Name:

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| --- | --- | --- |
| Problem | Points | Score |
| 1(a) | 10 |  |
| 1(b) | 10 |  |
| 1(c) | 10 |  |
| 1(d) | 10 |  |
| 2 | 20 |  |
| 3(a) | 10 |  |
| 3(b) | 10 |  |
| 3(c) | 10 |  |
| 3(d) | 10 |  |
| Total | 100 |  |

Notes:

1. The exam is closed books and notes except for one double-sided sheet of notes. You are allowed the use of a calculator, interest tables or MS Excel on this exam.
2. Please indicate clearly your answer to the problem. Circle your answers.
3. The details of your solutions are more important than the answers. Please explain your solutions clearly and include as many details as possible.
4. Cash Flow Diagrams and Compounded Interest: You decide to take out a loan for $10,000 at an annual interest rate of 10% with a loan origination fee of $1,000 (treat this like a closing cost). Your objective in this problem is to determine the amount of the annual payment required to pay this loan off in three years assuming the first payment is made at the end of the FIRST year, and all subsequent payments are the same amount (equal payments). You will make semiannual payments (two per year, or every six months), but the first payment occurs at the end of the FIRST year and every six months after that.

(a) Create a table that shows the amount of interest accrued each period, the amount of each payment (starting at the end of the FIRST year), and the remaining balance. Do this manually in Excel and copy your results to the exam page. Manually adjust the payment so that the balance is close to zero at the end of the three-year period. Draw the corresponding cash flow diagram.

(b) Next, determine the amount of the semiannual payment using either Excel functions, equations, tables, etc. Demonstrate that this result matches part (a).

(c) Compute the effective annual interest rate of this loan. Explain your computation and show, based on the table in (a) that it makes sense.

(d) Compute the present value of this loan using a TVOM factor of 5%. Justify your answer.

1. A house is to be purchased for $270,000 with a 5 percent down payment, thereby financing $256,500 with a home loan and mortgage. There are 2 points assessed, and there are additional closing charges of $3,500, with both points and additional charges being included in the loan. A conventional 30-year loan is used at 7.5 percent, resulting in monthly payments of $1,853.83. Which of the following statements is false?

(a) The loan will be figured on a total of $265,130 borrowed.

(b) There can (unfortunately) be multiple methods of computing the APR (annual percentage rate) on such a loan, yielding (usually slightly) dif- ferent answers.

(c) The effective interest rate will exceed 7.5 percent.

(d) The APR will be less than 7.5 percent.

You must show your work and explain your calculations.

1. A midcareer professional couple is interested in purchasing a new home costing $750,000. They can afford a 20 percent, or $150,000, down payment, leaving $600,000 to be borrowed, a loan in the ‘‘jumbo’’ category. They prefer to have a conventional loan, and one lender has offered a 30-year loan at 6.9932 percent with no points and no other closing costs.

(a) What is the amount of the monthly payment?

(b) If, immediately after the one hundred twentieth payment (10 years), the professional couple decides to sell the house, what will be the unpaid balance on the loan?

(c) Determine the effective annual interest rate for the loan.

(d) Determine the APR.