Actuarial Society of South Africa

EXAMINATION

28 May 2012 (am)

Subject F204 - Pensions and Other Benefits Specialist Applications

Time allowed: Three Hours

INSTRUCTIONS TO THE CANDIDATE

1. Enter all the candidate and examination details as requested on the front of your answer booklet.

2. 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.

3. You must not start writing your answers on the answer sheet provided until instructed to do so by the supervisor.

4. Mark allocations are shown in brackets.

5. Attempt all questions, beginning your answer to each question on a separate sheet.

AT THE END OF THE EXAMINATION

Hand in BOTH your answer booklet, with any additional sheets firmly attached, and 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

A pension fund's pension increase policy includes provision for annual increases of 90% of increases in the Consumer Price Index. At the fund's last statutory valuation in June 2010 the fund had a surplus of 10% of accrued liabilities. Approximately half of the accrued liabilities are attributable to pensioners.

The valuator recommended that an additional pension increase, consisting of a compulsory and a discretionary component, be granted to pensioners.

(i) Set out the legislative requirements in relation to pension increase policies . [5]

(ii) Describe how the valuator would have calculated the compulsory component of the additional pension increase in order to make the recommendation . [6]

(iii) Discuss the additional considerations that the valuator would have had to make in order to arrive at the discretionary component of the recommended additional pension increase. [5]

A year later, as a consequence of poor investment returns, and despite the pensioners' objection, the trustees approved the valuator's proposal of a 0% pension increase as at 1 July 2011. Six months later, once markets had partly recovered, the pensioners asked the trustees to consider an interim pension increase.

(iv) Discuss what the valuator should consider in evaluating the pensioners' request. [6]

[Total 22]

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QUESTION 2

The developing country of Zorc has a population of 2 million people with an average age of 35 years. Life expectancy at birth is 65 years. The average monthly income is Z$ 5 000 and unemployment is at 25%.

Zorc has no social security benefits and provision for retirement is provided through employer sponsored pension funds and / or individual insurance policies. Retirement savings are encouraged by allowing members to contribute tax free up to 5% of their annual salary towards retirement provision. Employer contributions are also fully tax deductible.

A consultant has recommended to the Minister of Finance that Zorc introduce a compulsory social security scheme with the following benefit and contribution structure:

Normal Retirement Age	65 years
Contributory Salary	Actual salary capped at Z$3 000 per month
Retirement benefit	1% of total Contributory Salary, revalued with price inflation to Normal Retirement Age.
Death benefit	A spouse's pension equal to 0.5% of total Contributory Salary, revalued with price inflation to date of death. If contributions have been made for less than 120 months, the pension is increased by the ratio: 120 / (number of months contributed).
Disability benefit	A pension equal to 1.0% of total Contributory Salary, revalued with price inflation to date of disability. If contributions have been made for less than 120 months, the pension is increased by the ratio: 120 / (number of months contributed).
Contributions	Members pay 5% of Contributory Salary Employers pay 5% of Contributory Salary
Pension increases	Pensions increase annually with price inflation

i) Comment on the above benefit and contribution structure. [6]

Company X operates in Zorc and established a defined contribution pension fund for its employees over 20 years ago. The benefit and contribution structure of the pension fund is as follows:

Normal Retirement Age	60 years
Contributory Salary	Actual salary per month
Member Account	The total of the member and Employer contributions towards retirement benefits, accumulated with investment returns.

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Retirement benefit	A lifetime pension secured with the Member Account from an insurer. No commutation of part of the pension for a lump sum is allowed. Retirement can take place at any time from age 55 years to age 60 years.
Death benefit	A lump sum of 4 times annualised Contributory Salary.
Disability benefit	A lump sum of 4 times annualised Contributory Salary.
Withdrawal benefit	Not allowed. Member Account must be preserved until the member qualifies for retirement.
Contributions	Members pay 5% of Contributory Salary towards the Member Account. The Employer pays 5% of Contributory Salary towards the Member Account as well as a further amount to cover the cost of death and disability benefits and Fund expenses (which currently amount to 4% of Contributory Salary).

