Effective Rate of Interest

1. A company obtained a short-term bank loan of $250,000 at an annual interest rate of 6%. As a condition of the loan, the company is required to maintain a balance of $25,000 in its checking account, which earns 2%. What is the effective interest rate of the loan?

Effective rate of interest can be calculated as follows:
Loan amount: 250,000 × 6% = $15,000
Amount to be kept in the checking account: 25,000 × 2% = $500
Net interest cost = $14,500
Effective interest = (net interest cost ÷ loan amount available for actual utilization) × 100 = (14,500 ÷ 225,000) × 100 = 6.44%
The company has to put an extra $25,000 into the checking account as a condition of the loan, so the amount free to be utilized out of the loan proceeds is only $225,000. Similarly, the interest is $15,000, out of which $500 is received on the checking account, which earns 2%. Net cost to the company is $14,500. Effective interest is calculated taking into account net cost and net loan proceeds. The cost of debt financing has become less expensive (and, therefore, more attractive) for a firm due to the deductibility of interest costs for tax purposes.

2. The Dixon Corporation has an outstanding one-year bank loan of $300,000 at a stated interest rate of 8%. In addition, Dixon is required to maintain a 20% compensating balance in its checking account, which it does. Assuming the bank does not pay interest on balances in checking accounts, the effective interest rate on the loan is ?

The effective interest rate on the loan is 10.0%.
With a required 20% compensating balance, Dixon is only using $240,000 of the $300,000.
$300,000 × 20% = $60,000
$300,000 − $60,000 = $240,000
8% interest on the $300,000 loan = $24,000
The effective interest rate = (net interest cost ÷ loan amount available for actual utilization) × 100
Therefore, the effective interest rate is: $24,000 ÷ $240,000 = 0.10 = 10%.

3. A company obtained a short-term bank loan of $500,000 at an annual interest rate of 8%. As a condition of the loan, the company is required to maintain a compensating balance of $100,000 in its checking account. The checking account earns interest at an annual rate of 3%. The company maintains a balance of $50,000 in its checking account. What is the effective interest rate of the loan?

The effective interest rate of the loan is 8.56%.
Annual interest expense = $500,000 × 0.08 = $40,000
Extra interest earned on $50,000 = $50,000 × 0.03 = $1,500
Net expense = $40,000 − $1,500 = $38,500
With the company only having use of $450,000, the effective interest rate is: $38,500 ÷ $450,000 = 8.555%.