EXAMINATION

3 June 2015 (am)

Subject F104 — Pension and Other Benefits

Fellowship Principles

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Use the instructions and password provided at the examination center to log in.*
2. *Submit your answers in Word format only using the template provided.*
3. *Save your work regularly throughout the examination on the supplied computers' hard drive.*
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 supervisor.*
6. *Mark allocations are shown in brackets on exam papers.*
7. *Attempt all six (6) 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 AND hand in this question paper.

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

Compare and contrast the funding system used for occupational pension schemes in the United Kingdom and in South Africa with the book reserving system used in Germany. Give a concise description of each system and set out the advantages that each system might have over the other.

[Total 8]

QUESTION 2

Consider a defined benefit pension scheme which allows an option at retirement to commute up to one third of the pension for a tax-free cash sum. A fixed commutation factor is used of R10 per R1 of pension foregone. Mr X is about to retire with a pension of 2/3 of annual salary. He elects to take a tax-free cash sum of twice annual salary. The current market-related 'true' commutation factor is R8 per R1 pension foregone.

i. List the disadvantages of using market-related commutation factors [4]
ii. What will be the percentage change in cost to the scheme of Mr X exercising the option? [4]

[Total 8]

QUESTION 3

i. Describe the Entry Age method and outline the advantages of using it for a triennial valuation of a final salary pension scheme. [6]
ii. Comment briefly on the impact on the valuation results of the following changes:
    a. Increasing the lump sum death in service benefit from twice annual salary to three times annual salary.
    b. A 5% discretionary increase to pensions already in payment.
    c. Changing the future service accrual rate from 1.67% to 2% of salary
    d. Changing the spouse's pension on death after retirement from 33% to 66% of the members pension.
    e. Reducing the assumption on entry age. [5]

[Total 11]

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QUESTION 4

You are the Actuary to a large, funded, defined benefit pension scheme that has been operating for many years. The only death benefit in the scheme is a death-in-service benefit consisting of a return of member contributions with 2% compound interest per annum. There are no separate death benefit arrangements for the members either. The trustees feel that this benefit is archaic and that it does not meet the needs of the members. They wish to undertake a comprehensive review of the death benefits for all classes of members and you have been asked to comment as follows:

i. Comment on the appropriateness of the current death benefit [3]
ii. Describe the typical ranges and types of benefit that the trustees may consider [8]
iii. The trustees are undecided about whether some or all of the suggested benefits should be self-insured within the scheme or insured with a reputable underwriter. Discuss the structures and factors they should consider. [12]

[Note from the approximate mark distribution that a very full answer is expected for this question]

[Total 23]

QUESTION 5

A large defined benefit scheme has been operating for some years in a developing country which has a vigorous and growing economy. The scheme is funded by member contributions (a fixed percentage of pensionable salaries) and employer contributions (balance of cost as determined triennially by actuarial valuation). The pension benefit on retirement is 2% of final pensionable salary for each year of scheme membership.

The government has unveiled plans to introduce a State old age pension (SP) of 50% of national average earnings each year, payable from age 65 for all citizens. The SP would be funded from general tax revenue.

i. Discuss the advantages and disadvantages of amending the scheme retirement benefits to take the SP into account. [5]
ii. Describe 3 methods of amending the benefits and contributions so that the original overall target benefit is maintained for a member with 30 years of service. Illustrate with equations/numerical example. [9]
iii. Discuss the advantages and disadvantages of each method. Consider members with different levels of earnings and service. Consider other practical issues, including possible transitional arrangements. Illustrate with same numerical example. [6]

[Total 20]

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QUESTION 6

You are the Actuary to a medium-sized, contributory, defined benefit (DB) scheme in South Africa. The scheme provides typical benefits, in particular on death, ill-health retirement and normal retirement. Legislation requires that a certain minimum benefit/transfer value should apply on exit from the scheme. The minimum benefit for a DB scheme is the present value on a prescribed basis of the pension, accrued at exit and payable from normal retirement age (NRA). For a defined contribution (DC) scheme the minimum benefit would be the accumulated share of fund for the member at the date of exit.

You have just completed a triennial valuation which, unfortunately, indicates a significant increase in the employer's contribution rate because of poor experience relating to various valuation assumptions. The Financial Director (FD) is unhappy with this and has suggested that the scheme be converted to a DC basis of operation. The FD also said that "It is vital that members should have a good chance of achieving exactly the same benefits with the DC model" and has suggested this could be achieved by calculating for each member at conversion (or future entrance to the scheme) the appropriate funding rate that would remain fixed.

You have been asked to comment on the proposal. Outline the questions you may ask and the points you would make which should cover, but not be restricted to:

i. The factors you would take into account in calculating the employer and employee funding rates, noting any areas where you would seek clarification from the FD. [10]

ii. Difficulties arising from the use of assumptions. [10]

iii. The effects of investment strategies. [5]

iv. Practical aspects. [5]

[approximate distribution of marks shown in brackets]

[Total 30]

[Grand Total 100]

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END OF EXAMINATION