

Working Capital Management

Lesson 17

KEY CONCEPTS

- Meaning of working capital
- Types of working capital
- Cash Management
- Inventory Management
- Receivables Management

Learning Objectives

To understand:

- Concept of working capital
- Importance or advantages of working capital
- Factors determining the working capital
- Concept of negative working capital
- Management of working capital
- Estimation of working capital requirement
- Management of inventory
- Management of receivables
- Management cash
- Factoring
- Forfeiting

Lesson Outline

- Introduction
- Types of working capital
- Importance or advantages of working capital
- Factors determining the working capital
- Concept of negative working capital
- Management of working capital
- Estimation of working capital requirement
- Management of cash
- Management of inventory
- Management of receivables
- Working capital financing
- Bank norms and macro aspect
- Factoring
- Forfeiting
- Case Studies
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INTRODUCTION

Capital required for a business can be classified under two main categories viz. Fixed Capital and Working Capital. Every business needs funds for two purposes – for its establishment and to carry out its day to day operations.

Long term funds are required to create production facilities through purchase of fixed assets such as plant, machine, land, building, furniture etc. Investment in these assets represents that part of the firm’s capital which is blocked on a permanent or fixed basis and is called fixed capital. Funds are also needed for short-term purposes for the purchases of raw material, payment of wages, other day to day expenses etc. These funds are known as working capital.

In Simple Words: Working capital refers to that part of the firm’s capital which is required for financing short-term or current assets such as- cash, marketable securities, debtors’ and inventories funds. Thus investments in current assets keep revolving and are being constantly converted in to cash and this cash flow out again in exchange for other current assets. Hence, it is also known as revolving or circulating capital or short term capital.

In the words of Shubin: “Working Capital is the amount of funds necessary to cover the cost of operating the enterprise”.

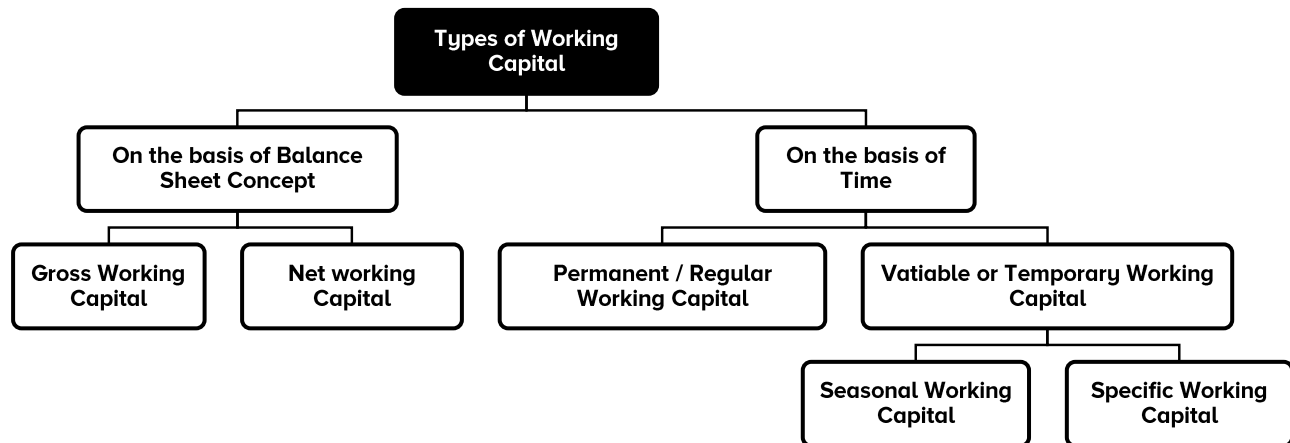
According to Genestenberg: “Circulating capital means current assets of a company that are changed in the ordinary course of business from one to another.”

Working capital is needed for the following purposes –

1. For the purchase of raw materials, components and spares.
2. To pay wages and salaries
3. To incur day to day expenses and overhead costs such as fuel, power, office experiences etc.
4. To meet the selling cost as – Packing, Advertising etc.
5. To provide credit facilities to the customers
6. To maintain the inventories of raw material, work in progress, stores and spares and finished stock.

TYPES OF WORKING CAPITAL

Working capital can be classified either on the basis of Balance Sheet concept or on the basis of periodicity (Time) of its requirements.



1) On the Basis of Balance Sheet Concept:

On the basis of B/S concept, it may be either gross working capital or net working capital. Gross working capital is represented by the total current assets. The net working capital is the excess of current assets over current liabilities.

- a) Gross Working Capital = Total Currents Assets (CA)
- b) Net Working Capital = Current Assets – Current Liabilities

2) On the basis of Requirement:

According to Gerstenbergh, the working capital can be classified into two categories on the basis of time and requirement:

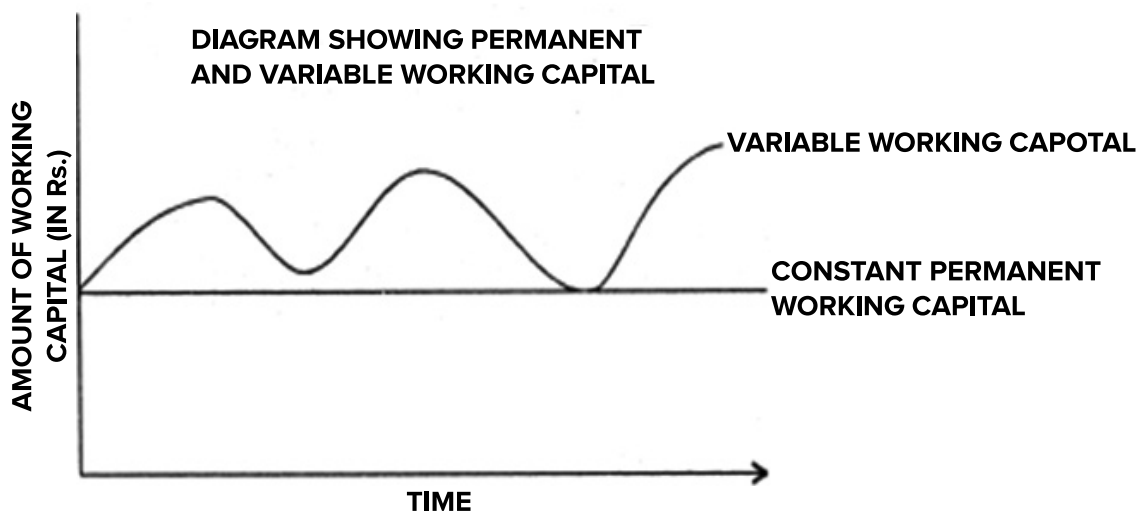
a) Permanent Working Capital:

It refers to the minimum amount of investment which should always be there in fixed or minimum current assets like inventory, accounts receivable, or cash balance etc., in order to carry out business smoothly. This investment is of a regular or permanent type and as the size of the firm expands, the requirement of permanent working capital also increases. Tondon Committee has referred to this type of working capital as “hard core working capital”.

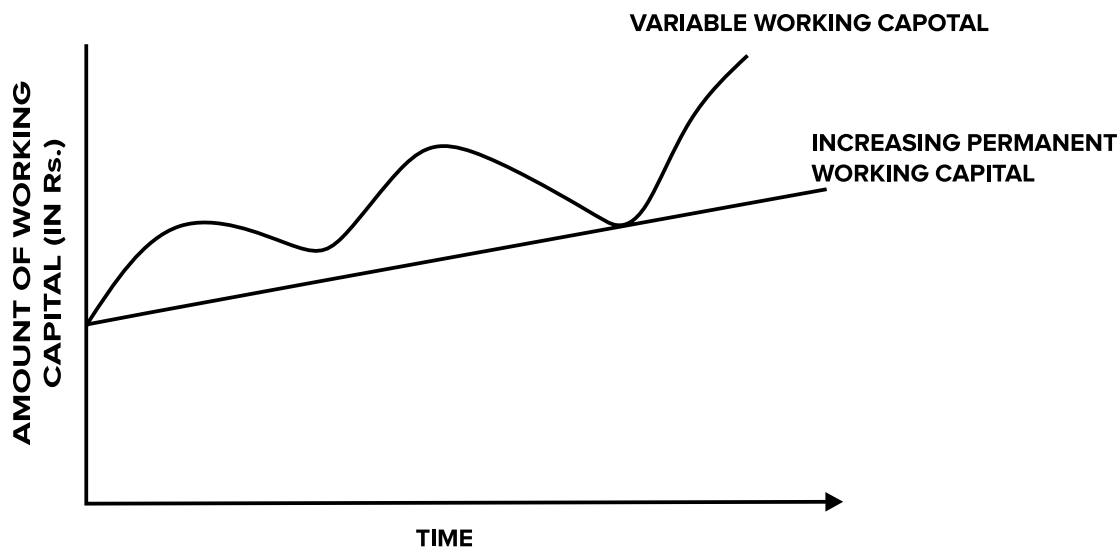
b) Variable Working Capital:

The excess of the amount of working capital over permanent working capital is known as variable working capital. The amount of such working capital keeps on fluctuating from time to time on variations in business activities. It may again be sub-divided into seasonal and special working capital. Seasonal working capital is required to meet the seasonal demands of busy periods occurring at stated intervals. On the other hand, special working capital is required to meet extraordinary needs for contingencies. Events like strike, fire, unexpected competition, rising price tendencies or initiating a big advertisement campaign require such capital.

The following diagram illustrates the difference between permanent and variable working capital:



The above is the case of a static company and in case of growing company permanent working capital requirement will be increasing as is shown in the figure given below:



IMPORTANCE OR ADVANTAGES OF WORKING CAPITAL

Working capital is the lifeblood and nerve center of a business. Just as circulation of blood is essential in the human body for maintaining life, working capital is very essential to maintain the smooth running of a business. No business can run successfully without an adequate amount of working capital. The main advantages of maintaining adequate amount of working capital are as follows:

1. Solvency of the Business:

Adequate working capital helps in maintaining solvency of the business by providing uninterrupted flow of production.

2. Goodwill:

Sufficient working capital enables a business concern to make prompt payments and hence helps in creating and maintaining goodwill.

3. Easy Loan:

A concern having adequate working capital, high solvency and good credit standing can arrange loans from banks and others on easy and favorable terms.

4. Cash Discounts:

Adequate working capital also enables a concern to avail cash discounts on the purchases and hence it reduces costs.

5. Regular Supply of Raw Material:

Sufficient working capital ensures regular supply of raw materials and continuous production.

6. Regular Payment of Salaries, Wages and Day to Day Commitments:

A company which has ample working capital can make regular payment of salaries, wages and other day-to-day commitments which raises the morale of its employees, increases their efficiency, reduces wastages and costs and enhances production and profits.

7. Exploitation of Favorable Market Conditions:

Only concerns with adequate working capital can exploit favorable market conditions such as purchasing its requirements in bulk when the prices are lower and by holding its inventories for higher prices.

8. Ability to Face Crisis:

Adequate working capital enables a concern to face business crisis in emergencies such as depression because during such periods, generally, there is much pressure on working capital.

9. Quick and Regular Return on Investments:

Every investor wants a quick and regular return on his investments. Sufficiency of working capital enables a concern to pay quick and regular dividends to its investors, as there may not be much pressure to plough back profits. This gains the confidence of its investors and creates a favorable market to raise additional funds in the future.

10. High Morale:

Adequacy of working capital creates an environment of security, confidence, high morale and creates overall efficiency in a business.

FACTORS DETERMINING THE WORKING CAPITAL

The working capital requirement may be calculated with following determinants:

1. Nature of Business:

The working capital requirements of a firm basically depend upon the nature of its business. Public utility undertakings like Electricity, Water Supply and Railways need very limited working capital because they offer cash sales only and supply services, not products, and as such no funds are tied up in inventories and receivables. On the other hand trading and financial firms require less investment in fixed assets but have to invest large amounts in current assets like inventories, receivables and cash; as such they need large amount of working capital.

2. Size of Business/Scale of Operations:

The working capital requirements of a concern are directly influenced by the size of its business which may be measured in terms of scale of operations. Greater the size of a business unit, generally larger will be the requirements of working capital.

3. Manufacturing Process/Length of Production Cycle:

In manufacturing business, the requirements of working capital increase in direct proportion to length of manufacturing process. Longer the process period of manufacturing, larger is the amount of working capital required.

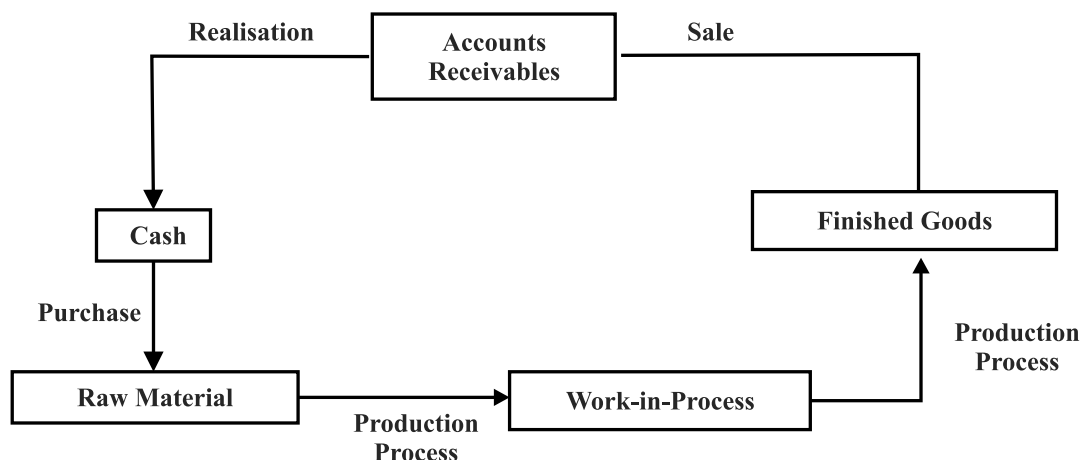
4. Seasonal Variations:

In certain industries raw material is not available throughout the year. They have to buy raw materials in bulk during the season to ensure an uninterrupted flow and process during the entire year.

5. Working Capital Cycle or Operating Cycle:

In a manufacturing concern, the working capital cycle starts with the purchase of raw material and ends with the realization of cash from the sale of finished products. This cycle involves purchase of raw materials and stores, its conversion into stocks of finished goods through work-in-progress with

progressive increment of labour and service costs, conversion of finished stock into sales, debtors and receivables and ultimately realization or cash and this cycle continues again from cash to purchase of raw material and so on.



The speed with which the working capital completes one cycle determines the requirement of working capital-longer the period of the cycle larger is the requirement of working capital.

6. **Rate of Stock Turnover:**

There is a high degree of inverse co-relationship between the quantum of working capital and the velocity or speed with which the sales are effected. A firm having a high rate of stock turnover will need lower amount of working capital as compared to a firm having a low rate of turnover.

7. **Firm's Credit Policy:**

The credit policy of a concern in its dealings with debtors and creditors influences considerably the requirements of working capital. A concern that purchases its requirements on credit and sells its products/services on cash requires lesser amount of working capital. On the other hand a concern buying its requirements for cash and allowing credit to its customers, shall need larger amount of working capital as very huge amounts of funds are bound to be blocked up in debtors or bills receivables.

8. **Business Cycles:**

Business cycle refers to alternate expansion and contraction in general business activity. In a period of boom i.e., when the business is prosperous, there is a need for larger amount of working capital due to increase in sales, rise in prices, optimistic expansion of business, etc. On the contrary, in the times of depression i.e. when there is a downswing of the cycle, the business contracts sales decline, difficulties are faced in collections from debtors, and firms may have a large amount of working capital lying idle.

9. **Rate of Growth of Business:**

The working capital requirements of a concern increase with the growth and expansion of its business activities. Although, it is difficult to determine the relationship between the growth in the volume of business and the growth in the working capital of a business, yet it may be concluded that for normal rate of expansion in the volume of business, we may have retained profits to provide for more working capital. But in fast growing concerns, we shall require larger amount of working capital.

10. **Earning Capacity and Dividend Policy:**

Some firms have more earning capacity than others due to quality of their products, monopoly conditions, etc. Such firms with high earning capacity may generate cash profits from operations and

contribute to their working capital. The dividend policy of a concern also influences the requirements of its working capital.

11. **Other Factors:**

In addition to the above considerations, there are a number of other factors which affect the requirements of working capital. Such as operating efficiency, management ability, irregularities to supply, import policy, asset structure, political stability, importance of labour banking facilities, etc., also influence the requirements of working capital.

THE CONCEPT OF NEGATIVE WORKING CAPITAL

Negative Working capital is a situation in which current liabilities of the company are higher than current assets. Generally negative working capital is a sign that the company may be facing bankruptcy or a serious financial trouble. Under the best circumstances, poor working capital leads to financial pressure on a company, increased borrowing, and late payments to creditor - all of which result in a lower credit rating. A lower credit rating means banks charge a higher interest rate, which can cost a corporation a lot of money over time. Companies with negative working capital may lack the funds necessary for growth.

Another situation is where companies can sell their inventory and generate cash so quickly that they actually have a negative working capital. These are companies which takes advance first against supply of goods or services.

McDonald's had a negative working capital of \$698.5 million between 1999 and 2000). Amazon.com is another example. This happens because customers pay upfront and so rapidly that the business has no problems raising cash. In these companies, products are delivered and sold to the customer before the company even pays for them.

In order to understand how a company can have a negative working capital, let us take an example of Wal-Mart. Suppose Wal-Mart orders 500,000 copies of a DVD to Warner Brothers and they were supposed to pay within 30 days. What if by the sixth or seventh day, Wal-Mart had already put the DVDs on the shelves of its stores across the country? By the twentieth day, they may have sold all of the DVDs. Here, Wal-Mart received the DVDs, shipped them to its stores, and sold them to the customer (making a profit in the process), all before they had paid Warner Brothers! If Wal-Mart can continue to do this with all of its suppliers, it doesn't really need to have enough cash on hand to pay all of its accounts payable. As long as the transactions are timed right, they can pay each bill as it comes due, maximizing their efficiency.

The bottom line is that a negative working capital can also be a sign of managerial efficiency in a business with low inventory and accounts receivable (which means they operate on an almost strictly cash basis).