Company X only has two employee job grades which have the following characteristics:

Grade	Number of employees	Monthly salary	Average age	Average service	Average Member Account
A	6 000	Z$ 3 000	35 years	7 years	Z$60 000
B	400	Z$ 12 000	45 years	15 years	Z$200 000

You are a consulting pension actuary working in Zorc.

ii) Company X has approached you and asked for your advice on how the proposed social security scheme will impact on Company X's pension fund and its members. Set out the points you would make to Company X. [7]

The Minister of Finance has asked for comments on how the existing employer retirement funds could be amended to fit in with the social security scheme if the latter were not compulsory.

iii) Based on Company X's pension fund set out your comments in response to this request. [4]

[Total 17]

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QUESTION 3

A number of years ago a South African manufacturing company purchased its opposition. While all new employees of the consolidated entity are members of a single defined contribution retirement fund there are still the two historical final salary pension funds. The following information is available for the two funds:

Benefits and actuarial valuation basis:

Fund A

- An annual pension of 1/50th of salary per year of service plus gratuity of 5% of salary per year of service
- Pension increases equal to 100% of inflation
- Normal retirement age 65 years. No early retirement allowed
- Death in service: a spouse's pension equal to 50% of the prospective pension
- Death in retirement: the spouse receives half of the pension payable to the pensioner at the date of death
- Salary increases of inflation +1% with no merit increases
- Member contributions at 6.0% of salary
- All male membership
- No pensioners in the Fund

Fund B

- An annual pension of 1/40th of salary per year of service.
- Pension increases equal to 75% of inflation
- Normal retirement age 65 years. No early retirement allowed
- Death in service: A lump sum of 2 x salary and spouse's pension of 50% of accrued pension
- Death post retirement: the spouse receives half of the pension payable to the pensioner at the date of death
- Salary inflation at inflation +2% with no merit increases
- Member contributions at 7.5% of salary
- All male membership
- No pensioners in the Fund

To allow for prescribed minimum benefits neither fund applies any pre-retirement decrement rates. Both funds also use the same post retirement mortality assumptions. Salary increases are granted on 31 December of each year.
The death in service benefit in excess of the actuarial reserve values is fully insured.

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Membership data as at the last actuarial valuation:

Actives members	**Fund A (30 June 2010)**	**Fund B (1 January 2011)**
Number	100	300
Liability weighted average age	45	40
Liability weighted average service	15	15
Unweighted average monthly salary	R10 000	R12 000

Financial information extracted from valuation reports:

- Fund A was 125% funded at 30 June 2010 on a net pre retirement discount rate of 3% per annum;
- Fund B, valued at a gross discount rate of 12% per annum and an inflation assumption of 8% per annum revealed the following:

Fund B	**1 January 2011**
Assets:	R139 384 800
Total Liabilities:	R103 248 000
Actives:	R103 248 000
Pensioners:	R0
Funding Level:	135%

Since their respective valuation dates the Funds have experienced the following:

- Withdrawals of 10 actives in Fund A and 30 actives in Fund B where their withdrawal benefits were equal to their actuarial reserves at the date of withdrawal and where these actuarial reserve were based on the respective previous valuation basis. The withdrawal benefits were transferred out of the Fund;
- At the year end the funds each saw the retirement of 10 active members;
- All exits had average service and salary at their respective previous valuation dates;
- There were no deaths during the period;
- The rules allocate all surplus to the Employer and as such the Employer has been on a contribution holiday;
- Salary increases of 9% and 7% were granted to all members as at 31 December 2010 and 31 December 2011 respectively; and
- Investment return on Fund A over the period since the previous valuation was 14% per annum while Fund B earned 10% per annum.

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i) Set out the advantages and disadvantages to the employer of merging the two retirement funds. [10]

ii) Using the valuation results and other information available for both funds:

a. Derive the appropriate annuity factor for Fund B as at the Fund's normal retirement age based on valuation results. [1]
b. Using the above factor estimate the equivalent annuity factor for Fund A. [2]
c. Using the above factor estimate Fund A's assets and liabilities as at 30 June 2010. [4]

As at 1 January 2012 the following actuarial valuation basis is agreed for both funds:

- Future pension increases equal to inflation
- Future salary increases equal to inflation +1% per annum
- Mortality post retirement remains unchanged
- No pre retirement decrements
- A market value basis using yields on nominal government bonds at 9% per annum and inflation linked bonds at 3% per annum

iii) Estimate the financial position of both funds as at 1 January 2012. State any other assumptions or approximations made. [24]

iv) Outline the issues that need to be addressed by the Trustees of the two funds when considering the request by the employer for the merger. [10]

The FD has suggested that on the basis of the financial positions estimated above the fund with the weaker financial position will be transferred into and adopt the benefit structure of the other fund.

v) Suggest how this could be achieved so as to preserve the value of the accrued benefits of the weaker fund. Show the funding level of the subsequent merged arrangement. [4]

vi) What are the likely consequences for members of the weaker fund in relation to the merger of the funds on the above basis? [6]

[Total 61]

END OF PAPER

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