

47. Solution: B

Price of bond = 1000 because the bond is a par value bond and the coupon rate equals the yield rate.

At the end of 10 years, the equation of value on Bill's investment is the price of the bond accumulated at 7% equals the accumulated value of the investment of the coupons plus the redemption value of 1000. However, the coupons are invested semiannually and interest i is an annual effective rate. So the equation of value is:

$$1000 (1.07)^{10} = 30 s_{\overline{20}|j} + 1000 \text{ where } j \text{ is such that } (1+j)^2 = 1+i$$

Rearranging, $30 s_{\overline{20}|j} = 1000 (1.07)^{10} - 1000 = 967.1513573$. Solving for j (e.g. using one of the approved calculators) yields $j = 4.759657516\%$, and thus $i = (1+j)^2 - 1 = .097458584$