Actuarial Society of India

EXAMINATIONS

21st June 2005

Subject CA3 – Communications

Time allowed: 2 ½ Hours (14.15* - 17.00 pm)

INSTRUCTIONS TO THE CANDIDATE

1. *Do not write your name anywhere on the answer scripts. You have only to write your Candidate's Number on each answer script.*

2. *In addition to this paper you should have available Actuarial Tables and an electronic calculator.*

3. *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 2 ½ hours to complete the paper.*

4. *You must not start writing your answers until instructed to do so by the Supervisor.*

5. *Attempt BOTH the questions.*

Professional Conduct:

> *"It is brought to your notice that in accordance with provisions contained in the Professional Conduct Standards, If any candidate is found copying or involved in any other form of malpractice, during or in connection with the examination, Disciplinary action will be taken against the candidate which may include expulsion or suspension from the membership of ASI."*

AT THE END OF THE EXAMINATION

Hand in BOTH your answer scripts and this question paper to the supervisor.

Q.1

Your employer, an insurance company is about to launch a single premium 5 year unit-linked product with a minimum guaranteed return of 5% pa which has an annual management charge of 3.5%. On maturity the policyholder receives the unit value subject to the minimum guaranteed return.

The company already sells a 5 year single premium unit-linked product which has an annual management charge of 1.75%.

Both the products invest in the same underlying assets and there are no other charges.

In response to a request from the CEO an actuarial student in your department has given the illustrated maturity values for a single premium of 100,000 (which are correct) at the standard industry rates of 6% and 10% as follows:

	6%	10%
Guaranteed product	127,628	137,009
Existing product	123,134	148,641

Your CEO is puzzled by the response given by the student as the guaranteed product gives a higher return under the 6% scenario but a lower return under the 10% scenario and has requested you to clarify the matter. He also wondered whether there was a rate where the products give the same return. He has also asked you to clarify why the guaranteed product has a higher annual management charge.

Draft a suitable reply in 400 – 500 words explaining why the guaranteed product fares better under the 6% scenario but is worse under the 10% scenario, the rate at which both products give the same return, and why there is a higher management charge under the guaranteed product (you can ignore expenses, commissions and can assume no life cover).

[60]

Q.2

A friend is considering purchasing a fixed interest security with an outstanding term of 5 years which pays an annual coupon of 11.5% and can be bought at 115. The bond repays 100 on maturity. Tom has told him that the yield should be 10%.Another friend, Bill has said that the yield is 11.5%. He has been told by another friend, John that the "yield to maturity" is 7.77%.

Your friend, who is not conversant with financial matters has asked you to explain in layman's language the matter and the basis for the various yields and which is the correct one. A colleague has offered to help you out and has written the following draft reply.

"Dear Ram,

Tom and Bill obviously don't know what they are talking about!

Tom has worked out what is called the running yield and has simply divided the expected annual income by the purchase value. This approach while it recognizes the purchase price being above par in the computation of the yield (by reducing this from the coupon percentage) is conceptually flawed as it does not give any recognition to the capital depreciation if the bond is held to maturity. As you are purchasing the bond at a premium to its par value the capital depreciation which takes place lowers the return from your perspective vis-à-vis the aforementioned yield. Hence this approach is incorrect.

Bill has in computing the return simply equated the return to the coupon rate. This is flawed as it gives no recognition to the purchase price in the computation of the yield nor does it reduce the coupon rate in view of the fact that you are purchasing the asset at a premium to its redemption value.Your return will be driven naturally by the price at which the asset is transacted between the seller and you and so the above technique is inappropriate for computing the return.

John's calculation gives the correct return from your perspective. Under this approach the yield is computed by calculating the rate of discounting at which the present value of future coupon payments and the maturity proceeds equates to the purchase price.

I trust this satisfactorily addresses the questions that you have raised.

Regards,

Yours sincerely

Mark"

Redraft the letter in about 400 words to make it suitable for sending it to your friend. You can assume that the information contained in the draft letter is correct and that no further information is required.

[40]

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