**Assignment 1 – Financial Management**

1 – A.

Expected cost of each year (Inflation rate of college cost is 3% annually.)

Freshman year: $25,000[FVIF 3%, 18]

Rate = 3%, Nper = 18, Pmt = 0, PV = 25,000, Type = 0, CPT FV = $42,560.83

Sophomore year: $25,000[FVIF 3%, 19]

Rate = 3%, Nper = 19, Pmt = 0, PV = 25,000, Type = 0, CPT FV = $43,837.65

Junior year: $25,000[FVIF 3%, 20]

Rate = 3%, Nper = 20, Pmt = 0, PV = 25,000, Type = 0, CPT FV = $45,152.78

Senior year: $25,000[FVIF 3%, 21]

Rate = 3%, Nper = 21, PMT = 0, PV = 25,000, Type = 0, CPT FV = $46,507.36

The money after last withdrawal for helping after graduation: $10,000

Value of expected cost of each year at 18 years from today

(Interest rate of college fund is 7% annually.)

Freshman year: $42,560.83

Sophomore year: $43,837.65[PVIF 7%, 1]

Rate = 7%, Nper = 1, PMT = 0, PV = 43,837.65, Type = 0, CPT PV = $40,969.77

Junior year: $45,152.78[PVIF 7%, 2]

Rate = 7%, Nper = 2, PMT = 0, PV = 45,152.78, Type = 0, CPT PV = $39,438.19

Senior year: $46,507.36[PVIF 7%, 3]

Rate = 7%, Nper = 3, PMT = 0, PV = 46,507.36, Type = 0, CPT PV = $37,963.86

The money after last withdrawal for helping after graduation: $10,000[PVIF 7%, 3]

Rate = 7%, Nper = 3, PMT = 0, PV = 10,000, Type = 0, CPT PV = $8,162.98

Total college costs and $10,000 balance for helping after graduation: $169,095.62

The expected cost of freshman year is $42,560.83, sophomore year is $40,969.77, junior year is $39,438.19 and senior year is $37,963.86.

1-B

If single deposit today = PV

$169,095.62 = PV[FVIF 7%, 18]

Rate = 7%, Nper = 18, PMT = 0, FV = 169,095.62, Type = 0, CPT PV = $50,029.29

I have to make $50,029.29 deposit today.

1-C

Because the number of deposits of parents are 18 and the last can’t gain any interest, it is ordinary annuity.

Future value of grandparents’ s deposit at 18 years from today

FV = $2,000[FVIF 7%, 18]

Rate = 7%, Nper = 18, PMT = 0, PV =2,000, Type = 0 CPT FV = $6,759.86

Future value of baby’s college fund at 18 years from today

$169,095.62 = PMT[FVIFA 7%, 18] + $2,000[FVIF 7%, 18]

Rate = 7%, Nper = 18, PV = 2,000, FV =169,095.62, Type = 0, CPT PMT = $4,774.72

Therefore, annual deposit of college is $4,774.72.

1-D

I want to know how much higher investment return I should have. For this, I can use how much higher interest rate I need.

$169,095.62 = $3,500[FVIFA I%, 18] + $2,000[FVIF I%, 18]

Nper = 18, PMT = 3,500, PV = 2,000, FV = 169,095.62, Type = 0 CPT RATE = 9.91%

Following the result, I have to get 2.91% of principal amount more for every year to prepare for college fund.

2 - A

Singing bonus: $20,000,000

Salaries for first 3 years: $16,000,000

Salaries for last 4 years: $23,000,000

PV = $20,000,000[PVIF 10%, 2] + $16,000,000[PVIF 10%, 3] + $16,000,000[PVIF 10%, 4] + $16,000,000[PVIF 10%, 5] + $23,000,000[PVIF 10%, 6] + $23,000,000[PVIF 10%, 7] + $23,000,000[PVIF 10%, 8] + $23,000,000[PVIF 10%, 9]

Rate = 10%, Value 1 = 0, Value 2 = 20,000,000, Value 3 = 16,000,000, Value 4 = 16,000,000, Value 5 = 16,000,000, Value 6 = 23,000,000, Value 7 = 23,000,000, Value 8 = 23,000,000, Value 9 = 23,000,000, CPT NPV = $94,682,370.97

Thus, PV of Ken Griffey Jr.’ s salaries for 7 years is $94,682,370.97

2 – B

Singing bonus: $10,000,000

Salaries for first 4 years: $20,000,000

Salaries for last 3 years: $30,000,000

PV = $10,000,000[PVIF 10%, 2] + $20,000,000[PVIF 10%, 3] + $20,000,000[PVIF 10%, 4] + $20,000,000[PVIF 10%, 5] + $20,000,000[PVIF 10%, 6] + $30,000,000[PVIF 10%, 7] + $30,000,000[PVIF 10%, 8] + $30,000,000[PVIF 10%, 9]

Rate = 10%, Value 1 = 0, Value 2 = 10,000,000, Value 3 = 20,000,000, Value 4 = 20,000,000, Value 5 = 20,000,000, Value 6 = 20,000,000, Value 7 = 30,000,000, Value 8 = 30,000,000, Value 9 = 30,000,000, CPT NPV = $102,771,826.50

Thus, PV of Alex Rodriguez’ s salaries for 7 years is $102,771,826.50

3 – A

First, we have to figure out balance of IRA account now.

