above inflation over most ten year periods) **(1 mark)** and any short term capital losses due to equity market volatility will be able to be recovered within a three to eight year time frame. **(1 mark)**
- This asset allocation should support the secondary objective of achieving a higher rate of return such as CPI plus 2% p.a. to provide a safety margin in case inflation is higher than expected on basic and discretionary spending items during time frames 1 and 2. **(1 mark)**

For time frame 3:

- Investment in defensive assets is not needed for this time frame given that based on historical evidence growth assets such as equities normally recover any downturns in capital value within 8 years. **(1 mark)**
- Invest 100% in growth assets such as equities which will provide returns that have the benefit of an expected equity risk premium of c 4% to 5%p.a. above inflation. **(1 mark)** and any short term capital losses due to equity market volatility will be able to be recovered within an eight year time frame. **(1 mark)**
- This asset allocation should support the objective of achieving a return substantially above inflation such as CPI plus 4% p.a. **(1 mark)**

### END OF QUESTION 2: MARKING GUIDE



### QUESTION 3: MARKING GUIDE

(20 marks)

- a) Explain the factors that the actuary may have considered in making this proposal. (8 marks)

*Command verb: Explain (Level 4 –Analyse): Give an account of something with the goal of clarifying it to someone or making something easier to understand. Calls for even more information than describe, showing that you can convey ‘why’ or ‘how’ or ‘so what’. A connection is expected between the item(s) and something else.*

**Learning objectives covered in this question part: 1.1, 1.2, 2.1, 2.2, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 6.8.**

Factors that the actuary may have considered are:

- Whether the economic and geopolitical factors leading to the increase in inflation in the last two years have been resolved or are still affecting prices of oil and other commodities. **(0.5 mark)** If they are persisting in spite of central bank actions to raise interest rates, then the expected future rates of consumer price and salary inflation may be higher for longer **(0.5 mark)** and the assumption of 10% p.a. salary increases for 3 years may need to be extended further into the future. **(0.5 mark)**
- Evidence from historical equity market returns suggests that equity markets often recover capital losses within periods as short as 3 years ( e.g US post 2020) or 5 years ( e.g. US post 2009), **(1 mark)** but occasionally can take much longer (e.g. Japan post 1989 took almost 30 years). **(1 mark)** If a recovery were to take a longer rather than a shorter period, the assumption of 7% p.a. investment returns may be too optimistic when viewed in isolation. **(1 mark)**
- The need to exercise care in using historical evidence on inflation, salary inflation, monetary policy, bond yields and equity market prices when making forecasts about these. **(1 mark)**
- More importantly the shift from 6% p.a. investment returns /4% p.a. salary inflation to 7% p.a. investment returns/6% p.a. salary inflation is significantly more conservative overall even before considering the additional 4% p.a. salary inflation for the first three years. **(1 mark)**
- The size of the estimated deficit of the fund and the tolerance of the Board of the Fund's Trustees to reporting a large deficit **(1 mark)** and whether they are operating under any regulatory constraints that requires them to have a documented plan for eliminating any reported deficit. **(1 mark)**



- The potential increase in employer contributions implied by any plan to reduce the fund deficit over any given period **(1 mark)** and whether there are financial constraints as to how much recommended employer contributions can be increased as a result of a review of the Fund's financial position. **(1 mark)**
- b) Explain two potential scenarios for the principal economic influences that may affect the valuation of the fund's assets and liabilities in three years' time. **(6 marks)**

*Command verb: Explain (Level 4 –Analyse): Give an account of something with the goal of clarifying it to someone or making something easier to understand. Calls for even more information than describe, showing that you can convey 'why' or 'how' or 'so what'. A connection is expected between the item(s) and something else.*

**Learning objectives covered in this question part: 2.1, 2.2, 2.5, 3.2,5.1,6.2,6.7,6.8.**

**Note to markers: The students are expected to explain two distinct scenarios in terms such as those set out below. There is no single right answer. Students should not be penalised for having a view which is different from the marker. If students explain only one scenario, the maximum marks for this question part will be 3 marks.**

Scenario 1:

- As in the 1970s and 1980s inflation takes a long time to be brought under control and requires the use of elevated short term interest rates by central banks for many years; **(1 mark)**
- Inflation in major developed countries persists at levels above 3% p.a. rather than returning to 2% p.a. or below; **(1 mark)**
- Bond yields react to the prospects of embedded inflation expectations and remain at levels between 4% p.a. and 6% p.a. ; **(1 mark)**
- The rise in bond yields is further exacerbated by the persistence of fiscal deficits which are large by historical standards in many developed countries; **(1 mark)**
- The use of bond yields as a central factor in the valuation of equities and property by many market participants, together with persistently higher bond yields puts downward pressure on valuations in those markets; **(1 mark)**
- Although equity market prices are also driven by recognition of earnings growth, the use of higher discount rates in valuations leads to valuations and returns which are lower than they would otherwise be. **(1 mark)**