For detail analysis on negative working capital students can refer the case study:

"Negative working capital and its impact on profitability: A Case Study of HUL", *The Management Accountant*, March-2013, pp. 308-313 <https://icmai.in/Knowledge-Bank/upload/case-study/2013/Negative-Working.pdf>

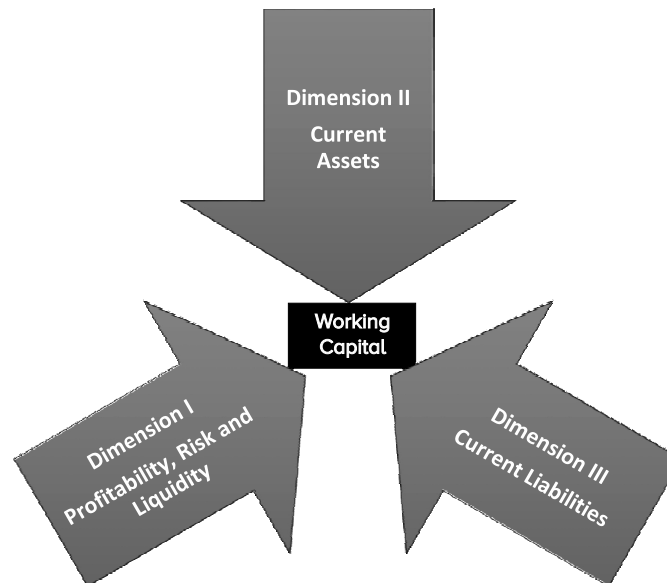
MANAGEMENT OF WORKING CAPITAL

Working capital, in general practice, refers to the excess of current assets over current liabilities. Management of working capital, therefore, is concerned with the problems that arise in attempting to manage the current assets, the current liabilities and the inter-relationship that exists between them. In other words, it refers to all aspects of administration of both current assets and current liabilities.

The basic goal of working capital management is to manage the current assets and current liabilities of a firm in such a way that a satisfactory level of working capital is maintained, i.e., it is neither inadequate nor excessive. This is so because inadequate as well as excessive working capital positions are bad for any business. Inadequacy of working capital may lead the firm to insolvency and excessive working capital implies idle funds which earn no profits for the business.

Working capital management policies of a firm have a great effect on its profitability, liquidity and structural health of the organization. In this context, *working capital management is three dimensional in nature:*

- (i) Dimension I, is concerned with the formulation of policies with regard to profitability, risk and liquidity.
- (ii) Dimension II is concerned with the decisions about the composition and level of current assets.
- (iii) Dimension III is concerned with the decisions about the composition and level of current liabilities.



ESTIMATION OF WORKING CAPITAL REQUIREMENT

The most difficult problem that is faced by the finance manager is the determination of the amount of working capital required at a particular level of production. Following methods are used to estimate working capital requirement:

- Percentage (%) on Sales Method
- Regression Analysis Method
- Forecasting Net Current Assets Method
- Projected Balance Sheet Method
- Operating Cycle Method

Percentage (%) on Sales Method:

It is a traditional and simple method of determining the level of working capital and its components. Under this method, the relationship between sales and working capital is set over the years. As the sales of previous year is assumed base as 100% and all current assets and current liabilities of previous year are termed in proportion of sales percentage and on the basis of expected sales of future sales, the current assets and current liabilities will be calculated.

This method is simple, easy to understand and useful for projecting relatively short-term changes in working capital. However, this method cannot be recommended for universal application because the assumption of linear relationship between sales and working capital may not hold good in all cases.

Regression Analysis Method:

This is statistical method or technique which is applied to forecast working capital requirement. It is a useful statistical technique applied for forecasting working capital requirements. It helps in making working capital requirement projections after establishing the average relationship between sales and working capital and its various components in the past years. The method of least squares is used in this regard.

The relationship between sales and working capital is given by the equation:

$$Y = a + bx$$

Where,

x = Sales (independent variable)

y = Working capital level (dependent variable)

a = Intercept of the least square line with vertical axis

b = Slope of the line

The value of 'a' and 'b' are obtained by the solution of simultaneous linear equations given below:

$$\Sigma y = na + b\Sigma x$$

$$\Sigma xy = a\Sigma x + b\Sigma x^2$$

Illustration-1:

SK Ltd. provided the following information regarding to the sales and working capital for the 10 years from 2010 to 2019. You are requested to determine the working capital requirement for the year 2025 if the estimated sale is Rs. 300 crores.

(All figures in crores)

Sr. No.	Year	Sales	Working Capital	Product of Sales & WC	Square of Sales (x)
		(x)	(y)	x*y	x ²
1	2011	100	55	5500	10000
2	2012	110	64	7040	12100
3	2013	121	80	9680	14641
4	2014	130	70	9100	16900
5	2015	150	90	13500	22500
6	2016	180	120	21600	32400
7	2017	181	100	18100	32761
8	2018	190	140	26600	36100
9	2019	230	150	34500	52900
10	2020	250	160	40000	62500
Gross	10	1642	1029	185620	292802
Total	Years				
Denotation	n	Σx	Σy	Σxy	Σx^2

Solution:

Formula = $\Sigma y = na + b\Sigma x$	Formula = $\Sigma xy = a\Sigma x + b\Sigma x^2$
Will replace the formula with values we have	Will replace the formula with values we have
$1029 = 10a + 1642b$	$185620 = 1642a + 292802b$
Multiply by 1642	Multiply by 10
$\Rightarrow 1689618 = 16420a + 2696164$ ----- Eq. (1)	$\Rightarrow 1856200 = 16420a + 2928020b$ ----- Eq. (2)

Subtract Eq. (1) from (2), we get,
$166582 = 0 + 231856 b$
$b = 166582/231856 = 0.7185$
Now, replace $b = 0.7185$ in our old eq. $1029 = 10a + 1642b$
We get, $a = -15.078$

Working Capital (x) = $-15.078 + 0.7185$ Sales (b)

Now, if the forecasted sales for the year 2025 are 300 crore, the working capital as per this method would be 200.472 crore. (Working Capital = $-15.078 + 0.7185 * 300 = 200.472$).

Forecasting Net Current Assets Method:

This is a very much popular method of computing working capital requirement. Under this method, all forecasted current assets and current liabilities are computed first then identify the net current assets (Total current assets – Total current liabilities). We may have few examples in form of illustrations for this method as follows:

Illustration-2:

A Performa cost sheet of a company provides the following particulars:

<i>Element of Cost</i>	<i>Amount per Unit (Rs.)</i>
Raw Material	80
Direct Labour	30
Overheads	60
Total	170
Profit	30
Selling Price	200

The following further particulars are available:

Raw materials are in stock on an average one month. Materials are in process, on an average half a month. Finished goods are in stock on average one month.

Credit allowed by suppliers is one month. Credit allowed to debtors is two months. Lag in payment of wages is 1½ weeks. Lag in payment of overhead expenses is one month.

One-fourth of the output is sold against cash. Cash on hand and at bank is expected to be Rs.25,000.

You are required to prepare a statement showing the working capital needed to finance a level of activity of 1,04,000 units of production.

You may assume that production is carried on evenly throughout the year, wages and overheads accrue similarly and a time period of four weeks is equivalent to a month.

Solution:

Statement of Working Capital Requirements Forecast

Current Assets:				Rs.
1.	Stock of Raw Materials (4 weeks)	(1,60,000 × 4)		6,40,000
2.	Stock of Finished Goods (4 weeks):		Rs.	
	Raw Material	1,60,000 × 4	6,40,000	
	Direct Labour	60,000 × 4	2,40,000	
	Overheads	1,20,000 × 4	4,80,000	13,60,000
3.	Work-in-Progress (2 weeks):			
	Raw Material	1,60,000 × 2	3,20,000	
	Direct Labour	60,000 × 1	60,000	
	Overheads	1,20,000 × 1	1,20,000	5,00,000
4.	Debtors (8 weeks):			
	Raw Material	1,20,000 × 8	9,60,000	
	Direct Labour	45,000 × 8	3,60,000	
	Overheads	90,000 × 8	7,20,000	20,40,000
5.	Cash Balance			25,000
				45,65,000
Less Current Liabilities:				
6.	Creditors for Raw Materials (4 weeks)	(1,60,000 × 4)	6,40,000	
7.	Lag in payment of wages (1½ weeks)	(60,000 × 1½)	90,000	
8.	Lag in payment of overheads (4 weeks)	(1,20,000 × 4)	4,80,000	12,10,000
9.	Net Working Capital Required			33,55,000

Illustration-3:

From the following information, prepare a statement showing the average amount of working capital required by Solvent Ltd., taking 360 days in a year.

Annual sales are estimated at 5,00,000 units at Rs.2 per unit. Production quantities coincide with sales and will be carried on evenly throughout the year and the production cost is:

Materials	Re. 1 per unit
Labour	Re. 0.40 per unit
Overheads	Re. 0.35 per unit

Customers are given 45 days' credit and 60 days' credit is taken from suppliers – 36 days' supply of raw materials and 15 days' supply of finished goods are kept.

Production cycle is 18 days and all material is issued at the commencement of each production cycle.

A cash balance equivalent to one-third of the average of other working capital requirement is kept for contingencies.

Solution:**Statement of Working Capital Requirements Forecast**

Current Assets:			Rs.
1. Stock of Raw Materials	$\frac{18}{360} \times 500000$		50,000.00
2. Stock of Finished Goods	$\frac{15}{360} \times 875000$		36,458.33
3. Work-in-Progress:			
Material	$\frac{18}{360} \times 500000$	25,000	
Labour and Overheads	$\frac{18}{360} \times 375000 \times 50\%$	9,375	34,375.00
4. Debtors	$\frac{45}{360} \times 875000$		1,09,375.00
Total Current Assets excluding cash			2,30,208.33
Less Current Liabilities:			
Creditors of Raw Materials	$\frac{60}{360} \times 500000$		83,333.33
Other Working Capital Requirement			1,46,875.00
Add Cash for contingencies (1/3)			48,958.33
Working Capital Required			1,95,833.33

Note:

- (i) Debtors have been taken at total cost of sales. Alternatively, they may be taken at selling price.
- (ii) It has been assumed that labour and overheads are incurred evenly through out the production process.

Projected Balance Sheet Method:

Under this method, all estimated assets and liabilities are taken in consideration in form of Balance Sheet (excluding cash as it is to be calculated) with their forecasted figures. The balance of Liabilities over Assets will be the Cash, whereas the balance of assets over liabilities will be bank Overdraft.

We may understand the concept with the following illustration:

Illustration-4:

On 1st January, 2006, the board of directors of Littlemore & Co. desire to know the amount of working capital that will be required to meet the programme they have planned for the year. From the following information, prepare an estimate of working capital requirements and a forecast of Profit and Loss Account and Balance Sheet.

Issued Shared Capital	Rs. 2,00,000
8% Debentures	Rs. 50,000
Fixed Assets as on 1st Jan.	Rs. 1,25,000

Production during the previous year was 60,000 units and it proposed to maintain the same during 2006.

The expected ratios of cost to selling price are: raw materials 60%, direct wages 10%, and overheads 20%.

Following further information are available:

- 1) Raw materials are expected to remain in stores for an average of two months before issue to production.
- 2) Each unit of production is expected to be in process for one month.
- 3) Finished goods will stay in the warehouse awaiting dispatch to customers for approximately three months.
- 4) Credit allowed by creditors is two months from date of delivery of raw materials.
- 5) Credit given to debtors is three months from date of dispatch.
- 6) Selling price is Rs.5 per unit.
- 7) Sales and production follow a consistent pattern.

Solution:**Statement of Working Capital Requirement Forecast**

Current Assets:			Rs.
Stock of Raw materials (2 months)	$(60,000 \times 3 \times 2/12)$		30,000
Stock of Finished Goods (3 months):			
Material	$60,000 \times 3 \times 3/12$	45,000	

Labour	$60,000 \times 0.5 \times 3/12$	7,500	
Overhead	$60,000 \times 1.0 \times 3/12$	15,000	67,500
Work-in-Progress (1 month):			
Material	$60,000 \times 3 \times 1/12$	15,000	
Labour	$60,000 \times 0.5 \times 50\% \times 1/12$	1,250	
Overhead	$60,000 \times 1 \times 50\% \times 1/12$	<u>2,500</u>	18,750
Debtors (3 months):			
Material	$60,000 \times 3 \times 3/12$	45,000	
Labour	$60,000 \times 0.5 \times 3/12$	7,500	
Overhead	$60,000 \times 1.0 \times 3/12$	<u>15,000</u>	<u>67,500</u>
			1,87,750
Less Current Liabilities:			
Creditors of Raw materials (2 months)	$(60,000 \times 3 \times 2/12)$		30,000
Net Working Capital Required			1,53,750

Forecast Profit & Loss Account

<i>Particulars</i>	<i>Rs.</i>	<i>Particulars</i>	<i>Rs.</i>
To Material	1,80,000	By Sales	3,00,000
To Direct Labour	30,000		
To Overheads	60,000		
To G.P. c/d	<u>30,000</u>		
	<u>3,00,000</u>		<u>3,00,000</u>
To Debenture Interest	4,000	By G.P. b/d	30,000
To Net Profit	26,000		
	30,000		30,000

Forecast Balance Sheet

<i>Liabilities</i>	<i>Amount Rs.</i>	<i>Assets</i>		<i>Amount Rs.</i>
Issued Capital	2,00,000	Fixed Assets		1,25,000
Profit Balance	26,000	Working Capital:		
5% Debentures	50,000	Current Assets:		
		Stocks:		
		Raw Materials	30,000	
		Work-in-Progress	18,750	
		Finished Goods	<u>67,500</u>	
			1,16,250	
		Debtors	<u>75,000</u>	
			1,91,250	
		Less Current Liabilities:		
		Creditors 30,000		
		Bank overdraft 10,250	<u>40,250</u>	1,51,000
	2,76,000			2,76,000

THE OPERATIONAL CYCLE METHOD CONCEPT AND APPLICATION OF QUANTITATIVE TECHNIQUES

This method of working capital forecast is based on the operational cycle concept of working capital. The operational cycle refers to the period that a business enterprise takes in converting cash back into cash. In the case of a manufacturing concern, the duration of time needed to complete the chain of events from cash to production and back to cash is termed as the "operating cycle". As an example, a manufacturing firm uses cash to acquire inventory of materials that is converted into semi-finished goods and then into finished goods. When finished goods are disposed of to customers, no credit accounts receivable are generated. When cash is collected from customers, we again have cash. At this stage one operating cycle is completed.

Thus, a circle from cash back to cash is called the 'Operating Cycle'. Each of the above operating cycle stage is expressed in terms of number of days of relevant activity and requires a level of investment to support it. The sum total of these stage-wise investments will be the total amount of working capital of the firm.

The following formula may be used to express the framework of the operating cycle:

$$t = (r - c) + w + f + b$$

where, t = stands for the total period of the operating cycle in number of days;

r stands for the number of days of raw material and stores consumption requirements held in raw materials and stores inventory

- c stands for the number of days of purchases in trade creditors;
- w stands for the number of days of cost of production held in work-in-progress;
- f stands for the number of days of cost of sales held in finished goods inventory;
- b stands for the number of days of sales in book debts.

The computations may be made as under:

$$r = \frac{\text{Average inventory of raw materials and stores}}{\text{Average per day consumption of raw materials and stores}}$$

$$c = \frac{\text{Average trade crediturs}}{\text{Average credit purchases per day}}$$

$$w = \frac{\text{Average work-in-progress}}{\text{Average cost of production per day}}$$

$$f = \frac{\text{Average inventory of finished goods}}{\text{Average cost of sales per day}}$$

$$b = \frac{\text{Average book debts}}{\text{Average sales per day}}$$

The average inventory, trade creditors, work-in-progress, finished goods and book debts can be computed by adding the opening and closing balances at the end of the year in the respective accounts and dividing the same by two. The average per day figures can be obtained by dividing the concerned annual figures by 365 or the number of days in the given period.

The operational cycle method of determining working capital requirements gives only an average figure. The fluctuations in the intervening period due to seasonal or other factors and their impact on the working capital requirements can not be judged in this method. To identify these impacts, continuous short-run detailed forecasting and budgeting exercises are necessary.

Illustration-5:

From the following information extracted from the books of a manufacturing company, compute the operational cycle in days:

Period Covered: 365 days

Average period of credit allowed by suppliers: 16 days

Average total of debtors outstanding	Rs. 4,80,000
Raw material consumption	Rs. 44,00,000
Total production cost	Rs. 1,00,00,000
Total cost of sales	Rs. 1,05,00,000
Sales for the year	Rs. 1,60,00,000
Value of average stock maintained:	
Raw Material	Rs. 3,20,000
Work-in-Progress	Rs. 3,50,000
Finished Goods	Rs. 2,60,000

Solution:**Computation of Operational Cycle**

$$\begin{aligned} \text{a) Materials Storage Period} &= \frac{\text{Average Stock for the year}}{\text{Daily Average Consumption}} \\ &= \frac{320}{4,400 \div 365} = \frac{320 \times 365}{4,400} = 27 \text{ days} \end{aligned}$$

$$\text{Less Average Credit Period granted by suppliers} = \frac{16 \text{ days}}{11 \text{ days}}$$

$$\begin{aligned} \text{b) Production Process Period} &= \frac{\text{Average W.I.P.}}{\text{Average Production Cost}} \\ &= \frac{350}{10,000 \div 365} = \frac{350 \times 365}{10,000} = 13 \text{ days} \end{aligned}$$

$$\begin{aligned} \text{c) Finished Goods Storage Period} &= \frac{\text{Average Stock of Finished Goods}}{\text{Average Cost of Sales}} \\ &= \frac{260}{10,500 \div 365} = \frac{260 \times 365}{10,500} = 9 \text{ days} \end{aligned}$$

$$\begin{aligned} \text{d) Debtors Collection Period} &= \frac{\text{Average Debtors}}{\text{Daily Average Sales}} \\ &= \frac{480}{16,000 \div 365} = \frac{480 \times 365}{16,000} = 11 \text{ days} \end{aligned}$$

Operational Cycle Period = 44 days

Illustration-6:

The following information is available for SK Ltd.

(Amount in Rs.)

Average stock of raw materials and stores	2,00,000
Average work-in-progress inventory	3,00,000
Average finished goods inventory	1,80,000
Average accounts receivable	3,00,000
Average accounts payable	1,80,000
Average raw materials and stores purchased on credit and consumed per day	10,000
Average work-in-progress value of raw materials committed per day	12,500
Average cost of goods sold per day	18,000
Average sales per day	20,000

Calculate the duration of operating cycle.

Solution**Calculation of operating cycle**

Period of raw material stage	$\frac{2,00,000}{10,000}$	= 20 days
Period of work-in-progress stage	$\frac{3,00,000}{12,500}$	= 24 days
Period of finished goods stage	$\frac{1,80,000}{18,000}$	= 10 days
Period of Accounts receivable stage	$\frac{3,00,000}{20,000}$	= 15 days
Period of Accounts payable stage	$\frac{1,80,000}{10,000}$	= 18 days

Duration of operating cycle = (20 + 24 + 10 + 15) – 18 = 51 days

MANAGEMENT OF CASH

Cash is one of the current assets of a business. It is needed at all times to keep the business going. A business concern should always keep sufficient cash for meeting its obligations. Any shortage of cash will hamper the operation of a concern and any excess of it will be unproductive. Cash is the most unproductive of all the assets. While fixed assets like machinery, plant, etc. and current assets such as inventory will help the business in increasing its earning capacity, cash in hand will not add anything to the concern.

Nature of Cash

For some persons, cash means only money in the form of currency (cash in hand). For other persons, cash means both cash in hand and cash at bank. Some even include near cash assets in it. They take marketable securities too as part of cash. These are the securities which can easily be converted into cash.

Cash itself does not produce goods or services. It is used as a medium to acquire other assets. It is the other assets which are used in manufacturing goods or providing services. The idle cash can be deposited in bank to earn interest.

