

Asset Liability Management

Exam Marking Guide Semester 1 2024





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	3.1, 3.2, 3.3, 5.1, 5.2, 5.3, 6.2	20	8	12	0
2	3.1, 3.2, 3.3, 5.1, 5.2, 5.3, 6.1, 6.2, 6.5	22	4	12	6
3	3.1, 3.2, 3.4, 6.1, 6.2, 6.3, 6.4, 6.5	23	14	4	5
4	3.4, 6.1, 6.2, 6.3, 6.4, 6.5	15	0	10	5
Total		80	26	38	16

SA – Simple Application 30%

A – Application 50%

H – Higher order/ Judgement/Evaluation 20%



Note to Markers:

INCLUDE IF RELEVANT

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 that 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 context stated in the question. 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 chapters 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 in 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' (½ mark for the clause) provided the premiums are paid (½ 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. Definitions of each of these command verbs are 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)

Question

It has been claimed that the long-term returns of actively managed equity portfolios are likely to be at or below the relevant equity benchmark index because the equity market is semi-strong form efficient.

- a) Discuss active management as it applies to an equity portfolio. (2 marks)
- b) Discuss the implications of a semi-strong form efficient equity market (2 marks)
- c) Discuss two other possible explanations for the long term returns of actively managed equity portfolios not exceeding the relevant equity benchmark index, which could be true even if the equity market is semi-strong form efficient (4 marks)
- d) Explain three theories that may support the hypothesis that active management can add value to an equity portfolio. (12 marks)

Question	Syllabus Learning Objective	Chapter Reference	Total Marks	SA	A	H
1	3.1, 3.2, 3.3, 5.1, 5.2, 5.3, 6.2		20	8	12	0
A	3.1, 3.2, 3.3	C6	2	2		
B	5.1	C9	2	2		
C	3.1, 3.2, 3.3, 5.2, 5.3	C5	4	4		
D	5.1, 5.2, 5.3, 6.2	C9 C10	12		12	

Marking guidance

- a) Discuss active management as it applies to an equity portfolio. (2 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.

Active management of an equity portfolio means using a process to select equity securities for the portfolio (0.5 mark) such that the portfolio weights of the securities are different from the weighting of the securities in an appropriate benchmark index. (0.5 mark)

Active management assumes the true or intrinsic value of a security can be estimated (0.5 mark) and that the market price will converge to intrinsic value over a longer time. (0.5 mark) giving an



active equity portfolio manager excess returns on the portfolio above the returns of the market index.

(0.5 mark)

2 marks maximum *The two points underlined must both be included to achieve the full 2 marks for this question part.*

b) Discuss the implications of a semi-strong form efficient equity market **(2 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.

- The semi-strong form of the Efficient Market Hypothesis states that the market price of an investment incorporates all publicly available information **[0.5 mark]**, but not information that is only privately available. **[0.5 mark]**
- Semi-strong efficiency means no investment portfolio manager can exploit public information to gain an investment performance advantage. **[0.5 mark]** However they may be able to exploit private information. **[0.5 mark]**
- Semi-strong efficiency means all public information has been factored into market prices **[0.5 mark]** so that technical and fundamental analysis based on public information cannot identify any mispricing that can be used to achieve excess returns. **[0.5 mark]**

2 marks maximum

c) Discuss two other possible explanations for the long term returns of actively managed equity portfolios not exceeding the relevant equity benchmark index, which could be true even if the equity market is semi-strong form efficient **(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.

Two other possible explanations are cost and market sentiment:

Cost

The detailed research at the securities or stock level, such as meetings with the management of companies, and the employment of experienced analysts, that is usually required for active equity portfolio management is usually very expensive. **[1 mark]**

Even if the manager has access to private information which may enable them to outperform the market in semi-strong conditions the costs of accessing and analysing such information may still exceed any potential excess returns achieved. **[1 mark]**



The manager's strategy is forward-looking and often relies more on their ability to formulate appropriate assumptions about the future for individual stock selection decisions rather than the analysis of history, public or private information i.e. the past is not always a reliable guide to the future. **[1 mark]**

Market sentiment

The portfolio manager's assumptions may prove to be wrong [0.5 mark] and even if they prove to be correct, market prices may not converge to their view of the intrinsic value of the stocks. [1 mark] and so expected excess returns relative to the market may not be achieved. [1 mark]

A technical or fundamental analysis strategy that makes no allowance for market behaviour driving market prices up/down [1 mark] For example if the prevailing market sentiment is risk averse in relation to a particular industry sector, or towards equities in general, the market prices may well fall below the price generated from the analysis. [1 mark]

As the portfolio manager would be holding the stocks in their portfolio regardless of such effects, the overall return on the portfolio will be relatively poor until the market view on the sectors or the entire equity market changes. [1 mark]

Manager skill

Even if the market is semi-strong efficient and private information can be gained to produce excess returns, skill is still required on behalf of the active investment manager to put the information to use appropriately. **(0.5 mark)** The lack of superior portfolio manager skills in equity security analysis **(0.5 mark)** or risk management through portfolio weighting and diversification **(0.5 mark)** is a possible explanation of manager actively managed equity portfolios not exceeding the relevant equity benchmark index, even if the equity market is semi-strong form efficient **(0.5 mark)**. There is substantial data and evidence that indicates that the majority of active equity managers fail to match or exceed market index returns over many periods. **(0.5 mark)**

Two examples are required to achieve the full 4 marks. The impact of taxes is essentially the same for active and passive strategies so reference to tax will not earn any marks.

Maximum 4.0 marks.

- d) Explain three theories that may support the hypothesis that active management can add value to an equity portfolio. **(12 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.)

Technical analysis

Technical analysis is a technique key assumption that patterns in price and volume of trades within an investment market can be perceived, analysed, and used to forecast future prices in the market. **[1 mark]**

This theory claims that recording and analysing all historical information on stock prices and volumes will allow better forecasting of future prices **(0.5 mark)** and therefore a portfolio managed using this technique will be able to outperform those of investors who do not investigate the past or use that information for their decisions. **[1 mark]** Other investors make up the market, so this will lead to outperformance of the market benchmark index. **[1 mark]**

This would support the hypothesis that active equity portfolio management may could add value - but does not imply that it will add value – as if all investors in the equity market use technical analysis equally well then none would be able to add value relative to the market. **[1 mark]**

If equity markets are semi-strong efficient then using technical analysis is unlikely to be a source of added value **[1 mark]**

Fundamental analysis

Fundamental analysis assumes that the intrinsic value of a security, the true value, can be calculated by the analysis of financial and accounting information, along with other public information. **[1 mark]**

This theory claims that analysing financial information on listed companies and using it in a valuation model will allow a better estimate of the intrinsic value of stocks than is implied in the current market prices. **[1 mark]**.

