

**MATH4511 Quantitive Methods for Fixed Income Derivatives, 2015-16 Fall**  
**Quiz 02(T1C)**

Name: \_\_\_\_\_

ID No.: \_\_\_\_\_

Tutorial Section: \_\_\_\_\_

1. (20 points) The following table provides information of swap rates of Oct 16, 2015:

Year to Maturity	Swap Rate	Forward rates	Spot rates
0.5	0.7%		
1.0	0.8%		
1.5	1.0%		
2.0	1.2%		

Calculate the forward rates  $f(t)$  (the forward rate on a loan from year  $t-.5$  to year  $t$ ) and semiannually compounded spot rates  $\hat{r}(t)$ ,  $t=.5, 1, 1.5, 2$ .

2. (10 points) Use the information of Question 1 to calculate the fair price of the bond “5s of Oct 16, 2017” (face value: \$100).

3. (20 points) Consider a par bond of maturity date Apr 16, 2018 with face value \$1000. The bond yield is 7%. Write down the cash flows and cash flow dates of this bond. Assume the 2.5-year maturity swap rate is 6%. Is there any arbitrage opportunity? If yes, how to arbitrage?