Motives for holding Cash**1) Transaction Motive:**

A firm needs cash for making transactions in the day to day operations. The cash is needed to make purchases, pay expenses, taxes, dividends, etc. The need to hold cash would not arise if there were perfect synchronization between cash receipts and cash payment, i.e., enough cash is received when the payment has to be made.

2) Precautionary Motive:

A firm is required to keep cash for meeting various contingencies. Though cash inflows and cash

outflows are anticipated, there may be variations in these estimates. For example, a debtor who was to pay after 7 days may inform of his inability to pay; on the other hand a supplier who used to give credit for 15 days may not have the stock to supply or he may not be in a position to give credit at present. In these situations cash receipts will be less than expected and cash payments will be more as purchases may have to be made for cash instead of credit. Such contingencies often arise in a business. A firm should keep some cash for such contingencies or it should be in position to raise finances at a short period. The cash maintained for contingency needs is not productive or it remains idle. However, such cash may be invested in short-period or low-risk marketable securities which may provide cash as and when necessary.

3) **Speculative Motive:**

The speculative motive relates to holding of cash for investing in profitable opportunities as and when they arise. Such opportunities do not come in a regular manner. These opportunities cannot be scientifically predicted but only conjectures can be made about their occurrence. For example, the prices of shares and securities may be low at a time with an expectation that these will go up shortly. The prices of raw materials may fall temporarily and a firm may like to make purchases at these prices. Such opportunities can be availed of if a firm has cash balance with it. These transactions are speculative because prices may not move in a direction; in which we suppose them to move. The primary motive of a firm is not to indulge in speculative transactions but such investment may be made at times.

FACTORS DETERMINING LEVEL OF CASH

Maintenance of optimum level of cash is the main problem around which the financial managers do the exercise of cash managements. Level of cash holding differs from industry to industry, organization to organization but the factors determining its level are common to all which can be summarized as follows:

1) **Credit Policy:**

Credit policy refers to the management policy in regard to allowing credit sales. It affects productivity and liquidity of the business considerably. If credit policy is liberal cash level will be higher and vice-versa.

2) **Nature of the Product:**

Nature of goods produced by the organization to a great extent exercises influence on cash reserves. If the produce comes in necessity class, the level of cash holding will differ in comparison to luxury necessity.

3) **Size and Area of Operation:**

Area of operation refers to the geographical area in which the organization is operating. If the organization is working on a large scale, it is quite possible that organization would have to keep higher cash balance. On the contrary, limited area of operations will require less cash balance.

4) **Duration of Production Cycle:**

It refers to the time period taken by the raw material to become finished product/marketable produce. In case of long production cycle, the level of cash holding is likely to be high and vice-versa.

5) **Policy followed by the Organization as to Disbursement of Salaries, Bonus, Dividend etc.:**

If salaries are being distributed after 15 days the organization would have to manage a high level of cash reserve, while the weekly payment of wages and salaries will require still more funds. On the contrary, monthly payments will reduce the need of funds.

6) Relations with Banks and Credit Standing of the Firm:

A firm managing proper relations with banks needs to carry less cash reserves to meet unpredicted cash outflow. Similarly, a firm whose credit standing is high can secure its supplies of materials on most suitable terms and finance a considerable part of its inventory through trade credit.

ADVANTAGES OF AMPLE CASH

The planning of cash is one of the primary responsibilities of financial management. In fact, cash is hub around which all financial matters cluster. A firm having sufficient cash balance can drive the following advantages from it:

1) Maintenance of Goodwill:

The goodwill and reputation of a business firm depends to a large extent on this fact that the firm retires all the obligations and meets the payments as and when they mature. It can be possible only when the firm maintains a good cash balance.

2) Cash Discount can be Availed:

If a firm has sufficient cash, it can avail cash discounts offered by the suppliers. It will lower down the raw material cost and finally the cost of production.

3) Good Bank Relations:

Commercial banks like to maintain good relations with such firms having high liquidity in funds. Such firms can avail credit facility from the banks at reasonable rate of interest.

4) Exploitation of Business Opportunities:

Firms having good cash position can exploit the business opportunities very well. They can take risk of entering into new ventures.

5) Encouragement to New Investments:

Firm having good cash position can maintain a sound cash dividend policy. This encourages the new investment in the shares of such firm because shareholders like cash dividend the most.

6) Increase in Efficiency:

Unless there is an adequate supply of cash, production can not be carried out smoothly. Uninterrupted production process increases labour efficiency.

CASH MANAGEMENT MODELS

One very important objective of cash management is to determine optimal cash balance, i.e., to ensure that cash does not remain idle unnecessarily and, at the same time, the firm is not confronted with a situation of cash shortage. The amount of cash balance will depend on the risk-return trade off. If the firm's cash balances are insufficient, its liquidity position will become weak but its profitability will improve as the released funds can be invested in marketable securities so that when the need arises, the firm can sell these to meet out its requirement. On the other hand, if the firm keeps high balances, its liquidity position will certainly improve but it will have to forego the potential profit on holding large cash balance. Hence, the firm should maintain optimum-cash balance, neither too much nor too little. The problem before a financial manager is to determine the optimum cash balance.

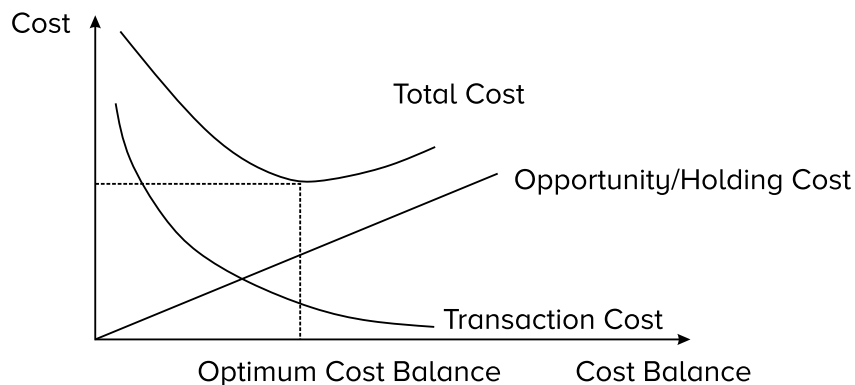
Various cash management models attempt to achieve the objective of cash management.

A brief description of these models is as follows:

(1) Optimum Cash Balance Under Certainty - Baumol's Mathematical Model:

Baumol's model provides a formal approach for determining a firm's optimum cash balance under certainty. It is based on the combination of inventory theory with monetary theory. This model is usually used in inventory management but has its application in determining the optimal cash balance also. In this model, cash is taken as an inventory item which flows out at a constant rate and is replenished instantaneously by borrowing or by selling securities. It is assumed that the size and timing of cash inflows are fully controllable to which transaction cost (fixed cost per order, i.e., cost of converting the securities into cash) and a variable carrying cost per rupee (in the form of opportunity cost of holding cash, i.e., the return on marketable securities) are attached. There is inverse relationship between the two costs as when one increases, the other decreases. Hence, the optimal cash balance is the trade off between opportunity cost and transaction cost and it is reached at a point where total cost is least.

The optimum cash balance is shown in figure given below:



Baumol's Model (Trade off between Holding Cost and Transaction Cost)

The following formula may be applied for calculating optimum cash balance:

$$C = \sqrt{\frac{2A \times F}{O}}$$

where, C = Optimum cash balance

A = Annual (or monthly) cash disbursements

F = Fixed cost per transaction

O = Opportunity cost of holding cash

Assumptions:

Baumol's model is based upon the following assumptions:

- a) Cash needs of the firm are known with certainty.
- b) Cash disbursements are uniform over a period of time and it is known with certainty.
- c) The opportunity cost of holding cash and transaction cost of converting securities into cash are known and they remain constant.

However, inside the model is subject to unreal assumptions, it does not provide an applicable tool for cash management.

Illustration-7:

The annual cash requirement of XYZ Ltd. is Rs.10 lakh. The company has marketable securities in lot sizes of Rs.50,000, Rs.1,00,000, Rs.2,00,000 and Rs.2,50,000. Cost of conversion of marketable securities per lot is Rs.1,000. The company's opportunity cost of funds is 5% per annum.

You are required to prepare a table indicating which lot size will have to be sold by the company. Also determine economic lot size by Baumol Model.

Solution:**Table Indicating Lot Size**

a)	Annual requirement of cash (Rs.)	10,00,000	10,00,000	10,00,000	10,00,000
b)	Lot size of securities (Rs.)	50,000	1,00,000	2,00,000	2,50,000
c)	No. of lot sizes (a ÷ b)	20	10	5	4
d)	Average holding of cash (b ÷ 2)	25,000	50,000	1,00,000	1,25,000
e)	Opportunity cost of funds (Rs.) (5% of d)	1,250	2,500	5,000	6,250
f)	Conversion cost per transaction (Rs.)	1,000	1,000	1,000	1,000
g)	Total conversion cost (Rs.) (c × f)	20,000	10,000	5,000	4,000
h)	Total cost (Rs.) (e ÷ g)	21,250	12,500	10,000	10,250

As total cost is minimum at lot size of Rs.2,00,000 and so it is economic lot size of selling securities. The company should make $10,00,000 \div 2,00,000 = 5$ transactions regarding sale of marketable securities for conversion into cash during the year.

Calculation of Economic Lot Size by Baumol Model:

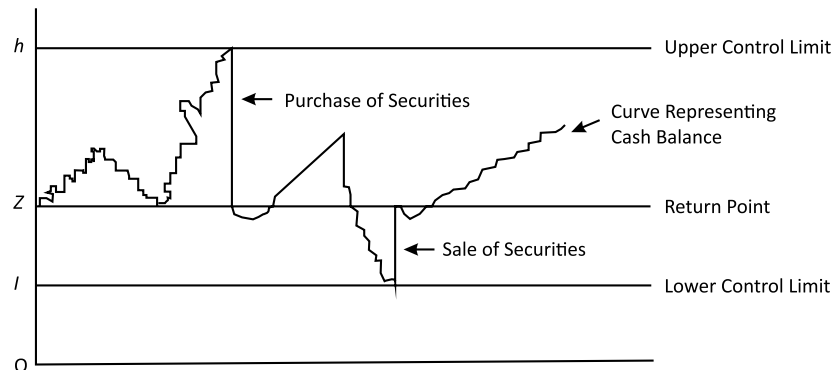
$$C = \sqrt{\frac{2A \times F}{O}} = \sqrt{\frac{2 \times 10,00,000 \times 1,000}{0.05}} = \text{Rs.}2,00,000$$

(2) Optimum Cash Balance Under Uncertainty or Stochastic Model – The Miller-Orr Model:

It helps to determine the optimal level of cash balance when the demand for cash is stochastic and not known in advance. In such a situation, Baumol's EOQ model is not applicable. When changes in cash balances occur randomly, the application of control theory serves a useful purpose. The Miller-Orr model is one of such control limit models. It deals with the cash management problem under the assumption of stochastic cash flows. Thus, this model is useful for firms with uncertain cash inflows and cash outflows. In this model, two control limits are set for cash balances. These limits may consist of an 'upper limit' 'h', 'z' as the return point and 'l' as the 'lower limit'. When cash balance reaches the upper limit, a transfer of cash equal to h-z is affected to marketable securities; when it touches the lower limit, a transfer from marketable securities to cash is made. During the period when cash balance stays between these high and low limits, no transaction between cash and marketable securities is made.

The high and low limits of cash balances are set on the basis of fixed costs associated with the securities transactions,

the opportunity cost of holding cash and the degree of likely fluctuation in cash balances. These limits satisfy the demand for cash at the lowest possible total cost. The model is illustrated in the following figure:



Miller-Orr Cash Management Model

We can see in the figure that when the balance reaches the upper limit, $h-z$ amount of cash is invested in the marketable securities and then the new cash balance comes down to z rupees. When the balance touches l , $l-z$ rupees of marketable securities are sold bringing the cash balance to z again. The minimum limit can be set at some amount higher than Zero also, and then h and z would move up in the figure. Setting up the lower limit at some positive amount would take care of delays in transfer from one account to another. The optimal value of z , the return point for security transactions can be determined as follows:

$$z = \sqrt[3]{\frac{3b \sigma^2}{4i}}$$

where, b = fixed cost associated with a security transaction

σ^2 = variance of daily net cash flows

i = interest rate per day on marketable securities.

The optimal value of h is simply $3z$.

Upper Limit = Lower Limit + $3z$

Return Point = Lower Limit + z

or = Upper Limit – $2z$

Average Cash Balance = Lower Limit + z .

Illustration-8:

Amit Ltd. has a policy of maintaining a minimum cash balance of Rs.5,00,000. The standard deviation of the company's daily cash flows is Rs.2,00,000. The annual interest rate is 14%. The transaction cost of buying or selling securities is Rs.150 per transaction. Determine Amit's upper control limit and return point as per Miller-Orr Model.

Solution :

$$z = \sqrt[3]{\frac{3b \sigma^2}{4i}} = \sqrt[3]{\frac{3 \times 150 \times (2,00,000)^2}{4 \times 0.14/365}} = \sqrt[3]{\frac{450 \times 2,00,000^2}{4 \times 0.14/365}} = \text{Rs.}2,27,226$$

Upper Control Limit = Lower Limit + $3z$

$$\begin{aligned}
 &= 5,00,000 + 3 \times 2,27,226 \\
 &= \text{Rs.}11,81,678 \\
 \text{Return Point} &= \text{Lopwer Limit} + z \\
 &= 5,00,000 + 2,27,226 \\
 &= \text{Rs.}7,27,226 \\
 \text{Average Cash Balance} &= \text{Lower Limit} + z \\
 &= 5,00,000 + \times 2,27,226 \\
 &= \text{Rs.}9,02,968
 \end{aligned}$$

MANAGING CASH FLOWS

After estimating the cash flows, efforts should be made to adhere to the estimates of receipts and payments of cash. Cash management will be successful only if cash collections are accelerated and cash disbursements, as far as possible, are delayed. The following methods of cash management help in managing cash:

(A) Methods of Accelerating Cash Inflows

1. *Prompt Payment by Customers:*

In order to accelerate cash inflows, the collections from customers should be prompt. This will be possible by prompt billing. The customers should be promptly informed about the amount payable and the time by which it should be paid. Another method for prompting customers to pay earlier is to allow them a cash discount.

2. *Quick Conversion of Payment into Cash:*

Cash inflows can be accelerated by improving the cash collecting process. Once the customer writes a cheque in favor of the concern the collection can be quickened by its early collection

3. *Decentralized Collections:*

A big firm operating over wide geographical area can accelerate collections by using the system of decentralized collections. A number of collecting centers are opened in different areas instead of collecting receipts at one place. Decentralized collection system saves mailing and processing time and, thus, reduces the financial requirements.

4. *Lock Box System:*

Lock box system is another technique of reducing mailing, processing and collecting time. Under this system, the firm selects some collecting centers at different places. The places are selected on the basis of number of consumers and the remittances to be received from a particular place. The firm hires a post box in a post office and the parties are asked to send the cheques on that post box number. A local bank is authorized to operate the post box.

(B) Methods of Slowing Cash Outflows

A company can keep cash by effectively controlling disbursements. The objective of controlling cash outflows is to slow down the payments as far as possible. Following methods can be used to delay disbursements:

1. *Paying on Last Date:*

The disbursements can be delayed on making payments on the last due date only. If the credit is for 10 days then payment should be made on 10th day only.

2. Payments through Drafts:

A company can delay payments by issuing drafts to the suppliers instead of giving cheques. When a cheque is issued then the company will have to keep a balance in its account so that the cheque is paid whenever it comes. On the other hand a draft is payable only on presentation to the issuer. The receiver will give the draft to its bank for presenting it to the buyer's bank. It takes a number of days before it is actually paid.

3. Adjusting Payroll Funds:

Some economy can be exercised on payroll funds also. It can be done by reducing the frequency of payments. If the payments are made weekly then this period can be extended to a month. Secondly, finance manager can plan the issuing of salary cheque and their disbursements.

4. Centralization of Payments:

The payments should be centralized and payments should be made through drafts or cheques. When cheques are issued from the main office then it will take time for the cheques to be cleared through post. The benefit of cheque collecting time is availed.

5. Inter-bank Transfer:

An efficient use of cash is also possible by inter-bank transfers. If the company has accounts with more than one bank then amounts can be transferred to the bank where disbursements are to be made. It will help in avoiding excess amount in one bank.

Illustration-9:

From the following budgeted figures, prepare a Cash Budget in respect of three months to June 30:

<i>Months</i>	<i>Sales Rs.</i>	<i>Materials Rs.</i>	<i>Wages Rs.</i>	<i>Overheads Rs.</i>
January	60,000	40,000	11,000	6,200
February	56,000	48,000	11,600	6,600
March	64,000	50,000	12,000	6,800
April	80,000	56,000	12,400	7,200
May	84,000	62,000	13,000	8,600
June	76,000	50,000	14,000	8,000

Expected Cash Balance on 1st April Rs.20,000. Other informations are as follows:

- 1) Materials and overheads are to be paid during the month following the month of supply.
- 2) Wages are to be paid during the month in which they are incurred.
- 3) Terms of Sales: The terms of credit sales are payment by the end of the month following the month of sales; $\frac{1}{2}$ of the sales are paid when due, the other half to be paid during the next month.
- 4) 5% sales commission is to be paid within the month following actual sales.
- 5) Preference dividend for Rs.30,000 is to be paid on 1st May.
- 6) Share call money for Rs.25,000 is due on 1st April and 1st June.
- 7) Plant and Machinery worth Rs.10,000 is to be installed in the month of January and the payment is to be made in the month of June.

Solution:

Cash Budget
Period three months ending June

Details	April (Rs.)	May (Rs.)	June (Rs.)	
Balance b/fd		20,000	32,600	- 5,600
<i>Receipts:</i>				
Cash from debtors:				
February Sales		28,000		
March Sales		32,000	32,000	
April Sales			40,000	40,000
May Sales				42,000
Share Call Money		25,000	–	25,000
Total Cash Available (A)		1,05,000	1,04,600	1,01,400
<i>Disbursements:</i>				
Materials		50,000	56,000	62,000
Overheads		6,800	7,200	8,600
Wages		12,400	13,000	14,000
Sales Commission		3,200	4,000	4,200
Preference Dividend			30,000	
Payment for Plant and Machinery		–	–	10,000
Total Disbursements (B)		72,400	1,10,200	98,800
Closing Cash Balance (A – B)		32,600	– 5,600	2,600

Illustration-10

From the following forecasts of income and expenditure, prepare a cash budget for the half year ended on 30th June 2008:

Year	Months	Sales (Credit) Rs.	Purchase (Credit) Rs.	Wages Rs.	Manufacturing Expenses Rs.	Administration Expenses Rs.	Selling Expenses Rs.
2007	Nov.	25,000	10,000	2,500	1,100	1,000	600
	Dec.	30,000	15,000	2,800	1,200	975	650
2008	Jan.	20,000	10,000	2,000	1,250	1,060	550

Year	Months	Sales (Credit) Rs.	Purchase (Credit) Rs.	Wages Rs.	Manufacturing Expenses Rs.	Administration Expenses Rs.	Selling Expenses Rs.
	Feb.	25,000	15,000	2,200	1,150	1,040	650
	Mar.	30,000	17,500	2,400	1,300	1,105	750
	Apr.	35,000	20,000	2,600	1,350	1,120	800
	May	40,000	22,500	2,800	1,450	1,180	825
	June	45,000	25,000	3,000	1,500	1,185	875

- 1) A sales commission of 5% on sales and due two months after sales, is payable in addition to the above selling expenses.
- 2) Capital Expenditure – Plant purchased, 1st January for Rs.10,000, its payment being immediately due; Building purchased in January for RS.80,000, payable in two half-yearly installments, the first in February.
- 3) A dividend of Rs.5,000 (net) is payable in April.
- 4) Period of credit allowed by creditors and to customers is 2 months.
- 5) Lag in payment of wages – 1/8th month.
- 6) Lag in payment of other expenses – 1 month.
- 7) Cash Balance on January 1, 2008 was expected to be Rs.37,500.