Using the divergence between the intrinsic value and the market price to allocate a weighting to stocks that are different from those in the benchmark index will lead to excess returns relative to the benchmark index if the market prices subsequently converge to the assessed intrinsic values. **[1 mark]**

Investors using this active management technique will be able to outperform those of investors who do not use it for their equity portfolio weighting decisions. **[1 mark]** Other investors make up the market, so this will lead to outperformance of the market benchmark index. **[1 mark]**

This would support the hypothesis that active equity portfolio management could add value - but does not imply that it will add value – as if all investors in the equity market use fundamental analysis equally well then none would be able to add value relative to the market. **[1 mark]**

Fundamental analysis makes assumptions about the future, and different managers may make



different assumptions, some better than others at getting the assumptions right and therefore adding value. **[1 mark]**

If equity markets are semi-strong efficient then using fundamental analysis is unlikely to be a source of added value **[1 mark]**

Factor-Based Investing Theory

Factor-based investing theory posits that certain factors, such as value, momentum, quality, size, and low volatility, are associated with excess returns over the long term. **[1 mark]**

Active managers can construct portfolios that tilt towards these factors to systematically capture risk premiums and generate alpha. **[1 mark]**

While passive index funds may passively replicate market returns, active managers have the flexibility to overweight or underweight specific factors based on their assessments of market conditions and individual stock valuations. **[1 mark]**

By dynamically managing factor exposures and adjusting portfolio allocations, active managers can potentially enhance returns and manage risk more effectively than static, index-based approaches. **[1 mark]**

Informational Advantage Theory

According to this theory, active managers can outperform the market by using informational advantages that can arise from various sources such as proprietary research, industry expertise, access to management, or superior analytical capabilities. **[1 mark]**

Managers who use these advantages to gain insights into companies, industries, or market trends can make better-informed investment decisions, **[1 mark]** allowing them to identify what they believe to be mispriced securities or anticipate market movements before they are reflected in prices. **[1 mark]**

Through efforts in research and analysis, active managers can exploit these informational advantages to generate excess returns for their portfolios. **[1 mark]**

Prospect theory (behavioural finance)

Prospect theory or behavioural finance ideas challenge the validity of the Efficient Market Hypothesis (that all market information is incorporated into market prices all the time) **[0.5 mark]** based on empirical evidence of anomalies. **[0.5 mark]**

Prospect theory allows for human behaviour to be irrational **[0.5 mark]** and if an investor can interpret market behaviour, they may be able to anticipate changes in market sentiment and exploit price changes to achieve excess returns relative to the market benchmark index. **[1 mark]**

The challenge is whether an investor has a reliable way to interpret the market behaviour that



works in all conditions, or whether any outperformance is more due to chance. **[1 mark]**

Behavioural finance ideas have not yet been developed into an agreed theory **[1 mark]** such as is the case with fundamental investing. **[0.5 mark]**

An alternative way of answering this question part is as follows:

Fundamental Analysis-

Using fundamental analysis assumes that the intrinsic value of a security, which is the true value that the market should recognise, **(0.5 mark)** can be estimated by the analysis of financial and accounting information published by companies, along with other public information that the analysts can collect. **(0.5 mark)**

The theory assumes that the market price will converge to the intrinsic value over time, **(0.5 mark)** leading to excess returns. **(0.5 mark)** The intrinsic value can be compared with the current market price in order to determine whether the security is cheap (and should be bought) or expensive (and should be sold). **(0.5 mark)**

Supporting Arguments-

Users of fundamental analysis are sometimes known as value investors. Many institutional investors and fund managers have used fundamental analysis over the last 80 years. Fundamental analysis is normally carried out for individual securities in what is often referred to as a 'bottom-up approach' rather than forecasting returns at a market-wide level. **(1 mark)**

Opposing Arguments-

However, the performance of the fund manager should be considered net of various fees and transaction costs (e.g. brokerage, market impact). To demonstrate an exploitable opportunity in the market, the opportunity should be sufficiently large to remain intact even after all these costs are considered **(1 mark)**

Studies have been carried around the question- "Is it possible to exploit inefficiencies in order to earn excess returns—beat the market—using processes such as fundamental analysis?". Analysis of the published results of fund managers using fundamental analysis has indicated that often they did not perform any better than simple buy-and-hold strategies. **(1 mark)**



Conclusion

Although the empirical evidence suggests that fundamental analysis has limited predictive power, it is still used by many investors (value investors). It is costly to gather all the inputs and conduct the analysis. **(0.5 mark)** It is claimed that the active trading patterns of a small number of investors using fundamental analysis can lead to accurate market prices that equate to intrinsic value, **(0.5 mark)** and so the effort of using fundamental analysis in pursuit of excess returns is mainly of no value. **(0.5 mark)**

Technical Analysis

Technical analysis relies on the idea that prices in investment markets 'move in trends which are determined by the changing attitudes of investors toward a variety of economic monetary political and psychological forces'. **(0.5 mark)** Technical analysis assumes that these trends are, therefore, predictable to some extent **(0.5 mark)** and that future prices of equity securities can be forecast through the analysis of their past prices and trading volumes. **(0.5 mark)**

Supporting Arguments-

Some studies report that:

- significant excess returns can be achieved when technical trading rules are used. **(0.5 mark)**
- short-run serial correlations were not zero and there does seem to be some momentum in short-run stock prices. **(0.5 mark)**
- some of the stock price signals used by technical analysts, such as head and shoulders formations and double bottoms, may have some modest predictive power. **(0.5 mark)**

Opposing Arguments-

Other studies, such as Allen and Karjalainen (1999), conclude that technical rules do not earn excess profits over a simple buy-and-hold strategy. **(0.5 mark)**

Conclusion

Studies that have tested the efficacy of technical analysis have focused on how well past prices and volumes explain future price movements. **(0.5 mark)** The evidence about technical analysis is not completely conclusive, **(0.5 mark)** although it suggests that it has some limited predictive power. **(0.5 mark)**



