**CHAPTER 10**

**Answers to EOC Questions, Mini-Exercises, Multiple Choice Questions,**

**and Assigned Exercises and Problems.**

ANSWERS TO QUESTIONS

1. A bond is a liability that may or may not be secured by a mortgage on specified assets. Bonds usually are in denominations of $1,000 or $10,000, are transferable by endorsement, and may be bought and sold daily by investors. A bond specifies a maturity date and rate of interest that will be paid on the principal amount. Bonds usually are issued to obtain cash for long-term asset acquisitions (operational assets) and expansion of the entity.

2. A bond indenture is an agreement drawn up by a company planning to sell a bond issue. The indenture specifies the legal provisions of the bond issue such as maturity date, rate of interest, date of interest payments, and any conversion privileges. When a bond is sold, an investor receives a bond certificate (i.e., a bond). All of the bond certificates for a single bond issue are identical in most respects. That is, each certificate states the same maturity date, interest rate, interest dates, and other provisions of the bond issue.

3. Secured bonds are supported by a mortgage or pledge of specific assets as a guarantee of payment. Secured bonds are designated on the basis of the type of asset pledged, such as real estate mortgage bonds and equipment trust bonds. Unsecured bonds are not supported by a mortgage or pledge of specific assets as a guarantee of payment at maturity date. Unsecured bonds usually are called debentures.

4. Callable bonds—bonds that may be called for early retirement at the option of the issuer.

 Convertible bonds—bonds that may be converted to other securities of the issuer (usually common stock) after a specified future date at the option of the bondholder.

5. Several important advantages of bonds compared with capital stock benefit the issuer. The issuance of bonds establishes a fixed amount of liability and a fixed rate of interest on the bond, and interest payments to the bondholders are deductible on the income tax return of the issuer. This deduction for tax purposes reduces the net cost of borrowing. For example, a corporation with a 40% average tax rate and bonds payable with a 10% interest rate would incur a net interest rate of 10% x 60% = 6%.

6. The higher the tax rate is, the lower the net cost of borrowing money because the interest paid on borrowed money is deductible on the income tax return of the borrower. The higher the income tax rate the less the net cost of interest for the borrower. For example, a corporation with an average tax rate of 40% and debt with 10% interest per annum incurs a net interest rate of 10% x 60% = 6%. In contrast, the same corporation with a 20% average tax rate incurs a net interest rate of 10% x 80% = 8%.

7. At the date of issuance, bonds are recorded at their current cash equivalent amount; that is, the amount of cash received for the bonds when issued. The recording is in conformity with the cost principle.

8. When a bond is issued (sold) at its face amount, it is issued at par. In contrast, when a bond is sold at an amount lower than the par amount, it is issued at a discount, and conversely, when it is sold at a price above par, it is issued at a premium. A bond will sell at a discount when the market, or effective, rate of interest is higher than the stated rate of interest on the bond. In contrast, when the market or effective rate of interest is lower than the stated rate, the bond will sell at a premium. Discounts or premiums on bonds payable are adjustments to the effective interest rate on the bonds. Therefore, the discount or premium is amortized over the life of the bonds as an increase or decrease in the amount of interest expense for each period.

9. The stated rate of interest is the rate specified on a bond, whereas the effective rate of interest is the market rate at which the bonds are selling currently.

10. When a bond is sold at par, the stated interest rate and the effective or market interest rate are identical. When a bond is sold at a discount, the stated rate of interest is lower than the effective rate of interest on the bond. In contrast, when a bond is sold at a premium, the stated rate of interest is higher than the effective rate of interest.

11. A bond issued at par will have a book or carrying value, or net liability, equal to the par or principal of the bond. This amount should be reported as the carrying value on each balance sheet date. When a bond is sold at a premium or discount, the premium or discount must be amortized over the outstanding life of the bond. When there is bond discount or premium, the par amount of the bond less the unamortized discount, or plus the unamortized premium, must be reported on the balance sheet as the net liability as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| Bonds payable  | $100,000 |  | $100,000 |
| Less: Unamortized discount  | 12,000 |  |  |
| Plus: Unamortized premium  |  |  | 12,000 |
| Book value (net liability)  | $ 88,000 |  | $112,000 |

12. The basic difference between straight-line amortization and effective-interest amortization of bond discount and premium is that, under straight-line amortization, an equal amount of premium or discount is amortized to interest expense each period. Straight-line amortization per interest period is computed by dividing the total amount of the premium or discount by the number of periods the bonds will be outstanding. Under effective-interest amortization, the amount of premium or discount amortized is different each period. Effective-interest amortization of bond premium and discount correctly measures the current cash equivalent amount of the bonds and the interest expense reported on the income statement based on the issuance entry. It measures the amount of amortization by relating the market (yield) rate to the net liability at the beginning of each period. For this reason interest expense and the bond carrying value are measured on a present value basis. The straight-line method can be used only when the results are not materially different from the results of the effective-interest method.

