Carleton University
Department of Civil and Environmental Engineering
Engineering Economics (ECOR 3800)
ASSIGNMENT # 1

Issued June 09, 2011 Due Date: June 21, 2011 at 5:00 pm
Drop off your location: Filing cabinet near the entrance to the Civil and Environmental Engineering office. The cabinet located to the right of room 3424 ME.
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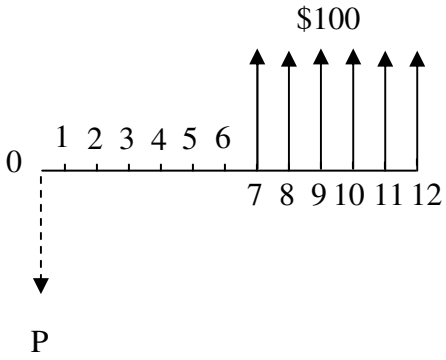
Q.1

(A) (1Mark)
If you make the following series of deposits at an interest rate of 10%, compounded annually, what would be the total balance at the end of 10 years?
(Support your answer with C.F.D.)

End of Period	Amount of Deposit
0	$800
1-9	$1500
10	0

(B) (1Mark)
Compute the equivalent present worth of the following cash flow series at period 0, i = 6%.



(C) (1Mark)
You deposit $2000 in a saving account that earns 9% simple interest per year. To double your balance, you wait at least (?) years. But if you deposit the $2000 in another saving account that earns 8% interest, compounded yearly, it will take (?) years to double your balance

Q.2 (1.5 Marks)
How much do you need to invest in equal annual amounts for the next 10 years if you want to withdraw $5000 at the end of the eleventh year and increase the annual withdrawal by $1000 each year thereafter until year 25? The interest rate is 6%, compounded annually.

Q.3 (1.5 Marks)
For the following transactions, draw the C.F.D and find the value of G that makes the deposit series equivalent to the withdrawal series at interest rate of 12%, compounded annually.

End of period	Deposit	Withdrawal
0	$1000	
1	800	
2	600	
3	400	
4	200	
5		
6		G
7		2G
8		3G
9		4G
10		5G

Q. (4) (1.5 Marks)
An engineer has estimated the annual toll revenues from a proposed toll highway over 20 years as follows:

$A_n = (\$2{,}000{,}000)(n)(1.06)^{n-1}$,
n = 1, 2, 3,…… ,20.

During an assessment of this project, the engineer was asked to present the estimated total present value of toll revenue at an interest rate of 6%. Assuming annual compounding, find the present value of the estimated toll revenue.

Q. (5) (1.5 Marks)

A) What is the sinking fund factor (uniform series)?

B) A couple is planning to finance their 5- years –old daughter's university education. They established a university funds that earns 10%, compounded annually. What annual deposit must be made from the daughter's 5^{th} birthday (now) to her 16^{th} birthday to meet the future university expenses shown in the following table .Assume that today is her 5^{th} birthday?

Birthday	Deposit	Withdrawal
5-16	A	
17		
18		25,000
19		27,000
20		29,000
21		31,000

Q.6 (1 Mark)

Calculate the present worth of the cash flow shown in the accompanying diagram, using at most three kinds of interest factors at 10% interest compounded annually.