ASSIGNMENT 2

For handing in on **24 January 2002**

Write your name and student number at the top of your assignment before handing it in. Staple all pages together. Post the assignment in the blue post-box on the second floor in the Maths building before 9:45 on Thursday.

This assignment is based on the material covered in Lectures 3 – 6. Additional reading: McCutcheon and Scott, pp. 33-36, 44-51, 66-74.

Give all your numerical answers to 4 decimal places. When interest rates are concerned, give your answers in the form of percentage.

1. Given that the rate of interest is 8% per annum effectively, find the nominal rate of discount convertible quarterly. How much interest is to be paid in advance for use of £2000 over 3 months?

2. A borrower is under an obligation to repay a bank £4300 in two years' time and £1200 in three years' time. As part of a review of his future commitments the borrower now offers to discharge his liability for these two debts either

   (a) by making an appropriate single payment two years from now; or
   (b) by 24 appropriate equal payments made at one month' intervals, the first payment being due now.

   On the basis of a constant rate of interest 12% per annum effectively, find the appropriate single payment if offer (a) is accepted by bank, and the appropriate monthly payment if offer (b) is accepted.

3. A loan of £300000 is to be repaid by 10 equal annual installments , the first is due now. Find the annual payment if the interest on the loan is charged at the rate 12.99%.

4. Mr. Smith wants to buy a brand new PC with a cash price of £1499. He is being offered a credit agreement according to which £299 is to be paid down on the day of purchase and the remaining amount is to be repaid by 24 equal monthly repayments, the first installment being due one month from the day of purchase. If the APR charged on this credit agreement is 22.95%, what is the monthly repayment?

5. Show that $a^{(p)}_{\overline{n}|} = \frac{i^{(p)}}{i} a_{\overline{n}|}$.

6. Show that $d^{(p)} \simeq \delta - \frac{\delta^2}{2p}$ when δ is small.