

**IE 342 2018-2019 Fall**

**Study Set 1**

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

**(Solutions will not be provided)**

- 1) Selma is planning to make two deposits: \$25,000 now and \$30,000 at the end of year 6. He wants to withdraw  $C$  each year for the first six years and  $(C+1000)$  each year for the next six years. Determine the value of  $C$  if the deposits earn 10% interest compounded annually.  
**Answer:** \$5793
- 2) Ege is planning to set aside \$1,500 now for possibly replacing her laptop whenever it becomes necessary. If the replacement isn't needed for 6 years, how much will she have in her investment account if it achieves an interest of 8% per year?  
**Answer:** \$2,380.31
- 3) Mehmetcan deposits \$2,000 in the first year, \$800 in the second year and \$600 in the third year to WMW Bank with an interest rate of 12%. Emre deposits \$3,800 in the third year to the same bank. At the end of the fifth year, Emre and Mehmetcan have the same amount of money in their accounts. What is the interest rate for Emre?  
**Answer:** 15%
- 4) Six annual deposits in the amount of \$4,000, \$3,300, \$2,600, \$1,900, \$1,200 and \$500, in that order, are made into a fund that pays interest at a rate of 9% compounded annually. Draw cash flow diagram and determine the amount in the fund immediately after the sixth deposit.  
**Answer:** \$18,245.07
- 5) Ceyda received a bonus of \$100,000 at the age of 30 and she decides to invest this money to a savings account with the annual interest rate of 6.8%. At what age she should retire, so that she has \$1,000,000 in her savings account when she is retired?  
**Answer:** 65
- 6) A start-up company expects to spend \$100,000 the first year for advertising, with amounts decreasing by \$10,000 each year. Income is expected to be \$400,000 the first year, increasing by \$50,000 each year. Determine the equivalent annual worth in years 1 through 5 of the company's net cash flow at an interest rate of 16% per year.  
**Answer:** \$402,360
- 7) A manufacturing company that uses steel in several products has a report showing that the present worth of steel purchases over a certain 5-year period was \$600,000. If the costs were known to geometrically increase by 5% per year during that time and the company used an interest rate of 13% per year for investments, what was the cost of the fabric in year 2?  
**Answer:** \$172,385.48

8) A series of equal quarterly payments of \$5,000 for 12 years is equivalent to what present amount at an interest rate of 9% compounded:

- a) Quarterly?
- b) Monthly?
- c) Semi-annually

**Answer:** a) \$145,848 b) 145,270.0852 and c)  $P = \$5000(P/A, 0.2225\%, 48)$

9) Kim Woo-bin is planning to retire in 15 years. Money can be deposited at 8% compounded quarterly. What quarterly deposit must be made at the end of each quarter until he retires so that he can make a withdrawal of \$25,000 semi-annually over the first five years of his retirement? Assume that his first withdrawal occurs at the end of six months after his retirement

**Answer:** \$1,774.4