EXAMINATION

2 October 2007 (pm)

Subject CA3 — Communications

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 in the booklet until instructed to do so by the supervisor.*

4. *Attempt Question 1 AND Question 2.*

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.

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1 You are the actuary to a pension scheme. You have received the following letter from a member trustee.

Mr James Cochran
Scheme Actuary

8 September 2007

Dear Mr Cochran,

Investment returns for ABC Ltd Pension Scheme

I have been examining the investment returns for our scheme in the year ending 30 June 2007. The investment manager has suggested that returns have been above the benchmark, but I have been unable to satisfy myself of this.

The total investments of the scheme were £4.285 million at 30 June 2006, and £5.110 million at 30 June 2007. I know that we received transfer values totalling £0.324 million on 1 January 2007, and assume that the employer and employee contributions totalling £0.457 million and the benefit payments totalling £0.279 million were spread throughout the year. If we assume these were received, on average, half-way through the year, the final value is £4.285 million with a year's growth plus £0.324 million + £0.457 million – £0.279 million = £0.502 million for half a year. I have calculated that this is equivalent to about 7.1% a year growth.

I have looked at the benchmark return and it is 7.8% for the year in question. While there is not a very big difference, I think we need to draw it to the trustees' attention, particularly since they have the impression that the investment manager has outperformed the benchmark.

I would welcome your comments on this before I raise the issue formally.

Yours sincerely,

Colin Spragg
Member Trustee

You have obtained further information from the investment manager as follows:

Quarter	*Fund at start of quarter (£million)*	*Fund at end of quarter (£million)*	*Payments in (£million)*	*Payments out (£million)*	*Return %*
1	4.285	4.638	0.108	0.065	7.20%
2	4.638	5.013	0.113	0.069	7.10%
3	5.013	5.224	0.439	0.072	-2.90%
4	5.224	5.110	0.121	0.073	-3.10%
Whole year			0.781	0.279	8.0%

Draft a letter of about 500 words to the member trustee explaining how the investment manager's performance compares with the benchmark and how the investment return has been affected by the pattern of payments and fluctuations in investment conditions.

Notes

1. You can assume that all calculations made by the trustee and the fund manager are correct, and that the return calculated by the trustee is a reasonable approximation to the money-weighted rate of return for the scheme.

2. The benchmark quoted by the trustee is a time-weighted rate of return. The benchmark return for 1 July 2006 to 31 December 2006 was 14.1%, and for 1 January 2007 to 30 June 2007 was -5.5%.

3. The returns quoted by the investment manager are also time-weighted, but in each quarter were the same as the money-weighted returns (to one decimal place).

[50]

2 You are an actuary working for a life insurance company. Your line manager, Peter Green, has sent you the following e-mail.

> John,
>
> As you know, our new Customer Service Director, Philip Smith, joined us from outside the financial services industry. His team is currently running a project to review our old with-profits endowment policies, and he's asked me to send him a short memo explaining the product. Could you please draft it?
>
> I'm attaching a training note that was written a few years ago. It's still accurate but the language and style are a bit dated. Although we're one of the few insurance companies that still don't have shareholders, for this memo you don't need to worry about explaining what it means to be mutual. But remember that we describe our bonuses as "yearly" and "final" these days.
>
> The main things I'd like you to get across are:
>
> - How the different elements (sum assured and bonuses) combine to make up the maturity value.
> - That yearly bonus isn't comparable with bank interest rates because it's only one element of the total policy return. This point causes a lot of confusion among customers and some staff, but isn't really covered in the existing note.
> - The main elements that are taken into account in the actuarial assessment of bonus.
> - What happens if customers die or cash in their policies before maturity.
>
> Keep the memo short — about 450 words.
>
> Thanks,
>
> Peter

The old training note attached reads:

> **With-profits endowment assurances**
>
> With-profits endowment assurances provide a guaranteed cash sum — the sum assured — on death or at the maturity date of the policy, assuming that all premiums are paid as they fall due. The sum assured allows for anticipated expenses, projected mortality and an element of investment growth.
>
> The sum assured is increased throughout the policy lifetime by reversionary bonuses, and there may also be a terminal bonus on death or at maturity. The purpose of bonuses is to enable distribution of surplus in an equitable manner while retaining the financial strength of the Society. Because the Society is a mutual company all distributions of profits are to its with-profits members.
>
> Bonuses are declared by the Directors of the Society after the end of each calendar year following an actuarial investigation into surplus assets in the with-profits fund. Surpluses arise when investment returns are higher than those assumed in premium rates, when mortality is lighter than assumed and when we are able to keep expenses below those assumed. There are also other less significant sources of surplus such as money made from non-profit business and any excess of asset share over surrender values paid.
>
> Reversionary bonus (also known as vested bonus) is added yearly as an addition to the sum assured. It increases the guaranteed sum assured and cannot be removed. The bonus reverts to members only on maturity of their policies or on death, hence the name. We aim not to change rates of reversionary bonus dramatically from year to year.
>
> At maturity or on death there may be an additional terminal bonus payable. This is dependent on market conditions at the time and is not guaranteed. The object is to provide each member with something close to asset share — what the premiums paid have earned over the policy lifetime. To offer some protection against the vagaries of the stock markets the terminal bonus incorporates an element of smoothing, so that those claiming benefits when markets are low are likely to receive rather more than asset share, while those claiming benefits when markets are high are likely to receive rather less than asset share.
>
> The sum assured, reversionary bonus and any terminal bonus are only payable at maturity or on death. Members who surrender their policies early forfeit all guarantees. However, the Society will aim to ensure that surrender values broadly reflect asset share.

Draft the memo requested by your line manager.

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END OF PAPER