ANSWERS TO MULTIPLE CHOICE

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1. c)
 | 1. c)
 | 1. b)
 | 1. d)
 | 1. c)
 |
| 1. b)
 | 1. c)
 | 1. c)
 | 1. a)
 | 1. c)
 |

**MINI-EXERCISES**

**M10–1.** 1. Balance Sheet

2. Income Statement

3. Statement of Cash Flows

4. May be in notes

5. Not at all

6. May be in notes

**M10–2**.

|  |  |  |  |
| --- | --- | --- | --- |
| **Principal** | $600,000 × 0.4564 | = | $273,840 |
| **Interest** | $ 24,000 × 13.5903 | = |  326,167 |
|  | **Issue Price** | = | $600,007\* |

 \*Issue price should be exactly $600,000. The $7 difference is the result of rounding the present value factors at four digits.

**M10–3**.

|  |  |  |  |
| --- | --- | --- | --- |
| **Principal** | $900,000 × 0.4350 | = | $391,500 |
| **Interest** | $ 27,000 × 13.2944 | = |  358,949 |
|  | **Issue Price** | = | $750,449 |

**M10–4.**

January 1, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A)  | 940,000 |  |  |
| Discount on Bonds Payable (+XL, -L)  | 60,000 |  |  |
|   Bonds Payable (+L)  |  |  | 1,000,000 |

June 30, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense (+E, -SE) ($940,000 × 11% × 1/2)  | 51,700 |  |  |
|  Discount on Bonds Payable (-XL, +L)  |  |  | 1,700 |
|  Cash (-A) ($1,000,000 × 10% × 1/2)  |  |  | 50,000 |

 **M10–5.**

January 1, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A)  | 580,000 |  |  |
| Discount on Bonds Payable (+XL, -L)  | 20,000 |  |  |
|  Bonds Payable (+L)  |  |  | 600,000 |

June 30, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense (+E, -SE)  | 31,000 |  |  |
|  Discount on Bonds Payable (-XL, +L)  |  |  | 1,000 |
|  Cash (-A)  |  |  | 30,000 |

**M10–6.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Principal** | $500,000 × 0.4564 | = | $228,200 |
| **Interest** | $ 25,000 × 13.5903 | = |  339,758 |
|  | **Issue Price** | = | $567,958 |

**M10–7.**

January 1, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A)  | 620,000 |  |  |
|  Premium on Bonds Payable (+L)  |  |  | 20,000 |
|   Bonds Payable (+L)  |  |  | 600,000 |

December 31, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense (+E, -SE)  | 52,000 |  |  |
| Premium on Bonds Payable (-L)  | 2,000 |  |  |
|  Cash (-A)  |  |  | 54,000 |

**M10–8**

January 1, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Cash (+A)  | 910,000 |  |  |
|  Premium on Bonds Payable (+L)  |  |  | 60,000 |
|   Bonds Payable (+L)  |  |  | 850,000 |

December 31, 2014:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense (+E, -SE) ($910,000 × 7%)  | 63,700 |  |  |
| Premium on Bonds Payable (-L)  | 4,300 |  |  |
|  Cash (-A) ($850,000 × 8%)  |  |  | 68,000 |

**M10–9.**

The debt-to-equity ratio and times interest earned ratio are both measures of the risk associated with using debt in the capital structure of a company. A company could have a high debt-to-equity ratio with relatively little risk if it generated a high level of stable earnings. On the other hand, a company with a low debt-to-equity ratio might be risky if it was unable to earn any profits. For this reason, most analysts look to the times interest earned ratio as a measure of a company’s ability to meet its required interest payments.

**M10–10.**

If the interest rates fall after the issuance of a bond, the bond’s price will increase. The company will report a loss on the debt retirement. On the balance sheet, cash and bonds payable will decrease. On the income statement, a loss would be recorded.

**M10–11.**

When a company issues a bond at a discount, the interest expense each period will be more than the cash payment for the interest. When a company issues a bond at a premium, the interest expense will be less than the cash payment for the interest. Neither is affected by the method used to amortize the discount or premium.

**M10–12.**

Cash paid to retire a bond would be reported in the financing activities section of the Statement of Cash Flows while cash paid for interest payments would be reported in the operating activities section.

