Math 105-21, Summer 2016 Name: _____

Exam 2

Friday, 06/17/16 *Score*: _____

Instructions: For full credit, show all your work and justify your answers. Unless specified otherwise, round your final answers to two decimal places.

Formulas for future accumulation and present value:

$FA = PMT\frac{(1+i)^m-1}{i}$, $P = PMT \cdot m$, and $I = FA - P$

$PV = PMT\frac{1-(1+i)^{-m}}{i}$, $F = PMT \cdot m$, and $I = F - PV$

$m = \log\left(1 + \frac{FA \times i}{PMT}\right) \div \log(1+i)$ $\qquad$ $m = -\log\left(\frac{PV \times i}{PMT} - 1\right) \div \log(1+i)$

Payoff Am.$= PMT\frac{1-(1+i)^{-k}}{i}$.

Problem 1 (15pts): Isabella wants to accumulate \$70,000 in 10 years by making equal deposits at the end of each quarter in the account paying 7.2% interest compounded quarterly. What quarterly deposit should she make?

(10 pts): How much of the \$70,000 she accumulates in the account will be interest she has earned?

Problem 2 (20 pts): You took a \$150,000 mortgage loan for 15 years at 3.6% annual interest compounded monthly. Your monthly payment is \$919.50 You decided to terminate the loan after 10 years. What is the payoff amount?

Problem 3 (20 pts): Alice wants to accumulate \$70,000 by making equal deposits of \$300 each at the end of each month in the account paying 7.2% interest compounded monthly. What is the required number of payments she needs in order to have **at least** \$70,000 in the account? What will be the exact value of her account after the last required payment?

Problem 4 Brian wants to buy a $240,000 house. He will pay 20% down and finance the rest.

a). (10 pts): How much will he have to finance?

b). (20 pts): He is offered a loan for 30 years at 6.3% compounded monthly, with no points. What will his monthly payment be?

c). (15 pts): How much total interest will he pay if he makes all payments of the loan?

Problem 5 (30 pts): Denisa needs \$120,000 to complete the purchase of a house (she has already made the down payment). She has been offered a loan provided she pays 2.5 points (percent) of the loan's value in fees. She is not going to pay cash for points.

a). How large a loan must she get so that it is just enough to cover both points and the \$120,000?

b). If the interest rate is 4.1%, what will her monlthy payments be on a 30 year mortgage?

Problem 6 (20 pts): Three months after his 20th birthday, Sebastian starts making quarterly payments of \$450 into a retirement account that pays 6.6% compounded quarterly. He continues to do so for 45 more years until he is 65 years old. How much money will he then have in the account?

Problem 7 (40 pts): You buy a new computer for \$1,000. The store gives you a loan for 10 months at 12% annual interest compounded monthly. Your first nine monthly payments will be \$105.58 each. Find i and complete the first two and last line of the amortization schedule:

$i =$ _____.

Payment #	Beginning Balance	Amount of Payment	Amount of Interest	Principal Repaid	Balance after Payment
1					
2					
. . . 9					104.53
10					

What was the total amount of interest you paid on your loan?