



INSTITUTE OF ACTUARIAL
& QUANTITATIVE STUDIES

Subject: AP1

Chapter: Unit 2

Category: Practice questions

Q1. CP1-APRIL 2023 -PAPER 1-Q6

A bank sells commercial mortgages to supermarkets. A portfolio of these commercial mortgages is now being put up for sale, and an insurance company is considering purchasing the portfolio as an investment opportunity.

- (i) Set out the steps the insurance company should take to assess this investment opportunity. [5]
- (ii) Discuss the issues that the insurance company should consider when choosing a method to value the portfolio. [5]

[Total 10]

Q2. CP1-APRIL 2023-PAPER 1-Q7

- (i) Propose, with reasons, three risks that a defined benefit scheme may wish to hedge. [3]
- (ii) Explain why a defined benefit scheme may choose to use liability hedging. [2]
- (iii) Discuss the risks that may still exist for a defined benefit scheme even if it has hedged its liabilities. [5]

[Total 10]

Q3. CP1-APRIL 2023-PAPER 1-Q9

An investment fund invests only in its domestic market. Its usual investment strategy has been to invest 50% in equities, 20% in property and 30% for the remainder, split equally between government bonds, corporate bonds and infrastructure.

Following a market shock, the proportion of funds in property has been significantly reduced. The investment manager of the fund is planning to rebalance and increase its property proportion back to 20%. The investment manager is considering investing in a large shopping centre.

- (i) Outline possible reasons why, following the market shock, the proportion of funds in property has been significantly reduced. [7]
- (ii) Discuss the suitability of a shopping centre as an investment for the fund. [6]

[Total 13]

· UK Equity Fund – with a target return of 3% p.a. The funds are exactly the same size, are both well diversified and have the same fund manager.

Suggest possible reasons why the predicted target returns for the two funds are different. [4]

Q5. CP1-SEPTEMBER 2022-PAPER 1-Q3

A defined benefit scheme that is open to new entrants and future accrual has shown in its latest accounts that the scheme's funding deficit has deteriorated since the last scheme valuation.

Suggest possible reasons that could explain the change in funding deficit shown in the accounts. [5]

Q6. CP1-SEPTEMBER 2022-PAPER 1-Q6

An insurance company uses financial derivatives to manage its exposure to options and guarantees across a range of financial products it has sold to investors.

The range of financial products includes ones that pay benefits on death, on surrender and on maturity.

- (i) Outline the options and guarantees that the insurance company could offer at death, surrender and maturity. [3]
- (ii) Explain why the insurance company may use financial derivatives to manage risk in these products. [4]

[Total 7]

Q7. CP1-APRIL 2022-PAPER 1-Q6

Discuss how a fair valuation could be determined for each of the following types of asset:

- (a) Unlisted corporate bonds
- (b) Commercial real estate loans
- (c) Property
- (d) Defaulted loans made to and secured on infrastructure assets. [12]

of a defined benefit scheme and Person B is a member of a defined contribution scheme. They have both received statements from their respective scheme provider, which show the same projected pension benefits at age 65.

Compare the risks affecting the retirement benefits that Person A and Person B will receive. [5]

Q9. CP1-SEPTEMBER 2021-PAPER 1-Q9

A life insurance company in Country A sells annuities that are guaranteed to increase each year in line with an official price index that is published by the country's government.

- (i) Describe the factors a life insurance company needs to consider in selecting the investments to back the annuity liabilities. [4]

The government of Country A has decided to make changes to the official price index and create a new index.

- (ii) Suggest reasons for the government's decision. [3]
- (iii) Discuss how a life insurance company could be affected by the introduction of a new official price index. [5]

[Total 12]

Q10. CP1-APRIL 2021-PAPER 1-Q7 (CHECK)

A defined benefit pension scheme in Country X has the following membership:

- 100 pensioners in payment who are all over the age of 80, but are receiving pension payments of £100,000 p.a., which increase in line with inflation
- 1,000 pensioners in payment with an average age of 65, with an average pension of £5,000 p.a.
- 1,000 deferred members who are due to retire in the next 5 years, with an average pension of £5,000 p.a. The government of Country X is known for regularly changing the regulations for pension schemes.