Behavioural Analysis

Behavioural finance research has focused on the behaviour of investors in an attempt to explain some of the anomalies observed between the observed behaviour of market prices and the results expected if Modern Portfolio Theory (including the EMH) applies. **(1 mark)** This work resulted in a challenge to the assumptions underpinning MPT. **(0.5 mark)** such as assumptions about investors' attitudes to risk and return, which had been capable of being incorporated in mathematical formulae, but which were not borne out in practice. **(0.5 mark)** The studies carried out by the behaviourists examined the behaviour of investors who were trying to make decisions under conditions of uncertainty. **(0.5 mark)** The work done in behavioural finance was based on observation of behaviour rather than simplifying assumptions that were mathematically more tractable. **(0.5 mark)**

Supporting Arguments-

Malkiel (2003) discusses some of the findings of behavioural finance in terms of how they amount to criticisms of the Efficient Markets Hypothesis. **(0.5 mark)** He reviews some of the patterns of possible predictability suggested by studies of the behaviour of past stock prices. They include:

- short-term momentum and underreaction to new information; and **(0.5 mark)**
- long-run reversals. **(0.5 mark)**

Opposing Arguments-

One of the major criticisms of behavioural finance is that by choosing which bias to emphasise, one can predict either underreaction or overreaction in market prices. **(0.5 mark)** In other words, one can find a story that fits the facts and appears to explain some puzzling phenomenon. **(0.5 mark)**

Three theories should be named and explained including how each can be used to achieve excess returns relative to the equity market benchmark index.

Maximum marks 12 Maximum 4 marks per theory

END OF QUESTION 1: MARKING GUIDE



QUESTION 2: MARKING GUIDE

(22 Marks)

Question

A motor vehicle insurance company offers its customers motor vehicle insurance policies which are renewed annually. Its policy liabilities are provided for by an asset portfolio that comprises only money market and fixed-interest securities, such as floating-rate notes, government bonds and investment-grade corporate bonds.

- a) Explain the key assumptions of three of the theories about the behaviour of the yield curve. (6 marks)
- b) Describe the return and risk characteristics of domestic investment-grade corporate bonds and how they vary over time. (4 marks)
- c) Explain, with reference to the liabilities being provided for:
- i. Two advantages and two disadvantages of a significant allocation to domestic investment-grade corporate bonds in the asset portfolio supporting the policy liabilities. (4 marks)
 - ii. Two restrictions that could be placed on the portfolio of corporate bonds to assist in the management of risk (2 marks)
- (Total 6 marks for the question part c)
- d) Prepare a set of notes for the board of the insurance company on the factors that may affect the returns on a portfolio of corporate bonds in the next year. (6 marks)

Question	Syllabus Learning Objective	Chapter Reference	Total Marks	SA	A	H
2	3.1, 3.2, 3.3, 5.1, 5.2, 5.3, 6.1, 6.2, 6.5		22	4	12	6
A	5.1, 5.2	C5	6		6	
B	3.1, 3.2, 3.3	C5	4	4		
C	3.1, 3.2, 5.3, 6.1, 6.2, 6.5	C5, C11	6		6	
D	3.2, 3.4, 5.3, 6.5	C5, C10	6			6



Marking guidance

- a) Explain the key assumptions of three of the theories about the behaviour of the yield curve.

(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.)

Economic theories generally indicate that prices (and yields, which are a version of the price of a bond) are determined by supply and demand. **[1 mark]**

Market segmentation theory

This theory assumes that bonds of different maturities effectively trade in different markets, each with its own supply-and-demand forces that produce bond yields. **[1 mark]** Because of this, the yields from one group of bonds with a certain maturity length cannot be used to predict the yields of another group with a different maturity. **[1 mark]**

The yields for each segment are therefore driven by the demand and supply in that segment and each segment can have a different shape — so the overall yield curve may be quite different from what the other theories suggest would be observed. **[1 mark]**

The key assumption of market segmentation theory is that different types of bond market investors restrict their purchases and sales to certain maturity ranges or segments of the yield curve such as short-term, medium-term, and long-term. **[1 mark]** This means that bonds of different maturities effectively trade in different markets, each with its own supply-and-demand forces that produce bond yields in that segment. **[1 mark]**

Liquidity preference theory

This theory assumes that a positive bond liquidity risk premium exists, **[0.5 mark]** so that investors in longer duration bonds require a higher expected return as compensation for the extra risk borne. **(0.5 mark)** This liquidity risk premium increases with duration, **[0.5 mark]** which is proportional to the volatility of bond prices with respect to yield. **[0.5 mark]**

A key assumption of liquidity preference theory is that investors prefer access to their capital through liquid investments rather than having restricted access and need to be compensated at different rates or yields for investing their capital for different periods. **[1 mark]** This means that a positive bond liquidity risk premium exists so that investors in longer-duration bonds require a higher expected return as compensation for investing for a longer term. **[1 mark]**

Applying this theory the shape of the yield curve is expected to be upward-sloping. **[1 mark]**



Inflation risk premium theory

The key assumption of the inflation risk premium theory is that Inflation risk, which is the risk that the purchasing power of capital is reduced if returns are lower than inflation, **[0.5 mark]** is more likely to occur over longer periods **[0.5 mark]**.

Therefore inflation risk premium theory implies that the yield curve should slope upwards **[0.5 mark]** as investors will need to be compensated for longer-term investments, **[0.5 mark]** which are more susceptible to inflation risk than shorter-term investments. **[0.5 mark]**

Expectations theory

This theory assumes that short-term interest rates will be based on long-term interest rates, which in turn are driven by expectations of future economic factors. **[1 mark]** Therefore there is no bond liquidity risk premium and forward rates will be equal to future spot rates. **[1 mark]**

The key assumption in expectations theory is that long-term interest rates are driven only by expectations of future economic factors. **[0.5 mark]**

There is no bond liquidity risk premium. **[0.5 mark]**

This is a more generalised form of the inflation risk premium theory. **[0.5 mark]**

Maximum 2 marks per theory, Maximum 6 marks for q2 part a) Maximum of 2 marks per theory. For each theory, the key assumption or assumptions need to be stated clearly in order to achieve a maximum of 2 marks per theory.

- b) Describe the return and risk characteristics of domestic investment-grade corporate bonds and how they vary over time. **(4 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.

