

ASSET AND LIABILITY MANAGEMENT

EXAM MARKING GUIDE SEMESTER 1 2021



MARKING GUIDE

This exam represents 80% of the available marks for the Asset Liability Management subject.

Question	Learning Objective	Module	Marks	K	A	HO
1	3.1, 6.2, 6.5	5.5.2, 11.4	11	0	8	3
2	5.1, 5.3, 6.4, 6.5	6.4.2, 6.4.6, 6.6, 9.3.3, 9.4.1, 9.4.2, 9.4.3 11.4.1	16	8	6	2
3	3.1, 3.2, 3.3, 3.4, 6.1, 6.5	Exercise 5.7, 10.2, 10.4.3, 11.4, 11.5.2, 11.7	14	4	7	3
4	2.8, 2.11, 6.2, 6.5, 6.6	5.3.2, 6.3.2, 11.4, 11.5, 11.5.2, 11.5.3	25	6	10	9
5	4.2, 4.3, 4.4, 4.5, 6.7,	8.2, 8.2.3, 8.3.2, 8.4.1, 8.5.1	14	2	10	2
Total			80	20 (25%)	41 (51%)	19 (24%)

Marking guide information is presented in blue box.

The sample answer is presented in black font.

The sample answer is not the only possible answer.



QUESTION 1: MARKING GUIDE

(11 Marks)

Background

An investor has an actively managed debt portfolio. The investor's mandate specifies:

- 50% domestic government debt securities and 50% domestic investment grade corporate debt securities;
- duration targets for each type of debt; and
- the minimum credit rating for individual securities.

A manager offers a debt securities fund (DS Fund) that the investor is considering. The DS Fund is benchmarked against a broad market weighted debt index comprising all issued domestic denominated investment grade bonds (government and corporate). The DS Fund targets outperforming this index by 0.5% p.a. before fees (that is, the total return to the investor).

The manager charges a fee of 0.2% p.a. plus a performance fee of 10% of gross returns in excess of (Index + 0.5%) (the minimum performance fee is 0%). The performance fee is assessed annually in arrears.

- a) The investor wishes to understand how the DS Fund fee structure will work in practice.

Complete the table of net returns to the investor (as a % pa) assuming the investor has a 0% income tax rate. [student to use excel or word for their response] (2 marks)

Net return to investor = Portfolio gross return less investment manager fees					
		Portfolio Gross %pa			
		0%	1%	2%	3%
Market Index %pa	0%				2.55%
	1%				
	2%				
	3%	-0.2%			

- b) Summarise your understanding of the investor's mandate and the DS Fund benchmark portfolio. (2 marks)
- c) State four distinct ways the composition of the DS Fund may differ from the investor's portfolio mandate. (4 marks)
- d) Identify one potential problem arising here for the investor if they use the DS Fund for their debt portfolio. (1 mark)
- e) Suggest two alternative actions to resolve the potential problem identified in (d). (2 marks)



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Marking Guide Commentary

- See the table page 1 for learning objectives and module references
- The knowledge content covers setting objectives, monitoring and risks
- The application requirements are to apply this knowledge to a specific bond mandate and fee arrangement
- The higher order thinking is to identify problems and resolve them
- Students should have a continuing theme of the investor's objectives

Maximum of 12 marks

Comments in bold below show intended allocation of marks. The sample solution shows a range of possible answers, others may be acceptable, and it shows more than is required to gain full marks.

Sample Solution

- a) The investor wishes to understand how the DS Fund fee structure will work in practice. Complete the table of net returns to the investor (as a % pa) assuming the investor has a 0% income tax rate.

[Student may submit as a separate excel file or as a table in the word file]

Net return to investor = Portfolio gross return less investment manager fees					
		Portfolio Gross %pa			
		0%	1%	2%	3%
Market Index %pa	0%	-0.2%	0.75%	1.65%	2.55%
	1%	-0.2%	0.8%	1.75%	2.65%
	2%	-0.2%	0.8%	1.8%	2.75%
	3%	-0.2%	0.8%	1.8%	2.8%

- 2 marks for exact match to this solution 1 mark for a consistent set of results due to alternative algebra 0 mark for blank or inconsistent figures A
 - Formula is $\text{Fee} = \max\{[\text{Gross} - \text{index} - 0.5\%] \times 0.1, 0\} + 0.2\%$
 - Net return = Gross - Fee
- b)
- The **mandated** portfolio is actively managed portfolio currently comprising 50% domestic government debt securities and 50% domestic investment grade corporate debt securities, with duration limits and minimum credit ratings. **(1 mark)**
 - The **benchmark** portfolio is a broad market weighted index comprising all issued domestic denominated investment grade debt securities (government and corporate). The split between corp/Gov; duration and credit ratings will reflect current issuance and vary over time. **(1 mark)**
 - Any clear summary of each consistent with the background
 - 2 marks



- c) State four distinct ways the composition of the DS Fund may differ from the investor's debt portfolio mandate.

