

IE 342 17-18 Spring Semester

Study Set 2

Please do not submit your answers as they will not be graded !!

- 1) Yasemin makes a series of equal monthly payments of \$7,000 for 5 years. The total amount is equivalent to what present amount at an interest rate of 10% compounded
 - a. Semiannually.
 - b. Quarterly.
 - c. Continuously.
- 2) Jane makes 36 monthly deposits of \$200 starting from the end of year 1, in a savings account at a Bank which pays nominal interest of 24% per year compounded monthly. Two years after making the last deposit, the nominal interest rate changes to 16% compounded quarterly. If the accumulated money is withdrawn from the bank at the end of year 10, how much is withdrawn?
- 3) Kristin borrowed \$25,000 from a bank at an interest rate of 9 % compounded monthly. The loan will be repaid in 24 equal monthly installments over 2 years. Immediately after his 17th payment, she wants to pay the remainder of the loan in a single payment. Compute the total amount Kristin must pay.
- 4) Joe and Katlin open two savings account in a Bank both earning 12 % interest compounding quarterly. Joe deposits \$1000 at the end of 1st year and each year he increases the amount he deposits by 10% for the next 3 years. Katlin deposits an amount at the end of 3rd year and increase the amount by \$200 for the next 1 year. What is the amount Katlin deposits at the end of the second year so that they have equal account balances at the end of 4th year?
- 5) Beth wants to buy a bar called Puzzle that will cost \$80,000. She will make a down payment of \$10,000 and take out a mortgage on the rest of the money at 9% compounded monthly.
 - a. What will be her monthly payments to retire the mortgage in 4 years?

- b. Beth has made 8 payments and wants to figure out balance remaining immediately after 8th payment. What is that balance?
- 6) Manfred opens a savings account in GNB and withdraws \$3000 at the end of 1st and 2nd years, \$4000 at the end of 3rd year and \$5000 at the end of 4th and 5th years with the changing interest rates over the five-year time span. For the first two years interest rate is 6% compounded quarterly, for the next two years interest rate is 9% compounded monthly, for the last year interest rate is 8% compounded quarterly. Draw the cash flow which represents three different rates applicable over the five-year time span. How much Manfred needs to deposit today?
- 7) A loan company offers money at 3.8% per month, compounded monthly.
- (a) What is the nominal interest rate?
 - (b) What is the effective annual interest rate?
 - (c) How many years will it take an investment to triple if interest is compounded monthly?
 - (d) How many years will it take an investment to triple if the nominal rate is compounded continuously?
- 8) KYK, which designs small loans to college students, offers to lend \$900. The borrower is required to pay \$60 at the end of each week for 40 weeks. Find the interest rate per week. What is the nominal interest rate per year? What is the effective interest rate per year?
- 9) A hairdresser is considering purchasing a lot adjacent to its business to provide adequate parking space for its customers. The hairdresser needs to borrow \$50,000 to secure the lot. A deal has been made between a local bank and the hairdresser so that the hairdresser would pay the loan back over a five-year period with the following payment terms: 20%, 25%, 30%, 35%, and 40% of the initial loan at the end of first, second, third, fourth, and fifth years, respectively.
- (a) What rate of interest is the bank earning from this loan?
 - (b) What would be the total interest paid by the hairdresser over the five-year period?

- 10) Cadillac Motor Car Company is advertising a 24-month lease of a Cadillac Deville for \$520, payable at the beginning of each month. The lease requires a \$2,500 down payment, plus a \$500 refundable security deposit. As an alternative, the company offers a 24-month lease with a single up-front payment of \$12,780, plus a \$500 refundable security deposit. The security deposit will be refunded at the end of the 24-month lease. Assuming an interest rate of 6%, compounded monthly, which lease is the preferred one?