ANSWERS TO END-OF-CHAPTER QUESTIONS

20-1

a. Working capital is a firm's investment in short-term assets—cash, marketable securities, inventory, and accounts receivable. Net working capital is current assets minus current liabilities. Working capital policy refers to the basic policy decisions regarding (1) target levels for each category of current assets and (2) how current assets will be financed.

b. A relaxed current asset investment policy refers to a policy under which relatively large amounts of cash, marketable securities, and inventories are carried and under which sales are stimulated by a liberal credit policy, resulting in a high level of receivables.

A restricted current asset investment policy refers to a policy under which holdings of cash, securities, inventories, and receivables are minimized; while a moderate current asset investment policy lies between the relaxed and restricted policies.

A moderate current asset financing policy matches asset and liability maturities. It is also referred to as the maturity matching, or "self-liquidating" approach.

c. The cash conversion cycle is the length of time between the firm's actual cash expenditures on productive resources (materials and labor) and its own cash receipts from the sale of products (that is, the length of time between paying for labor and materials and collecting on receivables.) Thus, the cash conversion cycle equals the length of time the firm has funds tied up in current assets. The cash conversion cycle model has been developed to formalize the calculation of the cycle. The inventory conversion period is the average length of time to convert materials into finished goods and then to sell them. It is calculated by dividing total inventory by sales per day. The receivables collection period is the average length of time required to convert a firm's receivables into cash. It is calculated by dividing accounts receivable by sales per day. The payables deferral period is the average length of time between a firm's purchase of materials and labor and the payment of cash for them. It is calculated by dividing accounts payable by credit purchases per day (COGS/360).

d. Transactions balance is the cash balance associated with payments and collections; the balance necessary for day-to-day operations. A compensating balance is a checking account balance that a firm must maintain with a bank to compensate the bank for services rendered or for granting a loan. A precautionary balance is a cash balance held in reserve for random, unforeseen fluctuations in cash inflows and outflows. A speculative balance is a cash balance that is held to enable the firm to take advantage of any bargain purchases that might arise.

e. A cash budget is a schedule showing cash flows (receipts,
disbursements, and cash balances) for a firm over a specified period. The net cash gain or loss for the period is calculated as total collections for the period less total payments for the same period of time.

The target cash balance is the desired cash balance that a firm plans to maintain in order to conduct business.

f. Trade discounts are price reductions that suppliers offer customers for early payment of bills.

g. Synchronizing cash flows is an attempt by firms to keep cash balances to a minimum by improving their forecasting and by arranging things so that their cash receipts coincide with required cash outflows.

h. Check clearing is the process of converting a check that has been written and mailed into cash in the payee's account. Net float is the difference between disbursement float and collections float. Disbursement float is the value of the checks which we have written but which are still being processed and thus have not been deducted from our account balance by the bank. Collections float is the amount of checks that we have received but which have not yet been credited to our account.

i. A lockbox plan is a procedure used to speed up collections and reduce float through the use of post office boxes in payers' local areas. A pre-authorized debit allows funds to be automatically transferred from a customer's account to the firm's account on specified dates.

j. Marketable securities are securities that can be sold on short notice without loss of principal or original investment. Near-cash reserves are a suitable set of securities that can be quickly and easily converted to cash. Examples of securities that could be held as near-cash reserves are U.S. treasury bills, commercial paper, negotiable certificates of deposit, money market mutual funds, floating rate and market auction preferred stock, and Eurodollar time deposits.

k. The red line method is a technique for inventory control, as is the two-bin method. Computerized inventory control systems are just what the name implies. In the red line method, a line is drawn around the inside of a bin at the level of the reorder point, and the inventory clerk places an order when the red line shows. The two-bin method is similar—when the first bin is exhausted, items are ordered. With a computerized inventory control system, the computer starts with an inventory count in memory. As withdrawals are made, they are recorded by the computer, and the inventory balance is revised. When the reorder point is reached, the computer automatically places an order, and when the order is received, the recorded balance is increased.