These may differ in several ways:

- Invested value weighting between government and corporate (mandate is 50/50, DS Fund will reflect benchmark values)
- Number of securities held (mandate not known but very likely to be less than benchmark, DS Fund likely to be closer to holding all securities in the benchmark)
- Duration of each sub sector (government/corporate) (mandate has specifications which may be different to the components of the DS Fund)
- Overall duration (again, mandate will reflect specifications and could be different to DS Fund)
- Credit rating of mandate has been specified but the DS Fund will reflect its weightings and credit rating of each security and DS Fund likely closer to market benchmark
- Term, conditions and coupon for the individual securities, e.g. callability of bonds, covenants, make-whole, etc.
- Industry sector mix of the corporates
- Geography regions of the bonds
- Use of foreign currency bonds hedged back to domestic currency?
- As a result of these and other variations, the yield to maturity on the two could be different
- **M 5.5.2**
- **1 mark each point with explanation**
- **There may be more valid points.**
- **Max 4 marks A**

- d) Identify one potential problem arising here for the investor.

One possible answer

- The DS Fund has a given return target but no risk objective (no specifications on credit risk or number of securities to be held). **(0.5 mark)**
- No penalties (or downside) on the manager if the DS Fund underperforms. **(0.5 mark)**
- So DS fund manager likely to add risk to the portfolio seeking the outperformance (e.g. lower rated debt securities) by taking active positions, away from the benchmark. **(0.5 mark)**
- May adding more risk than the investor intended and may not always pay off with above benchmark returns **(0.5 mark)** – however as manager not penalized for below benchmark, they are not concerned. **(0.5 mark)**

OR another possible answer

- The mandate requires certain duration and sector targets **(0.5 mark)** which may make it difficult or impossible for the DS Fund to comply at all times. **(0.5 mark)**
- If the investor uses the DS Fund, there will be times the DS Fund does not comply with their mandate portfolio. This could cause issues for the investor - compliance breaches. **(0.5 mark)**



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- Also the DS Fund under/over performance is compared to the market index, not the investor's mandate **(0.5 mark)** and potentially conflict between the investor and the manager. **(0.5 mark)**
- **M 11.4**
- **A constructed argument, 0.5 mark per step in the argument, these are two examples only expecting 1 mark**
- **Max 1 marks H**

e) Suggest two alternative actions to resolve the potential problem.

Respond to issue cited, e.g.

- Require a clear risk objective to the DS Fund objective. This may be to maintain a minimum overall credit risk rating of AA (for example). **(1 mark)**
- Negotiate the remove the performance fee for outperformance (or add a performance clawback provision for periods when underperforming benchmark) **(1 mark)**

Another issue e.g.

- Amend the mandate portfolio terms to more closely align to the market benchmark index, so that the DS Fund is likely to comply. **(1 mark)**
- Don't use the DS Fund, commission a tailored investment by the same fund manager to match the investor's mandate. **(1 mark)**
- Find two funds, one for corporate and one for government, so that the 50/50 required split can be maintained by the investor. **(1 mark)**
- **M 11.4**
- **A constructed response that lines up to the issues identified in previous question, (0.5 mark) for idea and (0.5 mark) for elaboration or example**
- **Max 2 marks H**

END OF QUESTION 1: MARKING GUIDE



QUESTION 2: MARKING GUIDE

(16 Marks)

Background

You are an actuary at a life insurance company. The board is responsible for the investment of the assets supporting the life insurance business. The board's investment beliefs are:

- Assess investment risks and returns relative to the insurance liabilities;
- Minimise unrewarded risks;
- Capital markets are fairly efficient over time; and
- Responsible investment adds value.

Responsible investment refers to social, environmental and governance factors.

The board is reviewing its domestic equity managers. Some board members are investment novices and have asked you to assist them as they prepare for the equity manager interviews.

a) Prepare a short answer to each question below:

- Describe active and passive management styles (for an equity portfolio). **(4 marks)**
- Compare technical analysis and fundamental analysis. **(4 marks)**
- Discuss the relevance of the Efficient Market Hypothesis to selecting the most appropriate management style. **(4 marks)**

b) Given the board's stated beliefs,

- Discuss how past performance of the individual managers should be taken into account by the Board when selecting a manager. **(2 marks)**
- Propose two specific questions for the board members to ask each and every equity manager that will assist in selecting a manager aligned to the board's investment beliefs. **(2 marks)**

Marking Guide Commentary

- See the table page 1 for learning objectives and module references
- The knowledge content covers equity investment styles, investor beliefs, manager selection, EMH
- The application requirements are to apply this knowledge to explain investment matters to a board in relation to equity portfolio
- The higher order thinking is to ask pertinent questions for the given set of beliefs
- Students should have a continuing theme of beliefs/theories in equity management and that they are not facts

Maximum of 16 marks

Comments in bold below show intended allocation of marks. The sample solution shows a range of possible answers, others may be acceptable, and it shows more than is required to gain full marks.



