



ASSET LIABILITY MANAGEMENT

EXAM MARKING GUIDE SEMESTER 2 2021



Asset Liability Management

Exam Marking Guide Semester 2 2021

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 Objective	Reference in Course Notes	Total Marks	K	A	H
Question 1	See MG	See MG	20	7	7	6
Question 2	See MG	See MG	23	6	13	4
Question 3	See MG	See MG	18	1	11	6
Question 4	See MG	See MG	19	7	7	5
<i>Exam</i>	<i>Total</i>		<i>80</i>	<i>21</i>	<i>38</i>	<i>21</i>
<i>Assignment</i>	<i>Total</i>		<i>20</i>	<i>12</i>	<i>5</i>	<i>3</i>
Totals			100	33	43	24

K – Knowledge

A – Application

H – Higher order



QUESTION 1: MARKING GUIDE

(20 Marks)

In a country with a strong economy, superannuation funds exist to facilitate each member saving during their working life and then drawing an income in retirement. Each fund pools the assets held by their members and invests the pool in one investment strategy. Each superannuation fund trustee manages one investment pool on behalf of all their own members, both savers and retirees. Each member has a personal account balance and there are no investment return or income guarantees.

Currently a superannuation fund trustee is required to invest in the members' best financial interests but there are no legislative limitations on their selection of investments.

a) For a superannuation fund in this country that is accepting new members and has a range of savers and retirees as members.

i. Discuss four features of the fund's liabilities. **(4 marks)**

ii. Propose one appropriate investment risk objective and one appropriate investment return objective for the fund. **(2 marks)**

iii. Explain the relevance of diversification to the trustee's investment strategy. **(2 marks)**

A fund trustee intends to carry out asset liability modelling to test investment strategies. The trustee's asset consultant uses a stochastic model for asset projections that applies assumptions about inflation, the relationships of each asset class returns to inflation and the relationships between asset classes. The model employs a Normal distribution of returns to generate future outcomes. The consultant notes that the model is only a representation and results are not guaranteed.

b)

i. Identify four key assumptions required to model the fund's future cash flows. **(2 marks)**

ii. List six distinct asset types to include in the asset liability model. **(3 marks)**

iii. Explain why the consultant makes the point that results are not guaranteed. **(3 marks)**

The government has decided to legislate that the superannuation funds must only invest in domestic assets. This includes equities, properties, bonds and cash.

c) Critique the proposed legislation with reference to the members' financial interests. **(4 marks)**



Marks and references

Question	Syllabus Learning Objective	Page Reference in Course Notes	Total Marks	K	A	H
A(i)	6.2	11.3, 11.3.1	4	2	2	0
A(ii)	6.4	11.4	2	0	0	2
A(iii)	3.4, 5.3, 6.2, 6.6	11.5.2, 11.4.1	2	0	2	0
B(i)	6.7	11.12	2	2	0	0
B(ii)	6.7	11.7	3	3	0	0
B(iii)	1.1, 6.7	2.6, 11.12	3	0	3	0
C	2.4, 6.2,	4.3.6, 6.5.1, 6.5.2, 11.4.1	4	0	0	4
Question 1			20	7	7	6

Sample answer and marking guide

a) For a superannuation fund in this country

i. Discuss four features of the liabilities

The role of the fund is to accumulate contributions made by a member over a working life and then release those assets back as income over remaining life. Features of the liabilities include:

- Very long **term** ($\frac{1}{2}$ mark) as income will be paid until member's death (so from age 20 to say 90) ($\frac{1}{2}$ mark) and with ongoing new members it becomes perpetual fund. ($\frac{1}{2}$ mark) (**max 1 mark for timeframe**)
- As accepting new members is going to continue to have cash flow in from contributions and cash flow out to income payments ($\frac{1}{2}$ mark), net **cash flow** could be positive or negative depending on membership profile. ($\frac{1}{2}$ mark for any conclusion on net cash flow) (**max 1 mark for cash flow**)
- Income payments will be in domestic **currency** ($\frac{1}{2}$ mark) to retirees either entirely or mainly – retirees could move overseas but payment likely still in local currency with retiree bearing the exchange risk ($\frac{1}{2}$ mark) (**max 1 mark for currency**)
- Income payments will likely be **indexed** ($\frac{1}{2}$ mark) to maintain real incomes ($\frac{1}{2}$ mark) (**max 1 mark for indexation**)
- The cash outflows are **uncertain** ($\frac{1}{2}$ mark) as the member may choose to move to another fund anytime ($\frac{1}{2}$ mark) and the timing of commencing an income is up to the member ($\frac{1}{2}$ mark) and the cessation of income payments is on death so also uncertain. ($\frac{1}{2}$ mark)
- Inflows are also **uncertain** as member may stop contributing anytime. ($\frac{1}{2}$ mark)