Answers and Solutions: 20 - 8
l. Just-in-time systems refer to receiving inventories just as they are needed. Firms that employ such systems are attempting to minimize inventory carrying costs.

m. An account receivable is created when a good is shipped or a service is performed, and payment for that good is not made on a cash basis, but on a credit basis.

Days sales outstanding (DSO) is a measure of the average length of time it takes a firm's customers to pay off their credit purchases.

n. An aging schedule breaks down accounts receivable according to how long they have been outstanding. This gives the firm a more complete picture of the structure of accounts receivable than that provided by days sales outstanding.

o. Credit policy is nothing more than the firm's policy on granting and collecting credit. There are four elements of credit policy, or credit policy variables. These are credit period, credit standards, collection policy, and discounts.

The credit period is the length of time for which credit is extended. If the credit period is lengthened, sales will generally increase, as will accounts receivable. This will increase the financing needs and possibly increase bad debt losses. A shortening of the credit period will have the opposite effect.

Credit standards determine the minimum financial strength required to become a credit, versus cash, customer. The optimal credit standards equate the incremental costs of credit to the incremental profits on increased sales.

The collection policy is the procedure for collecting accounts receivable. A change in collection policy will affect sales, days sales outstanding, bad debt losses, and the percentage of customers taking discounts.

Credit terms are statements of the credit period and any discounts offered—for example, 2/10, net 30.

p. Cash discounts are often used to encourage early payment and to attract customers by effectively lowering prices. Credit terms are usually stated in the following form: 2/10, net 30. This means a 2 percent discount will apply if the account is paid within 10 days, otherwise the account must be paid within 30 days.

q. Seasonal dating sets the invoice date, or date at which the credit and discount periods begin, to a time during the buyer's own selling season, regardless of the actual sale date.

20-2 When money is tight, interest rates are generally high. This means that near-cash assets have high returns; hence, it is expensive to hold idle cash balances. Firms tend to economize on their cash balance holdings during tight-money periods.

Answers and Solutions: 20 - 9
20-3 The two principal reasons for holding cash are for transactions and compensating balances. The target cash balance is not equal to the sum of the holdings for each reason because the same money can often partially satisfy both motives.

20-4 a. Better synchronization of cash inflows and outflows would allow the firm to keep its transactions balance at a minimum, and would therefore lower the target cash balance.

b. Improved sales forecasts would tend to lower the target cash balance.

c. A reduction in the portfolio of U.S. Treasury bills (marketable securities) would cause the firm’s cash balance to rise if the Treasury bills had been held in lieu of cash balances.

d. An overdraft system will enable the firm to hold less cash.

e. If the amount borrowed equals the increase in check-writing, the target cash balance will not change. Otherwise, the target cash balance may rise or fall, depending on the relationship between the amount borrowed and the number of checks written.

f. The firm will tend to hold more Treasury bills, and the target cash balance will tend to decline.

20-5 A lockbox would probably make more sense for a firm that operated nationwide. Lockboxes reduce the time required for a firm to receive incoming checks, to deposit them, and to get them cleared through the banking system so that the funds are available for use. However, even a local firm with enough volume may want its bank to receive and process checks before the firm adjusts its accounts receivable ledgers.

20-6 False. Both accounts will record the same transaction amount.

20-7 The four elements in a firm’s credit policy are (1) credit standards, (2) credit period, (3) discount policy, and (4) collection policy. The firm is not required to accept the credit policies employed by its competitors, but the optimal credit policy cannot be determined without considering competitors’ credit policies. A firm’s credit policy has an important influence on its volume of sales, and thus on its profitability.

20-8 The latest date for paying and taking discounts is May 10. The date by which the payment must be made is June 9.

Answers and Solutions: 20 - 10
20-9  a. Days sales outstanding = \( \frac{\text{Accounts receivable}}{\text{Sales/360}} \) = \( \frac{312,000}{2,880,000/360} \) = 39 days.

b. False. While it appears that most customers pay on time (because 39 days is less than the 40 days stipulated in the credit terms), this does not mean that all customers are paying on time. In fact, it is very likely that some are not, since some customers are paying on the tenth day and are taking the discount.

