Presentation on

WORKING CAPITAL MANAGEMENT

Part-II

For the students

of

Semester – VI

B.Com.(Hons. & General)

By

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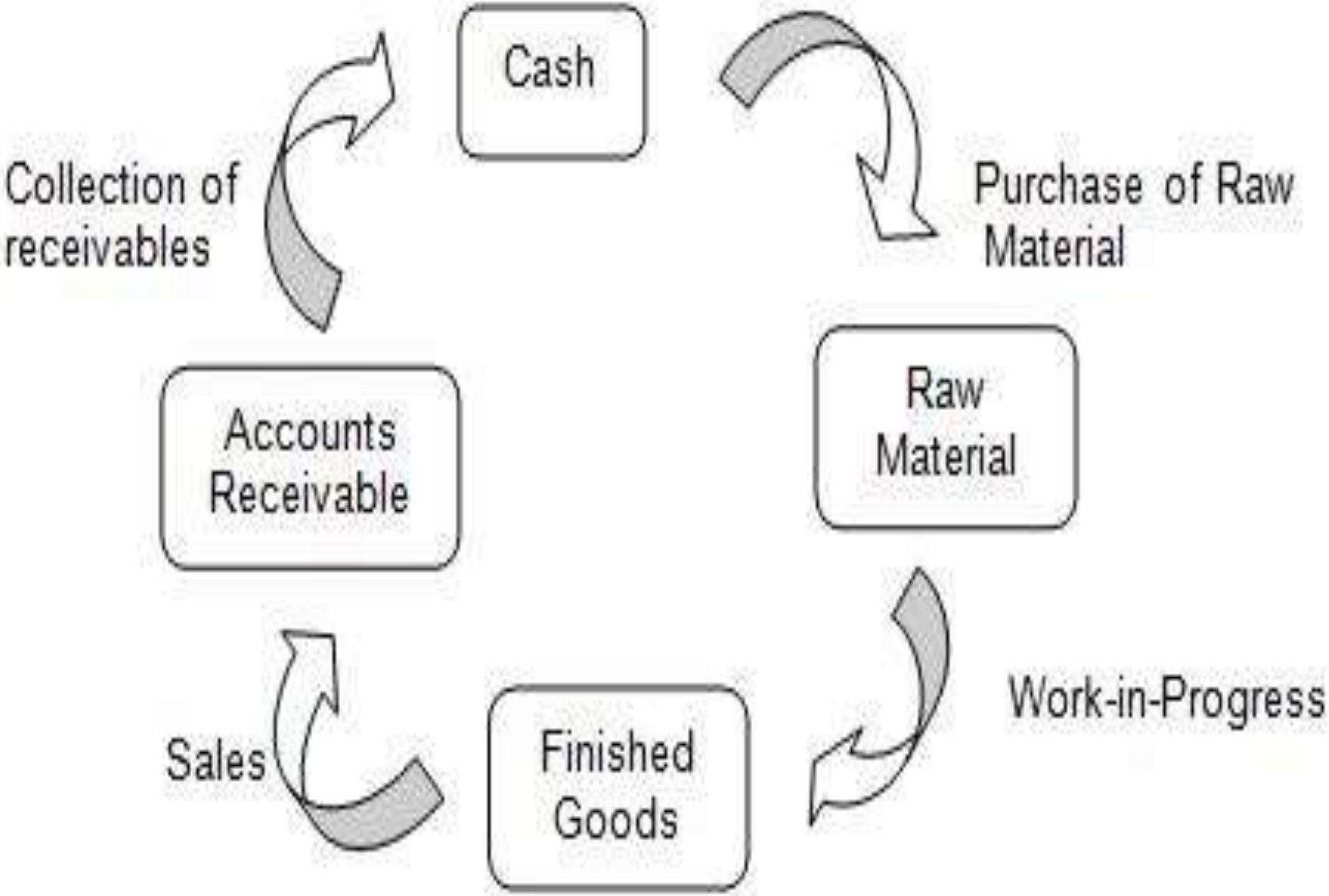
Estimation of Working Capital Requirements