Solution:**Cash Budget**

Period half-year ending: 30th June 2005

	Months					
	Jan. Rs.	Feb. Rs.	Mar. Rs.	Apr. Rs.	May Rs.	June Rs.
Receipts:						
Balance b/d	37,500	36,325	4,790	8,575	6,595	11,550
Cash realized from debtors	25,000	30,000	20,000	25,000	30,000	35,000
Cash Available (A)	62,500	66,326	24,790	33,575	36,595	46,550
Payments:						
Accounts Payable (purchase)	10,000	15,000	10,000	15,000	17,500	20,000
Wages	2,100	2,175	2,375	2,575	2,775	2,975
Manufacturing Expenses	1,200	1,250	1,150	1,300	1,350	1,450
Administration Expenses	975	1,060	1,040	1,105	1,120	1,180

Selling Expenses	650	550	650	750	800	825
Sales Commission	1,250	1,500	1,000	1,250	1,500	1,750
Plant Purchased	10,000	–	–	–	–	–
Building Purchased	–	40,000	–	–	–	–
Dividend Paid	–	–	–	5,000	–	–
<i>Cash Disbursements (B)</i>	26,175	61,535	16,215	26,980	25,045	28,180
Closing Cash Balance (A – B)	36,325	4,790	8,575	6,595	11,550	18,370

Calculation of wages:

Delay in wages payment is 1/8 so the balance 7/8 will be realized in the same month.

Calculation for the month of Jan:

1/8 of the month of Dec. i.e. 1/8 (2800)	=	350
7/8 of the month of Jan. i.e. 7/8 (2000)	=	1750
Total	=	2100

The same procedure is used for other months

MANAGEMENT OF INVENTORY

The dictionary meaning of inventory is 'stock of goods'. The word 'Inventory' is understood differently by various authors. In accounting language it may mean stock of finished goods only. In a manufacturing concern, it may include raw materials; work in process, stores, etc. To understand the exact meaning of the word 'Inventory', we may study it from the usage side or from the side of point of entry in the operations. Inventory includes the following things:

- a) Raw Material
- b) Work-in-Progress
- c) Consumables
- d) Finished goods
- e) Spares

Purpose/benefits of holding inventories

There are three main purposes of motives of holding inventories:

- (i) **The Transaction Motive** which facilitates continuous production and timely execution of sales orders.
- (ii) **The Precautionary Motive** which necessitates the holding of inventories for meeting the unpredictable changes in demand and supplies of materials.
- (iii) **The Speculative Motive** which induces to keep inventories for taking advantage of price fluctuations, saving in re-ordering costs and quantity discounts, etc.

The investment in inventory is very high in most of the undertakings engaged in manufacturing, whole-sale and retail trade. The amount of investment is sometimes more in inventory than in other assets. About 90 per cent part of working capital is invested in inventories. It is necessary for every management to give proper

attention to inventory management. A proper planning of purchasing, handling, storing and accounting should form a part of inventory management. An efficient system of inventory management will determine (a) what to purchase (b) how much to purchase (c) from where to purchase (d) where to store, etc.

The purpose of inventory management is to keep the stocks in such a way that neither there is over-stocking nor under-stocking. The over-stocking will mean reduction of liquidity and starving of other production processes; under-stocking, on the other hand, will result in stoppage of work. The investments in inventory should keep in reasonable limits.

Objectives of inventory management

The main objectives of inventory management are operational and financial. The operational objectives mean that the materials and spares should be available in sufficient quantity so that work is not disrupted for want of inventory. The financial objective means that investments in inventories should not remain idle and minimum working capital should be locked in it. The following are the objectives of inventory management:

- 1) To ensure continuous supply of materials, spares and finished goods so that production should not suffer at any time and the customers demand should also be met.
- 2) To avoid both over-stocking and under-stocking of inventory.
- 3) To maintain investments in inventories at the optimum level as required by the operational and sales activities.
- 4) To keep material cost under control so that they contribute in reducing cost of production and overall costs.
- 5) To eliminate duplication in ordering or replenishing stocks. This is possible with the help of centralizing purchases.
- 6) To minimize losses through deterioration, pilferage, wastages and damages.
- 7) To design proper organization for inventory management. A clear cut accountability should be fixed at various levels of the organization.
- 8) To ensure perpetual inventory control so that materials shown in stock ledgers should be actually lying in the stores.
- 9) To ensure right quality goods at reasonable prices. Suitable quality standards will ensure proper quality of stocks. The price-analysis, the cost-analysis and value-analysis will ensure payment of proper prices.
- 10) To facilitate furnishing of data for short-term and long-term planning and control of inventory.

Risk associated with inventory

The risk in inventory management signifies the chance that inventories cannot be turned over into cash through normal sale without a loss. These risks are due to following three factors:

1. Price decline:

It may result from an increase in the market supply of products, introduction of a new competitive product and price reduction by competitors.

2. Product deterioration:

It may result due to holding a product too long or it may occur when inventories are held under improper conditions of light, heat, humidity and pressure.

3. Obsolescence:

It is due to changes in customer taste, new production techniques, improvement in the product design, specifications etc.

Costs associated with inventory

The followings are the costs which are associated with inventory:

1. Material Cost
2. Ordering Cost
3. Inventory Carrying Costs
4. Stock-out or Shortage Costs

TOOLS AND TECHNIQUES OF INVENTORY MANAGEMENT

Effective inventory management requires an effective control system for inventories. A proper inventory control not only helps in solving the acute problem of liquidity but also increases profits and causes substantial reduction in the working capital of the concern.

The following are the important tools and techniques of inventory management and control:

- 1) Determination of Stock Levels
- 2) Determination of safety stocks
- 3) Selecting a proper System of Ordering for Inventory
- 4) Determination of Economic Order Quantity
- 5) A-B-C Analysis
- 6) VED Analysis
- 7) JIT Analysis
- 8) Inventory Turnover Ratio
- 9) Ageing Schedule of Inventories
- 10) Perpetual Inventory System

Determination of Stock Levels, Safety Stocks & EOQ

(1) Determination of Stock Levels:

Carrying of too much and too little of inventories is detrimental to the firm. If the inventory level is too little, the firm will face frequent stock-outs involving heavy ordering cost and if the inventory level is high it will be unnecessary tie-up of capital. Therefore, an efficient inventory management requires that a firm should maintain an optimum level of inventory where inventory costs are the minimum and at the same time there is no stock-out which may result in loss of sale or stoppage of production. Various stock levels are discussed as such.

- (a) **Minimum Level:** This represents the quantity of stock that should be held at all time, stock level is normally not allowed falling below this level. This level of stock is a buffer stock for use during emergencies. Fall in stock level below minimum level will indicate potential danger to the business. Thus, extra efforts have to be taken to expedite the supply.

$$\text{Minimum Stock Level} = \text{Re-order Level} - (\text{Normal Consumption} \times \text{Normal re-order Period})$$

The following factors are to be considered in fixing the minimum level:

- i) Nature of items of materials.
- ii) Minimum time required for delivery.
- iii) Rate of consumption of materials.
- iv) Stock-out costs which include loss of contribution margin, loss of Goodwill etc.

(b) Re-ordering Level:

When the quantity of materials reaches a certain figure then fresh order is sent to get materials again. The order is sent before the materials reach minimum stock level. The rate of ordering level is fixed between minimum level and maximum level. The rate of consumption, number of days required replenishing the stocks, and maximum quantities of materials required on any day are taken into account while fixing re-ordering level. Re-ordering level is fixed with the following formula:

$$\text{Re-ordering Level} = \text{Maximum Consumption} \times \text{Maximum Re-order period}$$

(c) Maximum Level:

It is the quantity of materials beyond which a firm should not exceed its stocks. If the quantity exceeds maximum level limit then it will be overstocking. A firm should avoid overstocking because it will result in high material costs. Overstocking will mean blocking of more working capital, more space for storing the materials, more wastage of materials and more chances of losses from obsolescence. Maximum stock level will depend upon the following factors:

- 1) The availability of capital for the purchase of materials:
- 2) The maximum requirements of materials at any point of time.
- 3) The availability of space for storing the materials.
- 4) The rate of consumption of materials during lead time.
- 5) The cost of maintaining the stores.
- 6) The possibility of fluctuations in prices.
- 7) The nature of materials: If the materials are perishable in nature, then they cannot be stored for long.
- 8) Availability of materials.
- 9) Restrictions imposed by the Government
- 10) The possibility of change in fashions will also affect the maximum level.

The following formula may be used for calculating maximum stock level:

$$\text{Maximum stock level} = \text{Re-ordering Level} + \text{Re-ordering Quantity} - (\text{Minimum Consumption} \times \text{Minimum Re-ordering period})$$

(d) Danger Level:

It is the level beyond which materials should not fall in any case. If danger level arises then immediate steps should be taken to replenish the stocks even if more cost is incurred in arranging the materials. If materials are not arranged immediately there is a possibility of stoppage of work. Danger level is determined with the following formula:

Danger Level = Average Consumption x Maximum re-ordering period for emergency purchases

(e) Average Stock Level:

The average stock level is calculated as such:

Average Stock Level = Minimum Stock Level + 1/2 of re-ordering quantity

OR

Average Stock Level = Minimum Stock Level + Maximum Stock Level

(f) Determination of Safety Stocks:

Safety stock is a buffer to meet some unanticipated increase in usage. The usage of inventory cannot be perfectly forecast. It fluctuates over a period of time. The demand for materials may fluctuate and delivery of inventory may also be delayed and in such a situation the firm can face a problem of stock-out. The stock out can prove costly by affecting the smooth working of the concern. In order to protect against the stock out arising out of usage fluctuations, firms usually maintain some margin of safety stocks. The basic problem is to determine the level of quantity of safety stocks. Two costs are involved in the determination of this stock i.e. opportunity cost of stock-outs and the carrying costs. The stock-outs of raw materials cause production disruption resulting in higher cost of production. Similarly, the stock-outs of finished goods result in the failure of the firm in competition as the firm cannot provide proper customer service. If a firm maintains low level of safety, frequent stock-outs will occur resulting in the larger opportunity costs. On the other hand, the larger quantities of safety stocks involve higher carrying costs.

ORDERING SYSTEMS OF INVENTORY:

The basic problem of inventory is to decide the re-order point. This point indicates when an order should be placed. The order point is determined with the help of these things:

- (a) Average consumption rate,
- (b) Duration of lead time,
- (c) Economic order quantity,

When the inventory is depleted to lead time consumption, the order should be placed. There are three prevalent systems of ordering and a concern can choose any one these:

- (a) Fixed order quantity system generally known as economic order quantity (EOQ) system;
- (b) Fixed period order system or period re-ordering system or periodic review system;
- (c) Single order and scheduled part delivery system.

Economic Order Quantity (EOQ):

EOQ is an important factor in controlling the inventory. It is a quantity of inventory which can reasonably be ordered economically at a time. It is also known as 'Standard Order Quantity', 'Economic Lot Size,' or 'Economical Ordering Quantity'. In determining this point ordering costs and carrying costs are taken into consideration. Ordering costs are basically the cost of getting an item of inventory and it includes cost of placing an order. Carrying cost includes costs of storage facilities, property insurance, loss of value through physical deterioration, cost of obsolescence. Either of these two costs affects the profits of the firm adversely and management tries

to balance these two costs. The balancing or reconciliation point is known as economic order quantity. The quantity may be calculated with the help of the following formula:

$$EOQ = \sqrt{\frac{2 \times R \times C_P}{C_H}}$$

Where R = Annual quantity used (in units)

CP = Cost of placing an order / ordering cost per order

CH = Cost of holding one unit/Inventory carrying cost of one unit / carrying cost of one unit per year

Assumptions of EOQ:

- i) While calculating EOQ the following assumptions are made:
- ii) The supply of goods is satisfactory. The goods are purchased whenever these are needed.
- iii) The quantity to be purchased by the concern is certain.
- iv) The prices of goods are stable. It helps to stabilize carrying costs.

Illustration-11:

Two components X and Y are used as follows:

Normal usage	300 units per week
Maximum usage	450 units per week
Minimum usage	150 units per week
Reorder Quantity	X – 2,000 units and Y – 4,000 units
Re-order Period	X – 4 to 6 weeks and Y – 2 to 4 weeks

Calculate for each component —

(1) Re-order Level, (2) Maximum Level, (3) Minimum Level (4) Average Inventory.

Solution:

	Component X	Component Y
1) Reorder Level = Maximum Usage × Maximum Reorder Period		
	= 450 × 6	= 450 × 4
	= 2,700 units	= 1,800 units
2) Minimum Level = Reorder Level – (Normal Usage × Average Delivery Period)		
	= 2,700 – (300 × 5)	= 1,800 – (300 × 3)
	= 2,700 – 1,500	= 1,800 – 900
	= 1,200 units	= 900 units
3) Maximum Level = Reorder Level + Reorder Quantity – (Minimum Usage × Minimum Delivery Period)		
	= 2,700 + 2,000 – (150 × 4)	= 1,800 + 4,000 – (150 × 2)
	= 4,700 – 600	= 5,800 – 300
	= 4,100 units	= 5,500 units

4) **Average Inventory = Minimum Level + ½ of Reorder Quantity**

$$\begin{aligned}
 &= 1,200 + \frac{1}{2} \text{ of } 2,000 && = 900 + \frac{1}{2} \text{ of } 4,000 \\
 &= 1,200 + 1,000 && = 900 + 2,000 \\
 &= 2,200 \text{ units} && = 2,900 \text{ units}
 \end{aligned}$$

or

$$\frac{\text{Maximum Level} + \text{Minimum Level}}{2}$$

$$= 2,650 \text{ units} \qquad \qquad \qquad = 3,200 \text{ units}$$

(This formula is used when reorder quantity is not given)

Illustration-12:

Calculate the economic order quantity from the following information and also state the number of orders to be placed in a year.

Consumption of materials per annum	= 10,000 kgs.
Order Placing Cost Per Order	= Rs.25
Cost per kg. of raw material	= Rs.2
Storage Costs	= 4% on average inventory

Solution:

$$\begin{aligned}
 EOQ &= \sqrt{\frac{2 R C_p}{C_h}} = \sqrt{\frac{2 \times 10,000 \times 25}{4 \times 2}} = \sqrt{\frac{5,00,000}{2}} = \sqrt{\frac{5,00,000 \times 25}{2}} \\
 &= \sqrt{\frac{1,25,00,000}{2}} = \sqrt{62,50,000} = 2,500 \text{ kgs.}
 \end{aligned}$$

$$\begin{aligned}
 \text{Number of order to be placed in a year} &= \frac{\text{Annual Requirements}}{\text{Economic Order Quantity}} \\
 &= 10,000 / 2,500 \text{ kg.} = 4 \text{ orders per year}
 \end{aligned}$$

Illustration-13:

A manufacturer requires 1,000 units of a raw material per month. The ordering cost is Rs.15 per order. The carrying cost in addition to Rs.2 per unit is estimated to be 15% of the average inventory per unit per year. The purchase price of the raw material is Rs.10 per unit. Find economic lot size and total cost. The manufacturer is offered a 5% discount in purchase price for orders of 2,000 units or more but less than 5,000 units. A further 2% discount is available for orders of 5,000 units or more. Which of these three alternative ways of purchase he should select?

Solution:

Annual Requirement	R = 1,000 × 12 = 12,000 units
Purchase Price Per Unit	P = Rs.10

Ordering Cost $C_p = \text{Rs.15 per order}$

Carrying Cost $C_h = \text{Rs.2} + P \times 0.15 = \text{Rs.2} + 10 \times 0.15 = \text{Rs.3.50}$

TIC at EOQ = Purchase Price + Ordering Costs + Carrying Costs

$$= (R \times P) + \left(\frac{R}{Q} \times C_p \right) + \left(\frac{Q}{2} \times C_h \right)$$

$$= 1,20,000 + 561 + 561 = \text{Rs.1,21,122}$$

$$\text{Total Cost at EOQ of 2,000 units} = 12,000 \times 9.50 + \frac{12,000}{2,000} \times 15 + \frac{2,000}{2} \times 3.425$$

$$= 1,14,000 + 90 + 3,425 = \text{Rs.1,17,515}$$

$$\text{Total Cost at EOQ of 5,000 units} = 12,000 \times 9.30 + \frac{12,000}{5,000} \times 15 + \frac{5,000}{2} \times 3.395$$

$$= 1,11,600 + 36 + 8,487.50 = \text{Rs.1,20,123.50}$$

The manufacturer should opt the alternative of 5% discount and order for 2,000 units at each time because at this option, the total inventory cost is the minimum.

Just-in-Time (JIT) System

Japanese firms popularized the just-in-time (JIT) system in the world. In a JIT system material or the manufactured components and parts arrive to the manufacturing sites or stores just few hours before they are put to use. JIT system eliminates the necessity of carrying large inventories and thus, saves carrying and other related costs to the manufacturer. The system requires perfect understanding and coordination between the manufacturer and suppliers in terms of the timing of delivery and quality of the material. The success of the system depends on how well a company manages its suppliers. The system puts tremendous pressure on suppliers.

ABC Inventory Control System

Large numbers of firms have to maintain several types of inventories. It is not desirable to keep the same degree of control on all the items. The firm should pay maximum attention to those items whose value is the highest. The firm should, therefore, classify inventories to identify which item should receive the most effort in controlling. This analytical approach is called the ABC analysis. The high value items are classified as 'A items' and would be under the highest control. 'C items' represent relatively least value and would be under simple control. 'B items' fall in between these two categories and requires reasonable attention of management. The ABC analysis concentrates on important items and is also known as control by importance and exception (CIE). This approach is also known as proportionate value analysis (PVA).

Illustration-14

ABC Limited has 7 different items in its inventory. The average number of units in inventory together with their average cost per unit is presented below. Suggest a break-down of the items into ABC classification assuming that the Company wants to introduce ABC Inventory System.