20-10 False. An aging schedule will give more detail, especially as to what percentage of accounts are past due and what percentage of accounts are taking discounts.

20-11 No. Although B sustains slightly more losses due to uncollectible accounts, its credit manager may have a wise policy that is generating more sales revenues (and thus profits) than would be the case if he had a policy which cut those losses to zero.

20-12

<table>
<thead>
<tr>
<th>A/R</th>
<th>Sales</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

Explanations:

a. When a firm "tightens" its credit standards, it sells on credit more selectively. It will likely sell less and certainly will make fewer credit sales. Profit may be affected in either direction.

b. The larger cash discount will probably induce more sales, but they will likely be from customers who pay bills quickly. Further, some of the current customers who do not take the 2 percent discount may be induced to start paying earlier. The effect of this would be to reduce accounts receivable, so accounts receivable and profits could go either way.

c. A less stringent credit policy in terms of the credit period should stimulate sales. The accounts receivable could go up or down depending upon whether customers take the new higher discount or delay payments for the 10 additional days, and depending upon the amount of new sales generated.
20-1
a. Cash conversion cycle = Inventory conversion period + Receivables collection period - Payables deferral period
= 75 + 38 - 30 = 83 days.

b. Average sales per day = $3,375,000/360 = $9,375.
Investment in receivables = $9,375 x 38 = $356,250.

c. Inventory turnover = 360/75 = 4.8x.

20-2
Net Float = Disbursement Float - Collections Float
= (4 x $10,000) - (3 x $10,000)
= $10,000.

20-3
Sales = $10,000,000; S/I = 2x.

Inventory = S/2 = $10,000,000 / 2 = $5,000,000.

If S/I = 5x, how much cash freed up?

Inventory = S/5 = $10,000,000 / 5 = $2,000,000.

Cash Freed = $5,000,000 - $2,000,000 = $3,000,000.

20-4
DSO = 17; Credit Sales/Day = $3,500; A/R = ?

DSO = A/R / S/360

17 = A/R / $3,500

A/R = 17 x $3,500 = $59,500.
### 20-5

a. Cost = \( \frac{\text{Number of locations}}{\text{Number of transfers}} \times \frac{\text{Cost per transfer}}{\text{Monthly cost}} \) \times 12

\[
= \frac{(10)(260)}{(6,500)} \times \frac{($9.75)}{($6,500)} \times 12 = \$25,350 + \$78,000 = \$103,350.
\]

b. Reduction in days of float = 3 days.

\[
\text{Benefit} = \frac{\text{Reduction in days of float}}{\text{Daily collections}} \times \frac{\text{Opportunity cost}}{\text{Monthly cost}} \times 0.10
\]

\[
= \frac{(3)(325,000)}{\text{(0.10)}} = 97,500.
\]

c. Net gain (loss) = $97,500 - $103,350 = -$5,850.

Malitz should not initiate the lockbox system since it will cost the firm $5,850 more than it will earn on the freed funds.

### 20-6

a. $0.4(10) + 0.6(40) = 28$ days.

b. $900,000/360 = $2,500 sales per day.

$2,500(28) = $70,000 = Average receivables.

c. $0.4(10) + 0.6(30) = 22$ days.

$900,000/360 = $2,500 sales per day.

$2,500(22) = $55,000 = Average receivables.

Sales may also decline as a result of the tighter credit. This would further reduce receivables. Also, some customers may now take discounts further reducing receivables.