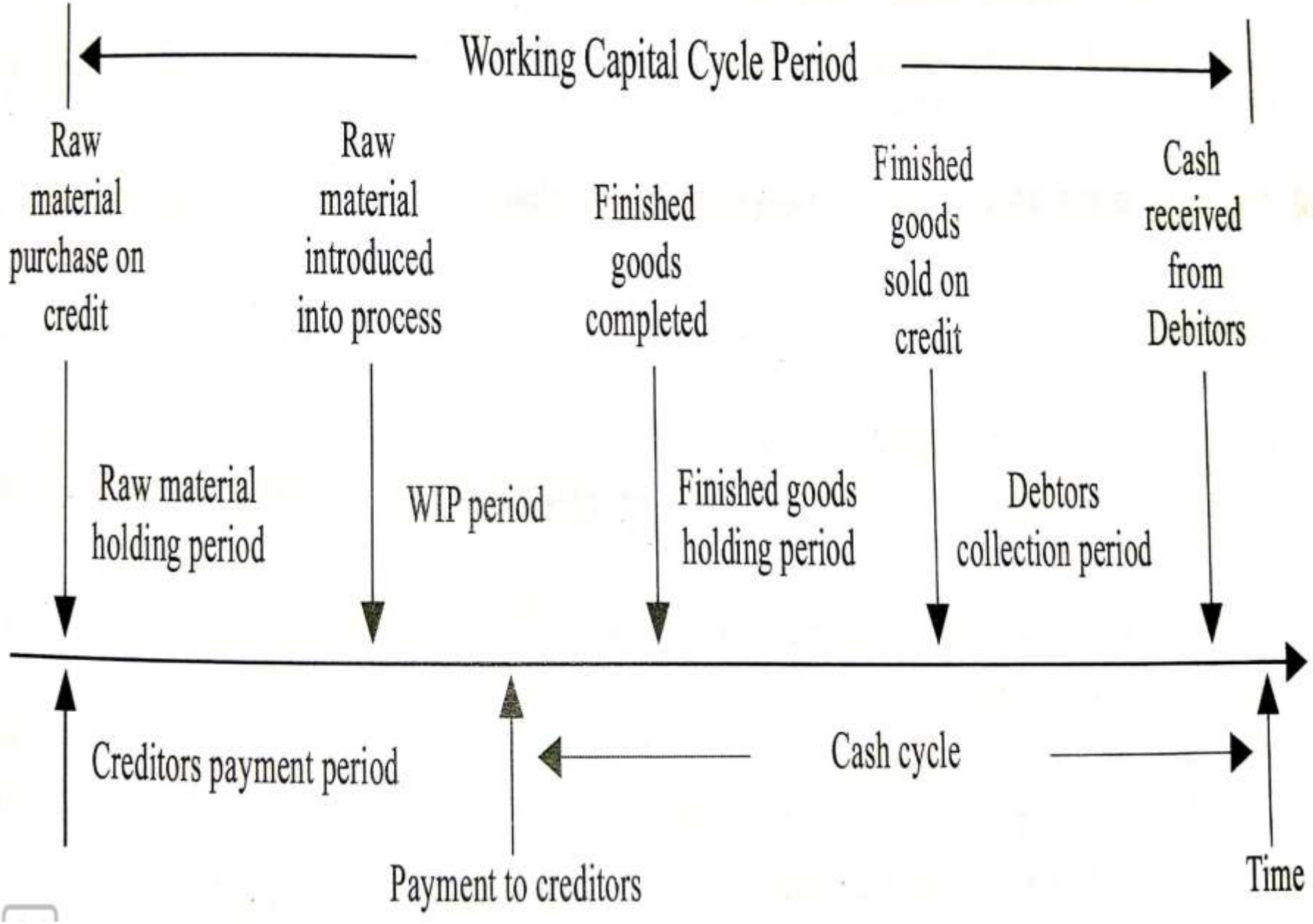
The most appropriate method of calculating the working capital needs of a firm is the concept of operating cycle. It was earlier referred to that working capital is also known as **revolving capital**. That is, a circular path of conversion/re-conversion takes place. Consider this example. You start your business operation with an initial investment. With credit extended by expense creditors (labour, employees, utilities, etc.) you start production process. Goods of varying levels of finish result. This is what we call as work-in-process or work-in-progress. Once complete processing is done, you get finished goods.