- (i) Outline the factors that create uncertainty around the pension benefits that will be paid by the pension scheme. [6]

The pension scheme currently has a deficit of £50m, and the trustees are discussing a contribution plan with the sponsor of the scheme, to remove the deficit over a specified period.

Q11. CP1-APRIL 2021-PAPER 1-Q8

A large benefit scheme invests in a wide range of assets. The current property portfolio held by the benefit scheme consists of direct investment in offices, shops and warehouses but not in residential property.

- (i) Discuss how the scheme managers could gain exposure to residential property, without making a direct investment. [4]

The scheme managers are proposing to directly invest in residential property. The proposal will involve buying the land, developing properties and then renting them to private tenants.

- (ii) Explain why the scheme managers may wish to invest directly in residential property. [5]
- (iii) Discuss the risks involved with investing in this proposal. [6]

[Total 15]

Q12. CP1-SEPTEMBER 2020-PAPER 1-Q1

An insurance company only sells house insurance and motor insurance products. The company invests the premiums received on its insurance business in cash and short-term loans.

- (i) Explain why the company currently invests in cash and short-term loans. [2]

It has been argued that the company could increase profits significantly by investing the premiums on its insurance business in more risky assets.

- (ii) Suggest, with reasons:
 - (a) two assets that may be suitable assets for the company.
 - (b) two assets that would not be suitable assets for the company. [4]

[Total 6]

Q13. CP1-SEPTEMBER 2019-PAPER 1-Q3

- (i) State the principles of investment for a provider of benefits on future uncertain events. [3]

investment strategy. [1]

The charity's long-term assets are invested in an ethical equity fund and an ethical corporate bond fund. The performance of these two funds has been measured and the returns appear to be lower than those of similar funds.

- (iii) Suggest why the performance of the ethical funds might be out of line with similar funds. [4]

[Total 11]

Q14. CP1-SEPTEMBER 2019-PAPER 1-Q7 (CHECK)

- (i) Outline the main factors that influence a financial institution's long-term investment strategy. [6] The board of a university located in a particular city are concerned about the shortage of accommodation available for students. To address this, the board has proposed the construction of a new building which will accommodate approximately 200 students. The new building will be funded by private investors, whose funds will finance the construction and ongoing maintenance of the new building.
- (ii) Outline reasons why private investors would want to invest in the new building. [3]
- (iii) Contrast how the following potential investors would evaluate this proposal:
 - (a) A large defined benefit pension scheme.
 - (b) An individual who has recently inherited a significant sum. [4]

An alternative proposal being considered by the board is to encourage individual investors to purchase houses in the city to rent out to university students.

- (iv) Assess how this alternative proposal addresses the accommodation shortage. [4]

[Total 17]

Q15. CP1-APRIL 2019-PAPER 1-Q7

A retirement benefits scheme in Country A ('the Scheme') currently has all of its funds invested in domestic, as opposed to overseas, assets. The Scheme's managers are reviewing the fixed interest bonds currently held. They propose to invest a portion of the Scheme's assets in government bonds issued in Country B, which currently have a lower redemption yield than comparable bonds of Country A.

The scheme's managers decide, instead, to switch all of the scheme's government bonds (still of Country A) into recently issued corporate bonds from the retail sector of Country A.

- (iii) Explain possible reasons for this decision. [3]
- (iv) Discuss the risk characteristics of retail sector corporate bonds. [4]

[Total 16]

Q16. CP1-SEPTEMBER 2018-PAPER 1-Q1

A company offers unsecured short term loans to consumers who are in employment via the internet. The loans are for small amounts and are repayable as soon as the consumer receives their next salary from their employer. The repayment includes a defined cash fee agreed when the consumer is accepted for a loan.

Explain why the credit risk for these loans will be relatively high. [7]

Q17. CP1-SEPTEMBER 2018-PAPER 1-Q3

- (i) List the non-economic factors that affect the demand for different asset classes. [6]

A country's economy is just starting to develop, and regulations are being put in place for the first time on the allowable asset classes that can be held by financial institutions.

