Material Costing

1. EOQ

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

P : A × PC

O : $A/_Q$ × O

C : $Q/_2$ × C

Frequency : $\frac{365}{\text{No of orders}}$

3. Inventory Turnover Ratio

Time : $\frac{\text{RMC}}{\text{Avg Stock}}$

Days : $\frac{365}{\text{Times}}$

4. Cost per unit

$\frac{\text{Cost}}{\text{Effective units}}$

5. Store Ledger

6. Stock out & carrying cost

7. ABC Analysis

2. Stock levels

ROL : (max C × LT) or SS + (Avg C × LT)

minimum : ROL − (Avg C × LT)

maximum : ROL + ROQ − (min C × LT)

Average : (min + max) ÷ 2 or SS + ROQ/2

Danger : Avg C × Emergency LT

1. Economic Order Quantity [EOQ]

(WN-1): Details:

- A : Annual Purchase of RM : (Avg consumption per day × 365)
- O : Ordering cost per order :
- PC : Purchase cost :
- % : :
- C : Carrying cost per unit p.a. : PC × %

NOTE:

a) A → Annual : If monthly × 12
→ RM : If FG data given then convert that into RM using RM : FG ratio
→ Purchase :

Raw material consumed	x
+ Closing stock of RM	x
- Opening stock of RM	(x)
	x

b) C : Carrying cost should be per unit per annum

1. Economic Order Quantity (EOQ) $= \sqrt{\frac{2AO}{C}}$

2. Statement showing Total Cost

Particulars	EOQ ___ units	Other ___ units
a) Annual Purchase Cost (A × PC)	x	x
b) Annual Ordering Cost (No of orders × O) No of orders = A ÷ Q (Round off to next digit)	x	x
c) Annual Carrying Cost $\left(\text{Safety stock} + \frac{Q}{2}\right) \times C$	x	x
Total Cost	xx	xx

3. Frequency of Orders $= \frac{365 \text{ days}}{\text{No of orders}}$

2. Stock Levels

> If Lead time is in days then consumption per day should be calculated.

(W.N-1): Details:

Particulars	Usage/ consumption	Re-order Period Lead time/Delivery time
minimum		
Normal/Avg		
maximum		

Re-order Quantity (ROQ) = ________

Emergency lead time = ________

1. Re-order Level = maximum consumption × maximum lead time

   or = Safety Stock + (Average consumption × Average Lead time)

2. Minimum stock level = Re-order Level − (Average consumption × Average Lead time)

3. maximum stock level = Re-order Level + Re-order Quantity − (minimum consumption × minimum Lead time)

4. Average stock level = $\frac{\text{Minimum stock level} + \text{maximum stock level}}{2}$

   or = Safety Stock + $\frac{\text{ROQ}}{2}$

5. Danger stock level = Average consumption × Emergency lead time

If average consumption not given then take minimum consumption.

3. Inventory Turnover Ratio

(WN-1): Details:

a) Raw material consumption

Opening stock	x
+ Purchase	x
- Closing	(x)
	x

b) Average stock

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

1. Inventory Turnover Ratio (in times) $= \frac{\text{Raw material consumption}}{\text{Average stock}}$

2. Inventory Turnover Ratio (in days) $= \frac{\text{365 days}}{\text{Inventory Turnover Ratio (in Times)}}$

↓

Average period for which inventory is held.

If question ask you to comments:

Material A is moving faster than material B

↓

material with higher Inventory Turnover ratio (in Times)

4. Cost per Unit

(WN-1): Effective Quantity:

Total Quantity Purchased	x
(-) Normal loss / Breakage	(x)
	x
(-) Provision for further deterioration	(x)
	x

Calculation of Cost per unit / rate per unit / Landed Cost per unit

Particulars		Amt
Invoice price / List price		x
(-) Trade discount		(x)
		x
(+) GST (if credit not available)		x
(+) Loading & unloading		x
(+) Transit Insurance		x
(+) Carriage / Freight Inwards		x
(+) Commission / Brokerage		x
(+) Octroi / Entry Tax		x
(+) Toll charges		x
(+) Cost of containers / Packing		
a) cost of non-returnable containers		x
b) cost of returnable containers	x	
(-) refable on returnable containers	(x)	x
Landed Cost of material		xx
÷ Effective quantity (WN-1)		÷ xx
		xx

NOTE:

a) Cash discount received shall not substracted from cost as it is Financial income.

b) Cost of Freight will be apportioned based on weight.