Scenario 2:



- As result of continued large fiscal deficits in many countries inflation is brought under control but more slowly than expected and continues to be above. 2% p.a. **(1 mark)**
  - Short term interest rates continue to be reduced by central banks who are concerned about avoiding a recession and a rise in unemployment in a world where there is significant political tension; **(1 mark)**
  - Bond yields react to the prospects of slightly reduced inflation expectations but remain at levels between 4% p.a. and 5% p.a. ; **(1 mark)**
  - Bond yields are also kept higher than they would otherwise be by the persistence of fiscal deficits which are large by historical standards in many developed countries; **(1 mark)**
  - The use of bond yields as a central factor in the valuation of equities and property by many market participants puts some downward pressure on valuations in those markets; **(1 mark)**
  - Equity market prices are also driven by recognition of earnings growth, which in some major countries such as the USA looks quite strong, more than offsetting the use of higher discount rates in valuations. This leads to valuations and returns which are higher than many investors expect. **(1 mark)**
- c) Propose changes to the asset allocation of the fund which may reduce the uncertainty of its asset valuation in three years' time. **(6 marks)**

*Command verb: Propose (Level 6–Create): Select and communicate a solution, action, or range of possible solutions/actions. Rationale, reasons, or justification must be included.*

**Learning objectives covered in this question part: 6.2,6.5, 6.7,6.8.**

*Note to markers: The students are expected to make a proposal such as that set out below. There is no single right answer, but they need to indicate their reasons for their proposal. Students should not be penalised for having a view which is different from the marker. Marks should be awarded for any reasonable points that answer the question ( 1.0 mark) for a complete sentence (0.5 mark) for a bullet point.*

In order to manage and mitigate the risk of a significant reduction in the value of the asset portfolio the asset allocation should be changed as follows:



- Reduce the allocation to listed equities from 60% to 40% because this will reduce the impact of a significant decline in equity market prices which may occur within the next three years without subsequently recovering within that time frame. (Scenario 1 in part (b)) **(1 mark)** The maintenance of 40% in equities allows for continued participation in equity market returns in the event that there is not a significant equity market decline. (Scenario 2 in part (b)) **(1 mark)**
- Reduce the allocation to longer term government bonds from 30% to 10% and replace them with shorter dated bonds or cash. **(1 mark)** This is in order to reduce the risk of a reduction in valuation of bond assets if bond yields continue to rise due to persistent and rising fiscal deficits; **(1 mark)**
- Allocate the 20% reduction in equities to short-dated bonds or cash, particularly as central bank interest rates are acting to keep returns on cash at rates which are not too far below the income yield on bonds. **(1 mark)**
- As this will result in a holding of 40% in short term bonds and cash, it may be considered to be too risky and lacking in diversification. **(1 mark)** Therefore consideration could be given to allocating half of this (20%) to unlisted property assets which offer a long term property risk premium of c 4% p.a. above the return on cash **(0.5 mark)** without the short term volatility of returns that affects listed equities. **(0.5 mark)**
- The effective changes in asset allocation may be achieved by implementing hedging strategies **(0.5 mark)** using derivatives such as futures **(0.5 mark)** or options **(0.5 mark)** to alter the expected cash flow from the asset portfolio **(0.5 mark)**

### END OF QUESTION 3: MARKING GUIDE





### QUESTION 4: MARKING GUIDE

**(20 marks)**

- a) Discuss potential differences in the nature of the liabilities arising from the needs of members making contributions and members who are receiving pension payments with reference to an investment strategy that meets their needs. **(4 marks)**

*Command verb: Discuss (Level 2 – Understand): Write about a subject or topic in detail taking into consideration issues and ideas. Provide more than one fact or observation relevant to the topic.*

**Learning objectives covered in this question part: 6.1,6.2,6.3, 6.4.**

Contributing members:

- are generally younger and have a longer investment horizon than pension recipients, often averaging 20 to 30 years. **(0.5 mark)**
- can usually afford to tolerate larger reductions in their account values due to downturns in the prices of listed equity assets, which usually recover in value within 10 years, and often within 5 years. **(1 mark)**
- due to their long investment horizon, they could benefit greatly in retirement by having an investment strategy with a return objective of CPI plus 4% p.a. instead of CPI plus 3% p.a. **(0.5 mark)**
- ought to be able to invest in a fund that has 80% in growth assets which ought to be able to earn CPI plus 4% rather than 70% in growth assets earning CPI plus 3% p.a. **(0.5 mark)**

Pension members:

- are generally older and have a shorter investment horizon than contributing members, often averaging 10 to 20 years. **(0.5 mark)**
- are less able to tolerate larger reductions in their account values due to downturns in the prices of listed equity assets, which may take up to 10 years to recover **(1 mark)** and in the meantime reduce their pension payments if they are fixed as a percentage of account value (which is common practice for many such pension recipients) **(0.5 mark)**
- may benefit by having an investment strategy that is less volatile **(0.5 mark)** but still has a return objective that maintains the real value of their assets such as of CPI plus 2% p.a. instead of CPI plus 3% p.a. **(0.5 mark)**
- ought to be able to invest in a fund that has 60% in growth assets which ought to be able to earn CPI plus 2% rather than 70% in growth assets earning CPI plus 3% p.a. **(0.5 mark)**



b) Explain the main drivers of the:

- i. return of tradeable government bonds; **(4 marks)**
- ii. risk of tradeable government bonds. **(4 marks)**

*Command verb: Explain (Level 4 –Analyse): Give an account of something with the goal of clarifying it to someone or making something easier to understand. Calls for even more information than describe, showing that you can convey 'why' or 'how' or 'so what'. A connection is expected between the item(s) and something else.*

**Learning objectives covered in this question part: 3.1,3.2,3.4, 5.1.**

- (i) The main drivers of returns of tradeable government bonds are:
- The main sources of return on a bond are the income received from the promised interest payments, less any defaults on either the interest payments or the promised return of capital at maturity, plus or minus any realised gains or losses if the bond is sold before maturity, or unrealised gains if it is not sold but is marked to market value. **(1 mark)**
  - In the case of tradeable government bonds defaults on capital or interest payments are exceptionally rare although the relative prospect of default may be factored into the yield to maturity by way of a margin or credit spread relative to the yield for US Treasury Bonds of the same term to maturity. (US Treasury bonds are regarded as the benchmark security in the world's government bond markets. **(1 mark)**
  - Spreads relative to US Treasuries shift up and down, driven by shifts in supply and demand for bonds issued by various governments, including those issued by the USA. **(1 mark)**
  - The market for US Treasuries is the biggest and most liquid in the world, even though they are not the bonds most highly rated by credit rating agencies, nor do they have the lowest yields for each maturity. **(1 mark)** Therefore there is rarely any difficulty in trading US Treasury Bonds. **(0.5 mark)**. Other markets such as those for Japanese, UK and German government bonds are also similarly large and liquid. **(0.5 mark)** Most other developed country governments, such as Switzerland, Australia, Canada, France and New Zealand, have effectively liquid markets for their bonds which are also regarded as free of default risk. **(0.5 mark)**



- An increase in the relative supply of tradeable government bonds due to an increase in issuance, due to higher fiscal deficits (such as is happening now in the USA and elsewhere) will depress the price and increase the bond yield and reduce the returns of investors who already hold the bonds and are marking them to market. **(1 mark)**
- (ii) The main drivers of risk of tradeable government bonds are:
  - The default risk is negligible for most tradeable government bonds. **(1 mark)**
  - The risk of loss due to an increase in the yield is much more common and has happened in the period 2021 (when US 10-year Treasuries were trading on a yield to maturity of 1.5% p.a. before moving up to trade at 5.0% p.a. in late 2024. The extent of the loss depends on the term to maturity or the duration, which is the weighted average term of the payments from the bond. **(1 mark)**
  - Note to markers: specific bond yields need not be quoted, but there needs to be a comment indicating that an increase in bond yields happened in response to the rise in inflation expectations and increase in fiscal deficits in the 2021-23 period.
  - For example, a duration of 7.0 (typical of a ten-year bond) implies that the bond will lose 7% of its value if the yield to maturity rises by 1% p.a. **(0.5 mark)**
  - The yield to maturity of tradeable government bonds is therefore the prime focus of all investors. In turn it is driven by shifts in the supply and demand for bonds of the particular maturity and issuer. **(1 mark)**
  - For example a decline in the purchases of US Treasury bonds in recent years by entities associated with the governments of China and Russia, together with a large increase in the amount of bonds issued by the US Treasury as it seeks to finance a very high deficit of 7% of GDP, have combined to increase bond yields at a time when they were inclined to rise as investors became more concerned about rising inflation. **(1 mark)**
  - Factors that contribute to risk are:
    - Inflation risk **(0.5 mark)**
    - Inflation risk is driven by current and expected rates of inflation in the economy. **(0.5 mark)** Investors expect the bonds to provide a small real yield, although this is not always the case historically. **(0.5 mark)**
    - Inflation uncertainty whereby expectations about inflation may shift over time in ways that cannot be foreseen **(0.5 mark)**



- When the outlook for inflation is more uncertain, then investors may add a margin to reflect the uncertainty on future inflation **(0.5 mark)**

c) Explain:

- i. why a regular valuation of the unlisted property is required; and **(2 marks)**
- ii. how the need to have daily unit prices can be accommodated. **(2 marks)**

*Command verb: Explain (Level 4 –Analyse): Give an account of something with the goal of clarifying it to someone or making something easier to understand. Calls for even more information than describe, showing that you can convey ‘why’ or ‘how’ or ‘so what’. A connection is expected between the item(s) and something else.*

**Learning objectives covered in this question part: 1.3,3.2,3.3, 6.8.**

- i. Regular valuations of unlisted property assets are required because:
  - They are needed to assess the performance unlisted property assets and to determine whether it has met its objectives **(1 mark)** so that the owners or their representatives (e.g. trustees or directors) are able to fairly hold management to account **(0.5 mark)** and also to remunerate them fairly for results achieved; **(0.5 mark)**
  - It will also inform any review of the investment governance of the Fund which may arise from instances such as significant losses on particular assets **(0.5 mark)** to allow key decisions to be evaluated and similar errors avoided in future; **(0.5 mark)**
  - The Fund provides for daily transactions by members so that a daily unit price is required to ensure fairness between members who are investing contributions, withdrawing from their account, or continuing to hold their investment; **(0.5 mark)**

**ii. Note to markers: This question may have reasonably been interpreted by candidates to be one about all asset classes and not just unlisted property (as was intended). An alternative answer based on the broader interpretation is included below**

The need to have daily unit prices can be accommodated even though unlisted property is normally independently valued only once a year. This could be done by:



- Setting up a link between the annual independent valuation and a key component used in a discounted cash flow valuation of the asset such as the price of a ten-year government bond; **(1 mark)**
- Adjusting the valuation of the asset which is used as input to the daily unit pricing process, on a daily basis by the percentage change in the price of the ten-year government bond; **(1 mark)**
- Adjusting the valuation of the asset which is used as input to the daily unit pricing process, on a daily basis by allowing for the accrual of rental income due to be paid; **(0.5 mark)**
- While not perfect, as it ignores intra-year shifts in vacancy, rental income and operating costs of the unlisted property, **(0.5 mark)** any large shifts in these ought to lead to a complete new independent valuation. **(0.5 mark)** In the absence of major shifts in these other variables it provides a reasonable basis for daily adjustments to the valuation. **(0.5 mark)**

### ***Sample answer to alternative interpretation of the question:***

Daily unit prices allow the fund to be open ended, allowing members to enter and exit at their will while receiving fair values for their shares in the fund.

Daily unit pricing can be accommodated in this case through the individual assets held:

- Public listed equities: there is a market price available, meaning valuations are up to date and reliable. **(0.5 mark)**
  - Property (unlisted commercial real estate): regular valuations can provide fair prices for these assets, **(0.5 mark)** although it may reduce their real return as the valuations are expensive **(0.5 mark)**
  - Government bonds are highly liquid and will have regular published prices that can be used **(0.5 mark)**
  - Cash will have a valuation available all the time. **(0.5 mark)**
- d) Propose a change in investment strategy that may better meet the needs of members making contributions and members who are receiving pension payments. **(4 marks)**

*Command verb: Propose (Level 6 –Create): Select and communicate a solution, action, or range of possible solutions/actions. Rationale, reasons, or justification must be included.*

***Learning objectives covered in this question part: 1.3,2.5, 6.2, 6.4, 6.5, 6.8.***



As discussed in (a) above:

- contributing members could benefit by having an investment strategy with a higher return objective and probably have a tolerance for the higher volatility in returns which this entails.
- pension members are less able to tolerate volatility in their account values which makes their pension payments more volatile.

Therefore, it is proposed that the investment fund be split into two with different return objectives and different allowable asset allocation strategies, based on historical evidence about returns on various asset classes relative to inflation and the volatility of the asset class returns:

	Contributors fund		Pension recipients fund	
	Investment objective: CPI plus 4% p.a. over rolling 8 year periods		Investment objective: CPI plus 2% p.a. over rolling 5 year periods	
	Long term strategic asset allocation target (% of total)	Allowable asset allocation range (% of total)	Long term strategic asset allocation target (% of total)	Allowable asset allocation range (% of total)
Public listed equities	60	50 to 70	40	30 to 50
Property (Unlisted commercial real estate)	20	10 to 30	20	10 to 30
Tradeable government bonds	15	10 to 20	25	5 to 30
Cash and short term fixed interest	5	2 to 30	15	10 to 55
Total	100		100	



The asset class ranges have been set to allow more protective action to be taken in the pension recipients fund if there is an assessment made that there is likely downturn in the returns on either listed equities or bonds.

**END OF QUESTION 4: MARKING GUIDE**

**END OF MARKING GUIDE**