Until these goods are sold, they remain in stock. Sales may be for cash and/or on credit basis. You need to wait a little to realize cash from the credit customers. The realized cash is used to pay creditors. You need to maintain a cash balance for day-to-day transactions as well as for meeting sudden spurt in payment obligations accompanied by sluggish cash collections from debtors. Thus a revolution or cycle from cash to raw materials to Work in Progress (WIP), to finished goods, to debtors, and back to cash is taking place. This revolution or cycle is known as operating cycle.


Cash
Purchase of Raw Material
Raw Material
Work-in-Progress
Finished Goods
Sales
Accounts Receivable
Collection of receivables

Efficient working capital management is one which ensures continuous flow without any interruptions/holdups at any of the stages referred to above and involves as for as possible a rapid completion of the revolutions. In other words, when raw materials remain in store pending issue for production for a less duration, when raw materials get converted into WIP in short duration, when WIP is converted into finished goods in short duration, when finished goods remain in dept pending sales for a short while only, and when cash realizations out of sales are made quickly and finally when payment to creditors is made slowly, the operating cycle would be smaller and consequently the working capital will also be reasonable.

Operating cycle is the time duration required to convert sales, after the conversion of resources into inventories and cash.


Working Capital Cycle Period
Raw material purchase on credit
Raw material introduced into process
Finished goods completed
Finished goods sold on credit
Cash received from Debitors
Raw material holding period
WIP period
Finished goods holding period
Debtors collection period
Creditors payment period
Payment to creditors
Cash cycle
Time

The operating cycle of a manufacturing co involves 3 segments:

i. Acquisition of resources like raw material, labour, fuel and power

ii. Manufacture of the product that includes conversion of raw material into work in process and into finished goods, and

iii. sales of the product either for cash or credit. Credit sales create book debts for collection (debtors).

The length of the operating cycle of a manufacturing co is the sum of –

i) inventory conversion period (ICP) and

ii) Book debts conversion period (BDCP) collectively,

They are sometimes called as gross operating cycle (GOC).

GOC = ICP + DCP

The Inventory conversion period is the entire time needed for producing and selling the product and includes:

(a) Raw material conversion time (RMCP)

(b) Work in process conversion period (WIPCP) and

(c) Finished good conversion period (FGCP).

ICP = RMCP + WIPCP + FGCP

The payables deferral period (PDP) is the length of time the firm is capable to defer payments on various resource purchases. The variation between the gross operating cycle and payables deferrals period is the net operating cycle (NOC).

NOC = GOC- Payables deferral period (PDP).

The steps involved in the determination of the operating cycle are shown below:

Particulars	Days	Days
A. Raw materials holding period	***	
B. Work in progress period	***	
C. Finished goods holding period	***	
D. Debtors collection period	***	
Gross operating cycle		***
E. Less: Creditors payment period		***
Net operating cycle		***

A. Raw materials holding period $= \dfrac{\text{Average stock of raw materials}}{\text{Average daily consumption of raw materials}}$

Average daily consumption of Raw materials $= \dfrac{\text{Raw materials consumed}}{360}$

Where, Raw materials consumed = Opening stock of raw materials + Purchase − Closing stock of raw materials

B. Work in progress period $= \dfrac{\text{Average work in progress}}{\text{Average daily cost of production}}$

Average daily cost of production $= \dfrac{\text{Cost of production}}{360}$

Where, Cost of production = Opening stock of work in progress + Raw material consumed + Wages + Factory overhead − Closing stock of work in progress

C. Finished goods holding period $= \frac{\text{Average stock of finished goods}}{\text{Average daily cost of goods sold}}$

Average daily cost of goods sold $= \frac{\text{Cost of goods sold}}{360}$

Where, Cost of goods sold = Opening stock of finished goods + Cost of production + Administrative overhead – Closing stock of finished goods

D. Debtors collection period $= \frac{\text{Average Debtors}}{\text{Average daily credit sales}}$

Average daily credit sales $= \frac{\text{Credit sales}}{360}$

E. Creditors payment period $= \frac{\text{Average Creditors}}{\text{Average daily credit purchases}}$

Average daily credit purchases $= \frac{\text{Credit purchases}}{360}$

***Note**: 365 days can also be used in place of 360 days and average is calculated as:

$$\frac{\text{Opening} + \text{Closing}}{2}$$

Example 7.3 From the following data compute the operating cycle for XYZ Company:

Particulars	Amount (Rs)
Opening balance:	
Raw materials	30,000
WIP	15,000
Finished goods	25,000
Debtors	60,000
Creditors	15,000
Purchases	1,25,000
Wages	40,000
Production overhead	20,000
Administration overhead	35,000
Sales	3,00,000
Closing balance:	
Raw materials	32,000
WIP	13,000
Finished goods	29,000
Debtors	64,000
Creditors	17,000

Assume 360 days in a year.