EXERCISES

**E10–4.**

|  |  |  |  |
| --- | --- | --- | --- |
| CASE A: |  |  |  |
|  $500,000 x 0.6730  | $ 336,500 |  |  |
|  $15,000 x 16.3514  |  245,271 |  |  |
|  Issue price (market rate less than stated rate)  | $581,771 |  | (at a premium)  |
|  |  |  |  |
| CASE B: |  |  |  |
|  $500,000 x 0.5537  | $ 276,850 |  |  |
|  $15,000 x 14.8775  | 223,163 |  |  |
|  Issue price (market rate and stated rate same)  | $500,013 |  | (at par, $13  |
| CASE C: |  |  | rounding error) |
|  $500,000 x 0.4350  | $ 217,500 |  |  |
|  $15,000 x 13.2944  |  199,416 |  |  |
|  Issue price (market rate more than stated rate)  | $ 416,916 |  | (at a discount) |

**E10–9.**

Computations:

 Interest:

|  |  |  |
| --- | --- | --- |
| $600,000 x 7.5% x 1/2 | = | $ 22,500 |

 Present value:

|  |  |  |
| --- | --- | --- |
| $600,000 x 0.7168 | = | 430,080 |
| $ 22,500 x 6.6638 | = | 149,936 |
| Issue price | = | $580,016 |

Req. 1

January 1:

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |
| Cash (+A)  | 580,016 |  |  |
|  Bonds Payable (+L)  |  |  | 580,016 |

Req. 2

June 30:

|  |  |  |  |
| --- | --- | --- | --- |
| Interest Expense\* (+E, -SE)  | 24,651 |  |  |
|  Bonds Payable (+L)  |  |  | 2,151 |
|  Cash (-A)  |  |  | 22,500 |

\*($580,016 x 8.5% x ½)

Req. 3

June 30, 2014:

|  |  |
| --- | --- |
| Income statement: |  |
|  Interest expense | $ 24,651 |

Balance sheet:

|  |  |  |  |
| --- | --- | --- | --- |
| Long-term Liabilities |  |  |  |

Bonds payable $582,167

**E10–17.**

Req. 1

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Date |  | CashInterest |  | Interest Expense |  | PremiumAmortization |  | Net LiabilityBalance |
| 1/1/2014 |  |  |  |  |  |  |  | $10,278 |
| 12/31/2014 |  | $500 |  | $10,278 x 4% = $411 |  | $89 |  |  10,189 |
| 12/31/2015 |  |  500 |  | $10,189 x 4% = $408 |  |  92 |  |  10,097 |
| 12/31/2016 |  |  500 |  | $10,097 x 4% = $404 |  |  96 |  |  10,001\* |

\* $1 rounding error

Present value computation:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Principal: |  | $10,000 x .8890  |  | $ 8,890 |
| Interest: |  |  500 x 2.7751  |  | 1,388 |
|  |  | Issue price |  | $10,278 |

Req. 2

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 2014 |  | 2015 |  | 2016 |
| December 31: |  |  |  |  |  |
| Interest expense  | $411 |  | $408 |  | $404 |
| Bond liability…………………. | $10,189 |  | $10,097 |  | $10,000\* |
|  |  |  |  |  |  |

 **\***Immediately before repayment of principal

**E10–22.**

1. Impacts Statement of Cash Flows (SCF) : report $960,000 inflow in financing section
2. The entry had no direct effect on cash flows. However, the change in interest payable during the year is a reconciling item in the operating activities section of the statement of cash flow. Without knowing the beginning balance, the effect cannot be determined. The amortization of bond discount reflects a difference in interest payable and interest expense, and it is a reconciling item in the statement of cash flows. The $1,000 amortization would be added in the SCF operating activities section as an adjustment: it affected interest expense (and net income) but not cash.
3. Impacts SCF : report $57,000 payment in operating activities section
4. Impacts SCF : report $915,000 payment in financing section

**CASES AND PROJECTS**

**CP10–4.**

Req. 1

Most bond indentures specify two types of cash outflows during the life of a bond issue: (1) periodic interest payments, and (2) payment of par value at maturity. When the stated interest rate is less than the effective-interest rate, bonds will sell at a discount. This means that when the bond matures, the investor will receive more cash than was paid for the bond when it was purchased. The discount on the bond compensates the investor for the difference between a stated interest rate that is less than the effective rate of interest. The JCPenney bonds sold at a “deep discount” because the stated rate of interest was zero. If investors want 15% effective interest, they would be willing to pay only $326.90 for a $1,000 JCPenney bond; the present value of the bond is computed as follows:

|  |  |
| --- | --- |
|  **Principal**: $1,000 x.3269 = $326.90 |  |

Req. 2

|  |  |  |
| --- | --- | --- |
|  **Principal:** | $400,000,000 x 0.3269 = | $130,760,000 |

The bonds would sell for 32.69% of par value, which is $130,760,000 for bonds with a $400,000,000 face value.