

INSTITUTE AND FACULTY OF ACTUARIES

EXAMINATION

30 September 2020 (am)

Subject SA7 – Investment and Finance Specialist Advanced

Time allowed: Three hours and fifteen minutes

In addition to this paper you should have available the 2002 edition of the Formulae and Tables and your own electronic calculator from the approved list.

If you encounter any issues during the examination please contact the Examination Team on T. 0044 (0) 1865 268 873.

1 Alpha Investors are a UK investment consultancy who have recently been appointed as the fiduciary manager to a UK defined benefit pension plan with a retail company sponsor. The trustees of the pension plan have asked Alpha Investors to use their investment expertise to increase the expected return of the asset portfolio and to update the portfolio asset mix, which is currently fully invested in sovereign bonds.

(i) List the characteristics of the liabilities that Alpha Investors should consider as part of their investment review. [5]

(ii) Outline probable reasons why the pension plan assets may have been fully invested in sovereign bonds. [4]

(iii) Suggest possible reasons why Quantitative Easing and a low interest rate environment could increase the challenge of managing pension plan assets. [5]

A senior portfolio manager at Alpha Investors has recommended moving a large proportion of the assets backing the pension plan into the following asset classes:

- corporate bonds (with a large proportion invested in those issued by technology start-ups)
- mortgages (residential and commercial)
- infrastructure debt.

(iv) Describe how the risks associated with these assets impact cashflow matching for the pension plan. [6]

(v) Outline the additional considerations for the pension plan of investing in these assets. [6]

Alpha Investors have recently recommended one of their funds as a suitable investment for the pension plan's assets. The plan's sponsor believes this would create a conflict of interest, since this recommendation, if carried out, will increase Alpha's fees.

(vi) Suggest possible responses that Alpha Investors could make to this challenge. [6]

(vii) Give examples of conflicts of interest that Alpha Investors might be subject to, even if the pension plan trustees instructed Alpha Investors not to invest in its own funds. [5]

[Total 37]

- 2 A small developed country is considering the introduction of an auto-enrolment pension scheme for all employees in the country who are not enrolled in any other pension scheme. The aim is to improve overall pensions coverage.

The Department of Finance & Treasury (DFT) in the country will be responsible for the design and implementation of the scheme. The DFT has hired an investment advisor to help ensure it improves monetary pension outcomes.

During discussions with the DFT, the investment advisor discovers that their analysis uses equity price indices rather than equity total return indices to calculate returns.

The following data show the price index and dividends paid for the domestic equity index for the period 31 March 2019 to 30 June 2019 inclusive:

	<i>Price index</i>	<i>Dividends</i>
30 June 2019	3,100	13.887
31 May 2019	2,926.5	2.857
30 April 2019	2,900	3.407
31 March 2019	2,840.7	

- (i) Estimate the capital return for domestic equities from 31 March to 30 June 2019, stating any assumptions. [1]
- (ii) Estimate the total return for domestic equities from 31 March to 30 June 2019, stating any assumptions. [3]

The investment advisor has proposed to the DFT that the domestic stock exchange should introduce a total return index.

- (iii) Set out one possible formula for such an index, defining any terms used. [4]

The government minister responsible for the DFT has asked the investment advisor to draft a short document outlining the most important factors for the government to consider in the design of the auto-enrolment pension scheme. It has already been decided that contributions will be taken from gross earnings.

- (iv) Discuss the two most important factors from an investment perspective that the investment advisor should highlight to the minister, including numerical examples that roughly simulate the probable impact of the size of returns and pensions levels, and suitable investment assumptions. [12]

[**Hint:** for the numerical examples, you should assume earnings of £30,000 per year and a minimum contribution rate of 5%, and consider an average person who joins the scheme at age 25 and contributes for 40 years. You should make other assumptions as necessary to estimate the level of pension income at retirement and how this might vary.]

- (v) Outline additional investment factors that the government should consider in the scheme design. [8]
- (vi) Discuss three non-investment factors that the government should consider in the scheme design. [6]

[Total 34]

3 In ordinary conversation, the word ‘ego’ is generally used to mean an individual’s degree of self-regard. In investment psychology, the concept of *Ego* is defined differently.

(i) Describe the concept *Ego* in investment psychology. [3]

Similarly, in ordinary conversation, individuals can sometimes be distinguished as having a big or small ego, but in investment psychology, the distinction is drawn between ‘healthy’ and ‘unhealthy’ *Ego*.

(ii) Describe the difference between a ‘healthy’ and an ‘unhealthy’ *Ego*. [3]

(iii) Discuss whether there is any connection between an individual having a big or small ego and a healthy or unhealthy *Ego*. [3]

The definition of *Ego* used in investment psychology enables a distinction to be drawn between *Logos* (the type of rational logic that could be understood by all) and rationalisations.

(iv) Define the concept of a rationalisation. [2]

[Total 11]

4 A multi-asset manager invests part of their portfolio in real estate investment trusts (REITs). The following information is provided on the net of fees performance of two REITs and their benchmark index over a 5-year period. The annual risk-free rate of return over this period is 1% per annum.

	<i>REIT A</i>	<i>REIT B</i>	<i>Index</i>
Annual return (% p.a.)	8.5	9.0	8.2
Standard deviation (% p.a.)	14.0	15.0	14.7
Correlation coefficient with index	0.8	0.9	1.00

(i) Calculate four different risk-adjusted performance measures for the two REITs. [10]

(ii) Comment on the uses of the different measures and the limitations of the results from part (i). [5]

A new version of REIT B has been launched, which is invested in the same underlying properties and same proportions. The new fund has variable leverage, in the range 1.1 to 1.4 times.

(iii) Comment on which of the above four measures it would be appropriate to use for performance comparisons of the new fund with REIT A. [3]

[Total 18]

END OF PAPER