The returns on corporate bonds comprise:

- the rate of income received while holding the bond; and **[0.5 mark]**
- the capital gain due to the change in price or yield during the holding period. **[0.5 mark]**

The rate of income can be reduced by default on payments of interest. **[0.5 mark]**

The capital gain can be reduced by the default on repayment of the principal at maturity or the reduction in the price of the bond between its purchase and sale. **[0.5 mark]**

There may be a capital gain (or loss) due to an improvement (or decline) of the credit rating of the issuer, **[0.5 mark]** which leads to a reduction (or increase) in the credit spread of the bond. **[0.5 mark]**



The credit default premium (or credit spread) compensates the investor for the expected rate of default on payments. **[0.5 mark]**

The credit spread is a measure of the risk as perceived by the market **[0.5 mark]** and often shifts over time due to:

- events specific to the issuer such as the deterioration of its revenue or profitability and therefore its capacity to repay **[0.5 mark]**
- a deterioration in the overall economy such as in the 2020 COVID recession, when credit spreads rose sharply **[0.5 mark]**
- a supportive response from fiscal or monetary policy **[0.5 mark]** such as in 2020 when major central banks announced that they would assist corporate credit markets by buying large volumes of corporate bonds leading to a sharp fall in credit spreads **[0.5 mark]**

Therefore:

Return Characteristics:

- Interest Income: The primary source of return for corporate bonds is the interest income paid periodically by the issuer, typically semi-annually or annually. **[0.5 mark]** This income is based on the coupon rate, which is set at the time of issuance and remains fixed throughout the bond's life. **[0.5 mark]**
- Yield to Maturity (YTM): The yield to maturity represents the total return an investor can expect to earn if the bond is held until maturity, accounting for both coupon payments and any capital gains or losses due to changes in market interest rates. **[0.5 mark]** YTM may fluctuate over time as market interest rates change, affecting bond prices inversely. **[0.5 mark]**

Risk Characteristics:

- Credit Risk: Despite being investment-grade, corporate bonds are subject to credit risk, the risk that the issuer may default on its obligations or face financial distress. **[0.5 mark]** While investment-grade issuers have strong creditworthiness, economic downturns, industry-specific challenges, or company-specific events can affect their ability to repay bondholders. **[0.5 mark]**
- Interest Rate Risk: Corporate bonds are sensitive to changes in interest rates (YTM). When market interest rates rise, the value of existing bonds falls, leading to capital losses for investors who sell before maturity. **[0.5 mark]** This interest rate risk is more pronounced for longer-term bonds with higher durations. **[0.5 mark]**



- Liquidity Risk: The liquidity of corporate bonds can vary over time and among individual issuers. Less liquid bonds may have wider bid-ask spreads **(0.5 mark)** and be more difficult to sell at fair prices, especially during periods of market stress. **(0.5 mark)** This liquidity risk can affect investors' ability to exit positions or execute trades efficiently. **(0.5 mark)**

Maximum 4 marks for this question q2 part b)

- c) Explain, with reference to the liabilities being provided for:
- i. Two advantages and two disadvantages of a significant allocation to domestic investment-grade corporate bonds in the asset portfolio supporting the policy liabilities. **(4 marks)**
 - ii. Two restrictions that could be placed on the portfolio of corporate bonds to assist in the management of risk **(2 marks)**

(Total 6 marks for the question part c)

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.)

The advantages of a significant allocation to domestic investment grade corporate bonds in the asset portfolio supporting the insurance policies are:

- the additional return derived from the credit spreads will improve the return on the portfolio **[0.5 mark]** and the profitability of the company. **[0.5 mark]**
- including investment-grade corporate bonds in the asset portfolio can enhance diversification **[0.5 mark]**. Corporate bonds often have a low correlation with other asset classes such as equities or real estate. **[0.5 mark]** By diversifying across different asset types, insurers can reduce overall portfolio risk and enhance the ratio of returns to volatility of returns (called risk-adjusted returns). **[0.5 mark]** Investment-grade corporate bonds, particularly those issued by companies in different industries, may provide additional diversification benefits, helping to mitigate the impact of adverse market conditions or economic downturns on the returns on the asset portfolio. **[0.5 mark]**
- the relatively short duration of most corporate bonds compared with government bonds means that they have limited exposure to interest rate risk (losses derived from falling prices when bond yields rise. **[0.5 mark]** This is particularly the case where the bonds are floating rate where the coupon is linked to the yield on very short-term money market instruments. **[0.5 mark]** These short-duration assets have a duration that matches that of the liabilities **[1 mark]**
- there is no currency risk given the bonds are denominated in domestic currency. Assets and



liabilities are in the same currency. **[1 mark]**

Disadvantages may include two of the following:

- the default risk on corporate bonds which may not be fully compensated for by the additional return from the credit spread. **[0.5 mark]**.
- the credit rating of corporate bonds may change which can increase the credit spread demanded by the market and reduce the value of the bonds **[1 mark]**
- credit risk: despite being investment-grade, corporate bonds are still exposed to credit risk, the risk of default or credit deterioration by the issuer. **[0.5 mark]** Allocating a significant portion of the portfolio to corporate bonds increases exposure to this risk, especially during economic downturns or periods of financial distress. **[0.5 mark]** If several bond issuers experience financial difficulties or default on their obligations, it can lead to losses for the insurer and negatively impact the asset portfolio's return, **[0.5 mark]** and may adversely impact the ability of the insurance company to pay claims. **[0.5 mark]**
- the risk that liquidity becomes significantly reduced when it is most needed during times when defaults and credit spreads are rising **[1 mark]**
- if a high allocation is made to corporate bonds that either default or decline in value, it can lead to the risk of the insurance company not being able to pay claims when expected by policyholders **[1 mark]**
- Interest Rate Risk: corporate bonds are sensitive to changes in interest rates, and allocating a significant portion of the portfolio to these bonds exposes insurers to interest rate risk. **[1 mark]** When market interest rates (yields) rise, bond prices fall, leading to capital losses. Failure to effectively manage interest rate risk can result in losses and may hinder the insurer's ability to meet policy liabilities or achieve targeted investment returns. **[1 mark]**

Maximum 4 marks for this Q2 part c) subpart (i). Candidates need to explain two advantages and two disadvantages to obtain full 4 marks.

There are several restrictions that could be placed on the portfolio of corporate bonds to assist in the management of risk so that the ability to pay claims on time is not compromised by losses arising either from defaults on interest or principal or increases in the credit risk spread in the yield on the bonds.

The restrictions that can be made, together with their rationale are:

- placing a maximum percentage on the allocation to corporate bonds within the asset portfolio, to limit exposure to the risk of defaults or increases in bond yields due to higher credit spreads when market conditions weaken.



