9 CHAPTER

Working Capital Management

THEORY

Meaning of working capital	❑ It refers to the amount of capital which is required for day to day operations of the business. ❑ It is a measure of both a company's efficiency and its short-term financial health. ❑ From Value point of view, working capital can be defined as: (*a*) **Gross Working Capital:** It means the firm's investment in total current assets. (*b*) **Net Working Capital**: It refers to the difference between the total current assets and current liabilities. In other words, it is portion of current assets which is financed through long term funds of the firm. ❑ From the point of view of time, working capital can be defined as: (*a*) **Permanent Working Capital:** It is that minimum level of investment in the current assets which is required at all times to carry out minimum level of business activities. (*b*) **Temporary Working Capital :** It refers to that part of total working capital which is required by a business over and above permanent working capital.
Factors to be considered for determining the requirement of working capital	(*a*) **Nature of business:** Generally the small trading concern or retails shops will have lower requirement of working capital because their operating cycle will be small and vice versa. (*b*) **Size of business:** Larger the scale of operations, larger will be the firm's working capital requirements and vice versa. (*c*) **Manufacturing cycle:** It is the time period between the purchase of raw material and converting them into finished product. Larger the manufacturing cycle, larger will be the firm's working capital requirements and vice versa. (*d*) **Business fluctuation:** During the boom period the business grows rapidly and thus requires more working capital and vice versa.

	(*e*) **Credit policy:** Liberal credit policy will lead to higher credit sales, higher book debts and higher working capital and vice versa. (*f*) **Growth and expansion:** The large sized business require more permanent and variable working capital in comparison to small business. (*g*) **Operating efficiency:** By better utilization of resources, operating costs will be reduced which will reduce the pressure on working capital. (*h*) **Price level changes:** Generally, rising price level requires a higher investment in working capital because increased investment is required to maintain the same level of current assets.
Repercussions of paucity of working capital	(*a*) It puts at rest the development of the firm because due to inadequate working capital management is unable to implement the profitable projects. (*b*) In absence of adequate working capital, fixed assets cannot be utilized fully. As a result, return on investment decreases. (*c*) Management cannot take advantage of business opportunities. (*d*) The production process stops due to lack of raw material. Decrease in stock of finished goods causes loss of sales. (*e*) Due to inability to pay short term liabilities in time, goodwill of the firm is adversely affected.
Effects of excess working capital	(*a*) Excessive working capital causes more inventory. As a result, chances of theft and misuse of stock increase. (*b*) It results in adaption of too liberal policy and chances of slackening of collection of receivables. As a result, the chances of bad debt increase and profits decreases. (*c*) It results in excessive cash holding. Thus, profitability decreases as a result of idle cash. (*d*) The tendency to accumulate excessive inventory is encouraged for making speculative profits so as to make dividend policy more liberal. In case the firm is unable to make speculative profits, liberal dividend policy can't be maintained.
Management of Working Capital	❑ Working capital plays a similar role as blood in a living body. ❑ It has to be effectively managed keeping in mind the 3Es i.e. Economy, Efficiency and Effectiveness. ❑ It can be further studied in two ways i.e. liquidity & profitability and Investment & Financing Decisions.
Investment of Working Capital	It is the amount to be invested in current assets which depends on various factors such as: ❑ Nature of industry ❑ Type of products ❑ Volume of sales ❑ Credit policy

<table>
<tr><td>Meaning of Working capital financing</td><td>It means what portion of working capital should be financed with long term sources of funds such as equity share capital, preference share capital, debentures etc. and what potion of working capital should be financed with short term sources such as trade credit, short term bank credit etc.</td></tr>
<tr><td>Approaches of Financing of Working Capital</td><td>Comparative study of Aggressive, Conservative & Matching Approach
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<tr><td>1. Permanent Current Assets</td><td>Some portion financed with short term sources of funds

Some portion financed with long term sources of funds</td><td>All permanent current assets are financed with long term sources of funds.</td><td>All permanent current assets are financed with long term sources of funds.</td></tr>
<tr><td>2. Temporary Current Assets</td><td>All temporary current assets are financed with short term sources of funds.</td><td>Some portion financed with long term sources of funds

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<tr><td>3. Liquidity</td><td>Lower</td><td>Higher</td><td>Moderate</td></tr>
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<tr><td>Current Assets to Fixed Assets Ratio</td><td>❑ A company requires both current assets and fixed assets to operate upto a level of output.
❑ If current assets to fixed assets ratio is high (assuming constant fixed assets) then it indicates conservative current assets policy.
❑ If current assets to fixed assets ratio is low (assuming constant fixed assets) then it indicates aggressive current assets policy.</td></tr>
<tr><td>Operating Cycle</td><td>It is the duration of time between acquisition of supplies and the collection of cash from receivables.</td></tr>
<tr><td>Operating cycle of Trading firm</td><td>It is the length of the time required:
(a) to convert cash into inventory of finished goods
(b) to convert inventory of finished goods into receivables
(c) to convert receivables into cash.
Operating Cycle = S + D: C
Where, S = Stock holding period
D = Debtors collection period
C = Creditors payment period</td></tr>
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Operating cycle of Manufacturing firm	It is the length of the time required: (*a*) to convert cash into inventory of raw materials (*b*) to convert inventory of raw materials into work-in-progress (*c*) to convert inventory of work-in-progress into finished goods (*d*) to convert inventory of finished goods into receivables (*e*) to convert receivables into cash. Operating Cycle = R + W + F + D: C Where, R = Raw material storage period W = Work-in-progress holding period F = Finished goods storage period D = Debtors collection period C = Creditors payment period
Components of operating Cycle	(*a*) Raw material storage period = $\frac{\text{Average stock of work-in-progress}}{\text{Average cost of production per day}}$ (*b*) Work-in-Progress storage period = $\frac{\text{Average stock of finished goods}}{\text{Average cost of goods sold per day}}$ (*c*) Finished goods storage period = $\frac{\text{Average stock of finished goods}}{\text{Average cost of goods sold per day}}$ (*d*) Debtors collection period = $\frac{\text{Average debtors}}{\text{Average credit sales per day}}$ (*e*) Creditors payment period = $\frac{\text{Average creditors}}{\text{Average credit purchases per day}}$
Number of operating cycles	Number of operating cycles = $\frac{\text{365 or 360}}{\text{Net Operating Cycle Period}}$
Amount of Working capital based on operating cycle	Amount of working capital = $\frac{\text{Annual operating cost}}{\text{Number of operating cycles}}$ $\frac{\text{Annual operating cost}}{360}$ × Net operating cycle period
Estimation of Current Assets	❑ Raw Material Inventory = $\frac{\text{Annual raw material cost}}{\text{365 days or 12 months or 52 weeks}}$ × Average raw material storage period ❑ WIP Inventory = $\frac{\text{Annual factory cost}}{\text{365 days or 12 months or 52 weeks}}$ × Average WIP storage period ❑ Finished goods Inventory = $\frac{\text{Annual Cost of Production}}{\text{365 days or 12 months or 52 weeks}}$ × Average FG storage period ❑ Debtors = $\frac{\text{Annual Credit sales}}{\text{365 days or 12 months or 52 weeks}}$ × Average debtors collection period