- So **net cash flow** at a member level for each future year is uncertain. ($\frac{1}{2}$ mark) As a group though the trustee can model cashflows and be reasonably certain of the aggregated cash flows. ($\frac{1}{2}$ mark)
- there do not appear to be any **guarantees** on return of capital to the member ($\frac{1}{2}$ mark), so the liability value follows the underlying asset values. ($\frac{1}{2}$ mark)

Features expected are nature (cashflows, indexation etc.), timeframe, currency, uncertainty. Provided four distinct features with relevant discussion then 4 marks. Don't pay some point twice. Max 4 marks.

This question is not asking about the investment portfolio objectives or portfolio.

- ii. Appropriate investment risk and appropriate investment return objective

Return objective: inflation protection is important and also maximising future income so CPI plus 3% per annum over a rolling ten year time frame ($\frac{1}{2}$ mark for short background reasoning and $\frac{1}{2}$ mark for any plausible return objective)

Risk objective: capital protection is important to members for confidence in their savings and income so Negative return over 12 month periods to occur no more frequently than once per five years ($\frac{1}{2}$ mark for short background reasoning and $\frac{1}{2}$ mark for any plausible risk objective)

Max 1 mark each objective total 2 marks

- iii. Explain the relevance of diversification to the trustee's investment strategy

Modern Portfolio Theory suggests diversification of asset types improves the **risk/return trade off** (for an investor). **(1 mark for this statement or any similar in their own words on diversification improving the R/R tradeoff)**

As each asset class has its own risk/return characteristics, and they are not expected to all respond to market conditions in the same way at the same time, the fund can use a range of asset classes to get the benefit of one class returning well when another is not. **(1 mark – showing the advantage for the fund)**

Having determined an appropriate investment strategy and allocations at an asset class level, further diversification within the constraints of the strategy, is desirable.

(1 mark)

The fund can further diversify in several ways including currency, investment managers, asset location, country, as well as sub sectors within each asset type. **(1 mark explaining what specifically can be diversified)**

This should mean that the fund overall has more stable returns (less volatile returns over shorter periods) while seeking a given return objective. **(1 mark – show the advantage for the fund)**

Any combination of relevant remarks, max 2 marks. Pay marks for giving appropriate



examples of diversification. MPT quote is cut and paste from 11.5.2, that alone would generate 1 mark only.

b) A fund trustee intends to carry out asset liability modelling to test investment strategies.

i. Identify four key assumptions required to model the fund's future cash flows

- member age at entry
- member age at retirement
- member age at death/ mortality rates
- member exit rates/withdrawal rates
- inflation rate
- contribution rate or value
- income payment value
- number of members at each age
- member balances now (by age)
- tax and expenses
- investment earning rate (to determine value of account at future date)

½ mark for each assumption max 2 marks Focus is on modelling liability cash flows, so amount and timing of each future transaction (both contributions and benefits). Question did not ask for assumptions to model the investment portfolio earnings, although there is some crossover.

ii. List 6 distinct asset types to include in the model

- government bonds
- corporate bonds

OR

- global fixed interest
- domestic fixed interest
- listed equities
- private equity
- cash
- infrastructure
- listed property
- direct property/real estate
- derivatives
- currencies

All items listed by students considered, ½ mark per distinct type of asset that could be modelled, with a max 3 marks.

Ok to divide a class into domestic/offshore, listed/unlisted etc. but not to keep dividing the same class different ways. Not paying for multiple 'micro' types within one class e.g. listed telecommunications. The terms "physical assets" "hybrids" "securities" and similar vague terms were not paid marks (neither distinctive nor able to be modelled).



iii. Explain why the consultant makes this point.

