1. Materials.

Chapter overview

- **Economic Order Quantity** [1]
  - a. Without discount
  - b. With discount
- **Stock levels** [2]
- **Stock ledgers** [3]
- **Misc / Val^n** [4]
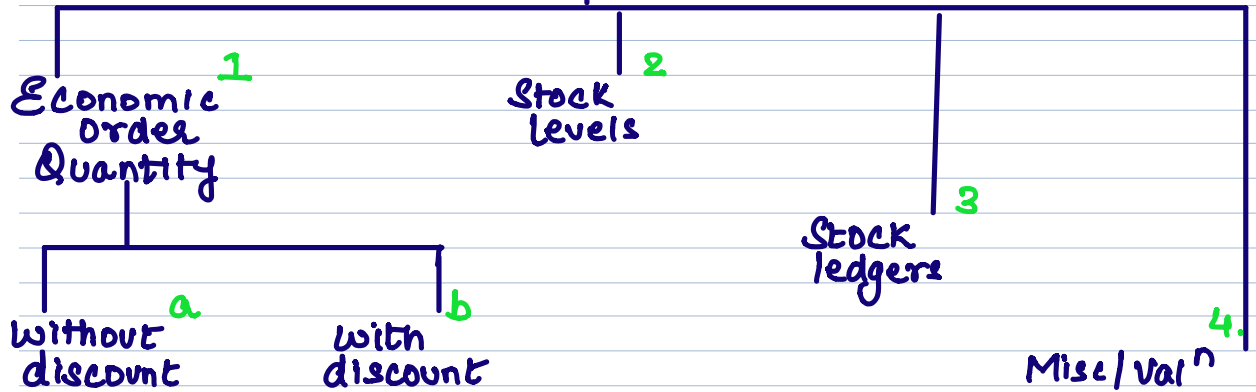
1.

$$\sqrt{\frac{2 \times AD \times OCpo}{CCpupa.}}$$

AD – Annual Demand.

OCpo – Ordering Cost per order

CCpupa – Carrying Cost per unit p.a.

$$\text{No. of orders} = \frac{\text{Annual Demand}}{\text{units ordered per order.}}$$

TOC = OCpo × No. of orders

Avg Inv = ½ units ordered.

TCC = Avg Inv × CCpupa.

CCpupa = Price of mat (pu) × CC %.

At EOQ, TOC = TCC

EOQ
TOC
TCC
no. of orders
frequency of orders = (360/365 / no. of orders)
Total Variable Cost

→ Type of Questions to be asked?

Note:- If there are more than 1 ordering cost/carrying cost, add them.

Imp Ques:- Q5, Q6, Q8. of the sheet.

EOQ with Discount (Refer Q9)

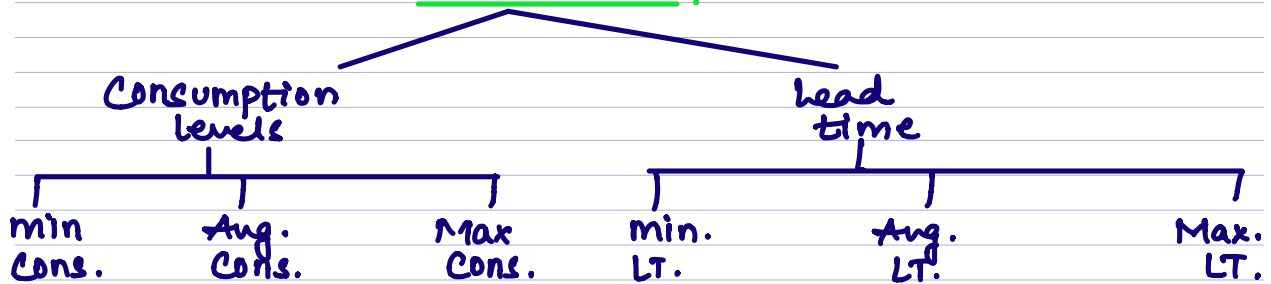| Order size	No. of orders	TOC (1)	Avg Inv	TCC (2)	TMC (3)	TVC = (1)+(2)+(3)
$\frac{40.2}{2}$		$\begin{bmatrix} no.\ of \\ orders \\ \times OCpo \end{bmatrix}$	$\begin{bmatrix} \frac{1}{2}\ order \\ size \end{bmatrix}$	$\begin{bmatrix} Avg \times \\ CCpupa \end{bmatrix}$	$\begin{bmatrix} AD \\ \times \\ rate \end{bmatrix}$	