Estimation of Current liabilities	❑ Trade payables = $\frac{\text{Annual Credit purchases}}{\text{365 days or12 months or 52 weeks}}$ × Average creditors payment period ❑ Outstanding Expenses = $\frac{\text{Annual Expenses}}{\text{365 days or 12 months or 52 weeks}}$ × Average lag in payment of expenses
Cash Cost of Working Capital	This approach is based on the fact that in the case of current assets, like sundry debtors and finished goods, etc., the exact amount of funds blocked is less than the amount of such current assets. While computing cash cost of working capital, all non-cash costs such as depreciation etc. should not be considered.
Effect of Double Shift on Working Capital	(*a*) **Raw Materials**: Stock requirements as regards units, may double since consumption per day will be twice as earlier. However, due to bulk purchasing, the firm may get quantity discounts. (*b*) **Work-in-progress**: there will be no change in the quantity of work-in-progress since work commenced in first shift will be completed in the second and vice-versa. At the end of the day, the average quantity of work-in-progress remains the same. (*c*) **Finished Goods**: due to greater production, finished goods stocks may double in quantity but cost of production per unit may be reduced due to lower cost of raw materials, economies of fixed costs etc. (*d*) **Debtors**: increase in demand and increased sales will lead to higher amount of debtors, for the same credit period but the increase may not be proportional or it may not double in case of reduction in credit period. Also discounted selling price may be offered in order to sell the increase production. (*e*) **Creditors**: Due to bulk purchasing and better bargaining power the firm may avail extended credit period for payment. Unless otherwise specified, the amount of creditors may double. (*f*) **Overheads :** Fixed overheads will remain same irrespective of double shift working while the variable overheads will increase in proportion to the increased production. Semi-variable overheads will increase according the variable element in them.
Working Capital Finance	It can be done from two sources: (*a*) Spontaneous Sources – These sources are natural in business operations e.g. trade credit, bills payable, accrued expenses etc. (*b*) Negotiated sources – These sources are specifically negotiated for business e.g. bank loan, commercial papers, inter-corporate loans, bill discounting, public deposits, factoring etc.

Maximum Permissible Bank Financing (MPBF) – Tandon Committee	The Reserve Bank of India set up in 1974 a study group under the chairmanship of Mr. P.L. Tandon, popularly referred to as The Tandon Committee. **Lending Norms:** (I) The borrower has to contribute a minimum of 25% of working capital gap from long term funds. **MPBF = 75% of (Current assets – Current liabilities) = 75% × Net Working Capital** (II) The borrower has to contribute a minimum of 25% of the total current assets from long term funds. **MPBF = (75% of Current assets) – Current liabilities** (III) The borrower has to contribute the entire hard core current assets and a minimum of 25% of the balance of the current assets from long term funds. **MPBF = (75% of Soft Core Current assets) – Current liabilities**
Core Current Assets or Hard Core Working Capital	The term "Core Current Assets" was framed by Tandon Committee and it is that part of the current assets which represents the very minimum level of raw materials, process stock, finished goods, receivables, cash etc. which are in circulation to ensure continuity of production. These represents a fixed element just like the fixed assets of the company. Such current assets are basically in the nature of circulating assets but are blocked for long term e.g. funds invested in core inventories etc. Determination of hard core working capital in different industries would require a careful analysis of the items of inventory, receivables, work-in-progress and cash.

PRACTICAL QUESTIONS

1. A firm has the following data for the year ending 31st March, 2022:

Sales (1,00,000 @ ₹20)	₹20,00,000
Earnings before interest and taxes	₹2,00,000
Fixed Assets	₹5,00,000

The three possible current assets holdings of the firm are ₹5,00,000, ₹4,00,000 and ₹3,00,000. It is assumed that fixed assets level is constant and profits do not vary with current assets level. Analyse the effect of the three alternative current assets policies.

[**Sol.** ROTA = 20%; 22.22%; 25%; CA to FA Ratio = 1; 0.80; 0.60]

2. A company is considering its working capital investment and financial policies for the next year. Estimated fixed assets and current liabilities for the next year are ₹2.60 crore and ₹2.34 crore respectively. Estimated sales and EBIT depend on current assets investment, particularly inventories and book-debts. The financial controller of the company is examining the following alternative working capital investment policies. **[RTP May 2019]**

(₹Crores)

Working capital policy	Investment in Current Assets	Estimated Sales	EBIT
Conservative	4.5	12.3	1.23
Moderate	3.9	11.5	1.15
Aggressive	2.6	10.0	1.00

After evaluating the working capital investment policy, the Financial Controller has advised the adoption of the moderate working capital policy. The company is now examining the use of long-term borrowings for financing its assets. The company will use ₹2.50 crores of the equity funds. The corporate tax rate is 35%. The company is considering the following debt alternatives:

(₹Crores)

Finance Policy	Short-term debt	Long-term debt
Conservative	0.54	1.12
Moderate	1	0.66
Aggressive	1.5	0.16
Interest rate average	12%	16%

You are required to calculate the following:

(1) Working capital investment for each policy;

(*a*) Net working capital positions;

(*b*) Rate of return before interest & tax on total assets;

(*c*) Current ratio

(2) Financing for each policy;

(*a*) Net working capital position; (*b*) Rate of return on shareholders' equity;

(*c*) current ratio

[**Sol.** (1)(*a*) ₹2.16 crores; ₹1.56 crores; ₹0.26 crores; (*b*) 17.32%; 17.69%; 19.23%; (*c*) 1.92; 1.67; 1.11; (2)(*a*) ₹1.02 crores; ₹0.56 crores; ₹0.06 crores; (*b*) 23.56%; 24.03%; 24.55%; (*c*) 1.35; 1.11; 1.02]

3. On 1st January, the Managing Director of SK Ltd. wishes to know the amount of working capital that will be required during the year. From the following information prepare the working capital requirements forecast.

- Production during the previous year was 60,000 units. It is planned that this level of activity would be maintained during the present year.
- The expected ratios of the cost to selling prices are raw material 60%, direct wages 10% and overheads 20%.
- Raw materials are expected to remain in store for an average of 2 months before issued to production.
- Each unit is expected to be in process for one month, the raw materials being fed into the pipeline immediately and the labour and overhead cost accruing evenly during the month.
- Finished goods will stay in the warehouse awaiting dispatch to customers for approximately 3 months.
- Credit allowed by creditors is 2 months from the date of delivery of raw materials.
- Credit allowed to debtors is 3 months from the date of dispatch.
- Selling price is ₹5 per unit.
- There is a regular production and sales cycle.
- Wages and overheads are paid on the 1st of each month for the previous month.
- The company normally keeps cash in hand to the extent of ₹20,000.

[**Sol.** ₹1,66,250]

4. The following annual figures relate to SK Ltd.:

	(₹)
Sales (at two month's credit)	36,00,000
Material consumed (suppliers extend two months' credit)	9,00,000
Wages paid (1 month lag in payment)	7,20,000
Cash manufacturing expenses (expenses are paid one month in arrear)	9,60,000
Administrative expenses (1 month lag in payment)	2,40,000
Sales promotion expenses (paid quarterly in advance)	1,20,000

The company sells its products on gross profit of 25%. Depreciation is considered as a part of the cost of production. It keeps one months' stock of raw materials and finished goods and a cash balance of ₹1,00,000. Assuming a 20% safety margin, compute the working capital requirements of the company on cash cost basis. Ignore work-in-process.