- The model makes simplifying assumptions (**½ mark**) so it is not possible to replicate the real world exactly. (**½ mark**)
- The future is uncertain and some events random (**½ mark**), and even a stochastic model which shows the outcomes of multiple futures cannot predict which future will unfold (**½ mark**) and at best only how likely it is.
- The assumptions about future inflation may not be correct. (**½ mark**)
- The assumptions about future returns may not be correct. (**½ mark**)
- The assumptions about a normal distribution for returns may not be correct (**½ mark**) (and quite likely not correct). (**½ mark**)
- Past relationships (correlations) observed between asset classes (or inflation) does not mean this will continue (**½ mark**) (may be historical observation but is not a law) (**½ mark**)
- Future developments (paradigm shift) (**½ mark**) may mean the entire model approach, or the assumption setting, becomes a poor representation of reality (**½ mark**)
- There may be technical errors or flaws in the model that are not (yet) apparent (**½ mark**)

Marks as shown, max 3 marks

c) Critique the proposed legislation with reference to the members' financial interests

Member's financial interests are best served by maximising their returns, minimising the risk of losing their capital and providing an income that increases with inflation.

OR

Modern Portfolio Theory suggests diversification (of asset types) improves the risk/return tradeoff for the fund and therefore the member). Diversification within the constraints of the strategy, is desirable.

OR

As far as the members financial interests are concerned, maximising returns and minimising risk suggests that a very diverse portfolio of assets would be ideal. (**1 mark for linking best interests to diversification**)

Removing international assets reduces the diversification of the portfolio (**½ mark**) – means more exposed to the risks of the limited available asset types – and not able to benefit from returns of unavailable asset types. (**½ mark**)

- Only one country/one economy/one economic growth story. (**½ mark**)
- Only one currency. (**½ mark**)
- Limits the types/industries for equity investment (and/or types of property investment) to whatever operates in the local economy. (**½ mark**)
- Which also mean a high exposure to the sectors that do operate in the local economy (which increases risk). (**½ mark**)

1 mark for linking removal of international to reduction in options/poorer outcomes

½ mark for specific examples of limitations max 4 examples, 2 marks



Removing international assets could be in the member's best financial interests if:

- This removes a consistently poor performing asset class;
- Reduces the cost of investment by more than the potential higher return
- Avoids adverse currency movements
- Avoids exposure to failing economies elsewhere.

½ mark per plausible examples of how international could detract from a member's financial interests max 2 examples 1 mark.

Expect answer overall to recognise command verb critique and therefore include explanatory remarks and a fuller discussion of the issues included both pros/cons. A final conclusion for/against not essential to gain full marks.

Max 4 marks

END OF QUESTION 1: MARKING GUIDE



QUESTION 2: MARKING GUIDE

(23 marks)

An indigenous trust has been formed to manage the money arising from an agreement with a mining organisation. The trust has **received** a single \$500 million per annum contribution from the mining organisation for land access rights for the next 30 years.

The trust requires this money to be invested and investment earnings **spent** on health and education for the benefit of the family members of that indigenous group, in perpetuity. Currently 15,000 people of all ages are recognised family members, with over 90% located in one regional town.

You are advising the trustee board, which is comprised of two family members, a lawyer and an accountant.

- a) Your first task is to educate the board using appropriate language.
- i. Explain the role of the board in relation to the investment portfolio. (1 mark)
 - ii. List the elements the board should address in its investment policy. (2 marks)
 - iii. Explain the trust's liability characteristics. (2 marks)
 - iv. Describe the principle of asset liability matching. (1 mark)
 - v. Explain the three types of matching portfolios, with reference to the board's situation. You are not required to propose a portfolio. (6 marks)

A family member who works for an investment firm as an equity analyst has approached the board and recommended the trust invest in the investment firm's equity unit trust which comprises the top 20 ASX stocks (only). The investment firm will charge an asset based fee. The mining organisation paying for the land access rights is one of these top 20 stocks.

- b) Demonstrate six financial relationships among the board, analyst, investment firm and mining organisation. (Use the table below as a prompt). (3 marks)

<div>\$ TO</div> <div>\$ FROM</div>	Board	Board members	Analyst	Investment Firm	Mining Organisation
Board					
Board members					
Analyst					



Asset Liability Management

Exam Marking Guide Semester 2 2021

<div>\$ TO</div> <div>\$ FROM</div>	Board	Board members	Analyst	Investment Firm	Mining Organisation
Investment Firm					
Mining Organisation					

The trustee board has several assets under consideration:

- ASX listed share
- Private equity investment in a local tour operator that employs family members
- Office tower in the Sydney Central Business District
- A global hedge fund that uses derivatives to exploit asset mispricing offered by a reputable investment fund manager (unlisted).