Solution: Computation of the Operating Cycle of XYZ Company

Particulars	Days
A. Raw materials holding period	91
B. Work in progress period	27
C. Finished goods holding period	45
D. Debtors collection period	74
Gross operating cycle	237
E. Less: Creditors payment period	46
Net operating cycle	191

$$\text{A. Raw materials holding period} = \frac{\text{Average stock of raw materials}}{\text{Average daily consumption of raw materials}}$$

$$= \frac{31,000}{341.67} = 91 \text{ days}$$

Where, average stock of raw materials $= \frac{30,000 + 32,000}{2} = 31,000$ and

Raw material consumed = Opening stock of raw material + Purchase – Closing stock of raw material

$$= 30,000 + 1,25,000 - 32,000 = 1,23,000$$

$$\text{Average daily consumption of Raw materials} = \frac{\text{Raw material consumed}}{360} = \frac{1,23,000}{360} = 341.67$$

B. Work in progress period $= \frac{\text{Average stock of work in progress}}{\text{Average daily cost of production}} = \frac{14,000}{513.89} = 27 \text{ days}$

Where, Cost of production = Opening work in progress + Raw material consumed + Wages + Production overhead – Closing work in progress

= 15,000 + 1,23,000 + 40,000 + 20,000 13,000 = 1,85,000 and

Average stock of work in progress $= \frac{15,000 + 13,000}{2} = 14,000$

Average daily cost of production $= \frac{\text{Cost of production}}{360} = \frac{1,85,000}{360} = 513.89$

C. Finished goods holding period $= \frac{\text{Average stock of finished goods}}{\text{Average daily cost of goods sold}} = \frac{27,000}{600} = 45 \text{ days}$

Where, Average stock of finished goods $= \frac{25,000 + 29,000}{2} = 27,000$ and

Cost of goods sold = Opening stock of finished goods + Cost of production + Administrative overhead – Closing stock of finished goods

= 25,000 + 1,85,000 + 35,000 – 29,000 = 2,16,000

Average daily cost of goods sold $= \frac{\text{Cost of goods sold}}{360} = \frac{2,16,000}{360} = 600$

D. Debtors collection period $= \frac{\text{Average Debtors}}{\text{Average daily credit sales}} = \frac{62,000}{833} = 74 \text{ days}$

Where, Average debtors $= \frac{60,000 + 64,000}{2} = 62,000$

Average daily credit sales $= \frac{\text{Credit sales}}{360} = \frac{3,00,000}{360} = 833$

E. Creditors payment period $= \frac{\text{Average Creditors}}{\text{Average daily credit purchases}} = \frac{16,000}{347.22} = 46 \text{ days}$

Where, Average creditors $= \frac{15,000 + 17,000}{2} = 16,000$

Average daily credit purchases $= \frac{\text{Credit purchases}}{360} = \frac{1,25,000}{360} = 347.22$

For manufacturing organisation, the following factors have to be taken into consideration while making an estimate of working capital requirements.

Factors Requiring Consideration While Estimating Working Capital
1. Total costs incurred on material, wages and overheads
2. The length of time for which raw material are to remain in stores before they are issued for production.
3. The length of production cycle or work in process i.e. the time taken for conversion of raw material into finished goods.
4. The length of sales cycle during which finished goods are to be kept waiting for sales.
5. The average period of credit allowed to customers.
6. The amount of cash required to pay day to day expenses of the business.
7. The average amount of cash required to make advance payments, if any.
8. The average credit period expected to be allowed by suppliers.
9. Time lag in the payment of wages and other expenses.

From the total amount blocked in current assets estimated on the basis of the first seven items given above, the total of the current liabilities i.e. the last two item, is deducted to find out the requirements of working capital. In case of purely trading concern, points 1,2,3 would not arise but all other factors from points 4 to 9 are to be taken into consideration. In order to provide for contingencies, some extras amount generally calculated as a fixed percentage of the working capital may be added as margin of safety.