[**Sol.** ₹7,20,000]

5. A Performa cost sheet of per unit cost of company provides the following particulars:

Raw material cost	100.00
Direct labour cost	37.50
Overhead cost	75.00
Total cost	212.50
Profit	37.50
Selling price	250.00

The company keeps raw material in stock on an average for one month; work in progress on an average for one week and finished goods in stock on an average for two weeks.

The credit allowed by suppliers is three weeks and company allows four weeks credit to its debtors. The lag in payment of wages is one week and lag in payment of overhead expenses is two weeks. The company sells one-fifth of the output against cash and maintains cash in hand and at bank put together at ₹37,500.

Required: Prepare a statement showing estimate of working capital needed to finance an activity level of 1,30,000 units of production. Assume that production is carried on evenly throughout the year and wages and overheads accrue similarly, work-in-progress is 80% complete in all respects.

[**Sol.** ₹30,06,250]

6. SK Ltd. has an installed capacity of producing 1.25 lakhs tons of cement per annum; its present capacity utilization is 80%. The major raw material to manufacture cement is limestone which is obtained on cash basis from a company located near the plant. The company produces cement in 200 kgs drum. From the information given below, determine the net working capital (NWC) requirement on cash cost basis of the company. For the current year cost structure per drum of cement (estimated) is as under:

	(₹)
Gypsum	25
Limestone	15
Coal	30
Packaging Material	10
Direct Labour	50
Factory overheads (including depreciation of ₹10)	30
Administrative overheads	20
Selling overheads	25
Total Cost	205
Profit Margin	45
Selling Price	250
Add: GST (10% of selling price)	25
Invoice price to customer	275

Additional information:

(*a*) Desired holding period of material:

Gypsum	: 3 months	Coal	: 2.5 months
Limestone	: 1 months	Packaging material	: 1.5 months

(*b*) Packaging material is used for packaging finished material at the time of sale.

(*c*) The product is in process for a period of ½ month (assume full units of materials, namely:- gypsum, limestone and coal are required in the beginning: other conversion costs are to be taken at 50%).

(*d*) Finished goods are in stock for a period of 1 month before they are sold

(*e*) Debtors are extended credit for a period of 3 months

(*f*) Average time lag in payment of wages is approximately ½ month and of overheads: 1 month

(*g*) Average time lag in payment of sales tax is 1½ months

(*h*) The credit period extended by various suppliers are

Gypsum – 2 months coal – 1 month Packaging material – ½ month

(*i*) Minimum desired cash balance is ₹25 lakhs. You may state your assumptions, if any.

[**Sol.** ₹3,66,66,667]

7. The management of SK Ltd. is planning to expand its business and consults you to prepare an estimated working capital statement. The records of the company reveal the following annual information: **[SM, RTP Dec 2021]**

	(₹)
Sales – Domestic at one month's credit	18,00,000
Export at three month's credit (sale price 10% below domestic price)	8,10,000
Materials used (suppliers extend two months credit)	6,75,000
Lag in payment of wages – ½ month	5,40,000
Lag in payment of manufacturing expenses (cash) – 1 month	7,65,000
Lag in payment of administration expenses – 1 month	1,80,000
Selling expenses payable quarterly in advance	1,12,500
Income tax payable in four instalments of which one falls in the next financial year	1,68,000

Rate of gross profit is 20%. Ignore work-in-progress and depreciation. The company keeps one month's stock of raw materials and finished goods (each) and believes in keeping ₹2,50,000 available to it including the overdraft limit of ₹75,000 not yet utilized by the company.

The management is also of the opinion to make 10% margin for contingencies on computed figure. You are required to prepare the estimated working capital statement for the next year.

[**Sol.** ₹5,48,702]

8. SK Limited is commencing a new project for manufacture of a plastic component. The following cost information has been ascertained for annual production of 12,000 units which is the full capacity: **[SM, Similar RTP Nov 2019]**

	Cost per unit (₹)
Materials	40
Direct labour and variable expenses	20
Fixed manufacturing expenses	6
Depreciation	10
Fixed administration expenses	4
	80

The selling price per unit is expected to be ₹96 and the selling expenses ₹5 per unit, 80% of which is variable. In the first two years of operations, production and sales are expected to be as follows:

Year	**Production (no. of units)**	**Sales (no. of units)**
1	6,000	5,000
2	9,000	8,500

To assess the working capital requirements, the following additional information is available:

(*a*) Stock of materials	2.25 months average consumption
(*b*) Work-in-progress	Nil
(*c*) Debtors	1 months average sales
(*d*) Cash balance	₹10,000
(*e*) Creditors for supply of materials	1 months average purchase during the year
(*f*) Creditors for expenses	1 months average of all expenses during the year

Prepare, for the two years:

(*i*) A Projected statement of Profit/Loss (Ignoring taxation)

(*ii*) A Projected statement of working capital requirements

[**Sol.** (*i*) –₹52,000; ₹20,000; (*ii*) ₹1,52,916; ₹2,13,125]

9. SK Ltd a company newly commencing business in 2021 has the under mentioned projected Profit & Loss Statement:

	₹	₹
Sales		2,10,000
Cost of goods sold		(1,53,000)
Gross profit		57,000
Administrative Expenses	14,000	
Selling Expenses	13,000	27,000
Profit before tax		30,000
Provision for taxation		(10,000)
Profit after tax		20,000
The cost of goods sold has been arrived at as under:		
Material used	84,000	
Wages & Manufacturing expenses	62,500	
Depreciation	23,500	
	1,70,000	
Less: Stock of finished goods (10% of goods produced not yet sold)	(17000)	
	1,53,000	

The figures given above relate only to finished goods not to work-in-progress. Goods equal to 15% of the year's production (in terms of physical units) will be in process on the average requiring full materials but only 40% of the other expenses. The company believes in keeping materials equal to two months consumption in stock.

All expenses will be paid one month in advance. Suppliers of materials will be extending 1– ½ months credit. Sale will be 20% for cash and the rest at two month's credit. 70% of the income tax will be paid in advance in quarterly instalments. The company wished to keep ₹8,000 in cash. Prepare an estimate of:

(*a*) Working Capital (*b*) Cash cost of working capital

[**Sol.** (*a*) ₹75,293; (*b*) ₹68,713]

10. SK Ltd. has been operating its manufacturing facilities till 31.3.2022 on a single shift working with the following cost structure:

	Per unit (₹)
Cost of materials	6.00
Wages (out of which 40% fixed)	5.00
Overheads (out of which 80% fixed)	5.00
Profit	2.00
Selling price	18.00
Sales during 2021-22 - ₹4,32,000	

As at 31.3.2022 the company held:

Stock of raw materials (at cost)	₹36,000
Work-in-progress (valued at prime cost)	₹22,000
Finished goods (valued at total cost)	₹72,000
Sundry debtors	₹1,08,000

In view of increased market demand, it is proposed to double production by working an extra shift. It is expected that a 10% discount will be available from suppliers of raw materials in view of increased volume of business. Selling price will remain the same. The credit period allowed to customers will remain unaltered. Credit availed from suppliers will continue to remain at the present level i.e. 2 months. Lag in payment of wages and expenses will continue to remain half a month.

You are required to prepare the additional working capital requirements, if the policy to increase output is implemented.