rest of the slabs - starting point

CCpupa = Applicable slab rate × CC %.

EOQ with Discount (Refer Q11) → Option Evaluation

	Costs @ EOQ	Costs @ proposed terms
TOC	X X	X X
TCC	X X	X X
TML	X X	X X
TVC		

Choose the option with lower TVC.

Stock levels

```
                Stock levels
         ┌──────────┴──────────┐
   Consumption              Lead
     levels                 time
   ┌────┬────┐           ┌────┬────┐
 min    Avg.  Max      min.   Avg.   Max.
Cons.  Cons. Cons.     LT.    LT.    LT.
```

1> Re-order level.

Max. cons × Max. LT.

OR

Safety Stock + (Avg. cons. × Avg. LT.)

2) Re-order Quantity :- EOQ. or any other Qty. apart from EOQ.

3) Minimum Stock Level :- Re-order Level $-$ (Avg. Cons. $\times$ Avg. LT)

Or

NIL (Safety Stock; if asked specifically)

4) Maximum Stock Level :- Re-order Level $+$ Re-order Qty $-$ (min. Cons. $\times$ min. LT.)

OR

Safety Stock + EOQ.

5) Average Stock Level :- $\dfrac{\text{Min. Stk level} + \text{Max. Stk level}}{2}$

OR

Safety Stock $+ \frac{1}{2}$ EOQ.

6) Danger Stock Level :- Avg. Cons. $\times$ Lead time for emergency purchases

7) Safety Stock :- $\dfrac{\text{Annual Demand}}{365/52/12} \times \left(\text{Max. LT} - \text{Avg. LT}\right)$

Imp. Question: Q12, Q17 & Practice problem; stock levels Q2.

Stock ledgers :- Imp. Questions :- Q19, Q21

Misc.

1. **Inventory Turnover ratio.**

$$\frac{COGS}{Avg.\ Inventory}$$

COGS :- Op + Pur - Clg

Avg Inv :- $\frac{Op + Clg}{2}$

Inventory T/O ratio (days)

$$\frac{365}{Inv.\ T/O\ ratio.}$$

Misc. Category Imp Ques :- **ALL**   (Q23 to Q29)

Marginal Costing.

Format.

Sales
(-) Variable Costs
Contribution
(-) Fixed Costs
_____
Profit   .0

Contribution

Sales - Variable Costs
OR
Profit + Fixed Costs
OR
Sales × PV ratio

Contribution per unit

Selling price pu - VC pu
OR
Selling price pu × PV ratio
OR
$\frac{Fixed\ Cost}{BEP\ units}$
OR
Total Contribution / no. of units SOLD

P/V ratio

$\frac{Con^n}{Sales} \times 100.$

OR

$\frac{Con^n pu}{Selling\ price\ pu} \times 100.$

OR

$\frac{\Delta Profit}{\Delta Sales} \times 100.$

OR

Fixed Costs × 100.

$$\overline{\text{BEP Sales}} \qquad \underline{\text{OR}} \; (100 - VC \; ratio)$$

$$\underline{\text{OR}}$$

$$\frac{\text{Profit}}{\text{MOS Sales}} \times 100.$$

Break-even point $\qquad$ BEP units × SPpu

$$\text{Total Sales} - \text{MOS Sales}$$

$$\text{OR}$$

$$\frac{FC}{\text{Cont}^n \, pu} = \text{BEP units} \qquad \text{OR} \quad \frac{FC}{PV \, ratio}$$