Sample Solution

a) Prepare a short answer to each question below:

i. Describe active and passive management styles (for an equity portfolio)

- Passive styles are based on a belief that markets are efficient **(0.5 mark)** and active investing after costs cannot consistently add value. **(0.5 mark)**
- Passive strategies for an equity portfolio are any strategy that does not involve moving away from the market **(0.5 mark)** rather focus on copying or tracking a given market index. **(0.5 mark)**
- Passive strategies focus on achieving the market return (beta) **(0.5 mark)** by holding securities that match to the market (index) being followed **(0.5 mark)**, and do not attempt to beat the market return. **(0.5 mark)**
- Active styles are consistent with the belief that markets are not efficient **(0.5 mark)** it is possible to identify mispricing and actively trade to outperform the market and earn an additional return (Alpha). **(0.5 mark)**
- Active styles require analysis to support a decision making process on what and when to trade. **(0.5 mark)** Active styles are therefore usually more expensive to operate. **(0.5 mark)** Active styles do not guarantee any outperformance (alpha) and may underperform the market. **(0.5 mark)**
- **M 6.6**
- **Marks per point as shown, other variations possible. Expecting an even balance of comments between active and passive. Detail is given in M6.6.**
- **Max 4 marks K**

ii. Compare technical analysis and fundamental analysis

- Technical analysis (for equity securities) is a process of looking at historical price and trade information to forecast future prices for a security and then making trading decisions. **(1 mark)**
- Technical analysis is based on assumptions that all possible information available is incorporated into market price and **(0.5 mark)** (i.e. there is no other relevant information); plus that history is a guide to the future. **(0.5 mark)**
- Research suggests that technical analysis has limited ability to reliably predict the future **(0.5 mark)** but nevertheless used widely, including as a 'second check'. **(0.5 mark)**
- Fundamental analysis (for equity securities) is a process of collecting all available information, making assumptions about the future, and calculating a value for a security. Then comparing this calculated (or estimated intrinsic) value to the current market price to make trading decisions. **(1 mark)**
- Fundamental analysis is based on the assumption that a market is not perfectly efficient **(0.5 mark)** and that some information is not available to (or not used by) all market participants. **(0.5 mark)**
- Decisions using fundamental analysis can still be 'wrong' as the assumptions about the future may prove to be incorrect or incomplete, **(0.5 mark)** or yet more information may become available. **(0.5 mark)**
- **M 6.4.2, 6.4.6 (also 9.4.1, 9.4.2)**



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- Looking for a complete definition of each, 1 mark each
- And a discussion that compares them – including underlying beliefs, when they might not work, whether evidence suggests they do work etc. 0.5 mark per point
- Max 4 marks K

iii. Discuss the relevance of the Efficient Market Hypothesis to selecting the most appropriate management style

- The EMH supposes that the market incorporates new information rapidly and rationally when pricing securities, and it incorporates all relevant information.
(1 mark for definition)
- As a consequence, if it holds (strong), then prices are always at a level that implies extra returns cannot be achieved by technical analysis or fundamental analysis.
(1 for impact)
- Weak efficiency is when the market has incorporated all historical information, if EMH holds in this form then technical analysis cannot add value. (1 mark)
- Semi strong form means that all public information has been incorporated, so that neither technical nor fundamental analysis can add value. (1 mark)
- This would appear to be the level the board believes holds, that is “fairly efficient”.
(0.5 mark for stating their assumption on the board’s level)
- Therefore, if the board’s belief is that the market is at least semi strong efficient, then there is no gain for the board in hiring a manager that relies on technical analysis (0.5 mark for view on TA), and likely little or no gain for fundamental analysis. (0.5 mark for view on FA) especially after costs of transactions are taken into account. (0.5 mark for mentioning costs)
- M 9.3.3, 9.4.3
- Must have concluding remark about relevance to decision to gain full marks
- Max 4 marks A

b) Given the board’s stated beliefs,

i. Discuss how past performance of the individual managers should be taken into account by the Board when selecting a manager

- The board’s belief in **fairly efficient markets (0.5 mark)** would correspond to a view that.
- Any investor can match the market index returns over time (before fees) by holding the index (0.5 mark) i.e. investing passively.
- A manager that could not at least track the index/benchmark in the past would not be expected to do so in the future and therefore not be selected. (0.5 mark)
- Fairly efficient but not perfectly efficient indicates that it is possible to use information to make decisions that add to returns. (0.5 mark)
- An active manager should be able to demonstrate above index performance over their stated target timeframe over successive periods if they are indeed able to add value over the index. (0.5 mark)
- So past performance would be a useful guide to whether a manager can do that consistently over various timeframes, by comparing performance to the relevant index. (0.5 mark)



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- The belief that it is important to **minimise unrewarded risks (0.5 mark)** can be applied by using past performance to test retrospectively the degree of risk taken by each manager relative to return achieved. **(0.5 mark)** Discard any manager that was relatively riskier for same return.
 - The absolute values of past performance are not the key issue. **(0.5 mark)**
 - The board believes that **responsible investing** adds value. **(0.5 mark)** When considering a manager who says that they have a responsible investing approach their past performance analysis can be used to show where they have applied this approach **(0.5 mark)** and perhaps whether it has added value as the Board would expect. **(0.5 mark)**
 - Past performance figures will have to take into consideration whether there was a particular ESG approach in place **(0.5 mark)** and whether there is a comparable index to look at. **(0.5 mark)** It may not be possible to use past performance alone to determine if the manager followed their stated ESG approach. **(0.5 mark)**
 - If a manager focuses on “socially responsible” companies then variation from market index weights (assuming the index was not constructed along socially responsible lines) was likely. **(0.5 mark)** The manager would probably not tracked the index especially if there were some large companies e.g. alcohol/tobacco in the index which either outperformed or underperformed which would not be reflective of the manager’s skill. **(0.5 mark)**
 - **As above modules plus 11.4.1 A**
 - **0.5 mark per step**
 - **Max 2 marks for a logical argument with a clear view (yes or no)**
 - **The student may present an argument about assessing past performance as a responsible investor (actual versus stated approach), this would be acceptable; or other aspects of investment.**
- ii. **Propose two questions for the board members to ask each and every equity manager that will assist in selecting a manager aligned to the board’s investment beliefs.**
- Explain your fee structure and what our net return will be if your portfolio achieves the benchmark return. **(1 mark)**
 - Explain your responsible investment parameters and whether you will invest differently to the benchmark (i.e. actively) after taking into account social, environmental and governance factors. **(1 mark)**
 - What assessment of social, environmental and governance factors do you carry out and what weight does this have on your investment decisions. **(1 mark)**
 - Show how your (fundamental) analysis has added value to the portfolio over time **(1 mark)**
 - Breakdown the contributors to your past outperformance – what decisions added value. **(1 mark)**
 - What is your views on the EMH and our stock market, whether active investing adds value. **(1 mark)**
 - Do you believe the market has now priced in social, environmental and governance factors, or is there room for value add by carrying out additional analysis? **(1 mark)**