[**Sol.** Additional working capital required is ₹94,800]

11. From the following information of SK Ltd., you are required to calculate:

(*a*) Net operating cycle period (*b*) Number of operating cycles in a year

	(₹)
Raw material inventory consumed during the year	6,00,000
Average stock of raw material	50,000
Work-in-progress inventory	5,00,000
Average work-in-progress inventory	30,000
Cost of goods sold during the year	8,00,000
Average finished goods stock held	40,000
Average collection period from debtors	45 days
Average credit period availed	30 days
No. of days in a year	360 days

[**Sol.** (*a*) 84.60 days; (*b*) 4.26 cycles]

12. Following information is forecasted by SK limited for the year ending 31st March, 2022:

	Balance as at 31st March, 2022 (₹in lakhs)	Balance as at 31st March, 2021 (₹in lakhs)
Raw Material	65	45
Work-in-progress	51	35
Finished goods	70	60
Receivables	135	112
Payables	71	68
Annual purchases of raw material (all credit)	400	
Annual cost of production	450	
Annual cost of goods sold	525	
Annual operating cost	325	
Annual sales (all credit)	585	

You may take one year as equal to 365 days.

You are required to calculate:

(*a*) Net operating cycle period (*b*) Number of operating cycles in the year

(*c*) Amount of working capital requirement

[**Sol.** (*a*) 147 days; (*b*) 2.48 cycles; (*c*) ₹130.89 lakhs]

13. Following is the balance sheet of SK Ltd. Calculate the amount of maximum permissible bank finance by all three methods for working capital as per Tandon Committee norms. You are required to assume the level of hard core current assets to be ₹30 lakhs. You are required to calculate the current ratios under each method. **[May 2022]**

Balance Sheet of SK Ltd. as on 31st March **(₹in lakhs)**

Liabilities		Assets		
Equity share of ₹10 each	200	Fixed assets		500
Retained Earnings	200	Current Assets:		
11% Debentures	300	Inventory:		
Public Deposits	100	Raw materials	100	
Trade Creditors	80	WIP	150	
Bills Payable	100	Finished goods	75	325
		Debtors		100
		Cash/Bank		55
	980			980

[**Sol.** ₹225 lakhs; ₹180 lakhs; ₹157.50 lakhs]

14. SK Ltd. has provided you the following information for the year 2021-22:

By working at 60% of its capacity the company was able to generate sales of ₹72,00,000. Direct labour cost per unit amounted to ₹20 per unit. Direct material cost per unit was 40% of the selling price per unit. Selling price was 3 times the direct labour cost per unit. Profit margin was 25% on the total cost.

For the year 2022-23, the company makes the following estimates:

Production and sales will increase to 90% of its capacity. Raw material per unit price will remain unchanged. Direct expenses per unit will increase by 50%. Direct labour per unit will increase by 10%. Despite the fluctuations in the cost structure, the company wants to maintain the same profit margin on sales.

Raw materials will be in stock for one month whereas finished goods will remain in stock for two months. Production cycle is for 2 months. Credit period allowed by suppliers is 2 months. Sales are made to three zones:

Zone	Percentage of saels	Mode of credit
A	50%	Credit period of 2 months
B	30%	Credit period of 3 months
C	20%	Cash sales

There are no cash purchases and cash balance will be ₹1,11,000.

The company plans to apply for a working capital financing from bank for the year 2022-23. Estimate net working capital of the company receivables to be taken on sales and also compute the maximum permissible bank finance for the company using 3 criteria of Tandon Committee Norms. (Assume stock of finished goods to be a core current assets) **[RTP May 2023]**

[**Sol.** Net working capital = ₹42,83,500; MPBF = ₹32,12,625; ₹30,27,625; ₹18,57,625]

PRACTICE QUESTIONS

15. The following data relating to an auto component manufacturing company is available for the year:

Raw material held in storage	20 days
Receivables' collection period	30 days
Conversion process period	10 days
(raw material – 100%, other costs – 50% complete)	
Finished goods storage period	45 days
Credit period from suppliers	60 days
Advance payment to suppliers	5 days
Total cash operating expenses per annum	₹800 lakhs

75% of the total cash operating expenses are for raw material. 360 days are assumed in a year. You are required to calculate:

(*i*) Each item of current assets and current liabilities

(*ii*) The working capital requirement, If the company wants to maintain a cash balance of ₹10 lakhs at all times.

[**Sol.** ₹133.78 lakhs]

16. PK Ltd., a manufacturing company, provides the following information: **[Nov 2020]**

	(₹)
Sales	1,08,00,000
Raw Material Consumed	27,00,000
Labour Paid	21,60,000
Manufacturing Overhead	32,40,000
(Including Depreciation for the year ₹3,60,000)	
Administrative & Selling Overhead	10,80,000

Additional Information:

(*a*) Receivables are allowed 3 months' credit.

(*b*) Raw Material Supplier extends 3 months' credit.

(*c*) Lag in payment of Labour is 1 month.

(*d*) Manufacturing Overhead are paid one month in arrear.

(*e*) Administrative & Selling Overhead is paid 1 month advance.

(*f*) Inventory holding period of Raw Material & Finished Goods are of 3 months.

(*g*) Work-in-progress is Nil.

(*h*) PK Ltd. sells goods at Cost plus 33-1/3%.

(*i*) Cash Balance ₹3,00,000.

(*j*) Safety Margin 10%.

You are required to compute the Working Capital Requirements of PK Ltd. on Cash Cost basis.

[**Sol.** ₹44,21,000]

17. Bita Limited manufactures used in the steel industry. The following information regarding the company is given for your consideration:

(*i*) Expected level of production 9,000 units per annum.

(*ii*) Raw materials are expected to remain in store for an average of two months before issue to production.

(*iii*) Work-in-progress (50% complete as to conversion cost) will approximate to ½ month's production.

(*iv*) Finished goods remain in warehouse on av average for one month.

(*v*) Credit allowed by suppliers is one month.

(*vi*) Two month's credit is normally allowed to debtors.

(*vii*) A minimum cash balance of ₹67,500 is expected to be maintained

(*viii*) Cash sales are 75% less than the credit sales.

(*ix*) Safety margin of 20% to cover unforeseen contingencies.

(*x*) The production pattern is assumed to be even during the year.

(*xi*) The cost structure for Bita Limited's product is as follows:

	(₹)
Raw materials	80 per unit
Direct Labour	20 per unit
Overheads (including depreciation ₹20)	80 per unit
Total cost	180 per unit
Profit	20 per unit
Selling price	200 per unit

You are required to estimate the working capital requirement of Bita Limited.

[**Sol.** ₹5,81,400]

18. While applying for financing of working capital requirements to a commercial bank, SK Ltd. projected the following information for the next year.

Cost Element	Per unit (₹)	Per unit (₹)
Raw Materials		
X	30	
Y	7	
Z	6	43
Direct Labour		25
Manufacturing and administration overheads (excluding depreciation)		20
Depreciation		10
Selling overheads		15
		113

Additional Information:

(*a*) Raw materials are purchased from different suppliers leading to different period allowed as follows:

X – 2 months; *Y* – 1 months; *Z* – ½ month

(*b*) Production cycle is of ½ month. Production process requires full unit of X and Y in the beginning of the production. Z is required only to the extent of half unit in the beginning and the remaining half unit is needed at a uniform rate during the production process.

(*c*) X is required to be stored for 2 months and other materials for 1 month.

(*d*) Finished goods are held for 1 month.