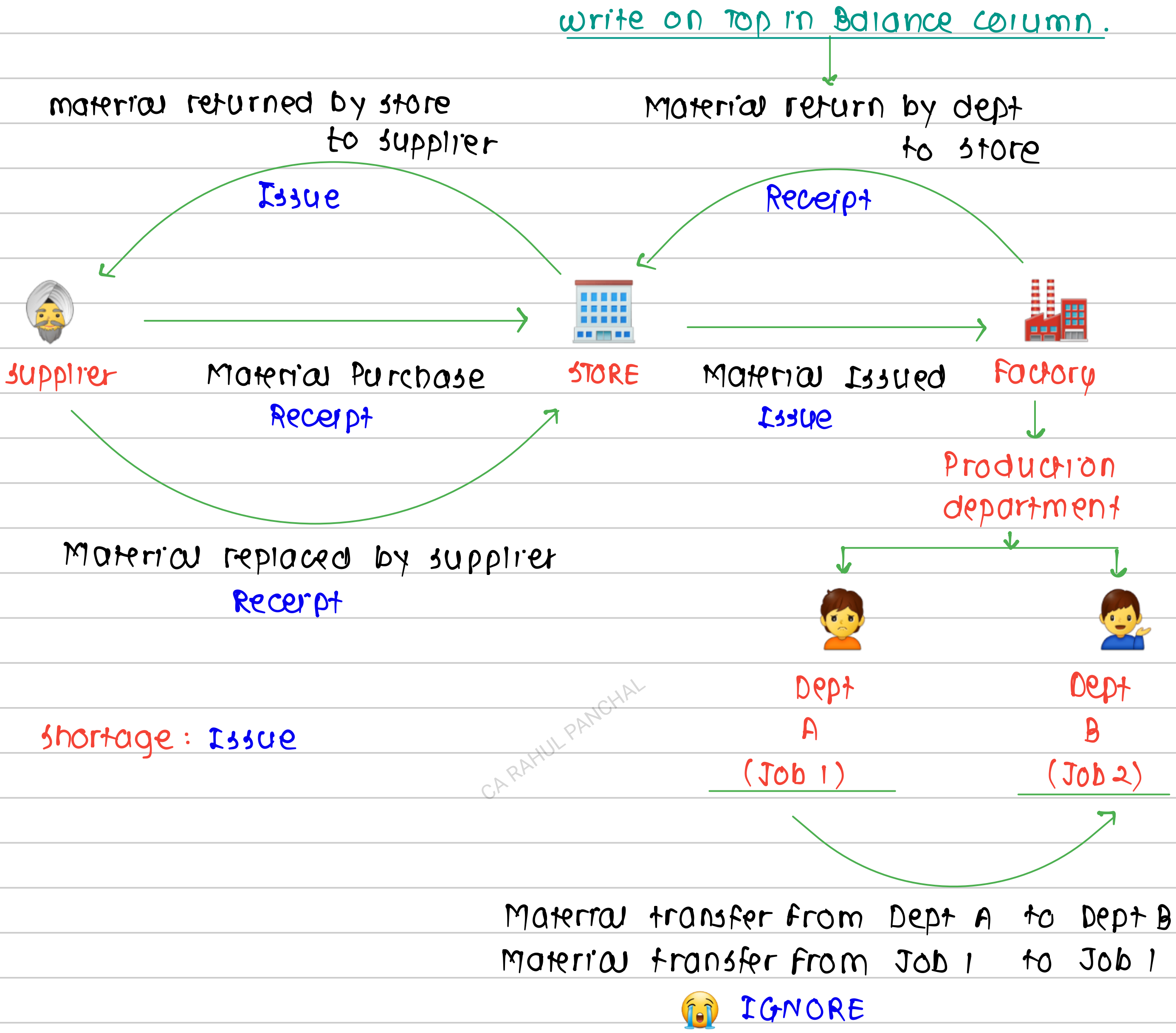
c) Following expenses will not be added in cost

i) Demurrage charges

ii) Detention charges

iii) Abnormal Cost

5. Store Ledger



Steps:

1. Arrange transactions datewise.
2. Check method to be followed.

(FIFO / LIFO / WAM)

STORE LEDGER

Date	Receipts			Issue			Balance		
	Qty	Price	Cost	Qty	Price	Cost	Qty	Price	Cost
				Cost of material			Closing stock.		

6. Stock out VS Carrying cost

(WN-1): Probability Table

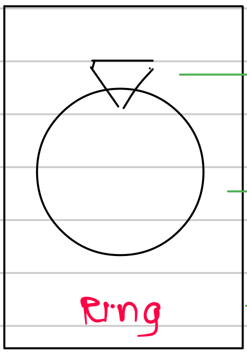
Stock out (units)	No of Times	Probability
x	x	?
x	x	?
Total.	x	100

Statement showing Total Cost:

Safety Stock	Stock out Cost	Carrying Cost	Total Cost
x	Stock out units x Stock out Cost x %	Safety Stock x Carrying Cost PU	
	①	②	1+2

Select lowest cost option.

7. ABC Analysis



		% Quantity		% Amt	
Diamond	(A)	Minimum	10%	Maximum	70%
Gold	(B)	Moderate	20%	Moderate	20%
Box	(C)	Maximum	70%	Minimum	10%

1. Statement of Total Cost & Ranking

Item	Units	% Units	Cost	% Cost	Ranking
1	x	?	x	?	(Highest Cost
2	x	?	x	?	means Rank 1.)
3	x	?	x	?	
Total	x	100	x	100	

2. Assumption.

3. ABC Plan for Selective Control.

Rank	Sr. No.	% Units	Cost	% Cost	Category