MAT205 – Exam 1 – Spring 2003

1) (15 points) An amount of $5000 is invested at 6% from September 15, 1960 to February 15, 1961. Find the amount of interest earned through

a) (5 points) Ordinary Interest and approximate time (Approximate time: 30/360)

b) (5 points) Exact interest and exact time (Actual/Actual)

c) (5 points) Using the Banker’s Rule

2) (20 points) An amount of $5000 is invested for 5 years an accumulates to $6000

a) (5 points) Find the simple interest rate

b) (5 points) Find the simple discount rate

c) (5 points) Find the nominal interest rate compounded semi-annually

d) (5 points) Find the discount rate compounded quarterly

3) (10 points) If the amount at time t=9 is given by A(9)=10000 and effective interest is found to be in=0.05t. Find the amount one period prior to t=9

4) (10 points) A fund accumulates to an amount X over a two year period at a nominal interest rate that is compounded quarterly. If the amount X is discounted for two years at a discount rate of 4% compounded semi-annually, it gives the original value of the fund. Find the nominal interest rate.

5) (10 points) Find the length of time necessary for an investment to triple at a rate of 8% compounded semi-annually

a) (5 points) Solving using a calculator

b) (5 points) Bu using the tables and linear interpolation

6) (10 points) Equal payments at the end of 1 year and 2 years will equitably replace the obligations: $2000 due in 3 years and $3000 today. Find the amount of each payment if interest is compounded at 8%

7) (10 points) A mother leaves her children money in a fund that earns 8% compounded quarterly. The provision is that at the age of 21 each child will receive an equal amount of $8205.67. One child is now 12 and the other is 17. How much money did the women initially leave in the fund?

8) (10 points) The force of interest is given by δ=0.04t2. Find the accumulated value after 3 years if the initial investment is given by $1000

9) (5 points) Find the effective rate of interest over a three-year period, which is equivalent to an effective rate of interest of 6% the first year, and 5% the second year and 4% the third year