- setting a minimum average credit rating for the portfolio that is above the level needed for investment grade to limit exposure to the risk of defaults or increases in bond yields due to higher credit spreads when market conditions weaken.
- setting a maximum on the proportion of corporate bonds in the portfolio that are rated below investment grade to limit exposure to the risk of defaults or increases in bond yields due to higher credit spreads when market conditions weaken.
- setting a minimum credit spread for bonds purchased by or held in the portfolio to limit exposure to the risk of increases in bond yields due to higher credit spreads when market conditions weaken.
- placing a maximum limit on bonds issued by any single issuer (borrower) to limit exposure to the risk of defaults from a particular borrower whose operating conditions deteriorate.
- placing a maximum limit on corporate bonds issued by companies in certain industry sectors that may be expected to be under economic stress to limit exposure to the risk of defaults from borrowers in a particular industry (e.g. construction) whose operating conditions are deteriorating.
- limiting investment to bond issues that meet minimum size requirements, to reduce the impact of illiquidity when trading in secondary markets, because lack of liquidity during periods of market stress can lead to significant increases in credit spreads and yields
- Setting duration limits to mitigate interest rate risk during times of increasing yields

(1 mark for any of the above if the rationale of the restriction is also stated (deduct 0.5 mark if the rationale is not stated), maximum of 2 marks for Q2 part c) subpart (ii))

Maximum 6 marks for question 2 part c)

- d)** Prepare a set of notes for the board of the insurance company on the factors that may affect the returns on a portfolio of corporate bonds in the next year. **(6 marks)**

Command verb: Prepare (Level 6 – Create): Make or get ready for use with a specific intention)

The returns on a portfolio of corporate bonds over the next year may be affected by:

- the shape and the level of the government bond yield curve and how it moves over the next year; and **(1 mark)**
- shifts in the credit spreads between corporate bonds and government bonds of similar maturities over the next year. **(1 mark)**

These in turn will be affected by a range of economic and political factors which comprise the following:



- changes in the rate of inflation which may cause changes in yields demanded for government and corporate bonds; **(1 mark)**
- the risk of central banks keeping their monetary policies too tight for too long until a recession is well underway, **(1 mark)** leading to an increased risk of default by corporate bond issuers, more downgrades in credit ratings of issuers by rating agencies and an increase in credit spreads as bond market participants seek greater compensation from yield for greater perceived risk of capital loss **(1 mark)**
- continued disruptions to economic growth due to warfare and related geopolitical impacts on trade **(1 mark)**
- other political factors such as the risk of a U.S. Treasury default on payments on its bonds as a result of the debt ceiling legislated by Congress not being increased in time to forestall such an event **(1 mark)**
- rising interest rates typically lead to lower bond prices and vice versa, affecting the total return of the corporate bond portfolio. **(1 mark)**
- Economic growth prospects and inflation expectations influence bond yields and investor sentiment. **(0.5 mark)** Strong economic growth and rising inflation may lead to higher bond yields and increased borrowing costs for corporations, affecting bond prices. **(0.5 mark)** Conversely, economic slowdowns or deflationary pressures may lead to lower bond yields and higher bond prices. **(0.5 mark)**
- Credit spreads, the yield differentials between corporate bonds and government bonds, reflect investors' perceptions of credit risk. **(0.5 mark)** Changes in credit spreads are driven by factors such as corporate earnings, leverage levels, and industry-specific dynamics. **(0.5 mark)**
- Sector and industry-specific factors can significantly impact the returns of corporate bond portfolios. **(0.5 mark)** Diversification across sectors and industries can help mitigate sector-specific risks and enhance overall portfolio resilience. **(0.5 mark)**
- Liquidity conditions in the corporate bond market can influence transaction costs and price volatility. **(0.5 mark)** Changes in market liquidity, driven by factors such as regulatory reforms, investor sentiment, or market stress events, may impact the ability to execute trades efficiently and affect bond prices. **(0.5 mark)**

Maximum 6 marks for Q2 part d)

END OF QUESTION 2: MARKING GUIDE



QUESTION 3: MARKING GUIDE

(23 Marks)

Question

A Trustee Board manages a \$AUD 30 million single portfolio of investments of a trust. The portfolio is currently invested in an asset portfolio comprising global listed equities (75%), global fixed-interest securities (20%), and Australian cash (5%).

There are three beneficiaries of the trust:

- A seventy-five-year-old woman who is a resident of the United Kingdom, who receives an annual income from the trust which is the greater of \$AUD 200,000 per annum or 40% of the investment income of the Trust for the rest of her life;
- Her fifty-year-old son who is a resident of Australia who will receive 60% of the value of the Trust upon the death of his mother, or 100% if his daughter predeceases him; and
- His twenty-year-old daughter who is a student currently resident in the USA will receive 40% of the value of the Trust upon the death of her grandmother, if her father is still alive, or 100% if he is not then alive. You should assume that the trust does not pay tax on its investment earnings from income or capital gains.

a) Explain the liabilities of the Trust. (4 marks)

b) Propose an investment return objective for the Trust investment portfolio, with clear links to the liabilities of the Trust, setting out your reasons having regard to expected returns from income and capital growth in different asset classes. (5 marks)

An investment advisor to the Trustee has recommended improving the diversification of the investment strategy by investing 25% of the portfolio in an unlisted property fund by reducing global equities by 15% and fixed interest by 10%.

c) Discuss the return and risk characteristics of unlisted property as an asset class. (7 marks)

d) Discuss the implications of accepting the recommendation to invest 25% of the portfolio in unlisted property. (7 marks)

Question	Syllabus Learning Objective	Chapter Reference	Total Marks	SA	A	H
3	3.1,3.2,3.4,6.1,6.2,6.3,6.4,6.5		23	14	4	5
A	3.4,6.1,6.2,6.3,6.4,6.5	C10, C11	4		4	
B	3.1,3.2,3.3, 3.4,6.1,6.4	C10,C11	5			5
C	3.1,3.2, 3.3, 3.4	C7	7	7		
D	5.3,6.3	C10,C11	7	7		



Marking guidance

a) Explain the liabilities of the Trust.

(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.)