Because the last deposit can’t gain any interest, it is ordinary annuity.

FV = $1,000[FVIFA 10%/12, 300]

Rate = 10%/12, Nper = 300, PMT = 1,000, PV = 0, Type = 0, CPT FV = $1,326,833.40

Now, he has $1,326,833.40 in his IRA account.

Next, we need to know how much equal monthly withdrawals for 25 years make this balance of IRA 0. Because withdrawals are made at the beginning of each month, it is annuity due problem.

$1,326,833.40 = PMT[PVIFA 10%/12, 300] \* (1 + 0.1/12)

Rate = 10%/12, Nper = 300, PV = 1,326,833.40, FV = 0, Type = 1,

CPT PMT = $11,957.30

Therefore, he can make monthly withdrawals of $11,957.30 for next 25 years.

3 – B

If Prof. Kim want to make 20% higher monthly withdrawals from his IRA account, he has to have 20% higher balance.

20% higher Balance of IRA: $1,326,833.40 \* 1.2 = $1,592,200.08

We have to know about number of payment in IRA for 20% higher savings.

$1,592,200.08 = $1,000[FVIFA 10%/12, 12\*n]

Rate = 10%/12, PMT = 1,000, PV = 0, FV = 1,592,200.08, Type = 0 CPT Nper = 320.29

Following the result, Prof. Kim has to make payment 21 months earlier.

4 – A

$22,000 = PMT[PVIFA 6.5%/12, 60]

Rate = 6.5%/12, Nper = 60, PV = 22,000, FV = 0, Type = 0, CPT PMT = $430.46

Prof. Finance’s monthly payment for car loan is $430.46.

4 – B

$1,599 = $45[PVIFA I/12%, 48]

Nper = 48, PMT = 45, PV = 1,599, FV = 0, Type = 0 CPT Rate = 1.30%

This rate is periodic rate for monthly compound.

Thus, the APR for this computer loan is 15.61%

If APR is 12%, the number of payment has to be less.

$1,599 = $45[PVIFA 12%/12, 12\*n]

Rate = 12%/12, PMT = 45, PV = 1,599, FV =0, Type = 0 CPT Nper = 44.12

Thus, for computer, we need to pay 44 times for $45 monthly and some tiny payment 1 times.

4 - C

If Suzie buys the ZX2 on condition that $750 cash back and 0.9% APR financing for 48 months,

$14,250 = PMT[PVIFA 0.9%/12, 48]

Rate = 0.9%/12, Nper = 48, PV = 14,250, FV = 0, Type = 0, CPT PMT = $302.36

If she wants to choose second option,

$13,500 = PMT[PVIFA 7.9%/12, 48]

Rate = 7.9%/12, Nper = 48, PV = 13,500, FV = 0, Type = 0, CPT PMT = $328.94

First option’s monthly payment is $302.36 and second one is $328.94.

Because first option’s payment is cheaper, Suzie should select first.

To make this two option’s payment same, we should manipulate interest rate of National City Bank.

$13,500 = $302.36[PVIFA I/12, 48]

Nper = 48, PMT = 328.94, PV = 13,500, FV = 0, Type = 0 CPT Rate = 0.3%

This rate is periodic rate for monthly compound.

The APR of National City Bank is 3.59%

4 - D.

Because the payment occurs at the beginning of each month, this is annuity due problem.

FV = $100[FVIFA 8%/12, 36] \* (1 + 0.08/12)

Rate = 8%/12, Nper = 36, PMT = 100, PV =0, Type = 1, CPT FV = $4,080.58

EAR = (1 + 0.08/12)12 – 1 = 8.30%

His down payment for new home is $4,080.58 and effective annual rate of this account is 8.30%.

4 – E

CD#1’ EAR = (1 + 0.0595/365)365 – 1 = 6.13%

CD#2’ EAR = (1 + 0.06/12)12 – 1 = 6.17%

CD#1’s effective annual rate is 6.13% and CD#2’s is 6.17%.

Therefore, I recommend CD#2 for my Grandma.

4 – F

$5,000 = $150[PVIFA 23.9%/12, n \* 12]

Rate = 23.9%/12, PMT = 150, PV = 5,000, FV = 0, Type = 0, CPT Nper = 55.28

He should pay 56 times monthly for making his debt balance zero.