- c) Consider the pros/cons of each asset with respect to the board's likely investment strategy. **(8 marks)**

Marks and references

Question	Syllabus Learning Objective	Page Reference in Course Notes	Total Marks	K	A	H
A(i)	1.3	2.4	1		1	
A(ii)	1.3	2.4	2	2		
A(iii)	6.2	11.3	2		2	
A(iv)	6.3	11.10.1 – 11.10.4	1	1		
A(v)	6.3	11.10.1 – 11.10.4	6	3	3	
B(i)	2.6	4.5.2	3		3	
C	3.1, 4.1	3.2, 4.1, 4.5, 8.5	8		4	4
Question 2			23	6	13	4

Sample answer and marking guide

- a) Your first task is to educate the board's **family members** using appropriate language.

- i. Explain the role of the board in relation to the investment portfolio

The Board has a governance role (**½ mark**) over the investment portfolio. This means defining the objectives, setting the strategy, allocating roles and responsibilities, and monitoring outcomes. (**1 mark**) This does not mean making the day to day investment



decisions or preparing reports etc. (**½ mark**)

Must be clear it is a governance role (not operational) to get the mark. No marks for going on and describing the management role in any detail. Max 1 marks.

ii. List the elements the board should address in its investment policy

An investment policy should incorporate:

- Board's investment philosophy (or beliefs)
- Investment goals and measurable objectives (risk and return)
- Any investment constraints or conditions or risk limits
- Benchmarks for monitoring performance against
- Delegations
- Review/update frequency
- May have strategic asset allocation/ranges

½ mark per valid distinct point, max 2 marks

iii. Explain the trust's liability characteristics

The trust liabilities are the annual expenses (**½ mark**) of delivering health and education for 15,000 plus people in perpetuity (**½ mark**). Liabilities are likely to continue to grow rather than reduce (**½ mark**) in line with inflation (**½ mark**) and population growth (**½ mark**). Education expenses may decline if population average age increases, but health expenses likely to increase (**½ mark**) (and vice versa) so not expecting any reduction in future years. (**½ mark**)

½ mark per partial point, max 2 marks

iv. Describe the principle of asset liability matching

Asset liability matching means selecting assets so that the cash inflows from the assets (income or capital) are available to match the cash outflows for the expenses (liabilities) (**1 mark**) so that the Board (investor) is always able to pay the expenses.

1 mark for description. Cut and pasting the definition of asset liability management or asset liability modelling – no marks.

v. Explain the three types of matching portfolios, with reference to the Board's situation. You are not required to propose a portfolio.

The board's primary duty is to pay the liabilities (that is, the expenses) as they fall due.

Selecting the assets such that they produce the same value cashflows at the same time as the expenses, regardless of economic circumstances, is called **exact matching**. (**1 mark**)

If this was possible, the board would be confident the investment portfolio was always going to release sufficient cash to pay the expenses as they came up. (**1 mark**)



Of course, the Board's expenses cannot be predicted precisely (either value or timing) so it's not possible to pick assets that provide an exact match. **(1 mark)**

Approximate (or partial) matching is an alternative. In this case, assets are selected that more generally are expected to deliver returns that will meet the liabilities. **(1 mark)** However, the asset values may move, or the asset returns may not be as expected, and the portfolio returns may not always be able to support the liabilities. **(1 mark)**

One type of approximate portfolio is a **replicating portfolio**, where the focus is on aligning relevant economic factors such as inflation and selecting assets. **(1 mark)** For example, as the fund's health and education expenses are likely to increase with inflation, we would select assets that are expected to increase in value with inflation such as equities and properties. **(1 mark)**

Expecting a discussion, with 3 types of matching mentioned. See table on 11.10.4 for the types the students may elect to discuss. 1 mark per complete point.

Max 6 marks. Only pay 6 marks if 3 types mentioned and some attempt to link to the trust's future cashflows being the health and education expenses and not precisely known in advance and likely inflation linked.

b) Demonstrate six financial relationships among the board, analyst, investment firm and mining organisation

- **Board** – pays benefits to the **analyst** as he/she is a family member
- **Board** – pays benefits to two **board members** as they are family members
- **Board** – may pay sitting fees to the **board members**
- **Analyst** – earns an income from employment at the **investment firm**. May earn bonuses for sales.
- **Board** – pays **investment firm** a fee that is higher the more the asset value
- Investment firm **equity trust** - likely invests in the **mining organisation** so returns are linked to the performance of the mining organisation
- **Mining** organisation – pays the agreed license fees by contributing to the **investment portfolio** – may feel they have an obligation/right to oversee the management of the portfolio and/or the decisions of the **board**
- If mining organisation fails, the license fees stop, and the investment trust might lose value and the investment firm loses fee income and the analyst might lose income
- If the portfolio fails, then the members don't get benefits and the mining organisation may stop contributing.
- If the investment firm or its fund fails, the portfolio loses money, the members get less benefits