The liabilities of the trust are the benefits which are paid to the three beneficiaries:

- Beneficiary 1: an annual income which is the greater of \$AUD 200,000 per annum or 40% of the investment income of the Trust for the rest of her life i.e. which may range from now to another 40 years, **[0.5 mark]** with an average term equal to the life expectancy of the beneficiary which is likely to be 15 to 20 years. **[0.5 mark]** The income is expected to grow in line with the income from the asset portfolio **[0.5 mark]**;
- Beneficiary 2: 60% or 100% of the value of the asset portfolio, at the date of death of Beneficiary 1: i.e. expected in 15 to 20 years. **[0.5 mark]**
- Beneficiary 3: 40% or 100% of the value of the asset portfolio, at the date of death of Beneficiary 1: i.e. expected in 15 to 20 years. **[0.5 mark]**

The asset portfolio is expected to grow in line with the price of the asset moves over time. **[0.5 mark]**

The investment time horizon for the asset portfolio is therefore likely to be 15 to 20 years but could be much shorter or significantly longer. **[0.5 mark]** There is therefore a need to consider the liquidity of the assets held in the asset portfolio. **[0.5 mark]**

There is a need to consider the reasonable expectations of the beneficiaries about either the growth in income or the growth in asset values compared with inflation **[0.5 mark]** as they will wish to at least preserve the real purchasing power of their income or expected capital receipts. **[0.5 mark]**

There is no need to consider:

- currency risk because payments are not defined in foreign currency even though each beneficiary lives in a different country. **(0.5 mark)**; or
- tax liabilities **(0.5 mark)**



- b) Propose an investment return objective for the Trust investment portfolio, with clear links to the liabilities of the Trust, setting out your reasons having regard to expected returns from income and capital growth in different asset classes. **(5 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.

Note to markers: A rationale for the investment objective needs to be provided by the student such as that in the example set out below. This is just one way of setting out the rationale. There will be others that will be satisfactory.

The asset portfolio with the current asset allocation is expected to generate the following returns over the next ten years or more:

Asset class	Asset allocation as % of the total portfolio	Current allocation in \$AUD million	Expected rate of income yield on assets (% p.a.) over the next ten years net of ETF management costs	Expected annual income in \$AUD million	Expected total return (% p.a) over the next ten years after ETF management costs
Global Equities	75%	22.5	1.40%	0.315	8.35%
Global fixed interest	20%	6.0	3.10%	0.186	3.10%
Cash	5%	1.5	2.90%	0.043	2.90%
Total	100%	30.0	1.81%	0.544	7.02%

[2 marks for analysis supporting the proposal similar to that shown in the table above]

Inflation in AUD terms is expected to average 2.75% p.a. over the next ten years- the current level of 4.10% p.a. trending down to 2.50% p.a. within two years, then averaging that level for the remaining eight years. **[1 mark]** because this is consistent with the targeted rate of inflation used by major central banks. **[1 mark]**

If an income of the greater of 40% of the investment income or \$AUD 200,000 is paid to Beneficiary 1 each year for the rest of her life (expectancy 15 years or more), then over the next ten years the portfolio is expected to grow by 7.0% p.a. less 40% of 1.8% p.a. = 6.3% p.a. which is 3.5% p.a. above expected inflation. **[1 mark]**

Therefore a suitable investment return objective that is realistic, achievable and in the long-term interests of Beneficiaries 2 and 3 would be a return of 2.5% p.a. in excess of inflation in AUD over the fifteen-year period **[1 mark]**.

Include comments on risk.



- c) Discuss the return and risk characteristics of unlisted property as an asset class. (7 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.

The return and risk characteristics of unlisted property as an asset class can be discussed using the SYSTEM T framework (but other approaches are acceptable):

Security: The security of a property's value is related to the security of its rental income. [1/2 mark]
Therefore a risk to the security of the value of a property is the potential for loss of the rental income if tenants default or if there are vacancies for long periods. [1 mark] The assessment of risk and security is mainly a function of evaluating the likely level of vacancies over many years, which in turn depends on the relative balance of supply and demand for properties. [1 mark]

Yield: The yield on property is the rental income net of expenses of managing and maintaining the property expressed as a % p.a. of the value of the property. [1/2 mark] Once tenants have signed leases the rental income is reasonably predictable at least for the term of the leases. [1 mark] Rental income is often but not always linked or indexed to inflation, providing a degree of protection for the total return against the effects of inflation. [1 mark] Property yields may rise and fall independently of rental income as market prices and valuations of property rise and fall due to property market sentiment, which is often influenced by shifts in both short-term interest rates which are directly affected by monetary policy as well as longer-term bond yields which are also influenced by monetary policy such as quantitative easing or tightening. [1 mark]

Spread: There may be a wide gap or spread between a seller's valuation and a buyer's valuation. [0.5 mark] A fall in demand for rental space or a rise in interest rates may lead to a significant increase in the spread. [1 mark] The valuation of property may decline from the price at which was purchased, causing negative overall returns. [1 mark]

Term: Whilst the ownership of the land component of property is often very long term, such as 50 years or more, the buildings will require refurbishment or replacement over a shorter period. [1 mark] This may be required within periods shorter than the 15 to 20 years implied by the liabilities to beneficiaries. [1 mark] This needs to be factored into future returns and adds to the uncertainty in the decision for the portfolio to invest in property. [1 mark]

Expenses: Expenses of operating and maintaining a property in order to retain tenants can be significant although some can be passed through to tenants. [1 mark] These costs should be taken into account when agreeing on tenant rents and when valuing a property. [1 mark] Excessive cost will reduce the net return and may even affect the ability of the Trust portfolio to meet its objective. [1 mark]



Marketability: Finding a seller or buyer and completing a transaction may take many months i.e. much longer than buying or selling ETFs investing in global equities, fixed interest, or cash, such as those held in the portfolio. **[1 mark]**

Tax: Generally there will be property-related taxes (e.g. land tax), transactional taxes (e.g. stamp duty), as well as income and/or capital gains taxes, while expenses are usually tax deductible. **[1 mark]** Overall taxes can reduce the return to the investor and need to be taken into account when considering if the net returns will support the investment objective. **[1 mark]**

Note to markers: The students need not use the SYSTEM T framework but if not, they will need to use some reasonably organised framework for their discussion of the return and risk characteristics of property as an asset class, that are relevant to considering the recommendation. The students should relate the analysis to the recommendation to allocate 25% to property.