Margin of safety

$$\text{Total Sales} - \text{BEP Sales}$$

$$\text{OR}$$

$$\frac{\text{Profit}}{PV \, ratio} = \text{MOS Sales}$$

$$\text{Total Sales} \times PV \, ratio = \text{Contribution}$$

BEP Sales		MOS Sales
× PV ratio		× PV ratio
= Fixed Costs		= Profit

Δ formulae :-

$$\frac{\Delta \, in \, TC}{\Delta \, in \, units} = VCpu$$

$$\frac{\Delta \, Profit}{\Delta \, Sales} = PV \, ratio.$$

Imp Ques — Q6, Q8, Q8, Q12, Q13, Q17, Q2e, Q25, Q27, Q28

→ All changes in VC. to be done on per unit basis.

→ All changes in FC to be done on totals.

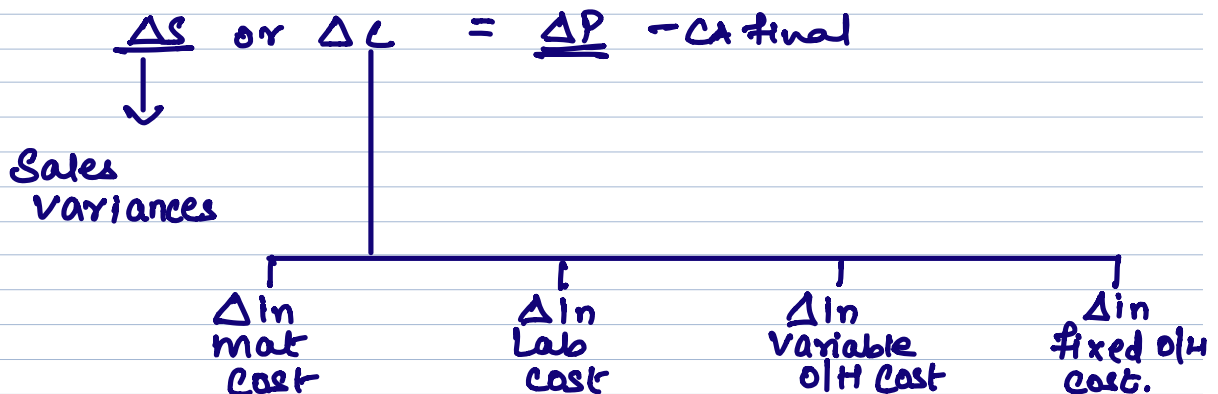Shutdown point :- $\dfrac{\text{Avoidable FC}}{\text{P/V ratio}}$ (Fixed costs - Unavoidable FC)

Above the shutdown point → continue

@ the shutdown point → either shutdown or continue

below the shutdown point → shut down.

Standard Casting.

1)   Sales - Costs = Profit

     $\underline{\Delta S}$ or ΔC = $\underline{\Delta P}$ - CA final

Sales
Variances

	Δ in mat Cost	Δ in Lab Cost	Δ in Variable O/H Cost	Δ in fixed O/H cost.

Material Variances

(Always as per actual Output)

Actual Output = units.

Standard			Actual		
Qty	rate	Amt	Qty	rate	Amt.
X — SQ	SR	SC	AQ	AR	AC
Y — SQ	SR	SC	AQ	AR	AC
		Std Cost		✗	Actual cost

Total Std Qty | wt Avg std rate | Total Actual Qty | Do not calculate.

Material Cost Variance = (Std Cost − Actual Cost)

(kitna Kharcha hona chahiye tha, aur kitna Kharcha ho gaya)

Mat. rate variance

(SR − AR) ACQ.

(kya rate mein mat. lena chahiye tha aur kya rate mein liya) X Actual Qty.

Mat. Qty. variance

(SQ − ACQ) SR

(kitna Qty use karna chahiye tha aur kitna Qty use kiya) X std rate.

