Actuarial Society of South Africa

EXAMINATION

26 October 2017

Subject F204 - Pensions and Other Benefits Specialist Applications

Time allowed: Three Hours

INSTRUCTIONS TO THE CANDIDATE

1. *You will receive instructions to log in using a password which will be issued to you at the exam centre.*
2. *You are required to submit your answers in Word format only using the template provided. You MAY NOT use any other computer program (e.g. Excel) during the exam.*
3. *Save your work throughout the exam on your computer's hard drive.*
4. *You have 15 minutes at the start of the exam 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. *You 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.
Hand in your question paper with any additional sheets firmly attached.

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

Company Z has 500 employees who all belong to its defined contribution pension fund which has assets of R1 800 million. 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 65 years. Members can also retire from service but defer the receipt of retirement benefits up to age 70 years. The average age of the membership is 38 years.

The Trustees have set up a default investment strategy which consists of a life stage investment portfolio which is invested in a typical balanced fund portfolio until age 59 years and transitions to a cash portfolio over 5 years by age 64 years. Members have the option to elect to remain invested fully in the balanced fund portfolio instead of following the default portfolio. The balanced fund portfolio and the cash portfolio are both pooled portfolios offered by the same investment manager.

The Trustees have recently appointed you as the Fund's actuary. They have asked you to provide a report setting out your views on the default investment strategy and to recommending any changes to the strategy.

i. Set out what your report to the Trustees would include. [11]

One of the Trustees attended a workshop where National Treasury's proposed default annuitisation was discussed. The Trustee wants the Fund to consider introducing a default living annuity option for retirees within the Fund.

ii. Set out the advantages and disadvantages of using an in-fund living annuity, as opposed to an external living annuity, as the default annuity option. [6]

The Trustees are concerned that living annuities may not provide a sustainable income in retirement over the longer term.

iii. Discuss how the in-fund living annuity could be designed to address the Trustees' concern. [19]

iv. Describe two other non-insured in-fund annuity options that can be considered and state whether they are suitable for the Fund. [6]

[Total 42]

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QUESTION 2

You are the valuator to a small defined benefit pension fund that was set up many years ago by a specialist engineering company. The Fund is open to all senior engineers.

The normal retirement age is 65 years. On retirement, members can elect to retire in the Fund or to transfer their capitalised benefits out of the Fund. Pensions in the Fund are valued at a post retirement interest rate of 3.0% per annum which is in line with the Fund's pension increase policy of targeting inflation related pension increases.

The Fund's rules do not permit retirement after age 65 years. The employer has been experiencing an acute skills shortage for a number of years and has requested the Trustees to amend the rules to allow for late retirement.

i. Set out the various ways a defined benefit fund can typically allow for late retirement and discuss the other benefits that may still apply during late retirement. [10]

The employer subsequently advised the Fund that it would not retain employees after age 65 years as permanent employees but would employ them on a contract basis instead. No contributions to the Fund will be made in terms of such contract employees. The employer has requested the Trustees to provide such members with as much flexibility as possible regarding the timing of the receipt of their retirement benefits.

ii. Discuss the possible options that the Fund could consider. [10]

[Total 20]

QUESTION 3

In addition to providing a savings vehicle for members to make provision for their retirement, additional benefits are commonly offered by retirement funds in South Africa.

i. Provide a broad overview of why and how disability benefits can be provided by employers who already provide a retirement fund, as well as the main features of each type of disability benefit. [15]

A company previously operated a defined benefit pension fund. Following conversion to a defined contribution pension fund ("the Fund") they retained their defined benefit ill-health pension benefit structure as a temporary transitional arrangement. The defined benefit promise was a pension of 2% of final salary for each year of service. On ill-health retirement service would be enhanced by the period between actual retirement age and the member's normal retirement age. The defined benefit pension fund targeted providing pension increases of 100% of CPI.

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Ill-health retirees could commute a portion of their pension using the following factors:

Age	**Capitalisation factor**
25	27.4
30	26.4
35	25.3
40	23.7
45	22.2
50	20.5
55	18.6
60	16.2
65	14.5

Members and the company each contribute 7.5% of pensionable salary to retirement savings in the Fund, in addition the company contributes towards the cost of providing risk benefits and Fund expenses. The Fund targets an investment return of inflation plus 4% per annum through a single portfolio investment strategy.

The company now wishes to move away from the obligation of a defined benefit pension on ill-health retirement and instead offer a lump sum disability benefit in addition to the members Fund Credit. They have asked you for a recommendation in respect of an age-related multiple of salary scale.

ii. Suggest, with reasons, a table of age-related multiples that meets the company's wish. You should show the multiple for ages 25, 30, 35 etc. through to age 65. State all assumptions made, highlighting those that are crucial to the benefit design. [15]

iii. Set out the potential issues in relation to determining an equivalent lump sum benefit. [3]

iv. Explain why the lump sum may differ if you were trying to target a lump sum that was equivalent to a typical PHI benefit structure aimed at replacing 75% of pensionable salary and estimate the likely PHI equivalent lump sum multiple using the ages in part (ii) above. [5]

[Total 38]

[Grand Total 100]

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END OF PAPER