½ mark for any valid financial relationship identified, max 3 marks.

c) The trustee board has several assets under consideration. Consider the pros/cons of each asset with respect to the board's likely investment strategy. **(8 marks)**



ASX listed share

- equity so potential for real return, protection of real capital value over longer term
- risk of share price falls at any time, reducing capital value
- dividend income typical of listed shares would support expense cashflows
- exposed to impact of economic downturn via reduced dividends, capital devaluation
- low cost to own or transact

Private equity investment in a local tour operator that employs family members

- uncertain returns both income and capital
- potential for complete loss of investment
- potential for conflicts of interest
- difficult to ascertain fair value
- private equity requires effort and expertise by the board to manage the investment and potentially assist the company's management team
- may have match to local economic conditions
- supporting family members with employment has some alignment to the goals of the trust

Office tower in the Sydney Central Business District

- property in major capital city, so likely to hold value over the very long term, may provide real return
- management costs would be material
- single property asset means highly illiquid and may require major capital expenses to upgrade over time
- rental income should be inflation linked, and fairly reliable
- economic downturn would see loss of rental income and devaluation

A global hedge fund that uses derivatives to exploit asset mispricing offered by a reputable investment fund manager (unlisted).

- high risk, potentially speculative investment,
- capital values could vary widely over the short and long term
- no guarantee of any return
- no regular income
- unlisted so may not be able to sell units from time to time to access capital or draw an income

½ mark per partial point, max 2 marks per asset 8 marks total

END OF QUESTION 2: MARKING GUIDE



QUESTION 3: MARKING GUIDE

(18 marks)

ABC was a successful family business with 60 profitable years of operation. The family took the company public, and it is now a listed company with 100 million shares. The share price has changed from \$1 on listing in 2020 to \$0.80c today. The gross profit made in the first year listed (2020/21) was \$10 million and the dividend paid to ordinary shareholders was 5c per share.

The board propose to raise working capital for further expansion. The board is considering issuing further ordinary shares and issuing corporate bonds.

You are a family member working in the company and a strong believer in its future. You have \$100,000 to invest in either the new shares or the corporate bonds.

For this question ignore any transactional costs or taxes.

- a) The new share listing is proposed to be 6,250,000 shares and underwritten at \$0.80 per share, as at 1 October 2021.
- i. Determine the amount of capital raised for ABC assuming the listing is fully taken up at \$0.80 per share (ignore any costs). **(1 mark)**
 - ii. Calculate the dividend per share next year assuming the listing is fully taken up, another profitable year to 30 June 2022, and \$5 million is again released as a dividend. **(1 mark)**
 - iii. Calculate the maximum price you will bid to purchase a share on 1 October 2021 if your minimum return requirement is 8% per annum (nominal). Show your workings and any assumptions. **(3 marks)**

The board also proposes to issue 50,000 corporate bonds at face value \$100 each, with a coupon of 6% pa (paid annually in arrears) and term of 5 years. The issue date will be 1 October 2021.

- b) Your minimum return requirement is 8% per annum (nominal).
- i. Calculate the maximum bid price you will offer to purchase for a \$100 bond. Show your workings and any assumptions. **(3 marks)**
 - ii. Determine the amount of capital raised if all investors are accepted at this price. **(1 mark)**
- c) Assess the risk and the return characteristics for each of the two investments available from your point of view as a potential investor. **(8 marks)**
- d) State two alternative methods for the company to obtain the required working capital of \$5,000,000. **(1 mark)**



Marks and references

Question	Syllabus Learning Objective	Page Reference in Course Notes	Total Marks	K	A	H
A(i)	3.1	M4.6	1	0	1	0
A(ii)	3.3	M6.4.3	1	0	1	0
A(iii)	3.3	M6.4 (not explicit in course)	3	0	2	1
B(i)	3.3	M5 Revision p7	3	0	2	1
B(ii)	3.3	M5	1	0	1	0
C	3.3	M5.5.2, M5.5.4, M6.3.1 M5 Exercise 5.7	8	0	4	4
D	3.2	M4.6.1, M6.2.3, M6.2.4	1	1	0	0
Question 3			18	1	11	6

Sample Answer and Marking Guide

a) 6,250,000 shares and \$0.80 per share.

