

KFUPM
Mathematics & Statistics

Term 181
AS 201

Date: 13/11/2018
Duration: 50 minutes

Quiz# 3

Name:

ID #:

Section:

Q1: John borrows 10,000 for 10 years at an annual effective interest rate of 10%. He can repay this loan using the amortization method with payments of 1,627.45 at the end of each year. Instead, John repays the 10,000 using a sinking fund that pays an annual effective interest rate of 14%. The deposits to the sinking fund are equal to 1,627.45 minus the interest on the loan and are made at the end of each year for 10 years. Calculate the balance in the sinking fund immediately after repayment of the loan.

Q2: A 10-year loan of 2000 is to be repaid with payments at the end of each year. It can be repaid under the following two options:

(i) Equal annual payments at an annual effective interest rate of 8.07%.

(ii) Installments of 200 each year plus interest on the unpaid balance at an annual effective interest rate of i .

The sum of the payments under option (i) equals the sum of the payments under option (ii).

Calculate i .

Q3: A loan is amortized over five years with monthly payments at an annual nominal interest rate of 9% compounded monthly. The first payment is 1000 and is to be paid one month from the date of the loan. Each succeeding monthly payment will be 2% lower than the prior payment. Calculate the outstanding loan balance immediately after the 40th payment is made.

Q4: A 25-year loan is being repaid with annual payments of 1300 at an annual effective rate of interest of 7%. The borrower pays an additional 2600 at the time of the 5th payment and wants to repay the remaining balance over 15 years.

Calculate the revised annual payment.

Q5: A student borrows money to pay for university tuition. He borrows 1000 at the end of each month for four years. No payments are made to repay the loan until the end of five years. The loan accumulates interest at a 6% nominal interest rate convertible monthly for the first two years and at an 8% nominal interest rate convertible monthly for the following two years. Calculate the loan balance at the end of four years immediately following the receipt of the final 1000.

Q6: