

KFUPM
Mathematics & Statistics

Term 171
AS 201

Date: 2/11/2017
Duration: 30 minutes

Quiz# 2

Name:

ID #:

Section:

Q1: To accumulate 8000 at the end of $3n$ years, deposits of 98 are made at the end of each of the first n years and 196 at the end of each of the next $2n$ years. The annual effective rate of interest is i . You are given $(1+i)^n = 2$. Calculate i .

Q2: A borrower takes out a 15-year loan for 400,000, with level end-of-month payments, at an annual nominal interest rate of 9% convertible monthly. Immediately after the 36th payment, the borrower decides to refinance the loan at an annual nominal interest rate of j , convertible monthly. The remaining term of the loan is kept at twelve years, and level payments continue to be made at the end of the month. However, each payment is now 409.88 lower than each payment from the original loan. Calculate j ?

Q3: An investor wishes to accumulate 5000 in a fund at the end of 15 years. To accomplish this, she plans to make equal deposits of X at the end of each year for the first ten years. The fund earns an annual effective rate of 6% during the first ten years and 5% for the next five years. Calculate X ?

Q4: John finances his daughter's college education by making deposits into a fund earning interest at an annual effective rate of 8%. For 18 years he deposits X at the beginning of each month. In the 16th through the 19th years, he makes a withdrawal of 25,000 at the beginning of each year. The final withdrawal reduces the fund balance to zero. Calculate X .

Q5: An investor decides to purchase a five-year annuity with an annual nominal interest rate of 12% convertible monthly for a price of X . Under the terms of the annuity, the investor is to receive 2 at the end of the first month. The payments increase by 2 each month thereafter. Calculate X .