i. $6,250,000 \times 0.80 = 5,000,000$ (1 mark)

ii. $5,000,000 / 106,250,000 = 4.71\text{c per share}$ (1 mark)

iii. Using Gordon Growth Model $V = D / (k-g)$

Method – 1 mark for naming appropriate method and using it, ½ mark for simply using appropriate formula without explanation – max 1 mark

$D = \text{dividend per share} = \$4.71\text{c expected, } k = 8\% \text{ given and assume } g \text{ is } 3\%$

Assumptions - 1 mark for identifying all assumptions needed – no need to justify – ½ mark if only some – 0 mark if not identified just used – max 1 mark

$V = 0.0471 / (8\% - g\%) = 0.0471 / (8\% - 3\%) = \$0.94 \text{ price per share}$

Results - 1 mark for correct application of method and assumptions, ½ mark if unclear or incorrect but reasonable result, 0 marks if incorrect and unreasonable result for given assumptions – max 1 mark

Total 3 marks

NB Alternative methods: if required – OK if g is not used or set to 0%



b) 50,000 bonds FV \$100 each 6% pa (paid annually in arrears) and term of 5 years.

i. Present value of cashflows of the bond, with discount rate of 8%pa.

$$PV = 6 * [1.08^{-1} + 1.08^{-2} + 1.08^{-3} + 1.08^{-4} + 1.08^{-5}] + 100[1.08^{-5}] = 6 * 3.9927 + 100 * 0.6806 = 92.01$$

Method – 1 mark for naming writing out method that shows each element, ½ mark for only partially writing out 0 marks if only result given – max 1 mark

Assumptions - ½ mark for identifying coupon as 6 and ½ mark for discount rate as 5% - max 1 mark

Results – 1 mark for correct result, ½ mark if arithmetical error arose or incorrect formula used but arithmetic correct and reasonable result 0 marks if incorrect and unreasonable result for given assumptions – max 1 mark

Total 3 marks

ii. amount of capital raised.

$$92.01 * 50,000 = \$4,600,500 \text{ or } \$4.6 \text{ million}$$

1 mark if this answer, ½ mark if different answer but consistent with (i) and plausible, 0 marks if implausible answer e.g. \$1 million total 1 mark

c) Assess the risk and return characteristics of the two investments available

Ordinary Shares – Risk

- Key risk is the uncertain future total return (**½ mark**) as dividends are uncertain and can rise/fall/stop (**½ mark**) and the market price can rise or fall in value (**½ mark**)
- Risk that the company can make losses or get into financial difficulty, leading to failure (**½ mark**) and then complete loss of capital (**½ mark**)
- While it is a listed share the investor can sell out at any time (good marketability) (**½ mark**) but must accept the market price, which may be lower than desired (**½ mark**)
- No guarantee that a net positive return will be achieved over any given time frame (**½ mark**) or net positive **real** return (**½ mark**)

Ordinary Shares – Return

- Return is the dividend income (**½ mark**) plus the capital appreciation of the market price (**½ mark**)
- Dividends reflect the company's business success/profit (**½ mark**) and the board's decisions on how much to release as a dividend (**½ mark**) neither of which is certain (marks here if not discussed under risk)
- Market prices are influenced by business success (past and predicted) (**½ mark**)



- But also other factors such as general economic conditions (**½ mark**) industry sector outlook (**½ mark**) share market behaviour/expectations (**½ mark**) etc.
- So the capital return may be affected by factors outside control of ABC or the investor (**½ mark**)

Corporate bond – Risk

- Key risk is risk of default (**½ mark**) by the company, ABC, i.e. not paying coupon or principal and investor loses their capital (**½ mark**)
- Risk that interest rates generally rise (**½ mark**), and the investor is locked into 6% coupon, this will devalue the bond (**½ mark**)
- (although if interest rates fall then the bond will appreciate) (**½ mark**)
- Low marketability (**½ mark**) so difficult to exit prior to maturity should that be necessary (**½ mark**)
- Inflation risk – that inflation is higher over the term than expected (**½ mark**) and reduces the real value of the coupon and the principal (**½ mark**)

Corporate bond – return

- Nominal yield if held to maturity of 6% is known (**½ mark**) and (should be) above risk free rate to allow for risks above (**½ mark**)
- Real yields will depend on inflation rate (**½ mark**) which is unknown in advance (**½ mark**) same as for dividend real yield (**½ mark**)
- Yield consists of required risk free return plus expected inflation plus bond risk (**½ mark**) and ABC has priced this at 6% (**½ mark**)
- Bond risk premium = inflation risk + credit default risk + marketability risk (**½ mark**)

1 mark per complete statement, expecting 2 marks per section, may be presented in list form, table or paragraph total 8 marks. Answer must be in the context of the specific equity and bond investment of the question to gain full marks, not generic.

