

Actuarial Society of South Africa

EXAMINATION

27 May 2013 (am)

Subject F204 - Pensions and Other Benefits Specialist Applications

Time allowed: Three Hours

INSTRUCTIONS TO THE CANDIDATE

- 1. Candidates will be issued with instructions to log-in using a password (which you will be provided with at the exam center).*
- 2. Candidates are required to submit their answers in Word format only using the template provided.*
- 3. Save your work continuously throughout the exam, on your computers' hard drive that you have been provided.*
- 4. You have 15 minutes at the start of the examination in which to read the questions. You are strongly encouraged to use this time for reading only, but notes may be made. You then have three hours to complete the paper.*
- 5. You must not start typing your answers until instructed to do so by the invigilator/supervisor.*
- 6. Mark allocations are shown in brackets on exam papers.*
- 7. Attempt all questions, beginning your answer to each question on a new page.*
- 8. Candidates should show calculations where this is appropriate.*

Note: The Actuarial Society of South Africa will not be held responsible for loss of data where candidates have not followed instructions as set out above.

AT THE END OF THE EXAMINATION

Save your answers on the hard drive.

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.

QUESTION 1

You have been asked by the Trustees of a defined contribution pension fund to assist with the determination of an appropriate investment strategy.

- i) Briefly set out the legislative framework that needs to be taken into account when setting the investment strategy. [4]
- ii) Explain to the Trustees what Asset Liability Modelling is and describe how you would use this to assist in determining an appropriate investment strategy for their Fund. [7]

The Trustees of the Fund have their own views around the appropriate investment strategy of the Fund:

- Trustee A would like all of the Fund's assets to be invested in index linked bonds as this is believed to protect the members against future inflation without taking on unnecessary risk;
 - Trustee B would like all the Fund's assets invested in fixed interest government bonds and cash as members are uncomfortable with seeing negative investment returns; and
 - Trustee C would like a life stage model that invests entirely in equity up to 5 years before retirement and then immediately moves entirely into cash for protection until retirement.
- iii) In the context of the investment objectives of a defined contribution pension fund comment on each of the above statements. [11]
 - iv) Explain how the available range of asset classes generally available can be combined within a suitable investment strategy for the Fund. [12]

[Total 34]

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QUESTION 2

Company X has 30 000 employees who all belong to its pension fund. The pension fund is a defined contribution fund with R25 billion in assets. The fund holds no reserve accounts and on retirement, a member must purchase an annuity outside of the fund in their own name. Members can retire at any time between the ages of 55 years and 60 years.

Members have the choice of investing their member shares in one of 3 investment portfolios. The Balanced portfolio, which is the default portfolio, has on average 70% of its assets in growth assets like equities and property. The Low Risk portfolio has on average 35% of its assets in growth assets. The Cash portfolio is invested entirely in money market instruments. 98% of the members are invested in the Balanced portfolio.

The fund recently undertook a detailed asset liability modelling exercise in order to set the investment policy for the Balanced portfolio. The asset liability model revealed that the Balanced portfolio is expected to produce a return, net of investment expenses, of 10.0% per annum over the next 10 years and that inflation is expected to be 6.0% per annum over the same period.

Based on actuarial valuations of other employee benefit schemes provided by Company X, it has emerged that retirees' mortality is in line with the PMA92C20 mortality table.

The fund's trustees have raised the possibility of allowing members the option to receive a living annuity from within the fund on reaching retirement. The trustees propose that the living annuity pensioners should all be invested in the Balanced portfolio and that no investment choice should be allowed.

- i) Set out the key features of a living annuity. [8]
- ii) Explain the advantages and disadvantages to providing a living annuity through the fund compared to purchasing a living annuity from an insurer. [4]
- iii) Discuss the advantages and disadvantages of the proposed investment strategy for living annuity pensioners. [7]

A trustee has indicated that in his view the legislated maximum income drawdown percentage (annual pension expressed as a percentage of the living annuity account balance) is too high. He has requested that you calculate an income drawdown percentage that will allow a single member to maintain an income that is expected to grow with inflation over their remaining lifetime.

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iv) Calculate the requested income drawdown percentage at ages 55, 65, 70, 75, 80, 85, 90 and 95 years. [5]

v) Comment on the results above and how this can be allowed for in the design of the living annuity benefit. [5]

The trustees also propose that any retiree should be eligible for a living annuity in the fund.

vi) Discuss the proposal and how this could be modified to take into account any concerns that you have. [4]

vii) Suggest two other options that the trustees might consider providing to the living annuity pensioners. [1]

[Total 34]

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QUESTION 3

You are the consulting actuary to a manufacturing company that is struggling to attract and retain the skilled staff that it requires to run its business. The company has taken a decision that a Defined Contribution (DC) pension fund should be established for all staff. The Finance Director (FD) has agreed that a budget of 10.0% of the total basic salary roll can be made available for this purpose and has stressed that the total cost of the pension fund must not exceed this figure.

The FD has suggested the following DC pension fund design:

- Compulsory member contributions into fund = 7.5% of basic salary.
 - Company contributions into fund = $X\%$ of basic salary where:
 - $X = 8.0\%$ below age 40 years
 - $X = 10.0\%$ from age 40 to age 50 years
 - $X = 12.0\%$ above age 50 years
 - Normal Retirement Age (NRA) = 65.
 - Lump sum payable on death in service = the member's accumulated DC fund value.
 - At retirement the member's accumulated fund is converted into a pension within the fund at conversion rates to be set by the Trustees.
 - At retirement the members choose the rate of pension increases in payment to be secured and the extent to which a contingent dependant's pension will be provided.
 - The fund will provide a number of risk profiled investment portfolios for members to invest their fund value in.
- i) The FD has asked you to comment on the proposed benefit design. Outline the points that you would make in your response, highlighting how well the following benefit design objectives will be met:
- improving recruitment and retention
 - managing risk for the Company
 - meeting the budget set by the FD
- [12]
- ii) Suggest some alterations to the proposed design that would help to overcome some of the difficulties that you have identified in each of the three areas in i) above.
- [5]

The FD is worried that some employees are too risk-averse to be members of a pure DC pension fund. As a result, she is proposing to introduce two optional underpins to her original DC fund design:

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Underpin 1: A guarantee that investment returns credited to DC funds cannot fall below 2% in any fund year.

Underpin 2: A guarantee that the pension at retirement will not be less than 1/60th of basic pay at retirement for each year of pension fund membership.

The FD has suggested that any member who wishes to take advantage of either (or both) of these underpins pays an additional charge to meet the expected cost of the underpin. She has asked for your advice.

iii) Concentrating on the following aspects, set out the points that you would make in your response:

- Whether the introduction of these underpins is likely to improve or worsen the chance of the fund meeting the original benefit design objectives set out above.
- How you would estimate the cost of each underpin.
- How you would structure the underpin charge to members.
- How the funding and investment strategy of the fund might need to change as a result of introducing these underpins. [15]

[Total 32]

GRAND TOTAL [100]

END OF PAPER