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- This portfolio supports our life insurance business, please comment on the risks/rewards of this asset portfolio compared to our liability portfolio (or asset matching or similar). (1 mark)
- M 11.4.1
- 1 mark per sensible question that links back to one of the Board's 4 stated beliefs
- Max 2 marks H

END OF QUESTION 2: MARKING GUIDE



QUESTION 3: MARKING GUIDE

(14 Marks)

Background

A large global charity provides long term care to otherwise homeless elderly whilst at the same time the charity seeks to have minimal impact on the environment.

The charity has a global investment portfolio of \$500 million. It has a stated preference to use only the income generated for its charitable purposes and not draw down on the capital.

The charity pays no tax.

Supporting information

There are no accompanying spreadsheets for this question.

- a) Propose two investment objectives, one for risk and one for return, for the charity's investment portfolio. **(3 marks)**
Summarise the four key features of corporate debt as an investment (in general). **(4 marks)**
- b) Explain the relationship between the expected returns of corporate debt, government debt and cash over the long term. **(2 marks)**
- c) Assess whether corporate debt might be considered a suitable asset class for the charity. **(3 marks)**

Following a review of the current investment portfolio, it has been decided that a small proportion of the portfolio should be invested in corporate debt. A specialist investment manager has therefore been appointed.

- d) State four matters that should be included in the explicit written mandate between the trustees of the charity and the investment manager. **(2 marks)**

Marking Guide Commentary

- See the table page 1 for learning objectives and module references
- The knowledge content covers corporate debt and long term returns
- The application requirements are to apply this knowledge to a specific client and their objectives, both financial and environmental.
- The higher order thinking is to consider timing of an investment in corporate debt
- Students should have a continuing theme of a debt portfolio, that the charity needs the return but could constrain portfolio to meet other objectives

Maximum of 14 marks

Comments in bold below show intended allocation of marks. The sample solution shows a range of possible answers, others may be acceptable, and it shows more than is required to gain full marks.



Sample Solution

- a) Propose two investment objectives, one for risk and one for return, for the charity's investment portfolio.

The charity's overall objectives are to provide services, minimise impact on environment. Also that the investment portfolio is managed as a perpetuity, i.e. will draw income only. (0.5 mark for any summary of charity's objectives)

Considering the investment portfolio alone, then the investment objectives need to be consistent with these higher order objectives.

(0.5 mark for noting need for consistency/supporting)

A certain amount of income is required every year (budgeting), and the capital value will need to be protected over longer term (including inflation proofing) and over shorter terms (absolute value) to retain confidence of donors, although can tolerate some fluctuations. (0.5 mark for an overview of what's required)

I suggest:

- A real return of 2%pa (inflation plus 2%) over rolling three year periods (1 mark for sensible return objective)
- Risk of capital loss in any one year to be less than 5% (or 1 in 20 years) (1 mark for sensible risk objective)
- M 11.4
- 0.5 mark for summary of charity's strategic objectives; 0.5 mark for noting that investment objectives should support the strategy; 0.5 mark for an overview of investment needs; 1 mark per return objective, 1 mark per risk objective.
- An objective set by reference to a benchmark index would also be OK.
- Max 3 marks H

- b) Summarise four key features of corporate debt as an investment.

Security: Security of investment depends on the issuer (the corporation) (0.5 mark) and the debt will be rated to provide guidance. (0.5 mark) Higher risk debt will generally have a higher coupon. (0.5 mark) Usually corporate lower credit ranking than government, but debt ranks ahead of equity investors in same company. (0.5 mark) (pay max two points, 1 mark)

Yield/Return: Coupon predictable (nominal or real) (0.5 mark) and return of capital predictable if hold to maturity (assuming the debt has not defaulted) (0.5 mark). Therefore overall yield mostly predictable, with asymmetric return distribution (negative skew due to default risk). (0.5 mark) Less certain if trading securities; if fixed coupon then real return uncertain (0.5 mark); reinvestment of coupon payments may not get same return (0.5 mark). As more risk than government, typically higher coupon. (0.5 mark) But as less risk than equity, expect a lower return from debt. (0.5 mark) (pay max two points, 1 mark)