- d) State two alternative methods for the company to obtain the required working capital of \$5,000,000. **(1 mark)**

- Preference shares
- Bank loan / overdraft
- Finance / leasing
- Convertible note
- Retain earnings next year, rather than pay a dividend

½ mark per distinct method, method must be an alternative that is not issue more equity or more corporate debt total 1 mark.

END OF QUESTION 3: MARKING GUIDE



QUESTION 4: MARKING GUIDE

(19 marks)

In a national economy, the domestic cash rate is 0.5% per annum and price inflation has been 1.0% over the last 12 months. The stock market indices are at an all-time high. As the Covid risks are receding in this nation and unemployment rate is falling, the central bank is now actively targeting inflation of 3%pa.

a) Define

- i. fiscal policy
- ii. monetary policy

(1 mark)

b) Describe one possible action to take under each type of policy to address the given situation. **(2 marks)**

In this economy, a sovereign wealth fund (SWF) manages the money the government has set aside to pay life pensions to retired government employees.

One asset in the investment portfolio held by the SWF is a 51% stake in an electricity generation business that owns and operates several gas fired power stations located across the nation. The remaining 49% is owned by an investment bank and several superannuation funds. The business is not listed and has been profitable for several decades.

c) Assess the electricity generation business as an asset for SWF using the SYSTEM T tool.

(6 marks)

d) Identify two features of this asset (the electricity generation business) that correspond with the features of SWF's liabilities. **(2 marks)**

e) Describe how the asset might be valued for SWF's financial reporting purposes.

(2 marks)

f) Analyse potential risks for SWF relating to the valuation of the asset.

(2 marks)

g) Propose two other types of asset that might be suitable for SWF, with reasons. **(4 marks)**



Marks and references

Question	Syllabus Learning Objective	Page Reference in Course Notes	Total Marks	K	A	H
A (i) and (ii)	2.1	3.2.2	1	1	0	0
B	2.1	3.2.3	2	2	0	0
C	3.1	6.3.2	6	0	3	3
D	6.3	11.3, 11.5	2	2	0	0
E	6.8	11.11.3	2	2	0	0
F	6.8	11.11.3	2	0	2	0
G	6.3, 3.1	11.3	4	0	2	2
Total Q4			19	7	7	5

Sample answer and marking guide

a) Define

- fiscal policy: government activities focused on taxation and spending to change the economy (for example to change the allocation of resources in the economy/ level of economic activity / redistribute wealth) (**½ mark**)
- monetary policy: activities (usually by the government or central bank) to influence the quantity of money and credit in the economy, principally via interest rates (**½ mark**)

or, using interest rates to influence aggregate demand, employment and inflation in an economy (**½ mark**)

Ok if they quote text or use own words total 1 mark

b) One possible action to take

a. Fiscal

- increase spending (**½ mark**) to increase demand (**½ mark**)
- reduce taxes (**½ mark**) to increase private sector spending/increase demand (**½ mark**)

b. Monetary

- Theory is that lower interest rates stimulate economic growth, demand and likely increase inflation
- Use open market operations to buy short term government bonds (**½ mark**), other debt securities, from banks to inject money into the economy (**½ mark**)



- Reduce central bank cash rate (as offered to commercial banks) (**½ mark**) to encourage lending (or could say to reduce lending interest rates and encourage borrowing) (**½ mark**) to increase spending/demand (**½ mark**)
- Reduce reserve requirements or reduce prudential capital requirements (**½ mark**) enabling banks to lend more (**½ mark**)

½ mark as shown, max 2 marks. Must give at least one example for EACH to get full 2 marks. Example given must recognise goal is to life inflation.

- c) Assess the electricity generation business as an asset for SWF using the SYSTEM T tool. **(6 marks)**

S: Security: Regular dividends to be expected as an established business, with customer contracts, and past profitability. Capital is relatively secure as business has fixed assets, customers etc. However market valuation is uncertain as not listed and could decrease at any time. Overall security depends on company's ability to continue to operate profitably.

Y: Yield: History of profit (and we assume dividends) suggesting a positive yield to date, expected to continue. Nature of product (electricity) suggest revenue will be linked to inflation ensuring a positive real yield.

S: Spread: Bid/offer spread for the company could be quite wide, as unlisted private equity and limited number of interested buyers/sellers at any time and valuation would have to be negotiated. The other shareholders may be prepared to trade with SWF, but likely few others actively interested.