(*e*) 25% of the total sales is on cash basis and remaining on credit basis. The credit allowed by debtors is 2 months.

(*f*) Average time lag in payment of all overheads is 1 months and ½ months for direct labour.

(*g*) Minimum cash balance of ₹8,00,000 is to be maintained.

Calculate the estimated working capital required by the company on cash cost basis if the budgeted level of activity is 1,50,000 units for the next year. The company also intends to increase the estimated working capital requirement by 10% to meet the contingencies. (You may assume that production carried on evenly throughout the year and direct labour and other overheads accrue similarly.) **[RTP May 2021]**

[**Sol.** ₹40,42,500]

19. Calculate the amount of working capital required for XYZ Ltd. from the following information:

Elements of Cost	Per unit (₹)
Raw Material	80.00
Direct Labour	30.00
Overheads	60.00
Total Cost	170.00
Profit	30.00
Sales	200.00

Raw materials are held in stock on an average for one month. Work-in-progress (completion stage 50%), on an average half a month. Finished goods are in stock on an average for one month. Credit allowed by suppliers is one month and credit allowed to debtors is two months. Time lag in payment of wages is 1½ weeks. Time lag in payment of overheads is one month. One fourth of the sales are made on cash basis. Cash in hand and at bank is expected to be ₹50,000.

You are required to prepare statement showing the working capital needed to finance a level of activity of 52,000 units of production. Assume that production is carried on evenly throughout the year and wages and overhead accrue similarly. For the calculation purpose 4 weeks may be taken as equivalent to a month and 52 weeks in a year.

[**Sol.** ₹16,35,000]

20. Day Ltd. a newly formed company has applied to the Private Bank for the first time for financing its working capital requirements. The following information are available about the projects for the current year:

Estimated level of activity	Completed Units of Production 31,200 plus unit of work in progress 12,000
Raw Material Cost	₹40 per unit
Direct Wages Cost	₹15 per unit
Overheads	₹40 per unit (inclusive of depreciation ₹10 per unit)
Selling price	₹130 per unit
Raw material in stock	Average 30 days consumption
Work in Progress stock	Material 100% and Conversion cost 50%
Finished goods stock	24,000 units
Credit allowed by the supplier	30 days
Credit allowed to purchases	60 days
Direct wages (lag in payment)	15 days
Expected cash balance	₹2,00,000

Assume that production is carried on evenly throughout the year (360 days) and wages and overheads accrue similarly. All sales are on the credit basis. You are required to calculate the Net Working Capital Requirement on Cash Cost Basis. **[May 2018]**

[**Sol.**]

21. SK Ltd., a newly formed company, has applied to commercial bank for the first time for financing its working capital requirements. The following information is available about the projections for the current year:

Estimated level of activity: 1,04,000 completed units of production plus 4,000 units of work in progress. Based on the above activity, estimated cost per unit is:

Raw material	₹80 per unit
Direct wages	₹30 per unit
Overheads (exclusive of depreciation)	₹60 per unit
Total Cost	₹170 per unit
Selling price	₹200 per unit

Raw materials in stock: Average 4 weeks consumption, work—in-progress (assume 50% completion stage in respect of conversion cost) (materials issued at the start of the processing).

Finished goods in stock	8,000 units
Credit allowed by suppliers	Average 4 weeks
Credit allowed to debtors/receivables	Average 8 weeks
Lag in payment of wages	Average 1.5 weeks
Cash at banks (for smooth operation)	₹25,000

Assume that production is carried on evenly throughout the year (52 weeks) and wages and overheads accrue similarly. All sales are on credit basis only. You are required to calculate the net working capital required. **[SM, MTP Nov 2018]**

[**Sol.** ₹42,52,913]

22. MT Ltd. has been operating its manufacturing facilities till 31.3.2021 on a single shift working with the following cost structure:

	Per unit (₹)
Cost of Materials	24
Wages (out of which 60% is variable)	20
Overheads (out of which 20% variable)	20
	64
Profit	8
Selling price	72

As at 31.3.2021 with the sales of ₹17,28,000 the company held:

	(₹)
Stock of raw materials (at cost)	1,44,000
Work-in-progress (valued at prime cost)	88,000
Finished goods (valued at total cost)	2,88,000
Sundry debtors	4,32,000

In view of increased market demand, it is proposed to double production by working an extra shift. It is expected that a 10% discount will be available from suppliers of raw materials in view of increased volume of business. Selling price will remain the same. The credit period allowed to customers will remain unaltered. Credit availed from suppliers will continue to remain at the present level i.e. 2 months. Lag in payment of wages and overheads will continue to remain at one month.

You are required to calculate the additional working capital requirements, if the policy to increase output is implemented to assess the impact of double shift for long term as a matter of production policy.

[**Sol.** Additional working capital requirement = ₹3,63,200]]

23. The following information has been extracted from the books of ABS Limited:

Particulars	1st April, 2017 (₹)	31st March, 2018 (₹)
Raw material	1,00,000	70,000
Work-in-progress	1,40,000	2,00,000
Finished goods	2,30,000	2,70,000

Other information for the year:

Particulars	₹
Average receivables	2,10,000
Average payables	3,14,000
Purchases	15,70,000
Wages and overheads	17,50,000
Selling expenses	3,20,000
Sales	42,00,000

All purchases and sales on credit basis. Company is willing to know:

(*a*) Net operating cycle period

(*b*) Amount of working capital requirement (assume 360 days in a year)

[**Sol.** (*a*) 12 days; (*b*) ₹1,19,000]

24. Following information is forecasted by the Puja Limited for the year ending 31st March, 2018:

	Balance as at 1st April, 2017 (₹)	Balance as at 31st March, 2018 (₹)
Raw materials	45,000	65,356
Work-in-progress	35,000	51,300
Finished goods	60,181	70,175

	Balance as at 1st April, 2017 (₹)	Balance as at 31st March, 2018 (₹)
Debtors	1,12,123	1,35,000
Creditors	50,079	70,469
Annual purchase of raw material (all credit)		4,00,000
Annual cost of production		7,50,000
Annual cost of goods sold		9,15,000
Annual operating cost		9,50,000
Annual sales (all credit)		11,00,000

You may take one year as equal to 365 days. You are required to calculate:

(*a*) Net operating cycle period

(*b*) Number of operating cycles in the year

(*c*) Amount of working capital requirement

[**Sol.** (*a*) 86 days; (*b*) 4.244; (*c*) ₹2,23,845.42]

25. Trading and Profit and Loss Account of Beat Ltd. for the year ended 31st March, 2022 is given below:

Particulars		Amount (₹)	Particulars		Amount (₹)
To opening stock:			By Sales (credit)		1,60,00,000
- Raw material	14,40,000		By Closing Stock:		
- Work-in-progress	4,80,000		- Raw material	16,00,000	
- Finished goods	20,80,000	40,00,000	- Work-in-progress	8,00,000	
To Purchases (credit)		88,00,000	- Finished goods	24,00,000	48,00,000
To Wages		24,00,000			
To Production exp.		16,00,000			
To Gross Profit c/d		40,00,000			
		2,08,00,000			2,08,00,000
To Administration exp.		14,00,000	By Gross Profit b/d		40,00,000
To Selling exp.		6,00,000			
To Net Profit		20,00,000			
		40,00,000			40,00,000

The opening and closing payables for raw materials were ₹16,00,000 and ₹19,20,000 respectively whereas the opening and closing balances of receivables were ₹12,00,000 and ₹16,00,000 respectively.