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Spread: Market values will vary **(0.5 mark)** with changes in economic factors, demand/supply, duration etc. **(0.5 mark)** If trading, there will be some volatility in values, typically less than equity markets. **(0.5 mark)** However return of capital at term is expected if no default. **(0.5 mark)** **(pay max two points, 1 mark)**

Term: Each issue will have a specified term, can vary from short to long, **(0.5 mark)** and will be priced accordingly. **(0.5 mark)**

Expenses: low trading costs for the investor for public corporates. **(0.5 mark)**

Marketability: Generally, a market enabling purchase and trading [primary (issue) and secondary (trading)] **(0.5 mark)** although not as big/deep as government bond market or as liquid as listed share market. **(0.5 mark)** maybe OTC only **(0.5 mark)** **(pay max two points, 1 mark)**

Tax: depends on investor's tax regime **(0.5 mark)** and whether any distinction between income and capital gains tax **(0.5 mark)** (not a relevant factor for the charity) **(0.5 mark)**

- M5 Exercise 5.7 (page 58) straight bookwork but if they copy from text will all be a comparison to government bonds. They will need to rewrite to be stand alone. If ONLY written as a comparison to government bonds, then max 2 marks.
 - Expecting SYSTEM T to be used, any 4 items from this list
 - Not expecting direct linkage to the charity in this part of the answers
 - 1 mark per item that is discussed correctly
 - Max 4 marks K
- c) Explain the relationship between the expected returns of corporate debt, government debt and cash over the long term.

Government bonds are assumed zero credit (default) risk, so the yields reflect the risk free cash rate plus a premium for inflation risk. **(1 mark)** Corporate bonds have a higher credit risk and a degree of market illiquidity risk, so would be expected to have a higher return for the same term. **(1 mark)**

Or

Generally, government debt returns would be at or above cash rates (as both set by government or central bank) **(1 mark)** and corporate debt returns higher again due to additional risks investing with a corporation rather than a sovereign government. **(1 mark)**

Or

If you believe that accepting risk will be rewarded with higher returns (overall) then the expectation is cash, higher for government bonds and higher again for corporate bonds. **(1 mark)** Corporates have a higher risk of default than government, corporate and government have an inflation risk that increases with term **(1 mark)**



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Historically, returns can be observed and compared. Australian data shows this relationship has held in past 10/20 years. **(0.5 mark)**

- M 10.2, 10.4.3
- Mark per developed point, above are examples
- Max 2 marks A

d) Assess whether corporate debt might be considered a suitable asset class for the charity.

- In 'normal' markets, corporate debt offers an opportunity to achieve real returns (i.e. above inflation) which the Charity needs **(0.5 mark)**; with less volatility than equity investments. **(0.5 mark)**
- Also by selecting securities with at least a minimum risk rating (e.g. Investment grade) the risk of capital loss is mitigated **(0.5 mark)**, and will assist with meeting the risk objective. **(0.5 mark)**
- The charity will have a buy and hold strategy given the portfolio is a perpetuity **(0.5 mark)** so it can hold debt to maturity and will not be exposed to market volatility to a great extent (other than in annual reporting) **(0.5 mark)** and will be able to forecast income from the securities with some confidence. **(0.5 mark)**
- Income distributions can be paid to the charity rather than reinvested **(0.5 mark)**, meeting their income needs. **(0.5 mark)**
- Corporate debt securities often have terms 1 – 10 years, unlikely to have very long term securities available, **(0.5 mark)** so the charity will need to have a rolling program of purchases **(0.5 mark)** and is exposed to reinvestment risk. **(0.5 mark)**
- The charity will be able to apply their ESG filter **(0.5 mark)** to the companies issuing debt, and only select those that meet its standards. **(0.5 mark)**
- For these reasons, corporate debt will be a suitable asset for the Charity as part of a diversified portfolio. **(0.5 mark for conclusion)**
- 0.5 mark for any feature and 0.5 mark for linking to objectives set by student earlier
- 0.5 mark for making a clear concluding statement yes or no that is supported by their reasoning
- M 11.5.2 A
- Max 3 marks

e) State four matters that should be addressed in the explicit written mandate between the trustees of the charity and the investment manager.

- Fees **(0.5 mark)**
- Constraints on types of corporate debt to keep risk exposure at acceptable level (credit risk rating, currency, size. Sector, regions) (this may be asset allocation to each grade) **(0.5 mark)**
- Constraints on the selection of debt securities to align the issuer with the environmental requirements of the charity, i.e. not invest in any corporate that has not published a carbon emission reduction strategy (or similar). **(0.5 mark)**
- Performance benchmark – what index and over what period. **(0.5 mark)**



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- Given this is a global charity I believe a key issue is the countries they invest in and the management of currency. **(0.5 mark)** Ideally these should match their commitments for charitable work in various countries. **(0.5 mark)**
- **M 11.7 A**
- Expect answer to cover the basics but also address the charities purpose and environmental limitations e.g. ESG
- 0.5 mark per item
- Max 2 marks

END OF QUESTION 3: MARKING GUIDE



QUESTION 4: MARKING GUIDE

(25 Marks)

Background

An investment company manages a mortgage trust RESIFUND which has a market value of AUD\$800 million. The RESIFUND trust pools investor money and lends money (issues a mortgage) to developers for land subdivision projects and/or residential property developments. All properties are in the local jurisdiction and mortgages in the domestic currency. It is an open fund, that is, able to accept new investors at any time and no fixed close date.