Representation of Working Capital Requirements:

Alternative - 1

Step 1:

Calculation of Time-Lag / Net Block Period (in weeks / months)

Particulars	Materials	Wages	Overhead	Profit
Raw Material	XX	–	–	–
Work-In-Progress	XX	XX	XX	–
Finished Goods	XX	XX	XX	–
Debtors	XX	XX	XX	XX
Gross Block	XX	XX	XX	XX
Less: Creditors				
– for Goods	XX	–	–	–
– for wages	–	XX	–	–
– for overheads	–	–	XX	–
Net Block	XX	XX	XX	XX

Step 2:

Statement showing the Working Capital Requirement

Element of Cost	Average cost per day/week/month (a) ₹	Net Block (day/week/month) (b) ₹	Total (c) = (a) x (b) ₹
Raw Materials	XXX	XX	XXX
Labour / wages	XXX	XX	XXX
Overhead	XXX	XX	XXX
			XXX
Profit	XXX	XX	XXX
			XXX
Add: Expected cash & bank			XXX
Total working capital			XXX

Alternative - II

Step 1:

Statement of Cost, Profit and Sale Price per day / week / month

Particulars	Amount (₹)	Cost per day / week / month (₹)
Raw Materials	XX	m
Labour / wages	XX	n
Overhead	XX	o
Total cost	XXX	m + n + o
Profit	XX	p
Sale Price	XXX	m + n + o + p

Step 2:

Statement of Working Capital Requirements

Particulars	Amount (₹)	Amount (₹)
1. **Stock of Raw materials:**		
Raw materials (m x time lag in stores)		XXX
2. **Work-in-progress:**		
(i) Raw materials (m x processing time)	XXX	
(ii) Wages (n x processing time)	XXX	
(iii) Overhead (o x processing time)	XXX	XXX
3. **Finished goods:**		
(i) Raw materials (m x time lag in warehouse)	XXX	
(ii) Wages (n x time lag in warehouse)	XXX	
(iii) Overheads (o x time lag in warehouse)	XXX	XXX
4. **Debtors:**		
(i) Raw materials (m x credit period allowed)	XXX	
(ii) Wages (n x credit period allowed)	XXX	
(iii) Overheads (o x credit period allowed)	XXX	
(iv) Profit (p x credit period allowed)	XXX	XXX
Total Current Assets		XXX
***Less:* Current liabilities**		
Creditors (m x credit period received)	XXX	
Wages (n x lag in payment of wages)	XXX	
Overhead (o x lag in payment of overheads)	XXX	
Net Working Capital		XXX
		XXX

Alternative – **III (Columnar form)**

Statement Showing the Working Capital Requirement

Particulars	Period in months week	Raw Materials (₹)	Work-in Progress (₹)	Finished Goods (₹)	Debtors (₹)	Creditors (₹)	Total (₹)
1. Raw Materials							
- In store	* * *	* * *					
- In work-in-progress	* * *		* * *				
- Finished goods	* * *			* * *			
- Debtors	* * *				* * *		
	* * *						
Less: Creditors	* * *					* * *	
Net block	* * *						* * *
2. Wages							
- In work-in-progress	* * *		* * *				
- Finished goods	* * *			* * *			
- Debtors	* * *				* * *		
	* * *						
Less: lag in payment of wages	* * *					* * *	
Net Block	* * *						* * *
3. Overhead							
- In work-in-progress	* * *		* * *				
- Finished goods	* * *			* * *			
- Debtors	* * *				* * *		
	* * *						
Less: lag in payment in overhead	* * *					* * *	
Net block	* * *						* * *
4. Profit							
- Debtors	* * *				* * *		* * *
		* * *	* * *	* * *	* * *	* * *	* * *

Problem 7. From the following information prepare a statement showing the estimated working capital requirement of Sudiptajit Co.:

(i)	Projected annual sales	26,000 units
(ii)	Selling price per unit	₹60
(iii)	Analysis of selling price:	
	Materials: 40%, Labour: 30%, Overheads: 20%, Profit: 10%	
(iv)	Time Lag (on average):	
	Raw materials in stock	3 weeks
	Production process	4 weeks
	Credit to debtors	5 weeks
	credit from suppliers	3 weeks
	Lag in payment of wages & overheads	2 weeks
	Finished goods are in warehouse	2 weeks
(v)	Cash in hand is expected to be 10% of net working capital.	

