

EXAMINATION

29 October 2012

Subject A302 Communications

Time allowed: Three hours

INSTRUCTIONS TO THE CANDIDATE

1. *Enter all the candidate and examination details at the beginning of each question. Ensure that your candidate number appears at the top of each page handed in. [Select “Insert”, then “Header”, input your candidate number on blank header template and select “Close Header”].*
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 typing your answers until instructed to do so by the supervisor.*
4. *Mark allocations are shown in brackets.*
5. *Attempt both questions, beginning your answer to each question on a new page.*
6. *Candidates should show calculations where this is appropriate.*
7. *Candidates are required to do a word count.*

AT THE END OF THE EXAMINATION

Save your answers with the password provided and hand in your question paper.

In addition to this paper you should have available the 2002 edition of the Formulae and Tables for Examinations of The Faculty of Actuaries and The Institute of Actuaries

Question 1

Your mother, who works as a bookkeeper for the local council, read a letter published in the Business Day. The letter was written by a reader, and a copy of it is reproduced below.

The decision by Gill Marcus and her team to cut the REPO rate by 0.5% to 5.00% (equivalent to a Prime rate of 8.50%) was a lost opportunity. Central banks in industrialised countries globally are at much lower interest rates than this. Why would the South African Reserve Bank be any different, and not add its name to a growing list, including the European Union Central Bank, the Bank of England and the central banks of Australia, India, China, Brazil, and South Korea which have embarked on a more accommodating monetary policy?

I do not see how our economic growth can improve when our Reserve Bank does not optimally use the primary tool at its disposal, i.e. interest rates. A 1% decrease would have given this economy the injection it needs.

Not only will a bigger reduction free up consumers' cash in reduced mortgage and car loan repayments, but will also make South African exports competitive overseas. This would lead to job creation – exactly what this country needs right now. The inflation is comfortably within the 3-6% target range so there is some room to lower the rate by up to 1% without upsetting the inflation target.

I hope the Monetary Policy Committee will apply common sense at the next review.

Economic Observer
Newtown

On reading this letter, your mother has written you the following email:

Subject: Business Day letter

Hi darling

I came across an interesting letter in yesterday's paper that got me thinking about my finances.

Here is a link to the article:

www.businessday.co.za/A302/Question1

The timing of this article was very apt – I was doing my budget for my trip to Muriel's wedding in New York in December. My guess is these interest rates affect exchange rates somehow. I just don't know whether this change in interest rates means I need to set aside more money or less money for the trip. Can you help?

While you're at it, maybe you can help me with my revised mortgage and car loan instalments as mentioned in the letter. I only get my revised instalment statements at the end of the month and I just cannot wait that long. If only the Reserve Bank had

reduced the interest rates further as suggested by the article – I wonder how much of a difference this would make.

But wait, there's more! (I might as well get some return for all the school fees I paid over the years.) We're obviously getting older, so having enough to retire on is becoming a big issue for your father and me. I always get nervous when someone talks about inflation. What does the interest rate cut have to do with inflation? Why might inflation be 'upset'? I sincerely hope this interest rate cut is not going to affect my pension fund at all!

I think, basically, I'd like to understand a bit more about how this interest rate cut will affect me.

I've got to go now. Dad is taking me shopping for my dress for the wedding, and we need to get going before he changes his mind!

Love you loads

Mum

Write an email response to your mother of between 600 and 700 words.

Notes:

- At the time of writing, your mother has a mortgage balance of R1,000,000 and car finance balance of R200,000. They have outstanding terms of 10 years and 3 years respectively. The respective interest rates are Prime and Prime plus 1% and the monthly repayments are R12,667.58 and R6,453.44 respectively.
- For your illustration of the repayments on the house and the car, calculate on the basis that your mother is borrowing the outstanding amounts from the bank at the given interest rates and the outstanding terms of 10 and 3 years, repayable monthly in arrears.
- Your mother's pension fund is a defined contribution scheme. She invests the value of her pension fund with the help of a financial adviser, and the value is currently invested 50% in equities and 50% in money market instruments. As the impact on equities is uncertain, your explanation should focus on the effect on money market instruments. Ignore taxes and transactional costs.
- Assume your mother has already bought her plane ticket to New York and her concerns relate to spending money once she gets there.
- Inflation is currently 5.1%.
- Ignore other inflationary effects beyond those attributable to the price of oil.
- South Africa's main imports are oil (which is traded on an US\$ exchange) and manufactured goods (mainly manufactured goods and textiles).
- South Africa's main exports are minerals and manufactured goods. The biggest trading partners are the European Union, the USA, Japan and China.

- Lower financing costs can encourage borrowing and investing. However changes in interest rates can have a drastic effect on exchange rates. International investors interested in purchasing a security that pays interest, such as a bond, will buy the bond that gives them the highest interest rate, all else being equal. A higher yielding bond in one currency leads to a higher demand for that particular currency and hence strengthening of that currency.
- The annuity factors for an annuity convertible monthly for different terms and interest rates are given in the table below:

$a_{\overline{n} }^{(12)}$	n=10	n=3
$i=8.0\%$	6.8685	2.6593
$i=8.5\%$	6.7212	2.6398
$i=9.0\%$	6.5785	2.6206
$i=9.5\%$	6.4401	2.6015
$i=10.0\%$	6.3059	2.5826

- Include headings in your email as markers, as appropriate.

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Question 2

You have been approached by the Chairperson of the Goldrush Investment Club. The club consists of a group of friends who meet regularly to learn about investing and who also pool their money to access investment opportunities. The members of the club are investigating whether to invest in options, but are not really sure what they are and how they work.

You, as an actuary, have been asked to do a short introductory presentation on options to the members of the club. Draft this presentation.

Your presentation should include the following:

- Using European options, illustrate the difference between put and call options.
- Using European options, the definition of being ‘in the money’
- The distinction between American and European options.
- The impact of the price of the underlying security on the price of a European call option.

Your presentation should be 6 or 7 slides long.

Notes:

- A European put option gives the holder the right, but not the obligation, to sell the underlying security at the strike price, at a specified future date, called the expiry date.
- An American option can be exercised, by the holder of the option, before the expiry date.
- You are advised to refer to pages 46 and 47 of the “Formulae and Tables for Examinations of The Faculty of Actuaries and The Institute of Actuaries” handbook for the valuation formulae for European options.
- A call option is in the money if the current price of the security exceeds the strike price.

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