An alternative way of answering the question is as follows:

Return Characteristics:

- Property markets are influenced by factors such as business activity and property development cycles, **(0.5 mark)** which respectively influence the demand for and supply of property. **(0.5 mark)** These in turn ultimately influence the returns that investors can expect to earn through rental yields and capital appreciation. **(0.5 mark)**
- Investment property returns are largely based on rental income and the potential for rental growth. **(0.5 mark)** The demand for properties by tenants will therefore have a significant influence on the rental returns achieved and the overall return on a property investment. **(0.5 mark)** Higher demand for a particular type of property will often lead to faster growth in the rental income rate. **(0.5 mark)**
- Historical evidence suggests that over long periods of time (ten years or more) property rental rates grow at least as fast as inflation and this maintains positive real returns on property over time. **(0.5 mark)**
- High levels of unanticipated inflation can lead (and have led) to large increases in interest rates, followed by recession **(0.5 mark)** which reduces demand for property, rental rates and hence property values. **(0.5 mark)**
- Infrequent rent reviews or any restrictions on the extent to which rent increases can be enforced may reduce future rental income growth prospects and therefore the property's growth in value. **(0.5 mark)**
- Any reduction in demand for a property by prospective tenants will eventually be reflected in lower rental income being achieved. **(0.5 mark)**
- A reduction in demand may be due to:



- economic forces (e.g. recession, structural change in industry); **(0.5 mark)**
- property location becoming less appealing (e.g. as new suburbs or business districts are developed); **(0.5 mark)** and
- the property itself becoming less appealing (e.g. because of outdated fit-out or features). **(0.5 mark)**

Risk Characteristics:

- More uncertain valuation and dated pricing: Property that is not listed on an investment exchange will not have continual price discovery that arises from frequent trading of public market Property such as equities and some fixed-interest securities. **(0.5 mark)** The lack of continual pricing leads to the risk of inappropriate valuation of unlisted Property based on much less frequent transactions which can be very dated; **(0.5 mark)**
- Hard to sell when needed: The lack of liquidity may lead to difficulty in selling an unlisted asset at a time when cash flow is required to meet liabilities; **(0.5 mark)**

d) Discuss the implications of accepting the recommendation to invest 25% of the portfolio in unlisted property. **(7 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.

Credible estimates of long-term returns over 10 to 15 years for an unlisted property fund which managed well would be:

- Income return net of management costs (of 0.5% p.a. to 1.5% p.a.) would be 3.5% p.a. to 4.5% p.a. **[1 mark]**
- Total return net of management costs: 6.0% p.a. to 9.0% p.a. **[1 mark]**

If the advice were accepted and 25% of the portfolio was invested in an unlisted property fund, reducing global equities by 15% and fixed interest by 10% the revised portfolio would appear as follows:

Asset class	Asset allocation as % of the total portfolio	Allocation in \$AUD million	Expected rate of income yield on assets (% p.a.) over the next ten years net of management costs	Expected annual income in \$AUD million	Expected total return (% p.a.) over the next ten years after management costs



Global Equities	60%	18.0	1.40%	0.252	8.35%
Global fixed interest	10%	3.0	3.10%	0.093	3.10%
Unlisted property fund	25%	7.5	4.00%	0.300	7.50%
Cash	5%	1.5	2.90%	0.043	2.90%
Total	100%	30.0	2.29%	0.688	7.34%

Note to markers: The use of the table format is not essential but some rationale for the discussion of the relevance to the recommendation will need to be given.

If an income of the greater of 40% of the investment income or \$AUD 200,000 is paid to Beneficiary 1 each year for the rest of her life (expectancy 15 years or more), then over the next ten years the portfolio is expected to grow by 7.34% p.a. less 40% of 2.29% p.a. = 6.42% p.a. which is 3.67% p.a. above expected inflation. **[1 mark]**

It could be concluded that the proposed shift in asset allocation, essentially mostly from fixed interest to unlisted property may be beneficial. **[1 mark]**

If each of the various assumptions described is achieved in practice over the next 10 to 15 years accepting the recommendation would:

- improve the rate of income of the trust **[1/2 mark]**
- increase the income distribution to Beneficiary 1 **[1/2 mark]**
- increase the rate of growth of the balance of the assets that Beneficiaries 2 and 3 will eventually receive. **[1/2 mark]**

The assumptions described about the rate of income and the total rate of return on each asset class may not be achieved in practice, **[0.5 mark]** given the uncertainty of conditions in each asset market over a period of ten years **[0.5 mark]**.

Therefore, rather than rely on a single projection of returns **[0.5 mark]** further analysis should be considered such as:

- a review of the historical correlations between asset class returns **[0.5 mark]** and whether there is any plausible cause and effect explanation for them **[0.5 mark]**
- sensitivity testing **[0.5 mark]** where outcomes are tested for sensitivity to shifts in each variable **[0.5 mark]**
- scenario testing **[0.5 mark]** where outcomes are projected using multiple simultaneous shifts in assumptions **[0.5 mark]**

Maximum 7 marks for part (d)



END OF QUESTION 3: MARKING GUIDE



QUESTION 4: MARKING GUIDE

(15 marks)

Question

You are an actuary advising the board of a not-for-profit mutual insurance fund that offers its members (policyholders) long-term insurance contracts providing for future aged care accommodation and health care costs, which may commence many years in the future.

The board has asked you to advise on setting the investment objective for the asset portfolio that supports the policy liabilities of the long-term contracts. and likely rates of return on the major liquid asset classes.

- a) Explain the liabilities that are being provided for by the long-term aged care contracts. (5 marks)
- b) Explain how the characteristics of the liabilities may affect the investment strategy of the fund. (5 marks)
- c) Propose, with reasons, an investment objective for the asset portfolio that provides for policy liabilities of the long-term aged care contracts. (5 marks)

Question	Syllabus Learning Objective	Chapter Reference	Total Marks	SA	A	H
4	3.4,6.1,6.2,6.3,6.4,6.5		15	0	10	5
A	6.1,6.2	C11	5		5	
B	6.1,6.2	C 11	5		5	
C	3.4,6.1,6.2,6.3,6.4,6.5	C10,C11	5			5

Marking guidance

- a) Explain the liabilities that are being provided for by the long-term aged care contracts. (5 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.)

Key points to cover:

- long-term contracts covering future aged care costs may be long-tail liabilities [0.5 mark] depending on the age of the policyholder, [0.5 mark] similar to funding retirement incomes. [0.5 mark]



- policyholders expect claims to be paid with certainty **[0.5 mark]** and for inflation of costs of their care to be covered **[0.5 mark]**
- the cash flow needed to provide for the liabilities is likely to increase significantly over the term of the liabilities due to inflation **[1 mark]**
- there is a need to take into consideration the potential inflation of aged care accommodation and health care costs rather than overall consumer price inflation. **[1 mark]** because they have often exceeded consumer price inflation **[0.5 mark]** due to demand growing strongly in an ageing population **[0.5 mark]**

b) Explain how the characteristics of the liabilities may affect the investment strategy of the fund. **(5 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.