Items (Nos.)	Average number of units in inventory	Average cost per unit (Rs.)
1	25,000	12
2	25,000	4
3	70,000	4
4	30,000	15
5	10,000	110
6	20,000	50
7	20,000	3

Solution:-

Item	Per Unit Cost (Rs)	Inventory				Total Value				
		Units	% of Total		Cumulative %	Total Cost Rs.	% of Total		Cumulative %	Category
5	110	10,000	5			11,00,000	33.4			
6	50	20,000	10	15%	15	10,00,000	30.4	63.8%	63.8	A
4	15	30,000	15	27.5%	42.5	4,50,000	13.7	22.8%	86.6	B
1	12	25,000	12.5	57.5%	100	3,00,000	9.1	13.4%	100	C
3	4	70,000	35			2,80,000	8.5			
2	4	25,000	12.5			1,00,000	3.1			
7	3	20,000	10			60,000	1.8			
Total		2,00,000	100%			32,90,000	100%			

VED Analysis

The VED analysis is used generally for spare parts. Spare parts are classified as vital (V), essential (E) and desirable (D). The vital spares are must for running the concern smoothly and these must be stored adequately. The E types of spares are also necessary but their stocks may be kept at low figures. The stocking of D type of spare may be avoided at times, if the lead time of these spares is less, then stocking of these spares can be avoided.

Inventory Turnover Ratio

It indicates whether inventories have been used efficiently or not. The purpose is to ensure the blocking of only required minimum funds in inventory. Inventory conversion period may also be calculated to find the average time taken for clearing the stocks.

Inventory Turnover = Cost of Goods Sold / Average Value of Inventory

Ageing of Inventories

According to this method, an inventory is to be classified according to the dates of their purchase or manufacture. Thus, schedule of inventories can be prepared on the basis of the age of different items of inventories. Efforts should be made to clear off the old inventories at the earliest.

Perpetual Inventory System

Perpetual inventory system implies maintenance of up-to-date stock records and. According to Weldon, it may be defined as “a method of recording stores balances after every receipt and issue to facilitate regular checking and to obviate closing down for stock-taking”. The basic object of this system is to make available details about the quantity and value of stock of each item at all time.

MANAGEMENT OF RECEIVABLES

Receivables management is the process of making decisions relating to investment in trade debtors. Certain investment in receivables is necessary to increase the sales and the profits of a firm. But at the same time investment in this asset involves cost considerations also. Further, there is always a risk of bad debts too. Thus, the objective of receivable management is to take sound decision as regards investment in debtors. *In the words of Bolton, S.E.*, the objective of receivables management is “to promote sales and profits until that point is reached where the return on investment in further funding of receivables is less than the cost of funds raised to finance that additional credit”.

Costs of maintaining receivables:

A firm incurs the following costs on maintaining receivables:

1) Cost of Financing Receivables:

‘Selling goods or services on credit’ means allowing the customers to use concern’s funds. The concern incurs some cost for collecting funds which finance receivables.

2) Administrative Costs:

This relates to costs for maintaining accounts of debtors and cost of conducting investigation regarding potential credit customers to determine their credit worthiness.

3) Cost of Collection:

This includes cost of reminders to the customers, cost of persons sent for collection and cost of legal recourse to recover money from the defaulting customers.

4) Defaulting Costs or Bad Debts:

The amount which the firm is unable to realize from the customers is known as bad debts.

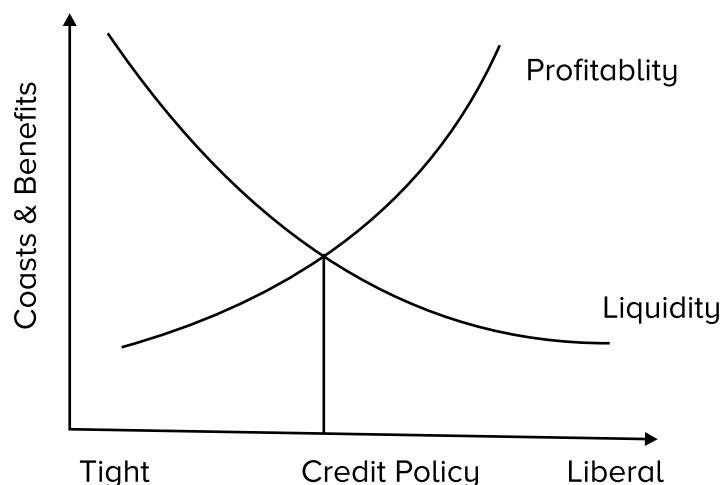
Scope of receivables management

The scope of receivable management is very wide. It includes the following aspects:

1) Determining Credit Policy:

The term ‘credit policy’ refers to those decision variables that influence the amount of trade credit, i.e., the investment in receivables. The credit policy may be lenient (loose or expensive) or tight (or restrictive). In developing an optimum credit policy, the financial executives will have to compare the benefits of credit extension with the costs of credit. The major considerations in costs are liquidity and opportunity costs. On the other hand, in benefits of a liberal credit policy, the profitability is the

major criterion. The optimum credit policy will be determined by the trade off between liquidity and profitability as shown in the following figure:



2) Determining Credit Terms:

The second aspect of receivables management is concerned with determining credit terms. The 'credit terms' include the decisions like credit period, the quantum of cash discount, period of cash discount and fixing the credit standards. The extent to which credit standards can be liberalized should depend upon the matching between the profits arising due to increased sales and the costs to be incurred on the increased sales.

3) Evaluating the Credit Applicants:

The third important aspect of receivables management is to lay down clear-cut guidelines and procedures for granting credit to individual customers. A firm can not follow the policy of treating all customers equal for the purpose of extending credit. Each case is to be decided on its own merits. Hence, this function will include the following steps: Collection of credit information about the customers, investigation in the credit capacity of these customers, credit analysis, fixing credit limits for each of them and lastly, deciding collection procedures. In taking a decision about individuals, five 'C's are important: character, capacity, capitals, collateral and conditions.

4) Determining Collection Policies and Methods:

Next aspect is collection policy and setting collection methods. A well-conceived collection policy is needed because all customers do not pay the firm's bills in time. There are certain customers who are slow payers and some are non-payers. Therefore, the collection policy should aim at accelerating collections from slow payers and reducing bad debt losses.

FACTORS AFFECTING THE SIZE OF RECEIVABLES

The level of investment in accounts receivable depends upon two types of factors- general and specific. General factors are external factors while specific factors are internal factors.

1) General Factors:

These are those factors which are common to all firms and all types of assets. They include the type and nature of business, anticipated volume of sales operations, price-level variations, availability of funds, interest rate, pace of technological development, industry norms, etc.

2) Specific Factors:

The main determinants of the level of investment in receivables are as follows:

a) The Volume of Credit Sales:

The most important variable affecting the level of the receivables is the volume of credit sales. As sales increases, receivables expand. As sales fall down, the receivables also decline.

b) Terms of Sale:

If the firm sells goods only for cash on delivery in order to avoid tying its funds in receivables and risking bad debts losses this item will altogether not appear in the balance sheet of the firm. But credit is the soul of business. Hence, if the firm sells on credit and credit period allowed is more, then receivables will also be more.

c) Stability of Sales:

If the business is of seasonal character, its credit sale in the season will be large, simultaneously; a large volume of receivables will be there. If a firm supplies goods on installment basis its investment in receivables will be high.

d) Credit and Collection Policy:

If a firm has a lenient or relatively liberal credit policy, it will experience a high level of receivables as compared to a firm with a more rigid or stringent credit policy.

e) Bills Discounting or Endorsement:

If bills are got discounted with banks or endorsed to third parties the level of investment in this asset will be automatically low.

f) Credit Period Allowed:

Longer the period of credit allowed, higher will be the volume of receivables.

Illustration-15:

ABC Ltd. has present annual sales of 10,000 units at Rs.300 per unit. The variable cost is Rs.200 per unit and fixed costs amount to Rs.3,00,000 per annum. The present credit period allowed by the company is 1 month. The company is considering a proposal to increase the credit period to 2 months and 3 months and has made the following estimates:

	<i>Existing</i>	<i>Proposed</i>	
		1 month	2 months
Credit Policy	1 month	2 months	3 months
Increase in sales	–	15%	30%
% of Bad Debts	1%	3%	5%

There will be increase in fixed cost by Rs.50,000 on account of increase of sales beyond 25% of present level.

The company plans on a return of 20% on investment in receivables.

You are required to calculate existing and proposed net profit and also calculate most paying credit policy for the company.

Solution:

Evaluation of Credit Policy of ABC Ltd.

<i>Particulars</i>	<i>Existing Policy</i>	<i>Proposed Policy</i>	
		<i>1 month</i>	<i>2 months</i>
(A) Sales (Units)	10,000	11,500	13,000
(B) Sale Proceeds	30,00,000	34,50,000	39,00,000
Variables cost @ Rs.200 p.u.	20,00,000	23,00,000	26,00,000
Contribution	10,00,000	11,50,000	13,00,000
Fixed Cost	3,00,000	3,00,000	3,50,000
(C) Net Margin	7,00,000	8,50,000	9,50,000
(D) Investment	1,91,667	4,33,333	7,37,500
(E) Expected Return on Receivables at 20%	38,333	86,667	1,47,500
(F) Bad Debts	30,000	1,03,500	1,95,000
(G) Net Profit (C – E – F)	6,31,667	6,59,833	6,07,500
(H) Increase in Profits		28,167	– 52,333

As, 2 months credit policy yields higher return, it should be adopted.

Working Notes:

$$\text{Investment in receivables} = \frac{\text{Variable Cost} + \text{Fixed Cost}}{12} \times \text{No. of months credit}$$

$$1 \text{ month: } 23,00,000 \times \frac{1}{12} = \text{Rs.1,91,667}$$

$$2 \text{ months: } 26,00,000 \times \frac{2}{12} = \text{Rs.4,33,333}$$

$$3 \text{ months: } 29,50,000 \times \frac{3}{12} = \text{Rs.7,37,500}$$

Illustration-16:

A trade whose current sales are Rs.6 lacs per annum and an average collection period of 30 days wants to pursue a more liberal credit policy to improve sales. A study made by a management consultant reveals the following information:

<i>Credit Policy</i>	<i>Increase in collection period</i>	<i>Increase in Sales</i>	<i>Bad debt loss anticipated</i>
A	10 days	Rs.30,000	1.5%
B	20 days	Rs.48,000	2.0%
C	30 days	Rs.75,000	3.0%
D	45 days	Rs.90,000	4.0%

The selling price per unit is Rs.3, average cost per unit is Rs.2.25 and variable cost per unit is Rs.2. The current bad debt loss is 1%. Required return on average investment is 20%. Assume 360 days in a year. Which of the above policies would you recommend for adoption?

Solution:

Evaluation of Credit Policy

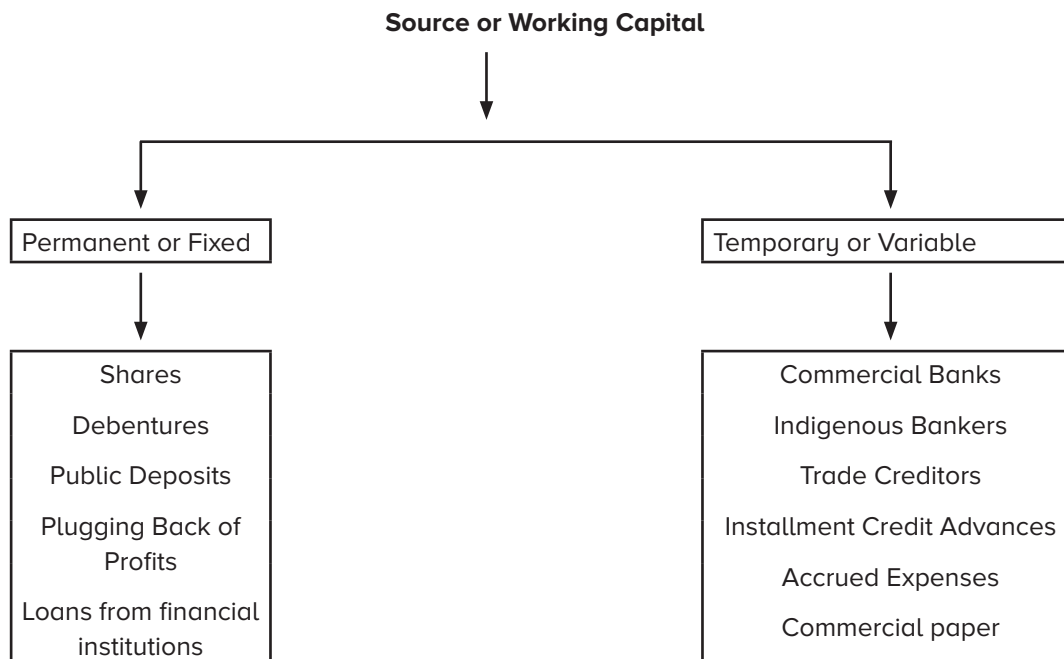
<i>Part I</i>	<i>Existing</i>	<i>Credit Policy</i>			
		<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>
Credit Period (Days)	30	40	50	60	75
Expected Additional Sales (Rs.)		30,000	48,000	75,000	90,000
Contribution on additional sales (One-third of selling price)		10,000	16,000	25,000	30,000
Bad Debts (Expected Sales × Default %)	6,000	9,450	12,960	20,250	27,600
Additional bad debts	–	3,450	6,960	14,250	21,600
Contribution on additional sales less					
Additional bad debts (a)	–	6,550	9,040	10,750	8,400
Part II					
Expected Sales (Rs.)	6,00,000	6,30,000	6,48,000	6,75,000	6,90,000
Cost of Sales (Rs.)	4,50,000	4,70,000	4,82,000	5,00,000	5,10,000
Receivables turnover ratio	12	9	7.2	6	4.8
Average investment in receivable					
= $\frac{\text{Cost of Sales}}{\text{Receivables turnover}}$	37,500	52,222	66,944	83,333	1,06,250
Additional investment in receivables	–	14,722	29,444	45,833	68,750
Required return on average investment at 20% (b)	–	2,944	5,889	9,167	13,750
Net Benefit (a – b)	–	3,606	3,151	1,583	(5,350)

The net benefit (additional contribution over required return on additional investment in receivables) is maximum under credit Policy A. Hence, Policy A is recommended for adoption followed by B and C. Policy D cannot be adopted because it would result in the reduction of the existing profits.

WORKING CAPITAL FINANCING

The working capital requirement of a concern can be classified as—

- (a) Permanent or fixed working capital requirement.
- (b) Temporary or variable working capital requirement sources of working capital.



Financing of Permanent/Fixed or Long-Term Working Capital

Permanent working capital should be financed in such a manner that the enterprise may have its uninterrupted use for a sufficiently long period. There are five important sources of permanent or long-term working capital.

1. Shares:

Issue of shares is the most important source for raising the permanent or long-term capital. A Company can issue various types of shares as equity shares, preference shares and deferred shares. According to the Companies Act, 1956, however, a public company cannot issue deferred shares. Preference shares carry preferential rights in respect of dividend at a fixed rate and in regard to the repayment of capital at the time of winding up the company. Equity shares do not have any fixed commitment charge and the dividend on these shares is to be paid subject to the availability of sufficient profits. As far as possible, a company should raise the maximum amount of permanent capital by the issue of shares.

2. Debentures:

A debenture is an instrument issued by the company acknowledging its debt to its holder. It is also an important method of raising long-term or permanent working capital. The debenture-holders are the creditor of the company; fixed rate of interest is paid on debentures. The interest on debentures is a charge against profit and loss account. The debentures are generally given floating charge on the assets of the company.

3. Public Deposits:

Public deposits are the fixed deposits accepted by a business enterprise directly from the public. This source of raising short term and medium-term finance was very popular in the absence of banking facilities. In the past, generally, public deposits were accepted by textile industries in Ahmadabad and Bombay for periods of 6 months to 1 year. But now-a-days even long-term deposits for 5 to 7 years are accepted by the business houses.

4. Plugging Back of Profits:

It means the reinvestments by concern of its surplus earnings in its business. It is an internal source of finance and is most suitable for an established firm for its expansion, modernization, replacement etc. This method of finance has a number of advantages as it is the cheapest rather cost-free source of finance; there is no need to keep securities, there is no dilution of control, it ensures stable dividend policy and gains confidence of the public. But excessive resort to plugging back of profits may lead to monopolies, misuse of funds, overcapitalization, and speculation etc.

5. Loans from Financial Institutions:

Financial institutions such as Commercial Banks, Life Insurance Corporation, Industrial Finance Corporation of India, State Financial Corporation, State Industrial Development Corporations, Industrial Development Bank of India, etc. also provide short-term, medium term and long-term loans. This source of finance is more suitable to meet the medium-term demands of working capital. Interest is charged on such loans at a fixed rate and the amount of the loan is to be repaid by way of installments in a number of years.

Financing of Temporary, Variable or Short-term Working Capital**1. Indigenous Bankers:**

Private money-lenders and other country bankers used to be the only source of finance prior to the establishment of commercial banks. They used charge very high rates of interest and exploited the customers to the largest extent possible. Now-a-days with the development of commercial banks they have lost their monopoly. But even today some business houses have to depend upon indigenous bankers for obtaining loans to meet their working capital requirements.

2. Trade Credit:

Trade credit refers to the credit extended by the suppliers of goods in the normal course of business. As present day commerce is built upon credit, the trade credit arrangement of a firm with its suppliers is an important source of short-term finance. The credit-worthiness of a firm and the confidence of its suppliers are the main basis of securing trade credit. It is mostly granted on an open account basis whereby supplier sends goods to the buyer for the payment to be received in future as per terms of the sales invoice. It may also take the form of bills payable whereby the buyer signs a bill of exchanges payable on a specified future date.

The main advantages of trade credit as a source of short-term finance include:

- i) It is an easy and convenient method of finance.
- ii) It is flexible as the credit increases with the growth of the firm.
- iii) It is informal and spontaneous source of finance.

However, the biggest disadvantage of this method of finance is charging of higher prices by the suppliers and loss of cash discount.

1. Installment Credit:

This is another method by which the assets are purchased and the possession of goods is taken immediately but the payment is made in installments over a pre-determined period of time. Generally, interest is charged on the unpaid price or it may be adjusted in the price. But, in any case, it provides funds for some time and is used as a source of short-term working capital by many business houses which have difficult fund position.

2. Advances:

Some business houses get advances from their customers and agents against orders, and this source is a short-term source of finance to them. It is a cheap source of finance and in order to minimize their investment in working capital, some firms having long production cycle, specially the firms manufacturing industrial products prefer to take advances from their customers.

3. Factoring or Accounts Receivable Credit:

Another method of raising short-term finance is through accounts receivable credit offered by commercial banks and factors. A commercial bank may provide finance by discounting the bills or invoices of its customers. Thus, a firm gets immediate payment for sales made on credit. A factor is a financial institution which offers services relating to management and financing of debts arising out of credit sales. Factoring is becoming popular all over the world on account of various services offered by the institutions engaged in it.