You are required to ascertain the working capital requirement by operating cycle method.

[**Sol.** ₹42,28,329.81]

26. The following information is provided by MNP Ltd. for the year ending 31st March, 2020:

Raw Material Storage Period	45 days
Work-in-Progress conversion period	20 days
Finished Goods storage period	25 days
Debt Collection period	30 days
Creditors' payment period	60 days
Annual Operating Cost	₹25,00,000
(Including Depreciation of ₹2,50,000)	

Assume 360 days in a year.

You are required to calculate:

(*i*) Operating Cycle period

(*ii*) Number of Operating Cycle in a year

(*iii*) Amount of working capital required for the company on a cost basis.

(*iv*) The company is a market leader in its product and it has no competitor in the market. Based on a market survey it is planning to discontinue sales on credit and deliver products based on pre-payments in order to reduce its working capital requirement substantially You are required to compute the reduction in working capital requirement in such a scenario.

[Jan 2021]

[**Sol.** (*i*) 60 days; (*ii*) 6 cycles; (*iii*) ₹3,75,000; (*iv*) ₹1,87,500]

27. From the following data, calculate the maximum permissible bank finance under the three methods suggested by the Tandon Committee:

Liabilities	**₹in Lakhs**
Creditors	120
Other current liabilities	40
Bank borrowing	250
Total	**410**

Current Assets	**₹in Lakhs**
Raw material	180
Work-in-progress	60
Receivables	100
Other current assets	20
Total current assets	510
The total core current assets (CCA) are ₹200 lakhs	

[**Sol.** ₹262.50 lakhs; ₹222.50 lakhs; ₹72.50 lakhs]

SOLUTIONS

15. Since WIP is 100% complete in terms of material and 50% complete in terms of other cost, the same has been considered for number of days for WIP inventory i.e. 10 days for material and 5 days for other costs respectively.

Particulars	₹in lakhs
Raw material stock $\left[\left(800\times75\%\times\frac{10}{360}\right)+\left(800\times25\%\times50\%\times\frac{10}{360}\right)\right]$	33.33
WIP stock $\left[\left(800\times75\%\times\frac{10}{360}\right)+\left(800\times25\%\times50\%\times\frac{10}{360}\right)\right]$	19.45
Finished goods stock holding $\left[800\times\frac{45}{360}\right]$	100.00
Receivables collection $\left[800\times\frac{30}{360}\right]$	66.67
Advance to supplier $\left[800\times75\%\times\frac{5}{360}\right]$	8.33
Credit period from supplier $\left[800\times75\%\times\frac{60}{360}\right]$	100.00

Computation of Working Capital

Particulars	₹in lakhs
Raw material stock	33.33
WIP stock	19.45
Finished goods stock	100.00
Receivables	66.67
Advance to suppliers	8.33
Cash	10.00
Total current assets	237.78
Less: Payables (Creditors)	100.00
Working capital	137.78

16. Statement showing Working Capital Requirements of

	Amount (₹)
Current Assets	
Stock of raw material (27,00,000 × 3/12)	6,75,000
Stock of finished goods (77,40,000 × 3/12)	19,35,000
Debtors (88,20,000 × 3/12)	22,05,000

Outstanding Administrative & Selling Overheads (10,80,000 × 1/12)	90,000
Cash balance	3,00,000
Total Current Assets (A)	**52,05,000**
Current Liabilities	
Creditors for raw material (27,00,000 × 3/12)	6,75,000
Outstanding Labour cost (21,60,000 × 1/12)	1,80,000
Outstanding Manufacturing Overheads (28,80,000 × 1/12)	2,40,000
Total Current Liabilities (B)	**10,95,000**
Net Current Assets (A - B)	41,10,000
Add: 10% safety margin	4,11,000
Working capital requirement	**44,21,000**

Working Note-1

Statement of Cash Cost

Particulars		₹
	Raw material consumed	27,00,000
Add:	Labour	21,60,000
Add:	Manufacturing Overheads [32,40,000 – 3,60,000]	28,80,000
	GFC/NFC/COGS	77,40,000
Add:	Administrative & Selling Overheads	10,80,000
	Cash cost of sales	88,20,000

17. Statement showing Working Capital Requirements of

		Amount (₹)
Current Assets		
Stock of raw material (9,000 × 80 × 2/12)		1,20,000
Stock of WIP -Material (9,000 × 80 × 0.5/12)	30,000	
Wages (9,000 × 20 × 50% × 0.5/12)	3,750	
Overheads (9,000 × 60 × 50% × 0.5/12)	11,250	45,000
Stock of finished goods (9,000 × 160 × 1/12)		1,20,000
Debtors (9,000 × 160 × 80% × 2/12)		1,92,000
Cash balance expected		67,500
Total Current Assets (A)		**5,44,500**
Current Liabilities		
Creditors for raw material (9,000 × 80 × 1/12)		60,000
Total Current Liabilities (B)		**60,000**
Net Current Assets (A - B)		4,84,500
Add: 20% safety margin		96,900
Working capital requirement		**5,81,400**

Note: Debtors has been calculated on the basis of cash cost. Alternatively, they can be calculated on sales basis as well.

18. Statement showing Working Capital Requirements of

	Amount (₹)
Current Assets	
Stock of raw material X (45,00,000 × 2/12)	7,50,000
Stock of raw material Y (10,50,000 × 1/12)	87,500
Stock of raw material Z (9,00,000 × 1/12)	75,000
Stock of work-in-progress (working note – 2)	4,00,000
Stock of finished goods (1,32,00,000 × 1/12)	11,00,000
Debtors for credit sale (1,54,50,000 × 75% × 2/12)	19,31,250
Cash	8,00,000
Total Current Assets (A)	**51,43,750**
Current Liabilities	
Creditors for raw material X (45,00,000 × 2/12)	7,50,000
Creditors for raw material Y (10,50,000 × 1/12)	87,500
Creditors for raw material Z (9,00,000 × 0.5/12)	37,500
Outstanding direct labour (37,50,000 × 0.5/12)	1,56,250
Outstanding manufacturing & administration overheads (30,00,000 × 1/12)	2,50,000
Outstanding selling overheads (22,50,000 × 1/12)	1,87,500
Total Current Liabilities (B)	**14,68,750**
Net working capital (A – B)	**36,75,000**
Add: Provision for Contingencies @ 10%	3,67,500
Working capital requirement	**40,42,500**

Working Note-1

Statement of Cost

Particulars		₹
	Raw material X (1,50,000 × 30)	45,00,000
	Raw material Y (1,50,000 × 7)	10,50,000
	Raw material Z (1,50,000 × 6)	9,00,000
	Raw material consumed	64,50,000
Add:	Direct labour (1,50,000 × 25)	37,50,000
Add:	Manufacturing & Administration overheads (1,50,000 × 20)	30,00,000
	Cash GFC/NFC/COP/COGS	1,32,00,000
Add:	Selling overheads (1,50,000 × 15)	22,50,000
	Cash cost of sales	1,54,50,000