Mat. mix variance

$$\left(\begin{array}{c} \text{Total actual} \\ \text{Qty X Std} \\ \text{mix.} \end{array} - \text{Actual Qty} \right) SR$$

[As per Total actual Qty, kitna Std Qty use Karna tha aur kitna use kiya] X Std rate

Mat. yield variance

$$\left(\begin{array}{c} \text{Total Std} \\ \text{Qty} \end{array} - \begin{array}{c} \text{Total Actual} \\ \text{Qty} \end{array} \right) \times \text{wt Avg std rate}$$

[Actual Output ke liye total kitna Std units lagha chahiye tha aur kitna use kiya] X wt Avg std rate

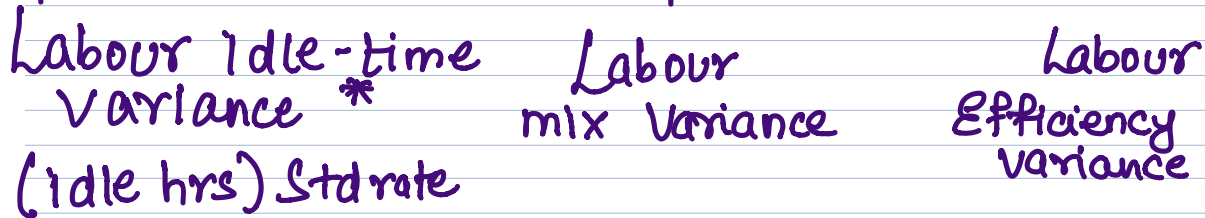* Std mix is the proportion of each Quantity / Total Qty

---

Labour Variances.

Labour Cost Variances

Labour Rate Variance

Labour time variance

```
                          │
        ┌─────────────────┼──────────────────────┐
```

Labour Idle-time
Variance *

(Idle hrs) Std rate

Labour
mix Variance

Labour
Efficiency
variance

All other variances are calculated the same way
as material variances

* <u>Idle time variance</u> to be calculated only when
specifically mentioned in the Question.

Variable Overhead Variances

[Generally related to labour hrs]

	Std.				Actual	
Hrs	rate	Amt	Hrs	rate	Amt.

There will be only <u>three</u> variances in Variable
Overheads.

Variable Overhead Cost Variance

```
                      │
     ┌────────────────┴────────────────────────┐
```

Variable Overhead
Expenditure
Variance
(same as mat. rate
variance)

Variable
Overhead
Efficiency
variance
(same as mat
Qty variance)

Fixed Overhead Variances

	Budget	Actual	Ab. rates
Days	Bud. Days	Actual Days	Amt/Days = ___ /day
hrs	Bud. hrs	Actual hrs	Amt/hrs = ___ /hr
Units	Bud units	Actual units	Amt/units = ___ /unit
Amt	Bud. Amt	Actual Amt	

[C] Fixed Overhead Cost Variance = $\left(\dfrac{\text{Absorbed}}{\text{Amt}} - \dfrac{\text{Actual}}{\text{Amt}}\right)$

$\left[\begin{array}{c}\text{Checking for} \\ \text{Over/Under} \\ \text{absorption}\end{array}\right]$

$\dfrac{\text{Actual}}{\text{Units}} \times \dfrac{\text{Ab rate}}{pu}$

Fixed Overhead [E] Expenditure Var

$\left[\dfrac{\text{Bud.}}{\text{Amt}} - \dfrac{\text{Actual}}{\text{Amt}}\right]$

Fixed Overhead [V] Volume Var.

$\left[\dfrac{\text{Bud}}{\text{Qty}} - \dfrac{\text{Actual}}{\text{Qty}}\right]\dfrac{\text{Ab. rate}}{\text{per unit}}$

Fixed Overhead [C] Calender Var.