4. Accrued Expenses:

Accrued expenses are the expenses which have been incurred but not yet due and hence not yet paid also. These simply represent a liability that a firm has to pay for the services already received by it. The most important items of accruals are wages and salaries, interest, and taxes. Wages and salaries are usually paid on monthly, fortnightly or weekly basis for the services already rendered by employees. The longer the payment-period, the greater is the amount of liability towards employees or the funds provided by them. In the same manner, accrued interest and taxes also constitute a short-term source of finance. Taxes are paid after collection and in the intervening period serve as a good source of finance. Even income-tax is paid periodically much after the profits have been earned. Like taxes, interest is also paid periodically while the funds are used continuously by a firm. Thus, all accrued expense can be used as a source of finance.

5. Deferred Incomes:

Deferred incomes are incomes received in advance before supplying goods or services. They represent funds received by a firm for which it has to supply goods or services in future. These funds increase the liquidity of a firm and constitute an important source of short-term finance.

6. Commercial Paper:

Commercial paper represents unsecured promissory notes issued by firms to raise short-term funds. It is an important money market instrument in advanced countries like U.S.A. In India, the Reserve Bank of India introduced commercial paper in the Indian money market on the recommendation of the Vaghul Committee. But only large companies enjoying high credit rating and sound financial health can issue commercial paper to raise short-term funds. The Reserve Bank of India has laid down a number of conditions to determine eligibility of a company for the issue of commercial paper. Only a company which is listed on the stock exchange, has a net worth of at least Rs.10 crore and a maximum permissible bank finance of not less than Rs.25 crore, can issue commercial paper. The maturity period of commercial paper runs between 91 and 180 days.

7. Working Capital Finance by Commercial Banks:

Commercial banks are the most important source of short-term capital. The major portion of working

capital loans are provided by commercial banks. They provide a wide variety of loans tailored to meet the specific requirements of a concern. The different forms in which the banks normally provide loans and advances are as follows:

(i) Loans:

When a bank makes an advance in lump-sum against some security it is called a loan. In case of a loan, a specified amount is sanctioned by the bank to the customer. The entire loan amount is paid to the borrower either in cash or by credit to his account. The borrower is required to pay interest on the entire amount of the loan from the date of the sanction. A loan may be repayable in lump sum or installments.

(ii) Cash Credit:

A cash credit is an arrangement by which a bank allows his customer to borrow money up to a certain limit against some tangible securities or guarantees. The customer can withdraw from his cash credit limit according to his needs and he can also deposit any surplus amount with him. The interest in case of cash credit is charged on the daily balance and not on the entire amount of the account. For these reasons, it is the most favorite mode of borrowing by industrial and commercial concerns.

(iii) Overdrafts:

Overdraft means an agreement with a bank by which a current account-holder is allowed to withdraw more than the balance to his credit up to a certain limit. There are no restrictions for operation of overdraft limits. The interest is charged on daily overdrawn balances. The main difference between cash credit and overdraft is that overdraft is allowed for a short period and is a temporary accommodation whereas the cash credit is allowed for a longer period.

(iv) Purchasing and Discounting of Bills:

Purchasing and discounting of bills is the most important form in which a bank lends without any collateral security. The seller draws a bill of exchange on the buyer of goods on credit. The bank purchases the bills payable on demand and credits the customer's account with the amount of bill less discount. At the maturity of the bills, bank presents the bill to its acceptor for payment. In case the bill discounted is dishonored by non-payment, the bank recovers the full amount of the bill from the customer along with expenses in that connection.

POLICIES FOR FINANCING CURRENT ASSETS

A firm can adopt different financing policies vis-a-vis current assets. A company may be referred to as:

- Matching Approach
- Conservative Approach
- Aggressive Approach

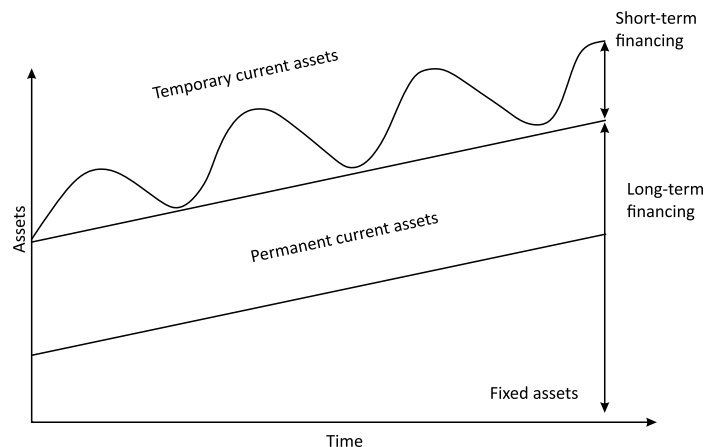
Matching Approach

The firm can adopt a financial plan which matches the expected life of assets with the expected life of the source of funds raised to finance assets. Thus, a ten-year loan may be raised to finance a plant with an expected life of ten years; stock of goods to be sold in thirty days may be financed with a thirty day commercial paper or a bank loan.

Using long-term financing for short-term assets is expensive as funds will not be utilized for the full period. Similarly, financing long-term assets with short-term financing is costly as well as inconvenient as arrangement for the new short-term financing will have to be made on a continuing basis.

When the firm follows matching approach (also known as holding approach), long-term financing will be used to finance fixed assets and permanent current assets and short-term financing to finance temporary or variable current assets. However, it should be realized that exact matching is not possible because of the uncertainty about the expected lives of assets.

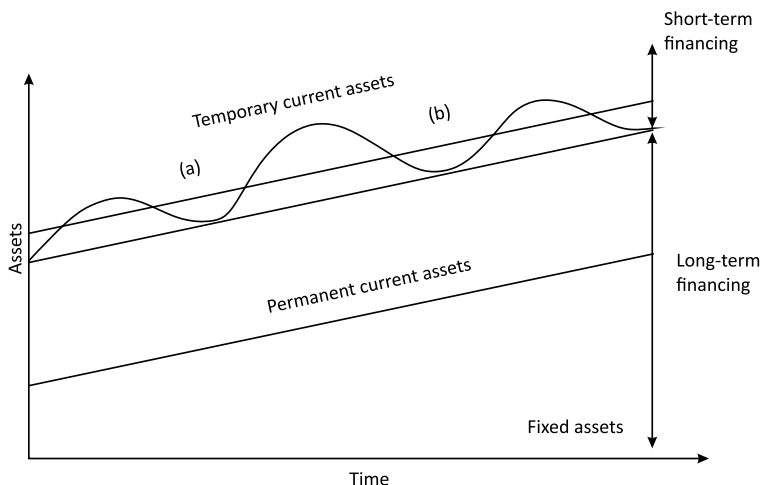
The following figure is used to illustrate the matching plan overtime. The firm's fixed assets and permanent current assets are financed with long-term funds and as the level of these assets increases, the long-term financing level also increases. The temporary or variable current assets are financed with short-term funds and as their level increases, the level of short-term financing also increases. Under matching plan, no short-term financing will be used if the firm has a fixed current assets need only.



Financing under matching plan

Conservative Approach

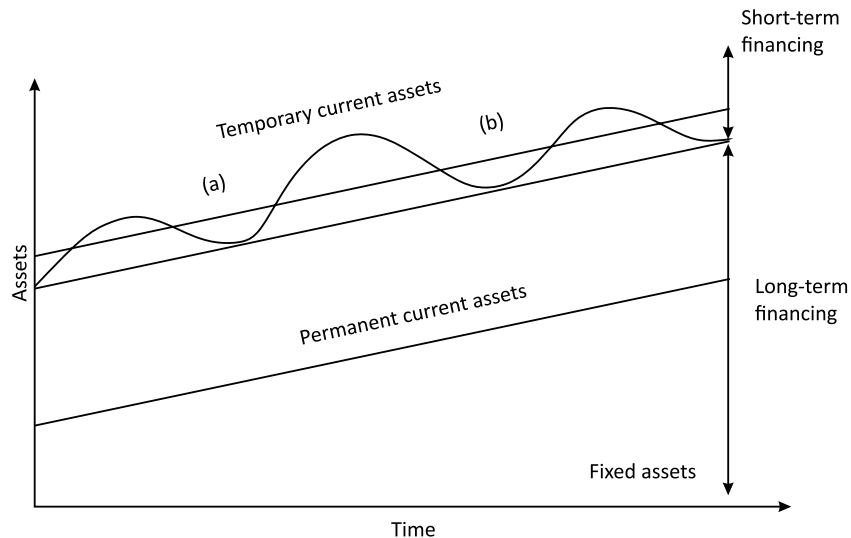
A firm in practice may adopt a conservative approach in financing its current and fixed assets. The financing policy of the firm is said to be conservative when it depends more on long-term funds for financing needs. Under a conservative plan, the firm finances its permanent assets and also a part of temporary current assets with long-term financing. In the periods when the firm has no need for temporary current assets, the idle long-term funds can be invested in the tradable securities to conserve liquidity. The conservative plan relies heavily on long-term financing and, therefore, the firm has less risk of facing the problem of shortage of funds. The conservative financing policy is shown in following figure:



Conservative financing

Aggressive Approach

A firm may be aggressive in financing its assets. An aggressive policy is said to be followed by the firm when it uses more short-term financing than warranted by the matching plan. Under an aggressive policy, the firm finances a part of its permanent current assets with short-term financing. Some extremely aggressive firms may even finance a part of their fixed assets with short-term financing. The relatively more use of short-term financing makes the firm more risky. The aggressive financing is illustrated in figure as below:



Aggressive financing

BANKING NORMS AND MACRO ASPECT

Banks normally provide working capital finance to hold an acceptable level of current assets viz. raw materials and stores, stocks in progress, finished goods and sundry debtors for achieving a pre-determined level of production and sales. The assessment of funds required to be blocked in each of these items of the working capital required by an industry is discussed as under:

1. **Raw Material:** Raw material, of any kind is necessarily required by an industrial unit to continue the production process. Different raw material could be procured from different sources may be indigenous or overseas and accordingly different treatment of procurement time is bound to be given. Mode of payment for the raw material may also be different. Thus, affecting the credit requirements of the client, the funds blocked up in procurement and stocking of material will have to be taken into consideration. Total materials including those in transit and for which advance payment is made can normally be expressed in terms of number of months consumption and requirements of funds can be assessed by multiplying the figure by the amount of monthly consumption.
2. **Work in Process:** The time taken by the raw material to be converted into finished product is the period of material processing and all the expenses of the process are involved in it. Therefore, the assessment of funds blocked in the process is made by taking into account the raw material consumption during the processing period and the expenses incurred during such period i.e. the cost of production for the period of processing.
3. **Finished goods in the next stage:** The funds blocked in finished goods inventories are assessed by estimating the manufacturing cost of product.
4. **Sundry Debtors:** When goods sold is not realised in cash, sundry debtors are generated. The credit period followed by a particular industrial unit in practice is generally the result of industry practices.

Investment in accounts receivable remains blocked from the time of sale till the time amount is realised from debtors. The assessment of funds blocked should be on the basis of cost of production of the materials against which bank extends working capital credit.

5. **Expenses:** One month's total expenses, direct or indirect, are provided by way of cushion in assessing the requirement of funds which may include rent, salaries, etc. depending upon the length of operating cycle.
6. **Trade Credit** received on purchases reduces working capital funds requirements and has to be taken into account for correct assessment of funds.
7. **Advances** received along with purchase orders for the products also reduce the funds requirements for working capital.

Taking into consideration the above parameters of operating cycle, the working capital for a unit can be assessed as under:

S. No.	Component of Working Capital	Basis of Calculation	r
1.	Raw material	Month's consumption	100
2.	Stock in process	Week's (cost of production for period of processing)	100
3.	Finished goods	Month's cost of production required to be stocked	100
4.	Sundry debtors	Month's cost of production	100
5.	Expenses	One month's	100
		Total	500
	Less: Trade credit on month's purchases	r 100	
	Less: Advance payment on Orders received	r100	200
	Working Capital required		300

Banks do not provide the entire amount of r 300 towards working capital. At every stage bank would insist upon the borrower's stake in the form of margin which depends on various factors like saleable quality of product, durability, price fluctuations, market conditions and business environment, etc. Thus, the bank at every stage would allow the margin at the pre-determined rate as noted below:

		Permissible Limit (r)
Raw material	100	
Less: Margin 10%	10	90
Stock in process	100	
Less: Margin 40%	40	60
Finished goods	100	
Less: Margin 25%	25	75
Sundry Debtors (at sale value)	100	
Less: Margin 10%	10	90

Expenses for one month	100	
100% Margin	100	–
Total permissible limit		315
Working capital requirement of the unit Permissible limits (Bank loan)		500
Gap (contribution to be provided by Borrower)		315
		<u>185</u>

Before sanctioning the working capital of r 315, the bank would ensure that borrower is in a position to bring in margin money of r 185 by way of excess current assets over current liabilities based on projected balance sheet.

Factoring

As the accounts receivable amount to the blocking of the firm's funds, the need for an outlet to impart these liquidity is obvious. Other than the lag between the date of sale and the date of receipt of dues, collection of receivables involves a cost of inconvenience associated with tapping every individual debtor. Thus, if the firm could contract out the collection of accounts receivable it would be saved from many things such as administration of sales ledger, collection of debt and the management of associated risk of bad-debts etc.

Factoring is a type of financial service which involves an outright sale of the receivables of a firm to a financial institution called the factor which specialises in the management of trade credit. Under a typical factoring arrangement, a factor collects the accounts on the due dates, effects payments to the firm on these dates (irrespective of whether the customers have paid or not) and also assumes the credit risks associated with the collection of the accounts. As such factoring is nothing but a substitute for in-house management of receivables. A factor not only enables a firm to get rid of the work involved in handling the credit and collection of receivables, but also in placing its sales in effect on cash basis.

Definition and functions

Factoring is a financial service in which the business entity sells its Trade receivables/debtors to a third party at a discount in order to raise funds. The Bank/Financial institution purchasing the receivable is known as factor. Factoring may be with or without recourse. 'With a recourse' means that in the event of bad debts factor (Bank) can approach the 'supplier'.

Though the purchase of book debts is fundamental to the functioning of factoring, there are a number of functions associated with this unique financial services. A proper appreciation of these functions would enable one to distinguish it from the other sources of finance against receivables. They undertake:

- credit and collection function;
- credit protection;
- encashing of receivables;
- collateral functions such as:
 - (a) loans on inventory,
 - (b) loans on fixed assets, other security and on open credit,
 - (c) advisory services to clients.

Factoring vs. Accounts Receivable Loans

Accounts receivable loan is simply a loan secured by a firm's accounts receivable by way of hypothecation or assignment of such receivables with the power to collect the debts under a power of attorney. In case of factoring however, there is an outright sale of receivables. Thus, in case of the former, the bank may debit client's account for 'handling charges' if the debt turns out to be bad as against non-recourse factoring.

Factoring vs. Bill Discounting

Under a bill discounting arrangement, the drawer undertakes the responsibility of collecting the bills and remitting the proceeds to the financing agency, whereas under factoring agreement, the factor collects client's bills. Moreover, bill discounting is always with recourse whereas factoring can be either with recourse or without recourse. The finance house discounting bills does not offer any non-financial services unlike a factor which finances and manages the receivables of a client.

Mechanics of Factoring

Factoring offers a very flexible mode of cash generation against receivables. Once a line of credit is established, availability of cash is directly geared to sales so that as sales increase so does the availability of finance. The dynamics of factoring comprises of the sequence of events outlined in figure.

- (1) Seller (client) negotiates with the factor for establishing factoring relationship.
- (2) Seller requests credit check on buyer (client).
- (3) Factor checks credit credentials and approves buyer. For each approved buyer a credit limit and period of credit are fixed.
- (4) Seller sells goods to buyer.
- (5) Seller sends invoice to factor. The invoice is accounted in the buyers account in the factor's sales ledger.

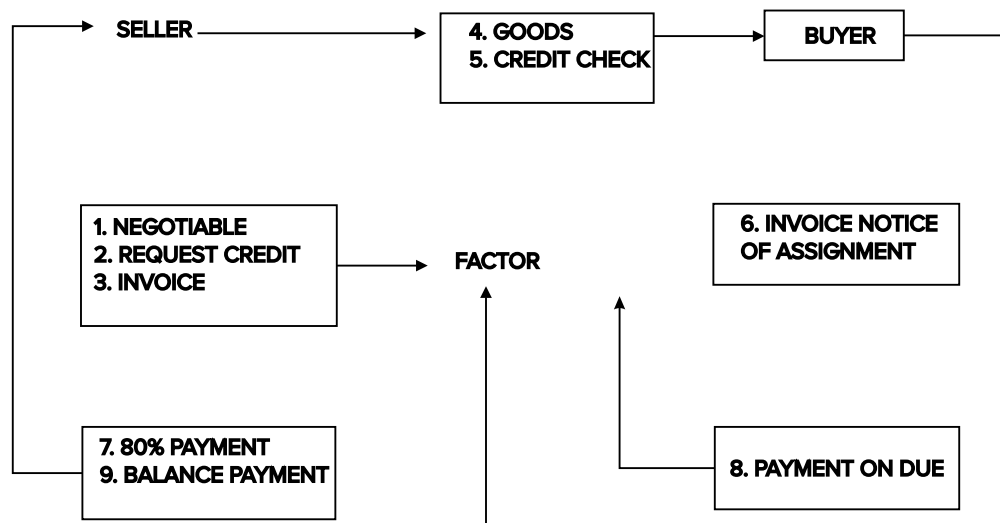


Figure: Mechanics of Factoring

Source: Ranjani Chari, 1991, *Factoring in India*, M.Phil, Dissertation, Delhi University

- (1) Factor sends copy of the invoice to buyer.
- (2) Factor advises the amount to which seller is entitled after retaining a margin, say 20%, the residual amount paid later.
- (3) On expiry of the agreed credit period, buyer makes payment of invoice to the factor.
- (4) Factor pays the residual amount to seller.

Types of Factoring: Factoring services may be rendered to cover domestic as well as international sales. The various services offered by factors for domestic sales are of six types whose essential characteristics are outlined in Table 1.

Table: Types of Factoring Services

<i>Type of Factoring</i>	<i>Type of Functions</i>					
	<i>Avail-ability of Finance bad debts</i>	<i>Protection* against</i>	<i>Credit Advice</i>	<i>Sales Ledger Adminis-tration</i>	<i>Collec-tion</i>	<i>Disclo-sure Custo-mers</i>
Full Source (Non-Recourse)	Yes	Yes	Yes	Yes	Yes	Yes
Recourse Factoring	Yes	$\frac{3}{4}$	Yes	Yes	Yes	Yes
Agency Factoring	Yes	Possible	$\frac{3}{4}$	No	No	Yes
Bulk Factoring	Yes	Possible	$\frac{3}{4}$	No	No	Yes
Invoice** Discounting	Yes	Possible	No	No	No	No
Undisclosed Factoring	Yes	Possible	No	No	No	No

* Any form which includes this element may be referred to as 'non-recourse factoring'

** Also referred to as confidential or non-notification factoring.

Source: Ranjani Chari-opcit. P. 28.