- (ii) Suggest, with reasons, why these regulations are likely to be prescriptive. [2]
- (iii) Discuss how these regulations might affect market prices of allowable, and non-allowable, asset classes. [4]

[Total 12]

Q18. CP1-SEPTEMBER 2018-PAPER 1-Q7

- (i) Outline differences in the features of the following products, from the point of view of an individual arranging a mortgage in order to purchase a residential property:
 - Interest only mortgage with an endowment assurance;
 - Repayment mortgage;
 - Interest only mortgage. [6]

The product features are:

- available to single homeowners aged over 60 who have no outstanding debt secured against their property;
 - the homeowner sells the property to ER for a cash sum payable to the homeowner immediately;
 - ER will then become responsible for all the issues associated with ownership;
 - the homeowner will retain the right to continue to live in the property – in effect as a tenant but rent free – until they die. On death, ER will be free to do as it wishes with the property.
- (ii) Explain why the cash sum offered by the insurer, to an individual selling their property under this product, is likely to be considerably less than the current market value of the property. [4]
- (iii) Describe, for each of the above product features, the risks to ER that the product feature is trying to mitigate. [7]

ER is considering introducing a variation to the product. Instead of receiving a cash sum immediately, the homeowner can choose to receive an annuity payable until they die. The rate of increases to the annuity, and any death benefits payable to dependants, can be chosen by the homeowner from a range of options.

- (iv) Discuss why anti-selection may be an additional risk to ER, that would arise from this product variation, and ways that ER could manage that additional risk. [5]

[Total 22]

Q19. CP1-APRIL 2018-PAPER 1-Q1

- (i) Define liquidity risk. [2]
- (ii) Explain how liquidity risk might influence an investor's view of the relative attractiveness of the following asset classes:
- (a) Traded Equities
 - (b) Property
 - (c) Hedge Funds
 - (d) Collectable Cars [8]

[Total 10]

higher expected return on its investments it is investigating investing in infrastructure assets. Infrastructure investments include both funding the construction of physical assets and operating these assets.

- (i) Outline the risk characteristics of an infrastructure investments. [2]
- (ii) Discuss the main features of the behaviour of market price levels and total returns for infrastructure investments. [10]

[Total 14]

Q21. CP1-APRIL 2018-PAPER 1-Q4

- (i) Describe five methods which can be used to value the assets that an insurance company might hold. [10]

An insurance company's liabilities are sensitive to interest rates. The company wishes to reduce its exposure to interest rate risk via the use of swaps.

- (ii) Explain how:
 - (a) These swaps could be valued in the company's accounts.
 - (b) Their values will move if future interest rates are lower than expected. [6]

[Total 16]

Q22. CP1-APRIL 2017-PAPER 1-Q5

A highly developed economy has been in recession for a number of years, with interest rates and inflation at historically low levels.

The central bank has warned that interest rates will rise in the short term.

- (i) Outline two reasons why the central bank is intending to increase rates. [4]
- (ii) Discuss the impact this could have on the level of: (a) the equity market. (b) the bond market. [10]
- (iii) Describe factors other than interest rates which could influence the country's investment markets and explain the impact each would have on equity markets. [6]

[Total 20]

bonds by term.

- (a) expectations theory
- (b) liquidity preference theory
- (c) inflation risk premium theory
- (d) market segmentation theory [8]

The following gross redemption yields (GRY) are currently available on bonds in a particular market:

Bond Type	Term to Maturity	GRY (% p.a.)
Conventional Domestic Government	2 years	5.0
Conventional Domestic Government	8 years	3.0
Conventional Domestic Government	15 years	3.5
Index-linked Domestic Government	15 years	2.0
Conventional Domestic Corporate	8 years	3.5
Conventional Foreign Government	2 years	8.0

All the above yields are quoted in nominal terms except for that on the index-linked bond which, is quoted real terms. All the bonds are denominated in the domestic currency. None of the bonds are convertible or have attaching options.

- (ii) Discuss the factors that could have given rise to the pattern of yields shown in the table. You do not need to consider the effects of taxation, accrued interest or different coupon rates. [10]

[Total 18]

Q24. CP1-APRIL 2016-PAPER 1-Q3

Market rent levels on retail units in a particular area of a city have reduced by 30% over the last year. Market rent levels on similar units in another area of the city have increased by 30% over the same period.