The characteristics of the fund's liabilities that may affect the investment strategy of the fund are:

- They are very long-term **[0.5 mark]** as:
 - members may join at a young age and have many years in which their accounts are accumulating with investment returns. **[0.5 mark]**
 - the long-term nature of the liabilities is likely to lead to a significant asset allocation to equities **[0.5 mark]** which have historically had higher returns than cash or fixed interest. **(0.5 mark)** and inflation **[0.5 mark]**
 - the uncertainties in the future cash flows should lead to a minimum level of liquid assets such as cash, government bonds and listed equities **[0.5 mark]**, and a maximum limit on less liquid assets such as private equity, private debt, unlisted property, and unlisted infrastructure. **[0.5 mark]**
- There are no guarantees of investment return on members' accounts **[0.5 mark]** so the value of the liabilities will not exceed the value of the assets **[0.5 mark]**, so that there is no tight constraint on the asset allocation of the fund. **[0.5 mark]**
- Although there are no guarantees of investment returns, it is likely that members will have a reasonable expectation that the investment returns on their account will at least match the rate of inflation in aged care accommodation costs and health care costs, **[0.5 mark]** which will lead to a need to invest in assets that have historically demonstrated returns above inflation in the longer term, such as listed equities. **[0.5 mark]**
- the liabilities are in domestic currency terms **[0.5 mark]** so to the extent that there is investment in international assets, there will be a need to consider hedging the currency risk **[0.5 mark]**



An alternative way of answering the question is:

The characteristics of the fund's liabilities that may affect the investment strategy of the fund are:

- they are very long-term as:
 - ~ members may join at a young age and have many years before retirement age in which their contributions are accumulating with investment returns. **(0.5 mark)**
 - ~ retired members may receive benefits under the plan for many years until their death; **(0.5 mark)**
 - ~ if the fund continues to have new young members joining the average term of the investment may become longer. **(0.5 mark)**
 - ~ the Fund will have a net cash flow that could be positive or negative depending on the balance of contributors and retirees **(0.5 mark)**
- The cash outflows are uncertain as members may:
 - ~ choose to move to another fund anytime or **(0.5 mark)**
 - ~ live much longer than anticipated in the model (longevity risk) **(0.5 mark)**
 - ~ start receiving the benefits at any time once the policy allows, **(0.5 mark)**
 - ~ have the benefits end on death, the timing of which is also uncertain **(0.5 mark)**
- Inflows are also uncertain because:
 - ~ a member may stop contributing anytime due to unemployment or policy discontinuance **(0.5 mark)**
 - ~ the Fund may be prohibited from receiving contributions if it fails in its regulatory obligations. **(0.5 mark)**
- The long-term nature of the liabilities is likely to lead to a significant asset allocation to equities which have historically had higher returns than cash or fixed interest **(1 mark)**
- The uncertainties in the future cash flows should lead to a minimum level of liquid assets such as cash, government bonds and listed equities, **(0.5 mark)** and a maximum limit on less liquid assets such as private equity, private debt, unlisted property and unlisted infrastructure. **(0.5 mark)**
- Although there are no guarantees of investment returns, it is likely that members will have a reasonable expectation that the investment returns on their account during the accumulation phase and in the benefit phase after retirement, will at least match inflation (including health care inflation), **(1 mark)** which will lead to a need to invest in assets which have demonstrated returns above inflation in the longer term, such as equities, property. **(1 mark)**



- c) Propose, with reasons, an investment objective for the asset portfolio that provides for policy liabilities of the long-term aged care contracts. **(5 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.

The investment objective needs to:

- specify return and risk objectives **[0.5 mark]**
- be specific, measurable, achievable, relevant and time-limited **[0.5 mark]**
- in a form such as:
 - return of at least CPI plus x% p.a. where x% is the excess of expected health and age care accommodation inflation above the expected CPI **[1 mark]** to meet the risk of health care inflation **[0.5 mark]**
- over rolling N-year periods **[0.5 mark]**
- with a risk (probability of failure) of less than F% **[0.5 mark]** over a rolling T-year period **[0.5 mark]**
- supported by a portfolio diversified across a range of asset classes **[0.5 mark]** such as short-term, liquid, investment grade fixed interest, longer-term fixed interest, and equities, **[0.5 mark]** diversified across a range of issuers, with no more than 5% invested with any single issuer **[0.5 mark]**

There is a need to discriminate between the volatility of returns at the asset class level and the definition of risk at the asset portfolio level- which is the probability of failing to meet the objective **[1.0 mark]**

An alternative way of answering this question part is:

The Fund's overall objectives are to provide funding for future aged care accommodation and health care costs extending over many years. **(0.5 mark)**

It is expected that program funding will be accommodated from the investment income of the Fund together with a part of the ongoing member contribution flow each year. **(0.5 mark)** Also, the cash outflow would not be commencing for many years in the future. **(0.5 mark)**

Therefore, depending on the flow of member contributions, the balance of the fund can be invested on a very long-term basis, and it will need to try to earn returns in excess of the rate of inflation for health care. **(0.5 mark)** This could lead to a higher allocation to equities than cash or fixed interest given the historically higher return on equities **(0.5 mark)** The fund needs to avoid the reputational risk of not being able to fund the programs as agreed to as this would impair its ability to continue to get new members. **(0.5 mark)**



Considering the investment portfolio alone, then the investment objectives need to be consistent with these higher-order objectives. **(0.5 mark)**

A certain amount of income is required every year (to meet the budgeted needs of the programs), and the capital value will need to be protected over longer term in absolute terms or relative to health care inflation **(0.5 mark)** and over shorter terms (absolute value) to retain the confidence of members, although some shorter-term fluctuations in the value of the Fund's portfolio can be tolerated as long as the cash-out flow needs of the programs are close to zero in recent years. **(0.5 mark)**

The following set of objectives could meet these needs:

- A real return of 4% p.a. (Inflation plus 4% p.a.) over rolling five-year periods. **(0.5 mark)**
- The probability of the five-year rolling return being less than inflation plus 4% p.a. should be no more than 20% when assessed over any 10-year period so as to avoid underpayment or non-payment of benefits which would lead to erosion of confidence in the business. **(0.5 mark)**

END OF QUESTION 4: MARKING GUIDE

END OF MARKING GUIDE