Forfaiting

Forfaiting is a form of financing of receivables pertaining to international trade. It denotes the purchase of trade bills/ promissory notes by a bank/financial institution without recourse to the seller. The purchase is in the form of discounting the documents covering entire risk of non-payment in collection. All risks and collection problems are fully the responsibility of the purchaser (forfeiter) who pays cash to seller after discounting the bills/notes. The salient features of forfaiting as a form of export relating financing are as under:

- (i) The exporter sells and delivers goods to the importer on deferred payment basis.
- (ii) The importer draws a series of promissory notes in favour of the exporter for payment including interest charge. Alternatively the exporter draws a series of bill which are accepted by the importer.

- (iii) The bills/notes are sent to the exporter. The promissory notes/bills are guaranteed by a bank which may not necessarily be the importer's bank. The guarantee by the bank is referred to as an Avail, defined as an endorsement by a bank guaranteeing payment by the importer.
- (iv) The exporter enters into a forfaiting agreement with a forfeiter which is usually a reputed bank. The exporter sells the availed notes/bills to the bank at a discount without recourse and receives the payment.
- (v) The forfeiter may hold these notes/bills till maturity for payment by the importers bank.

Forfaiting vs. Export Factoring

Forfaiting is similar to cross border factoring to the extent both have common features of non recourse and advance payment. But they differ in several important respects:

- (a) A forfeiter discounts the entire value of the note/bill but the factor finances between 75-85% and retains a factor reserve which is paid after maturity.
- (b) The availing bank which provides an unconditional and irrevocable guarantee is a critical element in the forfaiting arrangement whereas in a factoring deal, particularly non-recourse type, the export factor bases his credit decision on the credit standards of the exporter.
- (c) Forfaiting is a pure financing arrangement while factoring also includes ledger administration, collection and so on.
- (d) Factoring is essentially a short term financing deal. Forfaiting finances notes/bills arising out of deferred credit transaction spread over three to five years.
- (e) A factor does not guard against exchange rate fluctuations; a forfeiter charges a premium for such risk.

CASE STUDIES

Question 1- ABC & XYZ Ltd. Plans to sell 30,000 units next year. The expected cost of goods sold is as follows:

	<i>Rs. (per unit)</i>
Raw Material	100
Manufacturing Expenses	30
Selling, Administration and Finance Expenses	20
Selling Price	200

The duration of various stages of the operating cycle is expected to be as follows:

Raw Material stage	2 months
Work-in-progress stage	1 month
Finished Goods stage	1/2 month
Debtors stage	1 month

Assuming the monthly sales level of 2500 units; estimate the gross working capital requirements if the desired cash balance is 5% of the gross working capital requirements.

Solution:**Statement of Gross Working Capital requirements**

Current Assets	Rs.	Rs.
(i) Raw Material (2 months) (Rs. 2,500 X 100 X 2)		5,00,000
(ii) Work-in-progress (1 month) Raw Material (Rs. 2,500 X 100 X 1) Mfg. Expenses (Rs. 2,500 X 30 X 1)	2,50,000 75,500	3,25,000
(iii) Finished Goods (1/2 month) Raw Material (2500 X 100 X ½) Mfg. Expenses (2500 X 30 X ½)	1,25,000 37,500	1,62,500
(iv) Debtors (1 month) (2500 X 150 X 1)		
(v) Cash (5 % of gross working capital i.e. 13,62,500 X 5/95)		3,75,000 13,62,500
Gross Working Capital Required		71,711 14,34,211

Working Notes:-

1. Selling, administration and finance expenses are not included in the value of closing stock of finished goods but added in the cost of sales for valuing debtors.
2. It is assumed that degree of completion of work-in-progress is 100% as regards material, labour and overhead and as such material and manufacturing expenses for the full period are included in the cost of work-in-progress.
3. It is assumed that all sales are credit sales.
4. Profit has not been treated as source of working capital, hence fully ignored.

Question 2:- From the following particulars, calculating working capital adding 10% per annum for contingencies.

	Rs.
(a) Average amount backed up for stocks:	
Stock of finished products	1000
Stock of materials and stores	1600
(b) Average credit given:	
Home market 6 weeks credit	62,400
Foreign market 1.5 week's credit	15,600

(c) Payment in Advance:		
Sales promotion expenses (paid quarterly in advance)		1,600
(d) Lag in payment of wages and other expenses:		
Wages	1.5 weeks	52,000
Materials and Stores	1.5 months	9,600
Office Salaries	0.5 month	12,480
Rent	6 months	2,000
Other expenses	1.5 months	9,600

Solution:**Computation of Working Capital Requirements**

	Rs.	Rs.
(A) Current Assets		
(i) Stock of Material and Stores		1,600
(ii) Stock of Finished Goods		1,000
(iii) Book Debts:		
(a) Home (62,400 X 6/52)	7,200	7,650
(b) Foreign (15,600 X 1.5/52)	450	400
(iv) Advance Payment (1,600 X 3/12)		10,650
(B) Current Liabilities		
(i) Creditors for Stores and Materials (9,600 X 1.5/12)		1,200
(ii) Outstanding Expense:		
Wages (52,000 X 1.52/52)	1,500	
Office Salaries (12,480 X 0.5/12)	520	
Rent (2,000 X 6/12)	1,000	
Other Expenses (9,600 X 1.5/12)	1,200	
		4,220
(C) Net Working Capital (A - B)		5,230
Add:- 10% Contingency Allowance		523
Average amount of working capital required		5,753

Working Notes:-

- i) For calculation purpose, 52 weeks or 12 months in a year are assumed.
- ii) In absence of cash cost of current assets, the actual working capital will differ from that of amount computed above.

Question 3:- From the following projections of M/s XYZ Limited for the year 2006-07 workout the amount of Working Capital Required:

Estimates for 2006-07

	Rs.
Annual Sales	14, 40,000
Cost of Production (including depreciation of Rs. 1, 20,000)	12,00,000
Raw Material purchases	7, 05,000
Monthly expenditure	25,000
Anticipated opening stock of raw materials	1, 40,000
Anticipated closing stock of raw materials	1, 25,000

Inventory norms:

Raw Material	2 months	Work-in-progress	15 days
Finished Goods	1 month		

The Company enjoys a credit of 15 days on its purchase and allows one month credit to its debtors. On sales orders the company has received an advance of Rs. 15000.

You may assume that production is carried out evenly throughout the year and minimum cash balance desired to be maintained is Rs. 10,000.

Solution:-**Statement Showing Working Capital Requirements**

(A) Current Assets	Rs.
i) Cash Balance	10,000
ii) Stock of Raw Materials (2 months) (Rs. 7,20,000 × 2/12)	1,20,000
iii) Stock of Work-in-progress(15 days) (Rs. 10,80,000 × 0.5/12)	45,000
iv) Stock of Finished Goods (1 month) (Rs. 10,80,000 × 1/12)	90,000
v) Debtors (1 month) (Rs. 10,80,000 × 1/12)	90,000
vi) Monthly Expenses	25,000
(B) Current Liabilities	3,80,000
i) Creditors (15 days) (Rs. 7,05,000 × 0.5/12) 29,375	44,375
ii) Advance received from Debtors <u>15,000</u>	3,35,625
Net Working Capital Required (A) – (B)	

Working Notes:

i) Calculation of Annual Consumption of Raw Material	Rs.
Opening Stock of Raw Material	1, 40,000
Add: Purchase	<u>7, 05,000</u>
	8, 45,000
Less: Closing Stock of Raw Material	<u>1, 25,000</u>
Annual Consumption	<u>7, 20,000</u>
ii) Cash Cost of Annual Production	
Cost of production as given	12, 00,000
Less:- Depreciation	<u>1, 20,000</u>
	<u>10, 80,000</u>

- iii) It is assumed that there is neither opening stock nor closing stock of finished goods. Hence, cost of sales after deducting depreciation is taken at Rs. 10,80,000.

Question 4- A Performa cost sheet of ABC Company provide the following particulars:

Element of Cost	Amount per unit	Rs
Raw materials		80
Direct Labour		30
Overheads		<u>60</u>
Total Cost		170
Profit		<u>30</u>
Selling Price		<u>200</u>

The following further particulars are available:

Raw materials are in stock for one month on an average. Materials are in process of half month on an average. Finished goods are in stock for one month on an average. Credit allowed by suppliers is one month. Credit allowed to debtors is two months. Lag in payment of wages is 2 weeks. Lag in payment of overhead expenses is one month. 25% of output is sold for cash. Cash in hand and at bank is expected to be Rs. 30,000.

You are required to prepare a statement showing the working capital needed to finance a level of activity of 1,04,000 units of production. You may assume that production is carried on evenly throughout the year. Wages and overhead accrue similarly and a time period of 4 weeks and 52 weeks is equivalent to a month and a year respectively.

Solution:-**Computation of Working Capital Requirements**

(A) Current Assets	
i) Stock of Materials(1 month) $(1,04,000 \times 80 \times 2/52)$	6,40,000
ii) Work-in-progress(1/2 month)	
Material Cost $(1,04,000 \times 80 \times 2/52)$	3,20,000
Labour Cost $(1,04,000 \times 30 \times 1/52)$	60,000
Overheads $(1,04,000 \times 60 \times 1/52)$	1,20,000
iii) Finished Goods(1 month)	
Material Cost $(1,04,000 \times 80 \times 4/52)$	6,40,000
Labour Cost $(1,04,000 \times 30 \times 4/52)$	2,40,000
Overheads $(1,04,000 \times 60 \times 4/52)$	4,80,000
iv) Debtors (2 months) $(78,000 \times 170 \times 8/52)$	20,40,000
v) Cash Balance	30,000
(B) Current Liabilities	45,70,000
i) Creditors for Material (1 month) $(1,04,000 \times 80 \times 4/52)$	
ii) Outstanding Expenses	6,40,000
a) Overheads (1 month) $(1,04,000 \times 60 \times 4/52)$	4,80,000
b) Wages (2 weeks) $(1,04,000 \times 30 \times 2/52)$	1,20,000
(C) Estimated Requirements of Working Capital (A-B)	12,40,000
	33,30,000

Working Notes:-

- i) 25% of production i.e. 26,000 units are sold for cash. Hence, credit sales are 78,000 units. The cash cost of debtors is calculated on these units.
- ii) It is assumed that full material is issued in the beginning and labour and overhead accrue evenly.
- iii) Profit on cash as well as credit sales may or may not be the source of working capital. Income tax and dividend paid are to be adjusted from these profits. Hence, profits are ignored.
- iv) All the overheads are assumed to be variable. Working capital will be reduced by the amount of depreciation. In absence of these data, estimates cannot be accurate.
- v) It is assumed that stock of raw material and finished goods is maintained on the basis of goods produced.

Question 5 - ABC & XYZ Food Products Ltd. is considering the revision of its credit policy with a view to increasing its sales and profits. Currently all its sales are on credit and the customers are given one month's time to settle the dues. It has a contribution of 40% on sales and it can raise additional funds at a cost of 20% per annum. The marketing director of the company has given the following options with draft estimates for consideration:

<i>Particulars</i>		<i>Current Position</i>	<i>Option I</i>	<i>Option II</i>
Sales	Rs. In lakhs	200	220	250
Credit Period	Months	1	2	3
Bad Debts	% of Sales	2	3	5
Cost of Credit Administration	Rs. In lakhs	1.20	1.50	3.00

Advise the company to take the right decision. (Working should for part of the answer).

Solution:-

Evaluation of Different Options in Credit Policy of Asmit Food Products Ltd.

<i>Particulars</i>	<i>Current Position</i>	<i>Option I</i>	<i>Option II</i>
<i>Credit Period(months)</i>	<i>1</i>	<i>2</i>	<i>3</i>
Sales	200	220	250
Less: Variable Cost (60 %)	120	132	150
Contribution (40%)	80	88	100
Investment in Debtors (Sales x Credit period/12 months)	16.67	36.37	62.50
Cost of funds invested in debtors balances @ 20%	3.33	7.33	12.50
Sales	200	220	250
Bad Debts (% of sales)	2%	3%	5%
Bad Debts	4	6.6	12.5
(A)	80.00	88.00	100.00
Contribution			
Less: Costs:	3.33	7.33	12.50
Cost of funds invested in debtors balances	4.00	6.60	12.50
Bad Debts	1.20	1.50	3.00
Cost of credit administration			
(B)	8.53	15.43	28.00
Net Contribution (A-B)	71.47	72.57	72.00

Decision:- Since the net contribution is highest in option I, it is suggested to extend 2 months credit period to the customers.

Question 6 - SK Limited specializes in the manufacture of a computer component. The component is currently sold for Rs. 1000 and its variable cost is Rs. 800. For the year ended 31st March, 2006 the company sold on an average 400 components per month.

At present the company grants one month credit to its customers. The company is thinking of extending avail the extended credit period of two months.

Increase in sales	25%
Increase in stock	Rs. 2, 00,000
Increase in creditors	Rs. 1, 00,000

You are required to advise the company on whether or not to extend the credit terms if all customers avail the extended credit period of two months.

Solution:

Evaluation of Extension of Credit Period

<i>Particulars</i>	<i>Rs.</i>
Profit on Additional Sales	
Existing Sales (400 x 12 x Rs. 1000)	48,00,000
Add: 25% increase	12,00,000
Revised Sales	60,00,000
P/V ratio $(1,000 - 800)/1,000 \times 100$	20 %
Contribution on additional sales $(12,00,000 \times 20/100)$ (A)	2,40,000
<i>Cost of carrying debtors and stock</i>	10,00,000
Total debtors after increase $(60,00,000 \times 2/12)$	4,00,000
Less: Existing debtors $(48,00,000 \times 1/12)$	6,00,000
<i>Net increase in debtors</i>	4,80,000
	2,00,000
Investments in additional debtors (Variable cost i.e. 80% of Rs 6,00,000)	6,80,000
	1,00,000
Add:- Increase in stock $(12,00,000 \times 2/12)$	5,80,000
Less: Increase in creditors	2,32,000
Net additional investments in working capital	
Minimum return @ 40% on additional investments Rs. 5,80,000 in Working Capital (B)	8,000
Increase in profit over cost of carrying additional working capital (A) – (B)	

Decision:- With the above analysis it is advised to company not to extend the credit terms if all customers avail the extended credit period of two months.

Question 7- Good Luck Ltd. which sells on credit basis has ranked its customers in categories 1 to 5 order of credit risk:

<i>Category</i>	<i>Percentage of Bad Debts</i>	<i>Average Collection Period</i>
1	0.0	30 days
2	1.0	45 days
3	2.0	60 days
4	5.0	90 days
5	10.0	120 days

The Company's current credit policy is to allow unlimited credit to firms in categories 1 to 3; limited credit to firms in category 4 and no additional credit to firms in category 5.

As a result, orders amounting to Rs. 25,00,000 from category 4 and Rs. 75,00,000 from category 5 are rejected every year. If the Good Luck Ltd. makes a 10% gross profit on sales and has an opportunity cost on investment in receivables of 12%, what would be the effect on profits of allowing full credit to all categories of customers? Should credit be extended to all categories of customers?

Solution :

Incremental Analysis

(Extension of credit to categories 4 and 5)

	<i>Category 4</i> <i>Rs.</i>	<i>Category 5</i> <i>Rs.</i>
Incremental Sales(revenue) (A)	25,00,000	75,00,000
Incremental Costs:		
Cost of goods sold (90% of Sales)	22,50,000	67,50,000
Bad Debts (5% and 10% of Sales)	1,25,000	7,50,000
Opportunity Cost	67,000	2,70,000
Total Incremental Costs(B)	24,42,500	77,70,000
Incremental Profit/Loss (A) – (B)	57,500	(-)2,70,000

Decision: Only category 4 customers should given the credit facility not to category 5.

Note:- Calculation of opportunity cost is being calculated on cost of goods sold @ 12% for 90 days and 120 for category 4 and 5 respectively.

Question 8- Consider the following data for a certain item purchased by ABC Ltd.

Annual Usage	10,000 units
Fixed Cost per order	Rs. 750
Purchase Price	Rs. 200 per unit
Carrying cost	20 % of inventory value.

a) What is the economic order quantity?

- b) On the assumption that a 25 trade discount is offered if the minimum order size is 1,000 units, should the company go in for the trade discount.

Solution:

$$\begin{aligned} \text{i) EOQ} &= \sqrt{\frac{2RO}{C}} \\ \text{EOQ} &= \sqrt{\frac{2 \times 10,000 \times \text{Rs.}750}{20\% \text{ of Rs.}200}} = \sqrt{3,75,000} = 612.37 \text{ units} \end{aligned}$$

ii) Total Cost without Discount:

$$\begin{aligned} \text{Purchase Cost} &= 10,000 \times 200 = 20,00,000.00 \\ \text{Ordering Cost} &= \left(\frac{R}{\text{EOQ}} \times O\right) = \left(\frac{10,000}{612.37} \times 750\right) = 12,247.50 \\ \text{Carrying Cost} &= \left(\frac{\text{EOQ}}{2} \times C\right) = \left(\frac{612.37}{2} \times 40\right) = 12,247.40 \\ & \qquad \qquad \qquad \underline{20,24,494.90} \end{aligned}$$

iii) Total Cost with discount:

$$\text{Purchase price per unit} = \text{Rs. } 200 - 4(2\% \text{ of Rs. } 200) = \text{Rs.}196$$

$$\text{Carrying Cost} = 20\% \text{ of Rs. } 196 = \text{Rs. } 39.20$$

Total Cost:

$$\begin{aligned} \text{Purchase Cost} &= 10,000 \times 196 = 19,60,000 \\ \text{Ordering Cost} &= \left(\frac{R}{\text{EOQ}} \times O\right) = \left(\frac{10,000}{1,000} \times 750\right) = 7,500 \\ \text{Carrying Cost} &= \left(\frac{\text{EOQ}}{2} \times C\right) = \left(\frac{1,000}{2} \times 39.20\right) = 19,600 \\ & \qquad \qquad \qquad \underline{19,87,100} \end{aligned}$$

$$\text{Total Savings} = \text{Rs. } 20,24,494.90 - \text{Rs. } 19,87,100 = \text{Rs. } 37,394.90$$

The Company should go in for trade discount.

Question 9- XYZ Limited, manufactures of a special product, follows the policy of EOQ (economic order quantity) for one of its components. The components details are as follows:

Purchase price per component	Rs. 200
Cost of an order	Rs. 100
Annual cost of carrying one unit in inventory	10% of purchase price

The company has been offered a discount of 2% on the price of the component provided the lot size is 2,000 components at a time.

You are required to : (a) compute the EOQ, (b) Advise whether the quantity discount offer can be accepted. (Assume that the inventory carrying cost does not vary according to discount policy.) (c) Would your advice differ if the company is offered 5% discount on a single order?

Solution:-

$$a) \text{ EOQ} = \sqrt{\frac{2RO}{C}}$$

$$\text{EOQ} = \sqrt{\frac{2 \times 4,000 \times \text{Rs. } 100}{10\% \text{ of Rs. } 200}} = \sqrt{40,000} = 200 \text{ units}$$

- b) Whether to accept quantity discount if the lot size is 2,000 components at a time with 2% discount on price

	Rs.
Ordering Cost = Rs. 100 x 2	200
Carrying Cost = (1/2 x 2,000 units x Rs. 20)	20,200
Total Cost	20,200
Less: Cost of inventory	4,000
Extra Cost(A)	16,200
Quantity Discount (4,000 units x Rs.200 x 2/100) (B)	16,000
Additional Expenditure if Quantity discount accepted (A) – (B)	200

Advice: Hence, quantity discount offer cannot be accepted.