### 20-7

a. Return on equity may be computed as follows:

<table>
<thead>
<tr>
<th>Current assets (%) of sales x Sales</th>
<th>Tight</th>
<th>Moderate</th>
<th>Relaxed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed assets</td>
<td>$1,000,000</td>
<td>$1,000,000</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>Total assets</td>
<td>$1,900,000</td>
<td>$2,000,000</td>
<td>$2,200,000</td>
</tr>
<tr>
<td>Debt (60% of assets)</td>
<td>$1,140,000</td>
<td>$1,200,000</td>
<td>$1,320,000</td>
</tr>
<tr>
<td>Equity</td>
<td>760,000</td>
<td>800,000</td>
<td>880,000</td>
</tr>
<tr>
<td>Total liab./equity</td>
<td>$1,900,000</td>
<td>$2,000,000</td>
<td>$2,200,000</td>
</tr>
<tr>
<td>EBIT (12% x 52 mil.)</td>
<td>$240,000</td>
<td>$240,000</td>
<td>$240,000</td>
</tr>
<tr>
<td>Interest (8%)</td>
<td>91,200</td>
<td>96,000</td>
<td>105,600</td>
</tr>
<tr>
<td>Earnings before taxes</td>
<td>$148,800</td>
<td>$144,000</td>
<td>$134,400</td>
</tr>
<tr>
<td>Taxes (40%)</td>
<td>59,520</td>
<td>57,600</td>
<td>53,760</td>
</tr>
<tr>
<td>Net income</td>
<td>$89,280</td>
<td>$86,400</td>
<td>$80,640</td>
</tr>
<tr>
<td>Return on equity</td>
<td>11.75%</td>
<td>10.80%</td>
<td>9.16%</td>
</tr>
</tbody>
</table>
c. The firm should try to maintain a balance on the bank’s records of $1,200,000. On its own books it will have a balance of minus $5,200,000.

d. For any level of sales, the firm will probably have a higher rate of return on assets and equity if it can reduce its total assets. By using float, SSC can reduce its cash account, by \((4 \times $1,600,000) - $1,200,000 = $5,200,000\). However, they actually can reduce equity and debt by $6,000,000 as the firm has gross float of $6,400,000 - $400,000 (increase in the amount deposited in the bank) = $6,000,000, so earnings per share will be higher. In terms of the Du Pont system, the rate of return on equity will be higher because of the reduction in total assets.

20-9 a. Presently, HGC has 5 days of collection float; under the lockbox system, this would drop to 2 days.

\[
\begin{align*}
$1,400,000 \times 5 \text{ days} &= $7,000,000 \\
$1,400,000 \times 2 \text{ days} &= 2,800,000 \\
\end{align*}
\]

HGC can reduce its cash balances by the $4,200,000 reduction in negative float.

b. \(0.10(\text{4,200,000}) = 420,000\) = the value of the lockbox system on an annual basis.

c. \($420,000/12 = $35,000\) = maximum monthly charge HGC can pay for the lockbox system.

20-10

a. I. Collections and Purchases:

<table>
<thead>
<tr>
<th></th>
<th>December</th>
<th>January</th>
<th>February</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$160,000</td>
<td>$40,000</td>
<td>$60,000</td>
</tr>
<tr>
<td>Purchases</td>
<td>40,000</td>
<td>40,000</td>
<td>40,000</td>
</tr>
<tr>
<td>Payments</td>
<td>140,000*</td>
<td>40,000</td>
<td>40,000</td>
</tr>
</tbody>
</table>

II. Gain or Loss for Month:

<table>
<thead>
<tr>
<th>Receipts from sales</th>
<th>December</th>
<th>January</th>
<th>February</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payments for:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Purchases</td>
<td>140,000</td>
<td>40,000</td>
<td>40,000</td>
</tr>
<tr>
<td>Salaries</td>
<td>4,800</td>
<td>4,800</td>
<td>4,800</td>
</tr>
<tr>
<td>Rent</td>
<td>2,000</td>
<td>2,000</td>
<td>2,000</td>
</tr>
<tr>
<td>Taxes</td>
<td>12,000</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Total payments</td>
<td>$153,800</td>
<td>$46,800</td>
<td>$46,800</td>
</tr>
</tbody>
</table>

Net cash gain (loss) | $1,200 | ($6,800) | $13,200 |

Answers and Solutions: 20 - 16