Actuarial Society of South Africa

EXAMINATION

17 May 2019

Subject F204 - Pensions and Other Benefits Specialist Applications

Time allowed: Three Hours

INSTRUCTIONS TO THE CANDIDATE

1. *Follow log in and saving instructions issued to you at the exam venue.*

2. *Save your work throughout the exam.*

3. *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 examination.*

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.*

7. *Attempt all questions, beginning your answer to each question on a new page.*

8. *You should show calculations where this is appropriate. If necessary, an answer book may be used for this purpose.*

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

Check that you have saved your work as per instructions given to you.
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

You are the actuary to a defined contribution pension fund that offers investment choice to its active members. The fund's Trustees are considering the format and content of the annual benefit statement to be provided to these active members.

i. List the data items that are required for a typical benefit statement. [4]

You were requested to determine the net replacement ratio for each member at retirement, assuming future contribution rates remain at their current levels. Your calculations showed a wide range of outcomes. One of the trustees mentioned that about 20 years ago the fund used to be a defined benefit fund with a pensions accrual rate of 2% of salary per year of service. He requested that you determine the accrual rate for each member implied by their net replacement ratio as this is a more meaningful measure.

ii. Comment on the merits of the trustee's request. [2]

The results of your calculations show that the accrual rate for the members varies from 1% to 6%. The average accrual rate is about 2%.

iii. Provide possible explanations for the range of accrual rates. [11]

Another trustee has suggested that for members with accrual rates above 3%, the fund should recommend that they follow a more conservative investment strategy.

iv. Comment on this suggestion. [8]

[Total 25]

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QUESTION 2

You are the employee benefits actuary advising the Human Resources director of a large hospital group. The group currently employs 25 000 nurses and has vacancies in respect of an additional 5 000. As a result of the skills shortages in the developing country in which the hospital group operates, the group is considering offering fixed-term employment contracts to nurses from another country to fill these vacancies. The contracts are likely to range between 12 and 24 months in length.

The hospital group currently offers its staff retirement and death benefits through a defined contribution pension fund, and an income disability benefit through an employer-owned permanent health insurance policy.

The Human Resources director is unsure how to the approach the provision of employee benefits to the proposed new group of temporary employees and has asked for your input.

i. Outline what the hospital group would need to consider in the possible provision of retirement and risk benefits to this potential group of employees. [27]

The Human Resources director has asked for your recommendation in respect of the provision of each of the benefits.

ii. Set out, with reasons, your response. [6]

iii. Outline other benefits that the employer could consider providing to this group of short-term contractors. [6]

[Total 39]

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QUESTION 3

You are an actuary working with a team of experts in assessing a potential takeover bid for Company A. Company A is not aware of the potential takeover.

The team has obtained the audited financial statements of Company A as at 30 June 2018 which discloses the following in respect of Company A's pension fund:

	2018 (R million)
Amounts recognised in the Balance Sheet	
Market value of assets	4 027
Value of obligations in respect of employees	-2 717
Value of obligations in respect of pensioners	-1 010
Surplus	300
Amount not recognised due to asset ceiling limitation	-136
Pension fund asset recognised at end of year	164
Profit or Loss	
Current service cost (14% of salaries)	-34
Past service cost	0
Interest cost	-381
Interest income on fund assets	403
Interest income on asset ceiling	-4
Net Loss	-16
Financial assumptions	
Discount rate	9.2%
Inflation rate	6.0%
Salary increase rate	7.0%
Pension increase rate	6.0%
Asset composition	
Local equities	35%
Foreign equities	25%
Local fixed interest	30%
Local cash	10%

The team leader is not familiar with disclosures in financial statements pertaining to pension funds and has asked you for your assistance.

i. Explain what each item under the "Amounts recognised in the Balance Sheet" in the above table represents. [6]

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ii. Explain what each item under the “Profit or Loss” in the above table represents. [4]

The team leader has asked you to explain why the pension fund is invested in assets other than bonds if the discount rate used to determine the liabilities is based on bond yields.

iii. Set out what your response to the team leader would cover. [6]

From various other documents that the team has obtained, you were able to extract the following information:

- Employees contribute to the pension fund at 6.0% of salaries. Company A has not contributed to the pension fund for a number of years.
- A pension increase of 4.0% was granted on 1 January 2019. The monthly pension roll after the increase is R7 million.
- Company A sold a division comprising 30% of its employees on 1 July 2018.
- For the 6 months to 31 December 2018, local equity markets returned -2.0%, local fixed interest returned 4.0%, local cash earned 4.5% and foreign equities were flat in Rand terms.
- Inflation expectations remain unchanged but nominal bond yields have increased to 10.0% as at 31 December 2018.

iv. Estimate what the “Amounts recognised in the Balance Sheet” would look like as at 31 December 2018 and what the “Profit or Loss” would look like for the 6 months to 31 December 2018. State any assumptions or simplifications that you make.
[20]

[Total 36]

[Grand Total 100]

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END OF EXAMINATION