- c) Whether to accept 5% discount on single order when the order size is 4,000 units.

	Rs.
Ordering Cost = Rs. 100 x 1	100
Carrying Cost = (1/2 x 4,000 units x Rs. 20)	40,000
Total Cost	40,100
Less: Cost of inventory	4,000
Extra Cost(A)	36,100
Quantity Discount (4,000 units x Rs.200 x 5/100) (B)	40,000
Net benefit of accepting the quantity discount (B) – (A)	3,900

Advice:- Hence, the quantity discount can be accepted.

Question 10- XYZ Pipes Limited uses about 75,000 valves per year and the usage is fairly constant at 6,250 per month. The valves cost Rs. 1.50 per unit when bought in quantities and the carrying cost is estimated to be 20 % of average inventory investment on the annual basis. The cost to place an order and process the delivery is Rs. 18. It takes 45 days to receive delivery from the date of an order and a safety stock of 3,200 valves is desired.

You are required to determine: (i) The most economical order quantity and frequency of orders; (ii) The order

point; and (iii) The most economical order quantity if the valves cost Rs. 4.50 each instead of Rs. 1.50 each.

Solution:-

- i) Economic Order Quantity & Frequency of Orders

$$EOQ = \sqrt{\frac{2RO}{C}}$$

$$EOQ = \sqrt{\frac{2 \times 75,000 \times \text{Rs. } 18}{1.50 \times 20\%}} = \sqrt{90,00,000} = 3,000 \text{ units}$$

$$\text{Number of Orders} = \frac{\text{Annual Usage}}{EOQ}$$

$$= \frac{75,000}{3,000} = 25 \text{ orders}$$

- ii) Re-order Point

ROP = (Lead Time x Usages Rate) + Safety Stock

Or = (L x UR) + S

$$= (45 \times 6,250/30) + 3,200$$

$$= 9,375 + 3,200 = 12,575 \text{ units}$$

- iii) E.O.Q. when cost per value is Rs. 4.50

$$EOQ = \sqrt{\frac{2RO}{C}}$$

$$EOQ = \sqrt{\frac{2 \times 75,000 \times .18}{4.50 \times 20\%}} = \sqrt{30,00,000} = 1.733 \text{ units}$$

Question 11- Super Equipment Company estimates its carrying cost at 15% and its ordering cost at Rs.9 per order. The estimated annual requirement is 48,000 units at a price of Rs.4 per unit.

Compute:

- What is the most economical number of units to order?
- How many orders should be placed in a year?
- How often should an order be placed?

Solution:

- What is the most economical number of units to order?

Annual requirement = 48,000 units

Ordering cost = Rs.9 per order

Carrying cost = 15% of per-unit cost

Per unit cost = Rs.4 per unit

$$EOQ = \sqrt{2 \times AR \times OC / CC}$$

$$= \sqrt{2 \times 48,000 \times 9 / 4 \times 15\%}$$

$$= \sqrt{1,440,000}$$

$$= 1,200 \text{ units}$$

b) How many orders should be placed in a year?

$$= \text{Annual requirement} / \text{EOQ}$$

$$= 48,000 \text{ units} / 1,200 \text{ units}$$

$$= 40 \text{ orders}$$

c) How often should an order be placed?

$$\text{Frequency of orders} = \text{No. of days in one year} / \text{No. of orders}$$

$$= 360 \text{ days} / 40 \text{ orders}$$

$$= 9 \text{ days}$$

Question 12- A manufacturing company places a semi-annual order of 24,000 units at a price of Rs.20 per unit. Its carrying cost is 15% and the order cost is Rs.12 per order.

Compute-

i) What is the most economical order quantity?

ii) How many orders need to be placed?

Solution:

i) $EOQ = \sqrt{2 \times AR \times OC / CC}$

$$= \sqrt{2 \times 48,000 \times 12 / 20 \times 15\%}$$

$$= \sqrt{384,000}$$

$$= 620 \text{ units approximately}$$

ii) $\text{No. of orders per year} = \text{Annual Requirement} / \text{EOQ}$

$$= 48,000 \text{ units} / 620 \text{ units}$$

$$= 77 \text{ orders approximately}$$

To compute the annual requirement:

24,000 units are ordered semi-annually, therefore:

$$\text{Annual requirement} = 24,000 \text{ units} \times 2 = 48,000 \text{ units}$$

Question 13- Magnificent company is making sale of Rs.16,00,000 and it extends a credit of 90 days to its customers. However, in order to overcome the financial difficulties, it is considering to change the credit policy. The proposed terms of credit and expected sales are as follows:

Policy	Term	Sale (Rs.)
I	75 days	15,00,000
II	60 days	14,50,000
III	45 days	14,25,000

IV	30 days	13,50,000
V	15 days	13,00,000

The firm has a variable cost of 80% and a fixed cost of Rs.1,00,000, the cost of capital is 15%. Evaluate different proposed policies and suggest which policy should be accepted (Year: 360 days).

Solution:

Particulars	Credit Policies					
	90 days	75 days	60 days	45 days	30 days	15 days
(A) Sale	16,00,000	15,00,000	14,50,000	14,25,000	13,50,000	13,00,000
Cost:						
Variable Cost (80%)	12,80,000	12,00,000	11,60,000	11,40,000	10,80,000	10,40,000
Fixed Cost	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000	1,00,000
(B) Total Cost	13,80,000	13,00,000	12,60,000	12,40,000	11,80,000	11,40,000
(C) Profit (A – B)	2,20,000	2,00,000	1,90,000	1,85,000	1,70,000	1,60,000
(D) Debtor at Cost	3,45,000	2,70,833	2,10,000	1,55,000	98,333	47,500
Total Cost / 360 x Days						
(E) Cost of Funding	51,750	40,625	31,500	23,250	14,750	7,125
Debtors 15% of (D)						
Net Profit (C – E)	1,68,250	1,59,375	1,58,500	1,61,750	1,55,250	1,52,875
Policy Recommendation	First			Second		

The existing policy of 90 days is still the best as it gives the highest net profit of Rs. 1,68,250. The firm may choose the 2nd best profit earning period which is 45 days credit policy. But if we compare correctly, if we choose this policy, the credit period is being drastically reduced by 45 days and yet profit is reduced marginally. This may be a very good option.

LESSON ROUND-UP

- Gross Working Capital is the total of all current assets. Networking capital is the difference between current assets and current liabilities.
- Permanent Working Capital is that amount of funds which is required to produce goods and services necessary to satisfy demand at its lowest point.
- Various factors such as nature of firm's activities, industrial health of the country, availability of material, ease or tightness of money markets affect the working capital.
- Factors which influence cash balance include credit position of the company, status of receivables and inventory accounts, nature of business enterprise and management's attitude towards risk.
- The amount of time needed for inventories to travel through the various process directly affect the amount of investment. The investment in inventories is guided by minimization of costs and management's ability to predict the forces that may cause disruption in the follow of inventories like strikes or shifts in demand for the product.

- Factors influencing investment in receivables are mainly the cost and time values of funds.
- The operating cycle is the length of time between the company's outlay on raw materials, wages and other expenditures and the inflow of cash from the sale of the goods.
- In deciding company's working capital policy, an important consideration is trade-off between profitability and risk.
- Cash management means management of cash in currency form, bank balance and readily marketable securities.
- Inventory management has at its core the objective of holding the optimum level of inventory at the lowest cost.
- There are various technical tools used in inventory management such as ABC analysis, Economic Order Quantity (EOQ) and VED analysis.
- Factoring is a type of financial service which involves an outright sale of the receivables of a firm to a financial institution called the factor which specializes in the management of trade credit.
- Forfeiting is a form of financing of receivables pertaining to international trade. It denotes the purchase of trade bills/ promissory notes by a bank/financial institution without recourse to the seller.

GLOSSARY

Current Assets: Include cash, accounts receivable, and inventories.

Current Liabilities: Include accounts payable, short-term borrowings, and accrued liabilities.

Endogenous factors: Include a company's size, structure, and strategy.

Exogenous factors: Include the access and availability of banking services, level of interest rates, type of industry and products or services sold, macroeconomic conditions, and the size, number, and strategy of the company's competitors.

Liquidity Event: A liquidity event is a process by which an investor liquidates their investment position in a private company and exchanges it for cash. The main purpose of a liquidity event is the transfer of an illiquid asset (an investment in a private company) into the most liquid asset – cash.

TEST YOURSELF

OBJECTIVE TYPE QUESTIONS

Fill in the blanks

1. A decision to decrease the wage rates will.....working capital requirements.
2. Total of current assets is called as
3. Cash budget is a Term budget.
4. Motives for holding cash are,,
5. Total inventory cost =+.....+.....

6. EOQ is the quantity where ordering cost andcost are equal.
7. Inventory is one of the components ofassets.
8. Minimum stock level + half of the reorder quantity is equal to
9. The time required to process and executive an order is calledtime.

ANS –

1. Decrease
2. Gross Working Capital
3. Short
4. Transaction, Precautionary, Speculative
5. Material Cost, Ordering Cost, Holding Cost
6. Holding Cost
7. Current
8. Average Stock Level
9. Lead

MULTIPLE CHOICE QUESTIONS

- 1) Cash budget is based on

- | | |
|---------------------|------------------------|
| A) Past performance | B) Present performance |
| C) Future estimates | D) None of these |

ANS- C

- 2) Cash budget is prepared because it :

- | | |
|-------------------------------------|-----------------------------|
| A) Is legally compulsory | B) Helps in cash management |
| C) Helps In preparing balance sheet | D) None of these |

ANS- B

- 3) The term receivable implies

- | | |
|-------------------------|----------------------|
| A) Trade debtor and B/R | B) Trade debtor only |
| C) B/R only | D) None of these |

ANS- A

- 4) At EOQ level :

- | | |
|---|---------------------------|
| A) Total cost are minimum | B) Total cost are maximum |
| C) Total cost are equal to holding cost | D) None of these |

ANS- A

ESSAY TYPE QUESTIONS

1. What do you mean by working capital? What are factors which may affect the quantum of working capital?
2. Explain the kinds of working capital.
3. What are the different sources of working capital finance?
4. What is cash management? Explain the function and importance of cash management.
5. Explain the motives of holding cash.
6. Define the inventory. Why should inventory be held?
7. What do you mean by inventory management? Also explain its objectives.
8. What do you mean by Receivables? Also discuss the costs of maintaining Receivables.
9. Discuss the kinds of working capital.
10. What is the importance of working capital?
11. What is operating cycle method of estimating working capital?
12. What are the advantages of adequate working capital?
13. What is the need of cash in business? Discuss and explain the various facts of Cash Management.
14. Discuss the management problems involved in the planning and control of cash. Explain the main tools of cash planning and control.
15. What do you understand by Management of Receivables? Explain the factors affecting the investment in receivables.
16. What is Credit Policy? How can it be formulated and evaluated?

PRACTICAL TYPE QUESTIONS

Question 1. From the following information, you are required to estimate the net working capital:

	Cost per Unit (Rs.)
Raw Material	800
Direct Labour	300
Overheads (excluding Depreciation)	<u>600</u>
Total Cost	<u>1700</u>
Output 52,000 units per annum at an even pace	
Raw Material in stock	Average 4 weeks
Work-in-Progress (whole of material and 50% completion Stage for labour and overhead)	Average 2 weeks
Finished goods in stock	Average 4 weeks
Credit allowed to debtors	Average 8 weeks
Credit allowed by suppliers	Average 4 weeks

All sales are on credit basis and materials are introduced at the commencement of the process.

Ans.: Rs.2,29,00,000. Note: Investment in debtors has been valued on cost basis.

Question 2. The cost sheet of PQR Ltd. provides the following data:

Cost per Ton	(Rs.)
Raw Material	50
Direct Labour	20
Overheads (including depreciation of Rs.10)	<u>40</u>
Total Cost	110
Profits	<u>20</u>
Selling price	<u>130</u>

Average raw material in stock is for one month.

Average material in work-in-progress is for half month. Credit allowed by suppliers: one month; credit allowed to debtors: one month. Average time lag in payment of wages: 10 days; average time lag in payment of overheads 30 days, 25% of the sales are on cash basis. Cash balance expected to be Rs.1,00,000. Finished goods lie in the warehouse for one month.

You are required to prepare a statement of the working capital needed to finance level of the activity of 54,000 units of output. Production is carried on evenly throughout the year and wages and overheads accrue similarly.

Ans. 8,91,250

Assumption: (1) Depreciation, being non-cash item, has been excluded. (2) As wages and overheads accrue evenly throughout the year, only 50% of the expenses have been taken in work-in-progress.

Question 3. From the following details, prepare an estimate of the requirement of working capital:

Production	60,000 Units
Selling Price per Unit	Rs.5
Raw materials	60% of Selling Price
Direct Wages	10% of Selling Price
Overheads	20% of Selling Price
Materials in Hand	2 months' requirements
Production Time	1 month
Finished Goods in Stores	3 months
Credit for Material	3 months
Credit allowed to Customers	3 months
Average Cash Balance	Rs.20,000

Wages and overheads are paid at the beginning of the month following. In production all the required materials are charged in the initial stage and wages and overheads accrue evenly.

Ans.: (a) Estimating Debtors at cost Rs.67,500, Working Capital Requirements Rs.1,66,250

Question 4. From the following details prepare a Cash Budget for October, November and December 2008:

Month	Sales (Rs.)	Purchases (Rs.)	Wages (Rs.)	Expenses (Rs.)
July (Actual)	50,000	25,000	10,000	4,000
August (Actual)	70,000	38,000	12,000	6,000
September (Actual)	80,000	41,000	13,000	7,000
October (Estimated)	80,000	42,000	14,000	6,000
November, (Estimated)	90,000	46,000	16,000	6,500
December (Estimated)	1,00,000	52,000	15,000	8,000

Additional Information:

- 1) 20% of purchases and 10% of sales are for cash.
- 2) The average collection period of the business is $\frac{1}{2}$ month.
- 3) Credit purchases are regularly paid after one month.
- 4) Wages are paid half monthly and the Rent of Rs.1,000 (included in Expenses) is paid monthly.
- 5) Cash balance on October 1, 2008 is Rs.10,000.

Ans. Oct. 29300, Nov. 50500, Dec. 75300

Question 5. Prepare a Cash Budget for the quarter ending 30-6-2008 month-wise in a tabular form from the following information:

Particulars	Actual			Budgeted		
	Jan. Rs.	Feb. Rs.	Mar. Rs.	April. Rs.	May Rs.	June Rs.
Sales	80,000	80,000	75,000	90,000	85,000	80,000
Purchases	45,000	40,000	42,000	50,000	45,000	35,000
Wages	20,000	18,000	22,000	24,000	20,000	18,000
Expenses	5,000	6,000	6,000	7,000	6,000	5,000

- (1) 10% of sales and purchases are for cash.
- (2) Credit purchases are paid for after one month and the credit sales are collected after two months.
- (3) Wages are paid on the last day of the month and expenses after one month.
- (4) Rent Rs.300 per month is not included in expenses.
- (5) Income-tax payable in May is estimated to be Rs.4,000.
- (6) Cash Balance on March 31, 2008 was Rs.13,000.

Ans. Cash Balance on June 30, 2008 = Rs.36,800

Question 6. Summarized below are the income and expenditure forecasts for the month of March to August 2008:

<i>Month</i>	<i>Sales (all credit)</i>	<i>Purchases (all credit)</i>	<i>Wages Rs.</i>	<i>Mfg. Exps.</i>	<i>Office Exps.</i>	<i>Selling Exps.</i>
	<i>Rs.</i>	<i>Rs.</i>		<i>Rs.</i>	<i>Rs.</i>	<i>Rs.</i>
March	60,000	36,000	9,000	4,000	2,000	4,000
April	62,000	38,000	8,000	3,000	1,500	5,000
May	64,000	33,000	10,000	4,500	2,500	4,500
June	58,000	35,000	8,500	3,500	2,000	3,500
July	56,000	39,000	9,500	4,000	1,000	4,500
August	60,000	34,000	8,000	3,000	1,500	4,500

You are given the following further information:

- 1) Plant costing Rs.16,000 is due for delivery in July payable 10 percent on delivery and the balance after three months.
- 2) Advance tax of Rs.8,000 each is payable in March and June.
- 3) Period of credit allowed by suppliers 2 months and to customers 1 month.
- 4) Lag in payment of manufacturing expenses one-half month.
- 5) Lag in payment of all other expenses one month.

You are required to prepare a cash budget for three months starting on 1st May 2008 when there was a cash balance of Rs.8,000.

Ans. Cash Balance on 31st July 2008 = Rs.18,400

Question 7. Two components, X and Y, are used as follows:

Normal usage	600 units per week each
Maximum usage	900 units per week each
Minimum usage	300 units per week each
Re-order quantity	X, 4,800 units, Y 7,200 units
Re-order period	X 4 to 6 weeks, Y 2 to 4 weeks

Calculate for cash component

- a) Reorder Level
- b) Minimum Level
- c) Maximum Level
- d) Average Stock Level

Ans.

	X	Y
a)	5,400 units	3,600 units
b)	2,400 units	1,800 units
c)	9,000 units	10,200 units
d)	4,800 units	5,400 units

Question 8. A manufacturer requires 1,000 units of a raw material per month. The ordering cost is Rs.15 per order. The carrying cost in addition to Rs.2 per unit is estimated to be 15% of the average inventory per unit per year. The purchase price of the raw material is Rs.10 per unit. Find economic lot size and total cost.

Ans. E.O.Q. = 320.71 or 321 units; TIC = Rs.1,21,122

Question 9. XYZ Electrical Company uses annually 50,000 units of an item each costing Rs.1.20. Each order costs Rs.45 and inventory carrying cost is 15% of the annual average inventory value.

- Find the Economic Order Quantity
- If the company operates 250 days a year and the procurement time is 10 days and safety stock is 500 units, find the reorder point, maximum, minimum and average inventory.

Ans. (a) 5,000 units, (b) 2,500 units, 5,500 units, 500 units, 3,000 units

Question 10. From the following data of ARPG Co., compute the duration of the operating cycle for each of the two years:

	Year 1	Year 2
Stocks:	Rs.	Rs.
Raw Materials	20,000	27,000
Work-in-Progress	14,000	18,000
Finished Goods	21,000	24,000
Purchases	96,000	1,35,000
Cost of Goods Sold	1,40,000	1,80,000
Sales	1,60,000	2,00,000
Debtors	32,000	50,000
Creditors	16,000	18,000

Assume 360 days per year for computational purposes.

Ans: Operating Cycle 177 days, 198 days Operating cycle can be reduced by:

LIST OF FURTHER READINGS

- Financial Management: Theory and Practice by Eugene F. Brigham
- Guide to Financial Management by John Tennent
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