

# EXAMINATION

7 October 2009 (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 before 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 from the approved list.*

- 1 You are the manager of an actuarial team working in the annuity department of a Life Insurance Company. A policyholder has written the following letter to your client services team which has been forwarded to you.

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Dear Mr Ridley

Last year, I received a statement (dated 1 January 2008) illustrating that my fund had grown to £55,000. It also showed that if I wanted to purchase an annuity of £5,000 p.a. in 2020, I would need to pay in a monthly sum of £127 for the next 12 years.

I did not increase my monthly payments to £127 but continued paying £50 each month. The statement that I received in January 2009 showed that the fund had increased to £56,500 in value and that to purchase the same level of annuity I would now need to contribute £182 per month.

There must be a mistake in the statements! The second illustration was based on a higher “investment growth” figure and if that’s true, why have the monthly payments increased? Shouldn’t it be the other way round? Please could you revise the statement and send me a correct one as a matter of urgency.

Yours sincerely

James Brown

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An actuarial student in your team has gathered the following information about the two statements.

The 2008 and 2009 statements are based on the following assumptions:

	2008	2009
Investment growth	5%	5.5%
Annuity	24.7	26.9
Present value of fund required to reach target less current fund value	£13,770	£18,135
Present value of payment of £1 p.a. for 12 years	9.065	8.834
Present value of payment of £1 p.a. for 11 years	8.495	8.295

- If there had been no change in assumptions between the two statements, the present value of the difference in the fund value at 1 January 2009 and the target fund value in 2020 would be £15,700.
  - The money weighted rate of return between 2008 and 2009 was 1.6% p.a. The time weighted rate of return in the first half of the year was 2% whereas it was — 0.5% in the second half of the year.
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Draft your reply in about 450 to 500 words including an explanation of why the monthly payments have increased. You do not need to explain the reasons for the increase in the annuity rate in 2009 nor comment on the appropriateness of the assumptions.

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- 2 You work in the actuarial department of a government organisation. A colleague from the finance department has requested that you provide a memorandum giving details of two products, Income Drawdown and Alternatively Secured Pension, that can be used as part of an introductory pack about pension options. The pack will be given to new graduates joining the department.

Draft a memorandum based on the information provided below in approximately 450 to 500 words. Your memorandum should include a description of the products together with the main advantages and disadvantages from an individual's point of view. You should illustrate your answer with simple numerical examples. Yields on 20 year government bonds are currently roughly 5% p.a. and the fund size for these products is typically around £200,000.

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Income drawdown is the name given to the facility to continue to keep your retirement savings invested and take an income each year rather than buy an annuity when you wish to retire. This facility is available from age 60 and can only be continued to age 75, at which time an annuity has to be bought or the money transferred into an Alternatively Secured Pension (ASP).

ASPs have only been available since 6 April 2006. Prior to then, everyone had to use their pension savings to buy an annuity by age 75. This is still the rule but there is now an alternative option, ASPs.

The income that can be taken from an income drawdown arrangement can be varied each year subject to a minimum and a maximum. The minimum is £0 and the maximum is 120% of a pension calculated according to the standard tables produced by the government. (Details of the tables and method of calculating the maximum pension are set out in Appendix A to this question.)

The minimum that must be drawn as an income from an ASP is 55% of an amount calculated by applying the funds available to the same standard tables produced by the Government Actuary's Department. The maximum is 90%. The pension year for an ASP is the 12 months from your 75th birthday and every subsequent 12 month period. The maximum amount must be recalculated every new pension year. The reassessment continues to be made by reference to an annuity at age 75, irrespective of the actual age that you have reached.

An advantage of the named products is that the pension fund value (less any income withdrawn and associated charges) will continue to be invested until you decide to purchase an annuity. Depending upon investment returns, which can fall as well as rise and are not guaranteed, this may provide the opportunity to achieve sufficient growth to improve the ultimate benefits when you decide the time is right to purchase an annuity. Due to reductions in expected longevity as you get older, annuity rates are such that they generate a larger income stream for the same capital sum invested at the outset. For example at 70 you can typically purchase an income of 25% more than you would if you were 60. Another aspect to consider is that you will be able to plan in advance the level of income that you wish to take each year from income drawdown or ASP, so that you can take into account any other sources of income which may be available to you.

