Financial Economics **Quiz 1 – A** **Fall 2012**

Name:_____

Present value of a growing perpetuity:

$$P(C,r,g)=\frac{C}{r-g}$$

Present value of an annuity:

$$A(C,r,g,n)=\frac{C}{r-g}\left(1-\left(\frac{1+g}{1+r}\right)^{n}\right)$$

a) Today, you invest €1,000 at an effective annual rate (r_e) of 6%. Interests on this investment are compounded monthly. How much is your investment worth after 5.5 (five and a half) years?

◊ €1,330
◊ €1,377.79
◊ €1,389.82
◊ €46,793.7
◊ None of the above

b) Bank accounts A and B have the same annual rate (APR or r_a) of 12% but differ for their frequency of compounding. Frequency of compounding of bank account A is every quarter (k_A =4), whereas for bank account B it is every four months (k_B =3). Which bank account should you choose to maximize the future value of an investment made at date t=0?

◊ Bank account A
◊ Bank account B
◊ Bank account A and B are equivalent
◊ Impossible to tell

c) Consider three streams of cash flows: A, B and C. The discount rate is strictly positive. Which stream of cash flows has the lowest present value?

Year	0	1	2
A	20	15	25
B	25	15	20
C	20	20	20

◊ A
◊ B
◊ C
◊ They all have the same present value

d) Consider the following annuity with annual cash flows. The first cash flow at the end of the first year (at date t=1) is €200, the last cash flow is at the end of year 13. Every year cash flows grow at an annual rate of 4%. What is the present value at t=0 of this annuity, knowing that the discount rate is 2%?

◊ €2,230.93
◊ €2,871.56
◊ €2,600
◊ None of the above

e) What is the present value of the following stream of cash flows, using a discount rate of 2% per year?

Year	0	1	2	3
Cash flow	10	10	-100	10

◊ -70
◊ 66.89
◊ -66.89
◊ 106.50

Financial Economics **2010**

Quiz 1 – A - Solution

a) €1,377.79
b) Bank account A
c) A
d) €2,871.56
e) -66.89

Financial Economics **Quiz 1 – B** **Fall 2012**

Name:_____

Present value of a growing perpetuity:

$$P(C,r,g)=\frac{C}{r-g}$$

Present value of an annuity:

$$A(C,r,g,n)=\frac{C}{r-g}\left(1-\left(\frac{1+g}{1+r}\right)^{n}\right)$$

a) Today, you invest €1,000 at an annual rate (APR or r_a) of 6%. Interests on this investment are compounded monthly. How much is your investment worth after 5.5 (five and a half) years?

◊ €1,330
◊ €1,377.79
◊ €1,389.82
◊ €46,793.7
◊ None of the above

b) Bank accounts A and B have the same effective annual rate of 12% but differ for their frequency of compounding. Frequency of compounding of bank account A is every quarter (k_A =4), whereas for bank account B it is every four months (k_B =3). Which bank account should you choose to maximize the future value of an investment made at date t=0?

◊ Bank account A
◊ Bank account B
◊ Bank account A and B are equivalent
◊ Impossible to tell

c) Consider three streams of cash flows: A, B and C. The discount rate is strictly positive. Which stream of cash flows has the highest present value?

Year	0	1	2
A	20	15	25
B	25	15	20
C	20	20	20

◊ A
◊ B
◊ C
◊ They all have the same present value

d) Consider the following annuity with annual cash flows. The first cash flow at the end of the first year (at date t=1) is €200, the last cash flow is at the end of year 13. Every year, cash flows grow at an annual rate of 2%. What is the present value at t=0 of this annuity, knowing that the discount rate is 4%?

◊ €2230.93
◊ €2871.56
◊ €2600
◊ None of the above

e) What is the present value of the following stream of cash flows, using a discount rate of 2% per year?

