Actuarial Society of South Africa

EXAMINATION

2 November 2012 (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 computer's 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 (these could be copied from Excel into Word).

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 are the valuator to the closed defined benefit pension fund of Company X. You also carry out the IAS19 valuations of the fund for Company X.
The previous statutory actuarial valuation of the Fund was undertaken as at 31 December 2009 and revealed that:

a) the Fund was 100% funded; and
b) the required Company X contribution rate for future service was 18.0% of salaries.

Company X currently contributes at a rate of 18.0% of salaries.

Members contribute towards the fund at 5.0% of salaries.

The following has been extracted from the 31 December 2011 IAS19 disclosures of the Fund:

	31 December 2011 (Rm)
Market value of assets	**4 000**
Liabilities:	
- Active member section	1 000
- Pensioner section	3 200
Total liabilities	**4 200**
Total surplus	**-200**
Balance sheet deficit	**200**

IAS19 service cost in next year is 14.0% of salaries.

Assumptions as at 31 December 2011	*% per annum*
Discount rate (long term)	10.0
Expected price inflation (long term)	6.0
Expected salary inflation rate (long term)	7.0
Expected pension increases (long term)	6.0
Expected return on assets	12.0

It is currently 2 November 2012 and the following additional information can be assumed to apply for the 2012 year:

- The actual return on the assets is 8.0%
- Member contributions amounted to R10 million during the year

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- Government and corporate bond yields remained constant during the year
- Pension payments for the year amount to R180 million
- All other benefits paid amount to R50 million
- New pensions with a capitalised value of R40 million arose during the year
- A salary increase of 8.0% will be granted as at 31 December 2012
- A 5.0% pension increase will be granted as at 31 December 2012
- Company X recognises actuarial gains and losses in full in the year they occur
- The prescribed minimum benefits of all the active members as at 31 December 2012 amount to R820 million

Company X's finance director (FD) is not a trustee of the Fund.

i) The FD has asked you to explain why Company X's service cost under the IAS19 valuation is 14.0% of salaries whereas the previous statutory actuarial valuation determined that Company X must contribute at 18.0% of salaries. Outline the points you would make in your response to the FD. [3]

ii) Based on the above information, do the following:

(a) Estimate the assets, active member liability, pensioner liability and the overall financial position of the Fund as at 31 December 2012

(b) Estimate the components of the actuarial gain / loss for the year to 31 December 2012

(c) Determine the Net Periodic Pension Cost for 2012

(d) Reconcile the amount shown in Company X's balance sheet over the year

State any further assumptions that you make. [17]

The FD had indicated that Company X participates in a number of retirement funds, including Fund Y. Fund Y is an open defined contribution pension fund with a substantial Employer Surplus Account. Company X is considering the option of:

(a) Transferring the prescribed minimum benefits of the active members of the defined benefit fund to Fund Y; and

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(b) Providing a transfer incentive from the Employer Surplus Account in Fund Y to the transferring members. The cost of the incentive would amount to R300m for all the active members.

iii) Discuss the key issues that the Trustees of the defined benefit Fund would need to consider in respect of the FD's proposal [5]

iv) The FD has requested that, on the assumption that all active members accept the transfer offer, that you re-do the following:

(a) Estimate the assets, active member liability, pensioner liability and the overall financial position of the defined benefit Fund as at 31 December 2012

(b) Estimate the components of the actuarial gain / loss for the year to 31 December 2012

(c) Determined the Net Periodic Pension Cost for the year

(d) Reconcile the amount shown in Company X's balance sheet over the year

(e) Comment on the change in the amounts recognised in Company X's balance sheet in respect of the defined benefit fund and in respect of Fund Y above.

[8]

[Total 33]

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QUESTION 2

You are the valuator of a medium-sized defined benefit pension fund and recently completed the statutory valuation as at 31 December 2011. The valuation results, assumptions and other pertinent details are summarised below.

Results on Statutory Basis	*R millions*	*No. of members*	*Average age (liability weighted)*
Equities	1 625		
Bonds and cash	875		
In-service liabilities	1 125	1 250	40
Pensioner liabilities	875	500	65
Employer Surplus Account	250		
Solvency Reserve	250		

The rules were amended after the surplus apportionment scheme to transfer all future surplus to the Employer Surplus Account.