The marketing material to investors states:

- Your investment is diversified across a range of mortgages.
- In return for investing, investors receive a regular income called a distribution, generated from the interest paid by borrowers, interest earned on cash and earnings from other underlying investments held by the trust.
- Income from the pool of mortgages is distributed to all investors equally based on unit holdings.
- Investors share the risk associated with each of the mortgages in the pool.
- You can withdraw some or all of your capital subject to the trust's liquidity (a notice period is usually required).
- Distributions are paid monthly in arrears – investors may elect to reinvest distributions into the trust.

Most investors are self-funded retirees and they typically take the monthly distributions as cash, that is, they do not reinvest.

When an investor sells units (withdraws), payment to the investor is normally made on the fifth business day after receipt of the request to withdraw. However, in extreme circumstances, the investment company can defer withdrawal payments from the unit trust by up to six months.

- a) Describe one circumstance when it might be necessary to defer payments in this way. (2 marks)
- b) Discuss the following aspects of the unit trust's investment strategy:
- i. Ways RESIFUND can diversify the mortgage assets it holds. (2 marks)
 - ii. The proportion of the portfolio that should be held in cash. (2 marks)

A change in the regulations governing unit trusts has been proposed. The new regulations will specify that withdrawal payments must be made within 30 days or the investment company managing the unit trust will lose its license to operate.

- c) State one action that the investment company could take to ensure the 30 day limit can be met in most situations. (1 mark)



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- d) State the impact that the action could have on the investment performance of this unit trust. (1 mark)

A single self-funded retiree aged 70 manages their own investment portfolio of \$2 million, to generate an income of \$50,000 per annum (indexed) in retirement. The retiree has no beneficiaries and no need to leave an estate on death.

- e) Propose one return and one risk investment objective for their portfolio. (2 marks)

- f) There are three possible investments for the self-funded retiree.

- Term deposits;
- RESIFUND; and
- Stock market top 20 stocks by capitalisation.

Compare and contrast these investments for the retiree, considering the four key features given below. Present your answer in a table format.

	Term Deposits	RESIFUND	Top 20 stocks
Security of capital			
Yield			
Term			
Marketability			

(12 marks)

- g) Propose an asset allocation for the retiree's portfolio for the next 5 years, Using only the three investments in part (f). State any assumptions you make. (3 marks)

Marking Guide Commentary

- See the table page 1 for learning objectives and module references
- The knowledge content covers debt, investment risk factors, liquidity, regulation
- The application requirements are to apply this knowledge to specific asset class
- The higher order thinking is to determine impact of environmental changes on investment performance
- Students should have a continuing theme of liquidity and risk

Maximum of 25 marks

Comments in bold below show intended allocation of marks. The sample solution shows a range of possible answers, others may be acceptable, and it shows more than is required to gain full marks.

Sample Solution

- a) Describe one circumstance when it might be necessary to defer payments in this way. If the investor withdraws an amount in value that is more than the cash held by the trust, then the trust will not be able to pay until cash is available. (1 mark) This might require a new investor to make a deposit or an underlying mortgage to be sold and may take some time to occur. (1 mark)
- M11.5.3 A



- Max 2 mark

b) Discuss the following aspects of the unit trust's investment strategy:

i. Ways RESIFUND can diversify the mortgage assets it holds

This might include diversifying the:

- mortgagees (not all the one developer) (0.5 mark),
- locations (not all one city or state (0.5 mark)),
- stage of development (speculative land, subdivision approved, building approved) (0.5 mark),
- property types (land, houses, apartments) (0.5 mark),
- fixed rate loan vs variable rate loans (0.5 mark).
- M 11.5.2
- 0.5 mark per item for diversification
- Must clearly link discussion to the portfolio being residential land/ developments and mortgages, not generic property or fixed interest commentary
- Max 2 marks A

ii. The proportion of the portfolio that should be held in cash

- I propose that the portfolio should hold enough cash to manage net transactions each month without any impact on the underlying mortgages (0.5 mark) plus a buffer for unexpected redemptions. (0.5 mark)
- Three months' worth of distributions to unit holders might be appropriate to hold, so that 3 months of distributions can be paid out without any disruption (0.5 mark)
- Plus sufficient cash to cover a typical three month period of lump sum withdrawals. For example, average total withdrawals requested in a three month period (0.5 mark)
- M 11.5
- 1 mark for considering cash flow management for mortgage payments in, distributions out each month
- 1 mark for considering withdrawals
- Answers that discuss reserving would be acceptable
- Max 2 marks H

c) State one action that the investment company could take to ensure the 30 day limit can be met in most situations.

- Obtain a line of credit with a bank (overdraft facility) backed by the mortgages (1 mark) noting the bank will limit the value of the line of credit
- Purchase an option to sell the mortgages in say 14 days' time (rolling renewal of option) although this might be expensive (1 mark)
- Structure a deal with the investment company to purchase the units being redeemed; and or purchase the underlying mortgages from RESIFUND if withdrawal requests exceed cash holdings, or lend money to the RESIFUND, for a premium then paid to the investment company (1 mark) (this assumes the investment company has sufficient capital and reserves). Could also be difficult in practice to value trust fairly.