[C.U. B.Com(G), 2017, similar type] [C.U. B.Com (Hons.) 1986]

Solution:

Method – I

Step 1:

Calculation of Time Lag (in weeks)

Particulars	Materials	Wages	Overhead	Profit
Raw Material	3	—	—	—
Work-in-Progress	4	2	2	—
Finished goods	2	2	2	—
Debtors	5	5	5	5
Gross Blocks	14	9	9	5
Less: Creditors				
–for goods	3	—	—	—
–for wages	—	2	—	—
–for overhead	—	—	2	—
Net Block	11	7	7	5

Step 2:

Statement showing the Working Capital Requirement:

Element of cost	Average cost per week (₹)	Net Block (in weeks)	Total (₹)
Raw Material	12,000	11	1,32,000
Wages	9,000	7	63,000
Overhead	6000	7	42,000
Total cost	27,000		2,37,000
Profit	3,000	5	15,000
Add: Expected cash balance	30,000		2,52,000
Estimated working capital requirement			28,000
			2,80,000

Method – 2:

Working: Average weekly production = $\frac{26{,}000 \text{ units}}{52}$ = 500 units

Statement of Cost	Average cost per week ₹
Materials 500 x (40% of ₹ 60)	12,000
Labour 500 x (30% of ₹ 60)	9,000
Overheads 500 x (20% of ₹ 60)	6,000
Total cost	27,000
Profit 500 x (10% of ₹ 60)	3,000
	30,000

Note: *Assume that production process is carried on evenly throughout the year and wages and overhead accrue evenly throughout the manufacturing process. Therefore wages and expenses in work-in-progress is to be considered at* $4 \times \frac{50}{100} = 2$ *weeks.*

Statement Showing the Working Capital Requirement

	₹	₹
Current Assets:		
(a) Stock-in-trade		
(i) Materials (₹12,000 x 3)		36,000
(ii) Work-in-prog.; Materials (₹12,000 x 4)	48,000	
Labour 50% of (₹9,000 x 4)	18,000	
Overheads 50% of (₹6,000 x 4)	12,000	78,000
(iii) Finished goods (₹27,000 x 2)		54,000
(b) Debtors (₹30,000 x 5)		1,50,000
Total Current Assets		3,18,000
Less: **Current Liabilities :**		
(c) Creditors: for materials (₹12,000 x 3)	36,000	
for wages (₹9,000 x 2)	18,000	
for Overheads (₹6,000 x 2)	12,000	
Total Current Liabilities		66,000
Working Capital		2,52,000
Add: Expected cash-in-hand		28,000
Estimated working capital requirement		2,80,000

Method – 3:

Statement showing the Estimated Working Capital Requirement

Particulars	Period weeks	Raw Materials	W-I-P	Finished Goods	Debtors	Creditors	Total
		₹	₹	₹	₹	₹	₹
(a) Materials in:							
(i) Stock	3	36,000					
(ii) Work-in-progress	4		48,000				
(iii) Finished goods	2			24,000			
(iv) Debtors	5				60,000		
Gross Block	14						
Less: Credit from Creditors	3					36,000	
Net Block	11						1,32,000
(b) Labour in:							
(i) Work-in-progress	2		18,000				
(ii) Finished goods	2			18,000			
(iii) Debtors	5				45,000		
Gross Block	9						
Less: lag in payment	2					18,000	
Net Block	7						63,000

(c) Overheads in:							
(i) Work-in-progress	2		12,000				
(ii) Finished goods	2			12,000			
(iii) Debtors	5				30,000		
Gross Block	9					12,000	
Less: lag in payment	2						42,000
Net Block	7						
(d) Profit with debtors	5				15,000		15,000
		36,000	78,000	54,000	1,50,000	66,000	2,52,000

Working Capital Requirement as per statement

	₹	₹	₹
Stock:			
Raw materials	36,000		
Work-in-progress	78,000		
Finished goods	54,000	1,68,000	
		1,50,000	
Debtors			
Expected cash in hand = $\left(2,52,000 \times \frac{1}{9}\right)$		28,000	3,46,000
Less: Creditors			66,000
Estimated working capital requirement			2,80,000


Thank
You