

KFUPM
Mathematics & Statistics

Term 171
AS 201

Date: 15/10/2017
Duration: 30 minutes

Quiz# 1

Name:

ID #:

Section:

Q1: Find the present value of 1000 due at the end of 10 years if

- a. $i(6)=0.09$
 - b. $i(12)=0.09$
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Q2: Eric deposits X into a savings account at time 0, which pays interest at a nominal rate equal to i , compounded semiannually. Mike deposits $2X$ into a different savings account at time 0, which pays simple interest at an annual rate equal to i . Eric and Mike earn the same amount of interest during the last 6 months of the 8th year. Calculate i

Q3: David can receive one of the following two payment streams:

(i) 100 at time 0, 200 at time n years, and 300 at time $2n$ years

(ii) 600 at time 10 years

At an annual effective interest rate of i , the present values of the two streams are equal.

Given $v^n=0.76$, calculate i .

Q4: Bruce deposits 100 into a bank account. His account is credited interest at an annual nominal rate of interest of 4% convertible semiannually.
At the same time, Peter deposits 100 into a separate account. Peter's account is credited interest at an annual force of interest of δ
After 7.25 years, the value of each account is the same.
Calculate δ ?

Q5: Ernie makes deposits of 100 at time 0, and X at time 3. The fund grows at a force of interest, $\delta_t = \frac{t^2}{100}, t > 0$. The amount of interest earned from time 3 to time 6 is also X .

Calculate X .