Working Note-2

Statement of calculation of WIP

Particulars		₹
	Raw material X (45,00,000 × 0.5/12)	1,87,500
	Raw material Y (10,50,000 × 0.5/12)	43,750
	Raw material Z (9,00,000 × 50% × 0.5/12)	18,750
	Raw material usage	2,50,000
Add:	Raw material Z (9,00,000 × 50% × 50% × 0.5/12)	9,375
Add:	Direct labour (37,50,000 × 50% × 0.5/12)	78,125
Add:	Manufacturing & Administration overheads (30,00,000 × 50% × 0.5/12)	62,500
	Work in progress stock	4,00,000

19. Statement showing Working Capital Requirements of

Particulars			₹
Current Assets:			
Raw material stock (52,000 × 80 × 4/52)			3,20,000
WIP stock	- Material (52,000 × 80 × 50% × 2/52)	80,000	
	- Labour (52,000 × 30 × 50% × 2/52)	30,000	
	- Overheads (52,000 × 60 × 50% × 2/52)	60,000	1,70,000
Finished goods stock (52,000 × 170 × 4/52)			6,80,000
Receivables (52,000 × 170 × ¾ × 8/52)			10,20,000
Cash in hand & bank			50,000
Total Current Assets (A)			**22,40,000**
Current Liabilities			
Payables for material (52,000 × 80 × 4/52)			3,20,000
Outstanding wages (52,000 × 30 ×1.5/52)			45,000
Outstanding overheads (52,000 × 60 × 4/52)			2,40,000
Total Current Liabilities (B)			**6,05,000**
Net Working Capital (A – B)			**16,35,000**

20. Statement showing Working Capital Requirements of

	Amount (₹)
Current Assets	
Stock of raw material (17,28,000 × 30/360)	1,44,000
Stock of work-in-progress [12,000 × (40 + 7.50 + 15)]	7,50,000
Stock of finished goods [24,000 × (40 + 15 + 30)]	20,40,000
Debtors for sale (6,12,000 × 60/360)	1,02,000

Cash	2,00,000
Total Current Assets (A)	**32,36,000**
Current Liabilities	
Creditors for purchase (18,72,000 × 30/360)	1,56,000
Creditors for wages (5,58,000 × 15/360)	23,250
Total Current Liabilities (B)	**1,79,250**
Net working capital (A – B)	**30,56,750**

Working Note-1

Statement of Cost

Particulars		(₹)
	Opening stock of raw material	–
Add:	Purchases (Bal. fig.)	18,72,000
Less:	Closing stock of raw material (17,28,000 × 30/360)	(1,44,000)
	Raw material consumed [(31,200 × 40) + (12,000 × 40)]	17,28,000
Add:	Direct wages [(31,200 × 15) + (12,000 × 15 × 50%)]	5,58,000
Add:	Overheads [(31,200 × 30) + (12,000 × 30 × 50%)]	11,16,000
	Gross Factory Cost	34,02,000
Less:	Closing work in progress [12,000 × (40 + 7.50 + 15)]	(7,50,000)
	Cost of goods produced	26,52,000
Less:	Closing stock of finished goods (26,52,000 × 24,000/31,000)	(20,40,000)
	Cash cost of sales	6,12,000

21. Statement showing Working Capital Requirements of

	Amount (₹)
Current Assets	
Stock of raw material (86,40,000 × 4/52)	6,64,615
Stock of work-in-progress [4,000 × (80 + 15 + 30)]	5,00,000
Stock of finished goods [8,000 × (80 + 30 + 60)]	13,60,000
Debtors for sale (1,63,20,000 × 8/52)	25,10,769
Cash	25,000
Total Current Assets (A)	**50,60,384**
Current Liabilities	
Creditors for raw material (93,04,615 × 4/52)	7,15,740
Creditors for wages (31,80,000 × 1.5/52)	91,731
Total Current Liabilities (B)	**8,07,471**
Net working capital (A – B)	**42,52,913**

Working Note-1

Statement of Cost

	Particulars	₹
	Opening stock of raw material	–
Add:	Purchases (Bal. fig.)	93,04,615
Less:	Closing stock of raw material (86,40,000 × 4/52)	(6,64,615)
	Raw material consumed [(1,04,000 × 80) + (4,000 × 80)]	86,40,000
Add:	Direct wages [(1,04,000 × 30) + (4,000 × 30 × 50%)]	31,80,000
Add:	Overheads [(1,04,000 × 60) + (4,000 × 60 × 50%)]	63,60,000
	Gross Factory Cost	1,81,80,000
Less:	Closing work in progress [4,000 × (80 + 15 + 30)]	(5,00,000)
	Cost of goods produced	1,76,80,000
Less:	Closing stock of finished goods (1,76,80,000 × 8,000/1,04,000)	(13,60,000)
	Cash cost of sales	1,63,20,000

22. Present sales units = $\frac{17,28,000}{72}$ = 24,000 units

Sales units after double shift = 24,000 × 2 = 48,000 units

Statement of Cost

	24,000 units		48,000 units	
	Per unit	Total	Per unit	Total
Raw Material	24	5,76,000	21.60	10,36,000
Wages:				
Variable	12	2,88,000	12	5,76,000
Fixed	8	1,92,000	4	1,92,000
Overheads:				
Variable	4	96,000	4	1,92,000
Fixed	16	3,84,00	8	3,84,000
Total cost	64	15,36,000	49.6	23,80,800
Profit	8	1,92,000	22.4	10,75,200
Sales	72	17,28,000	72	34,56,000

Stock of raw material units on 31.3.2021 = $\frac{1,44,000}{24}$ = 6,000 units

Stock of WIP units on 31.3.2021 = $\frac{88,000}{24+20}$ = 2,000 units

Stock of finished goods units on 31.3.2021 = $\frac{2,88,000}{64}$ = 4,500 units

Statement of Working Capital Requirement

	Single shift (24,000 units)			Double shift (48,000 units)		
	Units	Rate	Amount	Units	Rate	Amount
Raw Material stock	6,000	24	1,44,000	12,000	21.60	2,59,200
WIP stock	2,000	44	88,000	2,000	37.60	75,200
Finished goods stock	4,500	64	2,88,000	9,000	49.60	4,46,400
Sundry Debtors	6,000	64	3,84,000	12,000	49.60	5,95,200
Total Current Assets (A)			**9,04,000**			**13,76,000**
Creditors for material	4,000	24	96,000	8,000	21.60	1,72,800
Creditors for wages	2,000	20	40,000	4,000	16	64,000
Creditors for Overheads	2,000	20	40,000	4,000	12	48,000
Total Current Liabilities (B)			1,76,000			2,84,800
Working Capital (A – B)			7,28,000			10,91,200

Additional working capital requirement = ₹10,91,200 - ₹7,28,000 = ₹3,63,200

23.

