Course No: first course **Course Title: mathematic of finance** **Date:07/01/2012** **No. of Questions: (6)** **Time: 2 hours** **Using Calculator (yes)**	**University of Palestine** **Final Exam** **1st 2011/2012** **Total Grade:**	**Instructor Name: Nafez M. Barakat** **Student No.: _____** **Student Name: _____** **College Name: _____** **Dep. / Specialist: _____** **Using Dictionary (No)**

Question One:

1)During the period 1980 – 1990 , the population of a city increased at rate of a bout 4% a year. If the population in 1990 was 300 000 , what is the predicted population in 2010?

2) **A Principal of $1000 earns 6% converted quarterly for 3 years and then 8% converted semiannually for 2 more years. Find the final amount.**

3)**If $500 amounts to $2500 in 4 years with interest compounded quarterly, what is the rate of interest?**

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Question two :

1)A donor wants to provide a $3000 scholarship every year for 4 years with the first to be awarded one year from now. If the school can get 9% return on its investment , how much money should the donor give now?

2)A student wants to have $2500 for a trip after graduation 4 years from now. How much must she invest at the beginning of each year starting now if she gets 5% compounded annually on her saving?

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Question Three:

A saving and loan association pays 5% converted quarterly. The husband is now 50 years old. The couple decides to deposit $200 at the end of each 3 months until the husband is 65. three months after their last deposit they plane to start drawing on the account with equal withdrawals every 3 months over 15 years. Find the size of the withdrawals and the total interest

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Question four :

1)Find the present value of an annuity of $50 every 3 months for 5 years if the first payment is made in 3 years. Money is worth 5% converted quarterly

2) **How much must be invested each year at 8% effective with the first payment in 1991 and the last in 2000 in order to be worth $100000 in the year 2010?**

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Question five :

A saving and loan association pays 5% converted quarterly on passbook accounts. Interest dates are march 31, June 30, September 30, and December 31. on September 30, 1991, a person opened an account with a deposit of $1000. every 4 months $300 was added to the account. The last $300 deposit was made on march 31, 1994. the money was then left to accumulate interest until the account is closed on December 31, 1996. find the accumulated amount on that date

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Question six :

1) Solve $(x + 3)(x^2 - x - 2) = 0$

2)Find an equation of the tangent line to the curve

$Y = 3 + x - 5x^2 + x^4$ when $x = 0$

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3) Solve .use Cramer's rule, if possible

$$3x - z = 7$$
$$4x - y + 3z = 9$$
$$3y + 2z = 15$$

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Using Dictionary (No)

Important formulas

$S = P(1 + r \times t)$ **I= P . r. t** **D = S .d . t**

p= S(1 – d.t) $S = \frac{P}{1 - d\,t}$ $S = P\,(1+i)^n$

$A_n = R\,a\overline{|n} = R\,\frac{1-(1+i)^{-n}}{i}$ $S_n = R\,s\overline{|n} = R\,\frac{(1+i)^n - 1}{i}$

$R = \frac{A_n}{a\overline{|n}} = A_n \times \frac{i}{1-(1+i)^{-n}}$ $S_n(due) = R(s\overline{|n+1} - 1) = R\left(\frac{(1+i)^{n+1} - 1)}{i} - 1\right)$

$A_n(def) = R(a\overline{|m+n} - a\overline{|m})$ $S_n(for) = R \times s\overline{|n} \times (1+i)^p$

$= R \times \left(\frac{(1+i)^n - 1}{i}\right) \times (1+i)^p$

No.	Month	days
1	January	31
2	February	28/29
3	March	31
4	April	30
5	May	31
6	June	30
7	July	31
8	August	31
9	September	30
10	October	31
11	November	30
12	December	31

End of Questions
Good Luck