$\left[\dfrac{\text{Bud.}}{\text{Days}} - \dfrac{\text{Actual}}{\text{Days}}\right]\dfrac{\text{Ab. rate}}{\text{per day}}$

Fixed Overhead Efficiency Variance [E]

$\left[\begin{array}{c}\text{Bud hrs} \\ \text{for} \\ \text{Actual} \\ \text{O/T}\end{array} - \dfrac{\text{Actual}}{\text{hrs}}\right]\dfrac{\text{Ab}}{\text{rate}}$ [2.] p/hr

[C] Fixed O/H [1] Capacity Var

$\left[\begin{array}{c}\text{Bud hrs} \\ \text{for Actual} \\ \text{days}\end{array} - \dfrac{\text{Actual}}{\text{hrs}}\right]\dfrac{\text{Ab}}{\text{rate}}$ p/hr

1. Actual days mein kitna hrs karna chahiye tha aur kitna hrs kiya.
   If actual hrs are more, then Favorable

2. For the units manufactured, kitna hrs lagna chahiye tha aur kitna hrs use kiya.
   If more hrs are used, then ADVERSE

SALES VARIANCES

Always use Budget & Actual, In Fixed Overhead & Sales.

→ Imp:- Always calculate units as per budgeted data.

Budgeted Output :-_____

Budget			Actual		
Units	SP	Amt	Units	SP	Amt.

Total Sales value Variance
$$= (\text{Bud. Sales Amt} - \text{Actual Sales Amt})$$

[If Actual sales are more, then [Favorable]]

Sales price variance
$$[\text{Bud. SP} - \text{Actual SP}] \text{ Actual Qty.}$$

Sales Qty variance
$$[\text{Bud. Sales Qty} - \text{Actual Sales Qty}] \text{ Bud Selling price}$$

Imp :- Q4, Q5, Q8, Q12, Q13, Q18, Q24, Q25

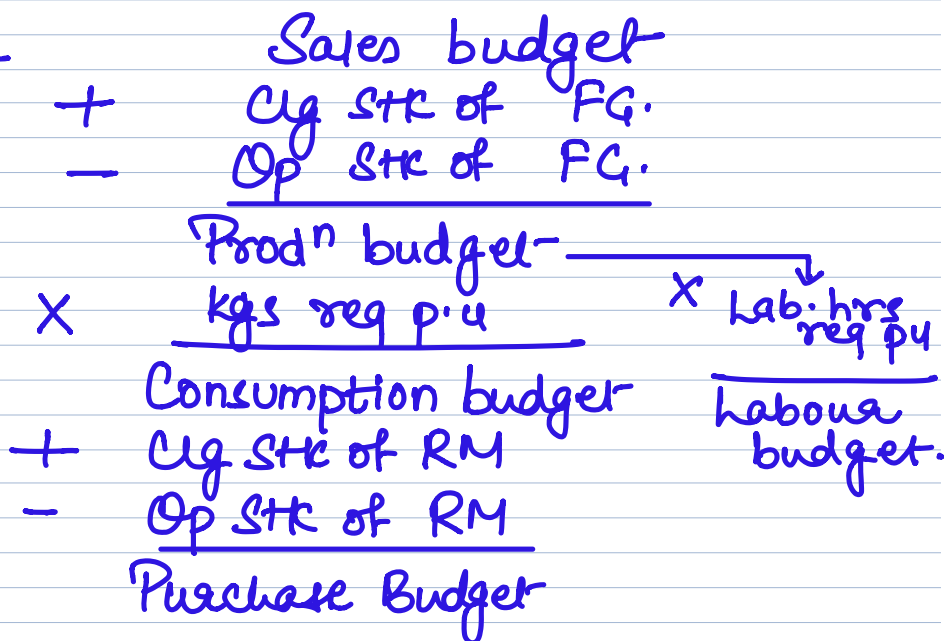# Budgets & Budgetary Control

Types

Flexible Budgets

A budget will be provided at a particular level & will be asked to draw a budget @ different capacity levels.