## Appendix A

Procedure for determining the basis amount for calculating the maximum income drawdown and ASP for an individual from their retirement savings.

- Step A** Establish the date that is the point of calculation that the member designates some of the member's funds should be used for income drawdown. (This is known as the "designated date" and should be no earlier than the member's 60<sup>th</sup> birthday and no later than his/her 75<sup>th</sup> birthday.)
- Step B** Calculate the age  $x$  of the member at the "designated date" in complete years and days.
- Step C** Obtain the yield on government bonds (20 years) from the published indices for the 15<sup>th</sup> day of the calendar month in which the "designated date" falls.
- Step D** The yield obtained in Step C must be rounded down to the next 0.25%. For example, 4.12% is rounded down to 4.00% and 5.39% is rounded down to 5.25%. If the yield obtained at Step C is an exact multiple of 0.25% then no rounding is required. Call this yield  $Y$ .
- Step E** Obtain the basis amount per £1,000 of fund from:
- Table 1 (if the individual is a male aged 60–75)
  - Table 2 (if the individual is a female aged 60–75)

By extracting the figure available at age  $x$  (see Step B) and yield  $Y$  (see Step D). Call this £A.

- Step F** Determine the Basis Amount appropriate to the individual's age  $x$  as:  
 $(\text{£Total funds} / \text{£1,000}) \times \text{£A}$

The results of this calculation should be rounded to 2 decimal places (that is, to the nearer penny).

For Income Drawdown — the maximum amount that can be taken is 120% of the Basis Amount. The minimum amount is 0%.

For Alternatively Secured Pension — the maximum amount that can be taken is 90% of the Basis Amount. The minimum amount is 55%.

## Appendix A

These tables are based on the amount that your fund would buy as an annuity based on your life only and with no allowance for any future increase.

**TABLE 1 — MEN**

AGE	<i>Yield</i>						
	4.00%	4.25%	4.50%	4.75%	5.00%	5.25%	5.50%
60	£60	£62	£64	£65	£67	£69	£71
61	£62	£63	£65	£67	£69	£70	£72
62	£63	£65	£67	£68	£70	£72	£74
63	£65	£66	£68	£70	£72	£73	£75
64	£66	£68	£70	£72	£73	£75	£77
65	£68	£70	£72	£73	£75	£77	£79
66	£70	£72	£74	£75	£77	£79	£81
67	£72	£74	£76	£77	£79	£81	£83
68	£75	£76	£78	£80	£81	£83	£85
69	£77	£79	£80	£82	£84	£86	£87
70	£80	£81	£83	£85	£87	£88	£90
71	£83	£84	£86	£88	£89	£91	£93
72	£86	£87	£89	£91	£93	£94	£96
73	£89	£91	£93	£94	£96	£98	£99
74	£93	£95	£96	£98	£100	£101	£103
75 or over	£97	£99	£100	£102	£104	£106	£107

**TABLE 2 — WOMEN**

AGE	<i>Yield</i>						
	4.00%	4.25%	4.50%	4.75%	5.00%	5.25%	5.50%
60	£57	£59	£60	£62	£64	£66	£68
61	£58	£60	£62	£63	£65	£67	£69
62	£59	£61	£63	£64	£66	£68	£70
63	£60	£62	£64	£66	£67	£69	£71
64	£62	£64	£65	£67	£69	£71	£72
65	£63	£65	£67	£68	£70	£72	£74
66	£65	£66	£68	£70	£72	£73	£75
67	£66	£68	£70	£72	£73	£75	£77
68	£68	£70	£72	£73	£75	£77	£79
69	£70	£72	£73	£75	£77	£79	£80
70	£72	£74	£76	£77	£79	£81	£82
71	£74	£76	£78	£79	£81	£83	£85
72	£77	£78	£80	£82	£84	£85	£87
73	£79	£81	£83	£84	£86	£88	£90
74	£82	£84	£85	£87	£89	£91	£92
75 or over	£85	£87	£89	£90	£92	£94	£95

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**END OF PAPER**