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- Package the commercial loans in the RESIFUND (which are assumed to be of sufficient industry standard) into collateralised mortgage backed securities and sell the tranches on open market to generate cash (if this is a permitted course of action by RESIFUND)
- **1 mark for any idea that could work**
- **Max 1 mark H**

d) State the impact that those action(s) could have on the investment performance of this unit trust.

The suggested action would involve RESIFUND paying a premium/purchasing a contract/paying interest on the overdraft. This cost would then have to be included in the cost of running RESIFUND and deducted from the distributions – reducing investment performance. **(1 mark)**

- **1 mark for relevant conclusion to the preceding idea, expecting cost**
- **Max 1 mark H**

e) Propose one return and one risk investment objective for their portfolio.

- The retiree is 70 and requiring \$50,000 per annum indexed for life from \$2 million investment. This is 2.5% of the capital (this year).
- The retiree appears prepared to run down the capital, and if the portfolio earns the inflation rate, it lasts 40 years on this basis. **(0.5 mark)** This is well beyond their likely lifetime. If they die sooner, then there will be a residual.
- There is no need to take undue investment risk but a definite need to protect capital values. **(0.5 mark)**
- Their investment objectives might be
 - Generate returns in line with inflation **(0.5 mark)**
 - With minimum risk of capital losses over a period of 12 months (day to day fluctuations can be tolerated) **(0.5 mark)**
- **M 11.4**
- **0.5 mark for return objective and 0.5 mark for risk, each should have a supporting reason/discussion considering retirees objective 0.5 mark each**
- **Max 2 marks H**

f) Compare and contrast the features of three possible investments for the self-funded retiree

	Term Deposits	RESIFUND	Top 20
Security of capital	Excellent	Some risk if property market collapse or mismanaged trust	Low but some risk, if economic collapse or company failure



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Yield	Known, around cash rate, may be below inflation rate Interest credited	Distributions monthly, should be fairly predictable As distributions linked to underlying mortgage rates, expect higher than cash rate given risks Not clear whether portfolio mortgages are fixed or variable loans, or whether any inflation linked returns	Less predictable, expect higher than inflation rate over longer term Dividends (reasonably predictable) and capital gains or losses (less predictable)
Term	3 months to 5 years available, at call	Returns reflect term of portfolio of mortgages, could be 3+ years	At call, take longer term view to secure returns in line with economic growth/above inflation
Marketability	Competitive market to invest, easy to exit	Not good marketability - once invested may be unable to withdraw on demand	Yes, listed market

- M 5.3.2, 6.3.2
 - Expecting each box filled 1 mark per sensible comment
 - May be laid out as table, grouped lists, paragraphs
 - Max 12 marks K/A
- g) Propose an asset allocation for the retiree's portfolio for the next 5 years, using only the three investments in part (f). State any assumptions you make.
- Suggest invest the next five years drawdowns (\$250,000) in term deposits, this is 12.% of the opening value, to ensure capital protected and liquid **(0.5 mark)**
 - This gives certainty of income to the investor for the five years **(0.5 mark)**, however, term deposits unlikely to give inflation protection sought **(0.5 mark)** so consider how to achieve **real return** of 0%



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- Mortgage income should generally be above inflation **(0.5 mark)**; But mortgages may not provide capital growth, only capital protection (and RESIFUND still has capital risk exposure). **(0.5 mark)**
- So propose 25% RESIFUND to generate income distributions and exposure to interest rate movements **(0.5 mark)** Income can go to rebalance into term deposits, or reinvest in RESIFUND or invest into shares, as required **(0.5 mark)**
- So remaining 62.5% in top 20 stocks for inflation linkage **(0.5 mark)** and again regular income from dividends that can be either reinvested or released to term deposits to rebalance **(0.5 mark)**. Not intending to sell the stocks in the next 5 years so short term capital value volatility not a major impediment. **(0.5 mark)**
- Rebalance say annually to maintain this strategy, **(0.5 mark)** review in depth after 5 years if still alive to reset objectives and strategy **(0.5 mark)**

12.5% \$250,000

Term Deposits

25% \$500,000

RESIFUND

62.5% \$1,500,000

Top 20 stocks

- M 11.5
- 1 mark per asset type, 0.5 mark per discussion point of why/why not hold that asset
- Actual asset allocation not the focus
- Would accept less in equities, e.g. if argument they wish to preserve capital value for peace of mind and happy to run down capital over next 30 years
- This is a 5 year plan, so would be reviewed again at 75
- Life expectancy of 65 year old woman is 22 years in Australia so for our investor, likely to be better than that. So a 70 year old wealthy health woman should be planning 20+ years.
- Max 3 marks H

END OF QUESTION 4 MARKING GUIDE



QUESTION 5: MARKING GUIDE

(14 Marks)

Background information:

This information is published by the Perth Mint each day (all prices per ounce of the relevant commodity.)

Perth Mint Spot Prices

Spot Price Australian Dollars		
	Ask	Bid
Gold	\$2,423.82	\$2,411.98
Silver	\$35.85	\$35.36
Platinum	\$1,471.95	\$1,420.55

- a) For each term below, explain the term and give an example by using the information given above: (4 marks)
- Market Maker
 - Ask Price
 - Bid Price
 - Spread

A jeweler is forecasting their precious metal purchases for the next financial year to plan their budget. They expect to need 25 ounces of gold per quarter for the bespoke jewelry they will make each quarter.