Year	0	1	2	3
Cash flow	10	10	100	-10

◊ 110
◊ 66.89
◊ -66.89
◊ 106.50

Financial Economics **2010**

Quiz 1 – B - Solution

a) 1,389.82

b) Bank account A and B are equivalent.

c) B

d) €2230.93

e) 106.50

Financial Economics **Quiz 1 – C** **Fall 2012**

Name:_____

Present value of a growing perpetuity:

$$P(C,r,g)=\frac{C}{r-g}$$

Present value of an annuity:

$$A(C,r,g,n)=\frac{C}{r-g}\left(1-\left(\frac{1+g}{1+r}\right)^{n}\right)$$

a) Today, you invest €1,000 at an effective annual rate (r_e) of 6%. Interests on this investment are compounded monthly. How much is your investment worth after 5.5 (five and a half) years?

◊ €1,330
◊ €1,377.79
◊ €1,389.82
◊ €46,793.7
◊ None of the above

b) Bank accounts A and B have the same effective annual rate of 12% but differ for their frequency of compounding. Frequency of compounding of bank account A is every quarter (k_A =4), whereas for bank account B it is every four months (k_B =3). Which bank account should you choose to maximize the future value of an investment made at date t=0?

◊ Bank account A
◊ Bank account B
◊ Bank account A and B are equivalent
◊ Impossible to tell

c) Consider three streams of cash flows: A, B and C. The discount rate is strictly positive. Which stream of cash flows has the lowest present value?

Year	0	1	2
A	20	15	25
B	25	15	20
C	20	20	20

◊ A
◊ B
◊ C
◊ They all have the same present value

d) Consider the following annuity with annual cash flows. The first cash flow at the end of the first year (at date t=1) is €200, the last cash flow is at the end of year 13. Every year, cash flows grow at an annual rate of 2%. What is the present value at t=0 of this annuity, knowing that the discount rate is 4%?

◊ €2230.93
◊ €2871.56
◊ €2600
◊ None of the above

e) What is the present value of the following stream of cash flows, using a discount rate of 2% per year?

Year	0	1	2	3
Cash flow	10	10	-100	10

◊ -70
◊ 66.89
◊ -66.89
◊ 106.50

Financial Economics **2010**

Quiz 1 – C - Solution

a) €1,377.79
b) Bank account A and B are equivalent.
c) A
d) €2230.93
e) -66.89

Financial Economics **Quiz 1 – D** **Fall 2012**

Name:_____

Present value of a growing perpetuity:

$$P(C,r,g)=\frac{C}{r-g}$$

Present value of an annuity:

$$A(C,r,g,n)=\frac{C}{r-g}\left(1-\left(\frac{1+g}{1+r}\right)^{n}\right)$$

a) Today, you invest €1,000 at an annual rate (APR or r_a) of 6%. Interests on this investment are compounded monthly. How much is your investment worth after 5.5 (five and a half) years?

◊ €1,330
◊ €1,377.79
◊ €1,389.82
◊ €46,793.7
◊ None of the above

b) Bank accounts A and B have the same annual rate (APR or r_a) of 12% but differ for their frequency of compounding. Frequency of compounding of bank account A is every quarter (k_A =4), whereas for bank account B it is every four months (k_B =3). Which bank account should you choose to maximize the future value of an investment made at date t=0?

◊ Bank account A
◊ Bank account B
◊ Bank account A and B are equivalent
◊ Impossible to tell

c) Consider three streams of cash flows: A, B and C. The discount rate is strictly positive. Which stream of cash flows has the highest present value?

Year	0	1	2
A	20	15	25
B	25	15	20
C	20	20	20

◊ A
◊ B
◊ C
◊ They all have the same present value

d) Consider the following annuity with annual cash flows. The first cash flow at the end of the first year (at date t=1) is €200, the last cash flow is at the end of year 13. Every year cash flows grow at an annual rate of 4%. What is the present value at t=0 of this annuity, knowing that the discount rate is 2%?

◊ €2,230.93
◊ €2,871.56
◊ €2,600
◊ None of the above

e) What is the present value of the following stream of cash flows, using a discount rate of 2% per year?

Year	0	1	2	3
Cash flow	10	10	100	-10

◊ 110
◊ 66.89
◊ -66.89
◊ 106.50

Quiz 1 – B - Solution

a) 1,389.82

b) Bank account A

c) B

d) €2,871.56

e) 106.50