[Take into consideration the cost behaviour]
i.e. whether a cost is
Fixed
Variable
Semi-Variable
& then change the costs accordingly

Functional Budgets

Flow of functional budgets.

Flow of functional :- budgets

Sales budget
+ Clg stk of FG.
− Op stk of FG.

Prod^n budget

× kgs req p·u

Consumption budget
+ Clg stk of RM
− Op stk of RM

Purchase Budget

× Lab. hrs req pu

Labour budget.

Types of Production budget

Type 1

where it will be given that $x\%$ of current sales & $y\%$ of next month's sales to be produced.

For such Questions

Step 1 :- Draw annual prod^n plan

Step 2 :- For Quarter I to III, follow the scheme in the ques

Type 2

Under this case, Opening Stock & Closing stock details are given

Follow :-
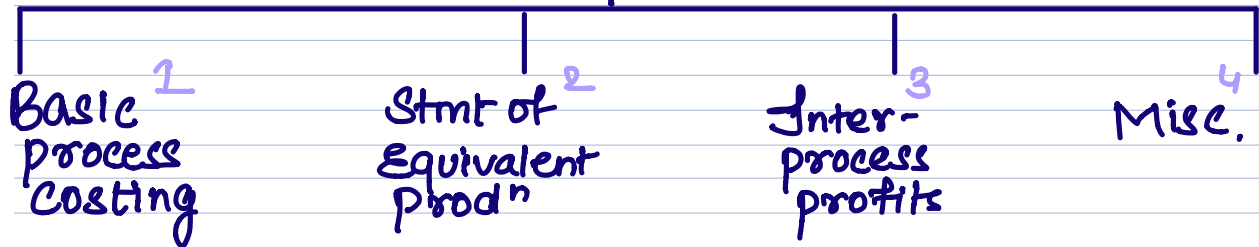
Sales
+ Clg stk
− Op stk

To find Production.

It can be monthly, Quarterly

Step 3:- For Quarter
IV, x% of current
sales will be done
& the balance will be
from Annual Prodn budget.

Imp:- Q4, Q6, Q8, Q10, Q11, Q12, Q18

Process Costing

Types

Basic process Costing [1]	Stmt of Equivalent Prodn [2]	Inter-process profits [3]	Misc. [4]

1. Basic Process Costing :-

No. of A/c's to be made :- Process A/c

Normal loss A/c

Ab. Loss/gain A/c

Process A/C.

	Units	Amt		Units	Amt.
To material Intd.	XX	xxx	By Normal Loss	XX	@SV
To Labour	—	xxx	By Output trfd to P-II	XX	@Exp cost
To Exps	—	XXX			
To Other materials	—	XXX	By Ab Loss	XX	@Exp cost
To Ab gain	XX	@Exp cost			

$$\text{Expected Cost} = \frac{\text{Mat} + \text{Lab} + \text{Exp} + \text{Other Costs} - \text{Scrap Value of Normal loss}}{\text{Units Intd} - \text{Scrap units (Normal loss)}}$$

In case of Ab loss

Normal Loss A/c.

	Units	Amt		Units	Amt
To Process A/c	xx	@SV	By Cash/Bank	xx	@SV

Abnormal Loss A/c

	Units	Amt		Units	Amt
To Process A/c	xx	@ Exp Cost	By Cash/Bank	xx	@SV
			By Profit/Loss A/c	xx	balance

SV - Scrap Value

In case of abnormal gain

Normal Loss A/c

To Process A/c	xx @SV	By C/B	xx @SV
		By Abnormal gain (Ab gain units)	xx @SV

Abnormal gain A/c

To Normal Loss A/c	xx @SV	By Process A/c	xx @ Exp Cost
To Costing P&L	Balance.		

Equivalent Production :-

Step 1 :- Calculation of Abnormal loss/gain.
Same for FIFO/ WT Avg.

