Math 105-21, Summer 2016 Name: _____

Exam 2

Tuesday, 07/05/16 *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): Kameron wants to accumulate \$60,000 in 8 years by making equal deposits at the end of each month in the account paying 7.8% interest compounded monthly. What monthly deposit should she make?

(10 pts): How much of the \$0,000 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 8 years. What is the payoff amount?

Problem 3 (20 pts): Alice wants to accumulate \$50,000 by making equal deposits of \$900 each at the end of each quarter in the account paying 7.2% interest compounded quarterly. What is the required amount of time, in years and months, she needs to invest in order to have **at least** \$50,000 in the account?
What will be the exact value of her account after the last required payment?

Problem 4 Brian wants to buy a \$360,000 house. He will pay 15% 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): Dasia needs $130,000 to complete the purchase of a house (she has already made the down payment). She has been offered a loan provided she pays 2.25 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 $130,000?

b). If the interest rate is 3.4%, what will her monlthy payments be on a 20 year mortgage?

Problem 6 (20 pts): John starts making monthly payments of $150 into a retirement account that pays 6.6% compounded monthly, when he turned 21. If he continues to do so for 44 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?