

Solution:

Before we begin the question, we need to calculate the present value of the bond and update the discounts accordingly.

To do so, let us break the calculation into two parts:

- **Payments Part:**

The bonds provide a payment of $\$100 \times 4.5\% = \4.5 million every semi-annual period, till 40 periods.

Thus, to find the present value, the situation is like an annuity with 5% interest rate and the above payments and cycle.

By using annuity tables, the present value of the annuity comes out to be $\$4.5 \times 17.1591 = \77.216 million.

- **Lump-sum Part:**

The bonds also provide a lumpsum payment of \$100 million after 40 periods, compounded at 5% interest.

Thus, by using the future value tables, we see that the present value of the lumpsum comes out to be $\$100 \times 0.1420 = \14.20 million.

Thus, based on the above we conclude that the current valuation of the bond is $\$77.216 + \$14.20 = \$91.416$ million, confirming the value.

We now proceed to do the accounting for the same.

(1)

The analysis for the same is as follows:

EFFECT ON BALANCE SHEET EQUATION (Amounts are in millions of \$)			
Scenario	Assets =	Liabilities +	Stockholders' Equity
Issuance of debentures	+\$91.42 (cash)	+\$100 (bonds payable) -\$8.58 (bonds discount)	
First Semi-annual payments	-\$4.5 (cash)	+\$0.07 (bond discount)	-\$4.57 (interest expense)
Maturity payment	-\$100 (cash)	-\$100 (bonds payable)	

(3)

The journal entries for the above are as follows:

JOURNAL ENTRIES FOR THE BOND TRANSACTIONS (Amounts are in millions of \$)			
Scenario	Particulars	Debit	Credit
Issuance of debentures	Cash	91.42	
	Bonds Discount To Bonds Payable	8.58	100.00
First semi-annual payments	Interest Expense	4.57	
	To Cash To Bonds Discount		4.50 0.07
Maturity Payment	Bonds Payable To Cash	100.00	100.00

(4)

For March 1, 2010, the entry has been already made. Let us now consider the effect on the March 1, 2011.

This comprises two semi-annual payments and so we fill up the following table for the values:

CALCULATION OF THE BOND ACCOUNTS (Amounts in millions of \$)						
Payment Time	Bond Payable	Bond Discount	Net Payable	Interest Expense	Interest Payable	Amortization
1 st	100	8.58	91.42	4.57	4.5	0.07
2 nd	100	8.51	91.49	4.57	4.5	0.07
Final	100	8.44	-	-	-	-

The “final” row in the above table shows the final values as of March 1, 2011 for the bond related accounts.