Particulars	₹
Opening stock of raw material	1,00,000
Add: Purchase of raw material	15,70,000
Less: Closing stock of raw material	(70,000)
Raw material consumed	16,00,000
Direct wages and overheads	17,50,000
Work cost	33,50,000
Add: Opening work-in-progress	1,40,000
Less: Closing work-in-progress	(2,00,000)
Cost of production	32,90,000
Add: opening stock of finished goods	2,30,000
Less: closing stock of finished goods	(2,70,000)
Cost of goods sold	32,50,000
Add: selling expenses	3,20,000
Cost of sales	35,70,000
Profit (Bal. fig.)	6,30,000
Sales	42,00,000

(*a*) Raw material storage period = $\frac{\text{Average stock of raw material}}{\text{Annual consumption of material}} \times 360$

$$= \frac{\left(\frac{1,00,000+70,000}{2}\right)}{16,00,000} \times 360 = 19.125 \text{ days or } 19 \text{ days}$$

(*b*) Work-in-Progress conversion period = $\frac{\text{Average stock of WIP}}{\text{Annual cost of production}} \times 360$

$= \frac{\left(\frac{1,40,000 + 2,00,000}{2}\right)}{32,90,000} \times 360 = 18.60$ or 19 days

(*c*) Finished stock storage period = $\frac{\text{Average stock of finished goods}}{\text{Annual cost of goods sold}} \times 360$

$= \frac{\left(\frac{2,30,000 + 2,70,000}{2}\right)}{32,50,000} \times 360 = 27.69$ or 28 days

(*d*) Receivables collection period = $\frac{\text{Average receivables}}{\text{Average credit sales}} \times 360 = \frac{2,10,000}{42,00,000} \times 360 = 18$ days

(*e*) Payable payment period = $\frac{\text{Average payables for material}}{\text{Average credit purchase}} \times 360 = \frac{3,14,000}{15,70,000} \times 360 = 72$ days

(*i*) Net Operating Cycle Period = A + B + C + D – E = 19 + 19 + 28 + 18 – 72 = 12 days

(*ii*) Number of operating cycles = $\frac{360}{\text{Operating cycle period}} = \frac{360}{12} = 30$ times

Amount of working capital = $\frac{\text{Cost of sales}}{\text{Number of operating cycles}} = \frac{35,70,000}{30} = ₹1,19,000$

24. Working Notes:

(*a*) Raw Material Storage Period (R) = $\frac{\text{Average Stock of Raw Material}}{\text{Annual Consumption of Raw Material}} \times 365$

$= \frac{₹55,178}{₹3,79,644} \times 3651 = 53$ days

Average Stock of Raw Material = $\frac{45,000 + 65,356}{2} = 55,178$

Annual Consumption of Raw Material = Opening Stock + Purchases – Closing Stock

= 45,000 + 4,00,000 – 65,356 = ₹3,79,644

(*b*) WIP Conversion Period (W) = $\frac{\text{Average Stock of WIP}}{\text{Annual Cost of Production}} \times 365 = \frac{43,150}{₹7,50,000} \times 365 = 21$ days.

Average Stock of WIP = $\frac{35,000 + 51,300}{2}$ 43,150

(*c*) Finished Stock Storage Period (F) = $\frac{\text{Average Stock of Finished Goods}}{\text{Cost of Goods Sold}} \times 365$

$= \frac{₹65,178}{₹9,15,000} \times 365 = 26$ days

Average Stock = $\frac{60,181+70,175}{2}$ = ₹65,178

(*d*) Debtors Collection Period (D) = $\frac{\text{Average Debtors}}{\text{Annual Credit Sales}} \times 365 = \frac{₹1,23,561.50}{₹11,00,000} \times 365$ = 41 days.

Average debtors = $\frac{1,12,123+1,35,000}{2}$ = ₹1,23,561.50

(*e*) Creditors Payment Period (C) = $\frac{\text{Average Creditors}}{\text{Annual Net Credit Purchases}} \times 365 = \frac{60,274}{\text{Rs. } 4,00,000} \times 365$ = 55 days.

Average Creditors = $\frac{50,079+70,469}{2}$ = 60,274

(*ii*) Operating Cycle Period = R + W + F + D – C = 53 + 21 + 26 + 41 – 55 = 86 days

(*ii*) Number of Operating Cycles in the Year = $\frac{365}{\text{Operating Cycle Period}} = \frac{365}{86}$ = 4.244

Amount of Working Capital Required = $\frac{\text{Annual Operating Cost}}{\text{Number of Operating Cycles}}$

= $\frac{₹9,50,000}{4.244}$ = ₹2,23,845.42

25. (1) Raw material period (R) = $\frac{\text{Average stock of raw material}}{\text{Daily avg. consumption of material}} = \frac{(14,40,000+16,00,000)/2}{86,40,000/365}$

= 64.21 days

(2) Production cost = RM Consumed + Wages + Production exp. + Op. WIP – Cl. WIP

= 86,40,000 + 24,00,000 + 16,00,000 + 4,80,000 – 8,00,000 = ₹1,23,20,000

WIP Conversion period = $\frac{\text{Average stock of WIP}}{\text{Daily average production cost}} = \frac{(4,80,000+8,00,000)/2}{1,23,20,000/365}$

= 18.96 days

(3) Cost of goods sold = Cost of production + Op. FG – Cl. FG

= 1,23,20,000 + 20,80,000 – 24,00,000 = ₹1,20,00,000

Finished goods period = $\frac{\text{Average stock of FG}}{\text{Daily average cost of goods sold}} = \frac{(20,80,000+24,00,000)/2}{1,20,00,000/365}$

= 68.13 days

(4) Receivables collection period (D) = $\frac{\text{Average receivables}}{\text{Daily average credit sales}} = \frac{(12,00,000+16,00,000)/2}{1,60,00,000/365}$

= 31.94 days

(5) Payables payment period (C) = $\frac{\text{Average payables}}{\text{Daily average credit purchases}} = \frac{(16,00,000+19,20,000)/2}{88,00,000/365}$

= 73 days

(6) Operating cycle days = R + W + F + D – C = 64.21 +18.96 + 68.13 + 31.94 – 73 = 110.24 days

(7) Number of operating cycles per year = $\frac{365}{\text{Duration of operating cycle}} = \frac{365}{110.24} = 3.311$

(8) Total operating expenses = COGS + Administration exp. + Selling exp.

= 1,20,00,000 + 14,00,000 + 6,00,000 = 1,40,00,000

(9) Working capital required = $\frac{\text{Total operating expenses}}{\text{Number of operating cycles per year}} = \frac{1,40,00,000}{3.311}$ = ₹42,28.329.81

26. (*i*) **Statement showing Operating cycle**

Raw Material storage Period	= 45 days
WIP Conversion Period	= 20 days
Finished goods storage period	= 25 days
Debt collection period	= 30 days
Less: Creditors' payment period	= (60 days)
Operating cycle period	= 60 days

(*ii*) Number of operating cycles in a year = $\frac{360}{\text{Operating cycle period}} = \frac{360}{60 \text{ days}}$ = 6 cycles

(*iii*) Amount of working capital required on cash cost basis = $\frac{(25,00,000 - 2,50,000)}{6}$ = ₹3,75,000

(*iv*) New operating cycle period = 60 days – Debt collection period = 60 – 30 = 30 days

Number of operating cycles in a year = $\frac{360}{30}$ = 12 cycles

New amount of working capital required on cash cost basis = $\frac{(25,00,000 - 2,50,000)}{12}$

= ₹1,87,500

Saving in cash cost of working capital = ₹3,75,000 - ₹1,87,500 = ₹1,87,500

27. The maximum permissible bank finance (MPBF) for the firm, under three methods may be ascertained as follows:

Method I

MPBF = 0.75(CA – CL) = 0.75(510 – 160) = ₹262.50 lakhs

Method II

MPBF = (0.75 × CA) – CL = (0.75 × 510) – 160 = ₹222.50 lakhs

Method III

MPBF = 0.75(CA – CCA) – CL = 0.75(510 – 200) – 160 = ₹72.50 lakhs