To assist with budgeting, they prefer to purchase their 3-monthly requirements on the first day of each quarter (1 July, 1 October, 1 January and 1 April) and lock in the price for all four purchases the preceding April whilst preparing the budget.

- b) State four types of derivatives and advise whether each is suitable for this approach. (4 marks)

The jeweler decides to buy 4 forward contracts in April, one for each quarter, each for 25 ounces at \$2,400 per ounce (the forward price is the same for all contracts).

- c) Write down the general long forward pay off formula, defining all terms. (2 marks)
- d) If the spot prices eventuate as follows, determine the nominal payoff for the jeweler over the full year (ignore transactional costs and do not discount cashflows). Show your workings. (2 marks)
- o 1 July 2021 \$2,500
 - o 1 October 2021 \$2,600
 - o 1 January 2022 \$2,200
 - o 1 April 2022 \$2,400



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- e) Give an example of a party who might be prepared to enter into the forward contracts with the jeweler, stating why. (2 marks)

Marking Guide Commentary

- See the table page 1 for learning objectives and module references
- The knowledge content covers derivatives, mainly forward contracts
- The application requirements are to apply this knowledge to precious metal market
- The higher order thinking is to consider needs of participants to contracts

Maximum of 14 marks

Comments in bold below show intended allocation of marks. The sample solution shows a range of possible answers, others may be acceptable, and it shows more than is required to gain full marks.

Sample Solution

- a) For each term below, explain the term and give an example by using the information given above:

- i. Market Maker
- ii. Ask Price
- iii. Bid Price
- iv. Spread

- Market maker is an entity prepared to buy or sell an asset every day, in order to create a market for that asset **(0.5 mark)**, in this case the Perth Mint is a market maker for precious metals **(0.5 mark)**
- The Ask price is the price being offered for sales by the market maker **(0.5 mark)**, in this case the Perth Mint is prepared to sell gold for \$2423.82 per ounce **(0.5 mark)**
- The Bid price is the price being offered for purchases by the market maker **(0.5 mark)** for example the Perth Mint is prepared to buy silver for \$35.36 per ounce **(0.5 mark)**
- Usually, the ask price is higher than the bid price, creating what is known as the bid-ask spread. **(0.5 mark)** The spread for Platinum is $\$1471.95 - \$1420.55 = \$51.50$ per ounce. **(0.5 mark)**
- **M 8.2, 8.3.2 bookwork K/A**
- **0.5 mark for a definition and 0.5 mark for an example from the information**
- **Max 4 marks (note these definitions can be lifted from 8.3.2 so important that they include examples to get the full marks.)**

- b) State four types of derivatives and advise whether they are suitable for this purpose.

- **Forwards** work, use OTC so some risk of default but choose counterparty wisely, payment not required until transaction day so fits with budgeting. **(1 mark)**
- **Futures** not so much use as standardised terms/volumes and marked to market, may not be gold derivatives standardised for 25 ounces, timing of payment less certain. **(1 mark)**
- **Credit derivatives** also not relevant. **(0.5 mark)**
- **Swaps** not really relevant to this situation as jeweler must have the gold, and there is no series of cash flows to swap. **(1 mark)**



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- Right to buy (call) **option** would work with American or European, physical or cash settlement but have to purchase the option up front so might be less attractive. **(1 mark)**
- **M8.4 Table 8.4.1 A**
- **Max 4 marks, for discussion of 4 types**

c) Write down the general long forward pay off formula, defining all terms.

$$S_T - F_0(T)$$

S_T is spot price at time T

T is the transaction date

$F_0(T)$ is the Forward price agreed at time 0, time of making the contract

- **M 8.4.1 K**
- **1 mark for formula 1 mark for terms**
- **Max 2 marks**

d) If the spot prices eventuate as follows, determine the nominal payoff for the jeweler over the full year (ignore transactional costs and do not discount cashflows). Show your workings.

- 1 July 2021 \$2,500
- 1 October 2021 \$2,600
- 1 January 2022 \$2,200
- 1 April 2022 \$2,400

$F_0(T)$ is 2400 in all cases

S_T is 2500, 2600, 2200, 2400 each quarter

So pay off P is 100, 200, -200, 0 each quarter

Sum and times by 25 ounces

$$100 * 25 = \$2,500$$

Alternatively, if just bought 25 ounces per quarter at spot, total cost \$242,500

Locked in, the purchase cost is $100 * 2400 = \$240,000$ so saving (payoff) was \$2500.

- **M 8.4.1 A**
- **2 marks for correct answer with workings. 1 mark if workings look right but answer wrong. 1 mark if correct answer but no workings**

e) Give an example of a party who might be prepared to enter into the forward contracts with the jeweler, stating why.

A speculator trader might be prepared to take the contract, **(1 mark)** committing them to sell gold at \$2400 at those future dates, if they have a view that spot gold prices will be below \$2400, i.e. they expect to profit **(1 mark)** and prepare to accept loss otherwise.

or

- A prospector **(1 mark)** who knows they typically find this much gold over a year, may be prepared to take the contract to lock in their earnings ahead of investing their time and resources in prospecting. **(1 mark)**
- **M 8.5.1 A**
- **1 mark for any sensible example plus 1 mark on how the party benefits**
- **Max 2 marks**

END OF QUESTION 5 MARKING GUIDE

END OF MARKING GUIDE