

King Fahd University of Petroleum and Minerals
 Department of Mathematics and Statistics
 AS 201 - Term 191 - Quiz 1

Name:
 Student ID #:
 Section #:1

Question 1. David can receive one of the following two payment streams:

- 100 at time 0, 200 at time n , and 300 at time $2n$
- 600 at time 10

At an annual effective interest rate of i , the present values of the two streams are equal.
 Given $v^n = 0.76$, determine i .

Present value of 1st stream = Present value of the 2nd stream

$$100 + 200v^n + 300v^{2n} = 600(1+i)^{-10}$$

$\begin{matrix} \text{"} & \text{"} \\ 0.76 & (0.76)^2 \end{matrix}$

$$i = 3.5\%$$

Question 2. John invests 1000 in a fund which earns interest during the first year at a nominal rate of K convertible quarterly. During the 2nd year the fund earns interest at a nominal discount rate of K convertible quarterly. At the end of the 2nd year, the fund has accumulated to 1173.54. Calculate K .

$$1000 \left(1 + \frac{K}{4}\right)^4 \left(1 - \frac{K}{4}\right)^{-4} = 1173.54$$

$$\left(\frac{4+K}{4-K}\right)^4 = 1.17354$$

$$4+K = (1.17354)^{1/4} (4-K)$$

$$K(1 + (1.17354)^{1/4}) = 4((1.17354)^{1/4} - 1)$$

$$K = \frac{4 \times 1.17354^{1/4} - 4}{1 + (1.17354)^{1/4}}$$

$$K = 8\%$$

QUESTIONS 2 IS ON THE BACK OF THE PAGE.