T: Term: No fixed maturity date and the product (electricity) should have a market forever hence the business could continue indefinitely. However, the generation assets will have to be replaced eventually. The remaining working lifetime of the assets will limit the investment term (until the business implements a plan to replace).

E: Expenses: As a private equity investor, the direct expenses will be relatively low (participating in board meetings etc.) but the transactional expenses will be relatively high should SWF wish to sell out.

M: Marketability: Private equity can be difficult to market quickly so not a liquid asset. However with several other shareholders there may be a party willing to transact. However the price may not meet SWF expectations.

T: Tax: The dividends will be taxed as income for SWF; any capital gains/losses on sales may also be taxable depending on tax laws.

Pay 2 marks max per SYSTEM T item.

0 marks for stating name of system t item as can be copied ½ mark for each point raised per item. Expecting 2 marks per item, one of which must link to the actual business and/or to SWF. If only generic comments copied from 6.3.2 (or elsewhere) that have not been tailored, max ½ marks for that item, max 3 marks overall.



If cover all 6 elements of SYSTEM T each with 2 marks one of which is tailored to situation then get full 6 marks

d) Identify two features of this asset that correspond to SWF's liabilities.

- Regular income from dividends (**½ mark**) matches regular payments to pensioners (**½ mark**)
- Expected growth in dividends aligned to economic growth/inflation (**½ mark**) matches inflation indexation of pensions and/or need for positive real returns on the portfolio (**½ mark**)
- Business is operating in local currency / dividends paid in local currency (**½ mark**) matches pension payments made in local currency (**½ mark**)

Points as shown, max 2 marks

e) Describe how the asset might be valued for SWF's financial reporting purposes

The valuation for reporting should be fair value, (**½ mark for stating fair value**)

Fair value is the price that would be paid by a willing buyer to a willing seller OR Fair value is the price that would be received to sell an asset in an orderly transaction between market participants. (**½ mark for defining fair value**)

As the asset is unlisted, no regular market price is available. (**½ mark**) We need to establish what an arm's length transaction price would be in normal business conditions. (**½ mark**) This might mean considering

- The company's balance sheet net asset position (**½ mark**)
- The financial ratios provide more guidance but depend on assumptions. (**½ mark**)
- The latest transactions on this company (**½ mark**)
- Transactions on other energy companies (**½ mark**)
- Or discounted cash flow analysis (**½ mark**)

An independent valuation by professional accounting firm (**½ mark**), applying appropriate market assumptions for energy companies (**½ mark**), informed by the audited financial statements (**½ mark**), may be best way to obtain fair value.

The fair value definitions are bookwork, pay either one but not both.

Any thoughtful approach that canvases the idea of an independent valuation can gain full marks max 2 marks

f) Analyse potential risks for SWF relating to the valuation of this asset.

- The valuation may rely on assumptions that prove to be incorrect (e.g. price of electricity) so valuation is wrong (**1 mark**)
- If the business cannot replace its generation assets in a timely manner, then it will eventually close – if this becomes more likely for any reason then the valuation will become overstated (**1 mark**)



- The market may change its views on gas fired energy and reduce the market valuation or even lead to no buyers (i.e. zero value) in an orderly market
- Carbon pricing or another external factor may require significant change to the business that is not factored into the valuation

Looking for any reasonable ideas that show why the valuation may not be correct max 2 marks. Expecting specific links to the nature of the business to get full marks.

- g) Propose two other types of asset that might be suitable for SWF, with reasons (4 marks)**

SWF has a long time frame and requires regular income, and a real return, in local currency.

Suitable assets to match this include:

- inflation linked domestic government bonds (long dated) (**½ mark**) – SWF can hold to maturity so receives an inflation linked return (**½ mark**) and security of real value of capital (**½ mark**) (actual return depends on purchase price). Currency matched (**½ mark**)
- direct industrial property holdings (domestic) (**½ mark**) – SWF collects inflation linked rental income (**½ mark**) and has little maintenance outgoings (**½ mark**) (as tenants responsibility). Provided located in area with economic growth then the capital value of the property also likely to be inflation linked, i.e. capital gains potential (**½ mark**). Currency matched (**½ mark**)

1 mark for a statement of what SWF might need – liability characteristics)

½ mark for each sensible suggestion and ½ mark for relevant supporting reasons, 3 reasons per asset to gain the max 4 marks.

END OF QUESTION 4: MARKING GUIDE

END OF MARKING GUIDE