Chapter 3 – Loan Repayment

HW # 3

Due date: Anytime before Sunday, October 18th, 2015 at 00:01 am

Homework problems guidelines:
1 – This is an individual work and each student must submit 100% own work.
2 – Completed HW must be handed to me personally in class or via email to: mmellouli@kfupm.edu.sa
   In case, you fail to submit your HW due to email technical problems, you will receive a ZERO grade. NO EXCUSES will be accepted.
3 – Please show your work completely.
4 – Please rework all the exercises we solved in class to help you better grasp the material, hence, to solve the HW problems with ease.
5 – Non-submission of the HW before the due date will lead to a ZERO grade. NO EXCUSES will be accepted.

Best of luck,
Moenes Mellouli
1) A loan for 50,000 has level payments to be made at the end of each year for 10 years at an annual rate of 9%. Find a) the balance at the end of 3 years and b) the principal and interest paid in the 3rd payment

2) A borrower would like to borrow 50,000 at 7.5% for 5 years, but would like to pay only 6,000 for the 1st two years and then catch up with higher payment for the final 3 years. What is the payment for the final 3 years?

3) You have 20,000 loan at 7.2% annually for 8 years. You agree to pay off the principal in installements of 2,500 per year, and to pay the interest on the outstanding balance each year. Find the interest due in the 6th payment

4) For a 6.3% level payment loan, the amount of principal in the 3rd payment is 845.28. find the amount of principal in the 7th payment

5) A loan made at an annual rate of 6% has 10 remaining payments of 1000. What is the loan balance?

6) A loan at 7% annually has an initial payment of 250, and 9 further payments. The payment amount increases by 3% each year. Find the loan balance immediately after the 7th payment

7) A loan at 6.5% annually has an initial payment of 300, and 9 further payments. The payment amount increases by 20 each year. Find the loan balance immediately after the 6th payment

8) A 30-year monthly payment mortgage loan for 500,000 is offered at a nominal rate of 8.4% convertible monthly. Find a) the monthly payment, b) the total principal and interest that would be paid on the loan over 30 years, c) the balance in 5 years and d) the principal and interest paid over the first 5 years

9) A 30-year monthly payment mortgage loan for 325,000 is offered at a rate of 6.6% convertible monthly. The borrower would like to have graduated payments where the 1st year’s monthly payment is P and all subsequent monthly payments are P+500. Find the initial payment P and find the balance at the end of 1 year

10) A 30-year monthly payment mortgage loan for 250,000 is offered at a nominal rate of 6.3% convertible monthly. The lender charges a fee of 2.5% for which no services are provided. Find the annual percentage rate.

11) A 65,000 annual payment loan is made for a term of 10 years at 7.3% interest. The lender wants only payments of interest until the end of year 10 when the 65,000 must be paid. The
12) For the loan in problem 11, find the total payment and the principal in the 6th payment.

13) A loan is repaid with level payments based on an annual effective interest rate of 7%. The 8th payment consists of 789 of interest and 211 of principal. Calculate the amount of interest paid in the 18th payment.

14) A bank customer takes out a loan of 500 at a 16% nominal interest rate convertible quarterly. The customer makes payments of 20 at the end of each quarter. Calculate the amount of the principal in the 4th payment.

15) Ali borrows 10,000 for 10 years at an annual effective rate of 9%. At the end of each year, he pays the interest on the loan and deposits the level amount necessary to repay the principal to a sinking fund earning an annual effective rate of 8%. The total payments made by Ali over the 10 year period is X. Calculate X.

16) A loan is being repaid with 25 annual payments of 300 each. With the 10th payment, the borrower pays an extra 1000, and then repays the balance over 10 years with a revised annual payment. The effective rate of interest is 8%. Calculate the amount of the revised annual payment.

17) Ali borrows X for 4 years at an annual interest rate of 8%, to be repaid with equal payments at the end of each year. The outstanding loan balance at the end of the 3rd year is 559.12. Calculate the principal repaid in the 1st payment.

18) A loan is amortized over 5 years with monthly payments at a nominal interest rate of 9% compounded monthly. The 1st 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.

19) 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 2 options: i) equal annual payments at an annual effective rate of 8.07% or ii) installements of 200 each year plus interest on the unpaid balance at an annual effective rate i.

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

Determine the interest rate i
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20) A 20-year loan of 1000 is repaid with payments at the end of each year. Each of the 1st 10 payments equal 150% of the amount of interest due. Each of the last 10 payments is X. The lender charges interest at an annual effective rate of 10%. Calculate X