- (i) Suggest possible reasons for these changes. [4]

An investor is considering purchasing a number of freehold retail units in the area where rents have fallen. He intends to convert the sites into blocks of residential flats.

Q25. CP1-SEPTEMBER 2015-PAPER 1-Q4

- (i) Explain the meaning of net asset value per share in the context of equity investment. [3]
- (ii) Assess the usefulness of net asset value per share, as shown in the accounts, as a means of deciding whether or not to purchase shares, quoted on a major exchange, in the following companies:
 - (a) an advertising agency
 - (b) a mineral extraction, e.g. mining company
 - (c) an industrial manufacturing company [11]

[Total 14]

Q26. CP1-APRIL 2015-PAPER 1-Q3

A large closed defined benefit pension scheme, with assets of €400 million, in a developed country is in deficit and is currently reviewing its investment strategy. The scheme's liabilities are roughly split half for pensions in payment and half for nonretired members averaging ten years to retirement age. Pensions in payment are indexed in line with price inflation.

Discuss the characteristics and suitability of including each of the following assets in the investments of the scheme. All would involve a one-off investment of €20 million.

- (i) A unit trust fund that predominately invests in the emerging market economies.
- (ii) A portfolio of rental flats in the country's capital city.
- (iii) A share of income from electricity generated by solar panels that have been installed on residential houses near the country's capital city.
- (iv) A 25% stake in a company that trades in antique stamps. [12]

Q27. CP1-APRIL 2015-PAPER 1-Q4

Space Tourism plc has been developing a space travel programme for members of the public. It will have large operational costs, and fuel will be a high proportion of these costs. In recent years the cost of fuel has increased and the volatility of the fuel price has also increased. To protect against these rising fuel prices and volatility, Space Tourism has bought fuel price futures.

- (i) Explain why Space Tourism has bought these futures. [2]

[Total 11]

Q28. CP1-APRIL 2015-PAPER 1-Q5

Explain the principal influences on:

- (i) Short term interest rates. [7]
- (ii) The relative levels of government and corporate bonds yields. [13]

[Total 20]

Q29. CP1-APRIL 2014-PAPER 1-Q2

- (i) List the principal economic influences on bond yields. [2]

A pension scheme invests in two investment portfolios:

- A. Long term conventional bonds
- B. A combination of domestic and foreign equities
- (ii) Set out the components of total returns for the two portfolios. [4]

The scheme has decided to increase its holding in portfolio B with the aim of achieving higher long term returns.

- (iii) Explain how the components in part (ii) could lead to portfolio A providing higher returns over the next twelve months. [5]

[Total 11]

Q30. CP1-APRIL 2014-PAPER 1-Q3

The government of a country has changed its economic policy with the aim of reducing its exchange rate relative to other currencies.

- (i) Explain how the government can influence exchange rates. [7]
- (ii) Describe the expected impact on the economy from a reduction in its exchange rate relative to other currencies. [5]

[Total 12]

Q31. CP1-APRIL 2014-PAPER 1-Q5

Outline the factors the individual will need to consider before making their choice. [13]

Q32. CP1-SEPTEMBER 2013-PAPER 1-Q5

- (i) State two expressions for the expected total return (to a domestic investor) on an overseas asset. [3]

A wealthy individual is considering investing in one of the following assets with the objective of maximising return:

- a fixed interest government bond with a gross annual redemption yield of 2%
- a property currently occupied by a local business with a current annual rental yield of 7%
- ordinary shares in a global company with a current annual dividend yield of 4%

- (ii) Discuss the relative merits of each of the assets above, considering the individual's objective. [9]

A friend of the individual has suggested swapping cash investment in the domestic currency for cash in a foreign currency.

- (iii) Comment on the merits of this idea. [2]

The individual has found a website that allows investors to lend money to companies seeking funding over a one-year, three-year or five-year time horizon. Each company decides what amount of money it requires; and then each investor can decide what level of interest to charge to that company; the company will choose to borrow from the investors who charge the lowest interest.

The investor has approached a financial advisor to help him decide a suitable interest rate to charge. He has asked the advisor to provide him with a suitable list of questions to ask each company before choosing a suitable rate.

- (iv) Set out the key questions the advisor should include in the list. [5]

[Total 19]

Q33. CP1-SEPTEMBER 2013-PAPER 1-Q6

Employees will be able to contribute up to 10% of their annual income into a personal account each year and the company will also pay 10%.

- The account will increase in line with inflation each year.
 - Monies can be withdrawn from this account in respect of a limited number of events set out in a predefined list.
 - The company guarantees that the scheme will have enough cash to pay the benefits.
- (i) Suggest possible events that could be included in the predefined list of withdrawal events. [3]
 - (ii) Explain why the company has decided to link the annual increase to inflation. [3]

The directors of the company have decided to invest the assets of the scheme in index-linked securities.

- (iii) Discuss the advantages and disadvantages of this investment policy. [2]

An investment manager has suggested that the scheme could be invested in a much wider range of investments in order to improve investment performance.

- (iv) Discuss the suitability of other investment classes for the scheme's assets. [8]
- (v) Comment on the investment manager's suggestion. [3]

[Total 19]

Q34. CP1-APRIL 2013-PAPER 1-Q7

- (i) Explain the factors underlying the expected return on a corporate bond. [13]
- (ii) Outline how an increase in government bond yields may affect the price of a corporate bond. [8]

An individual is planning to retire in ten years' time and has a large amount of money to invest. She is considering investing in either government bonds or corporate bonds.

- (iii) Explain how the individual could maximise expected returns from these investment choices. [6]
- (iv) Discuss how the individual could mitigate unwanted risks arising from these investments. [4]

[Total 31]

- Shortloan Bank lends to retailers and other trading companies. The loans they provide are for up to six months, to help borrowers meet their short term working capital requirements.
- Longloan Bank lends to large organisations that undertake long term development projects. The loans they provide are generally for at least five years.

In order to raise part of the funds necessary to provide these loans, both banks borrow from their government. The interest rate charged by the government is less than that charged by the banks on the loans they provide.

- Suggest how a regulatory framework set by the government may limit what these banks are able to do in terms of investment. [6]
- Suggest possible reasons why the government chooses to lend to the banks rather than directly to the banks' customers. [4] In addition, these banks also raise funds by issuing securities into the financial markets.
- Justify, for each of the two banks, which of the following securities would be the most appropriate to issue:
 - money market instruments
 - index linked bonds [5]
- Describe how Shortloan Bank could use the fundamental principles of good lending to assess the suitability of individual loan applications it receives. [9]

[Total 24]

Q36. CP1-APRIL 2017-PAPER 2-Q1

An individual has received an inheritance and has £500,000 to invest. He is interested in investing in the property market and particularly in accommodation available for students to let. The following three investments have been suggested:

- a house that can be let to a group of students
 - a number of rooms in high quality purpose-built student accommodation that are maintained to a high standard
 - a fund that invests in and manages a number of student halls of residence
- Discuss the characteristics and suitability of these three investments. [9]

Q37. CP1-APRIL 2017-PAPER 2-Q3

A regulator in a country requires assets in occupational benefit schemes to be valued on the following basis:

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- (ii) Comment on the disadvantages of this approach. [4]

The regulator has decided to change its policy to allow an application from a benefit scheme to use an alternative method to value its assets. The method will need to relate the value of the assets to the value of the liabilities.

- (iii) Discuss the methods that could be proposed for the valuation of assets. [6]

[Total 12]

Q38. CP1-SEPTEMBER 2014-PAPER 2-Q6

- (i) Outline the main features of an investment trust. [4]

An investment trust specialises in investing in unquoted equities and unquoted bonds.

- (ii) Discuss the attractions of this investment trust to an investor. [3]
 (iii) Describe how the investment trust might value its unquoted investments using cashflow techniques. [7]

Over the past six months there has been a rise in the main stock market index for the country where the investment trust is based, but over the same period the value of the investment trust's assets has fallen.

- (iv) Discuss possible reasons for this difference in performance. [3]

[Total 17]

Q39. CP1-APRIL 2014-PAPER 2-Q2

- (i) Outline why a defined benefit pension scheme would want to calculate its provisions. [4]
 (ii) Describe three different methods that could be used to allow for the risks in the cash flows for the pension scheme. [6]

[Total 10]