Benefits & Contributions	
Normal retirement age	65
Final average salary	Last 12 months
Withdrawal benefit	Minimum Individual Reserve in terms of the Pension Funds Act
Pension increase policy	90% of CPI inflation
Member contributions	7%

Information as at 31/12/2011	
Long-term government bonds	8.66%
Index-linked government bonds	2.25%
Adjusted ILG Yield used in MIR calculations	2.30%
Equity premium	2.50%
Inflation risk premium	0.50%
In-service decrements	Ignored

Assumptions	
Inflation	5.78%
Discount rate	10.29%
Salary increases	7.78%
Pension increases	5.20%

i) Explain how the four economic assumptions provided were derived, stating any additional assumptions that are required. [5]

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ii) Explain how the valuation assumptions would differ for an IAS19 valuation of the Fund. [6]

For the statutory valuation you used the Projected Unit Method and calculated a required employer contribution rate of 15% of salaries. The employer has indicated to you that they intend to close the Fund to new entrants.

iii) Estimate the average future employer contribution rate, as a percentage of salaries, to fund ongoing benefit accrual. State your assumptions. [5]

The employer's financial director has criticised the statutory valuation basis as being too strong and resulting in a higher employer contribution rate than the employer is happy with.

iv) Draft a short reply to the financial director's criticism. [7]

[Total 23]

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QUESTION 3

The HR Director of a SA company wants to design a defined contribution pension fund. The previous defined benefit pension fund provided a pension of 2.5% of salary per year of service and the HR Director wants to target a pension benefit of equivalent value under the new Fund. Employees could join the previous defined benefit (DB) fund at the age of 20 but were required to retire at age 60 years.

He wants employees to contribute at 7.5% of salary and the employer's total contributions will match those of the employees. He wants to take the lowest investment risk option possible, and has suggested an absolute return investment product.

The company currently has 850 employees and a total payroll of approximately R5.3125 million per month. In terms of the industry bargaining council agreement, future salary increases will be at a level equal to inflation.

The HR director was approached by a representative of a large insurance company who says they can meet all his requirements. The representative has quoted the following:

- The administration expenses would be R50 000 per month;
- The cost of death and disability benefits over the year would be R950 000 and R681 250 respectively;
- They offer 2 absolute return products; a lower risk CPI +2% per annum option and a higher risk CPI + 4% per annum option; and
- Their standard annuity product offers the following:

Age	**Approximate monthly Pension per R10 000 investment R**
60	55.56
61	57.87
62	60.39
63	63.13
64	66.14
65	69.44

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i) Calculate whether it will be possible under the HR Director's design ideals to reach the targeted pension using the lowest risk investment option. State any assumptions made. [8]

ii) Calculate the contribution rate that would be required by the employer to meet the target pension. State any assumptions made. [2]

iii) Discuss the elements, and their interaction with each other, that would affect the design and targeted benefits under a defined contribution structure. Your answer should include how the elements could be adjusted to better meet the target pension [7]

The Financial Director (FD) has stated that the design should be determined on the basis of a maximum total contribution by employees and employer of 18.5% of salaries. He has also commented that on average employees are currently 35 years old and have retirement savings of R150 000.

iv) Using the information provided demonstrate how changing each of the elements in (iii) above contribute to achieving the maximum replacement ratio for an average employee. Start from the HR director's proposal and work towards the FD's proposal. State any assumptions made. [12]

v) On the basis of the results in (iv), make recommendations as to the design of the benefit such that there is a greater likelihood of achieving the HR director's target pension benefit. [4]

vi) State the factors that must be considered, and the items that must be included, when providing any benefit projections and communication to individual members of a defined contribution fund. [3]

The Company is happy with the design and decides to close their current DB fund.

vii) List the issues that need to be considered specifically with respect to the closure of the DB fund. [4]

viii) Explain the process for the appointment of a liquidator. [4]

[Total 44]

END OF PAPER