Opening WIP	→	XXX UNITS
+ Units Intd.	→	XXX units
Units in process		XXX
(-) Normal Loss		(XXX)
Expected Output		XXX

Units transferred   Closing Stock   Abnormal Loss/gain.
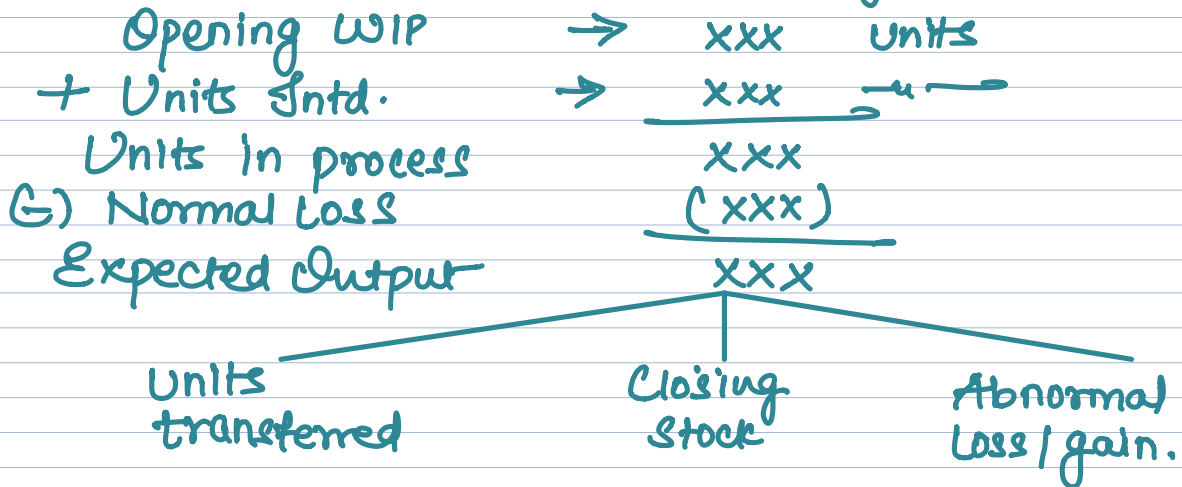
Step 2 :- Stmt. of Equivalent prodⁿ (As per FIFO)

Particulars	Units	Mat % Units	Lab % Units	O/H % Units
Op. Stk	XXX	Balance %	Balance %	
Units Intd. Completed & trfd.	XXX	100%	100%	100%
Ab Loss	XXX	% will be given else 100%		
Closing	XXX	% completed will be used.		
	Exp. O/T			

Ab. gain will be in the negatives. It will always be 100%

Cost per unit	Current cost of mat (-) Scrap Value of Normal loss ───────────── Eq. units of Mat	Current Cost of Labour ─────── Eg. units of Lab	Current cost of Overheads ─────── Eq. units of O/H

Valuation

Transfer → Op Stock = Cost incurred till date
+ further cost   xxx

↓ Units Intd, comp, trfd $\dfrac{xxx}{xxx}$

Closing Stock = Eq. units of mat × cpu + Eq. units of lab × cpu
+ Eq units of OlH × cpu   =

Ab. Loss = Eq. units of mat × cpu + Eq. units of lab × cpu
+ Eq units of OlH × cpu   =

Cpu = Cost per unit as calculated above.

Step 2:- Stmt. of Equivalent prodn (As per WT Avg)

Particulars	Units	Mat %	Mat Units	Lab %	Lab Units	OlH %	OlH Units
*Units tofd	xxx	100%		100%		100%	
Ab Loss	xxx	% will be given else 100%					
Closing	xxx	% completed will be used.					
	Exp. O/T						

* In FIFO, there will be Op. WIP & units intd, completed & trfd.

In WT Avg, there will only be units transferred.

Cost per unit :-

Current Cost + Op Cost – SV of NL	Current Cost + Op.cost	Current cost + Op.cost

Step III

| | Eq. units of mat | Eq units of lab | Eq. units of OH. |

Valuation :-

Transfer :- Units trd × Cost pu.

Closing Stock = Eq. units of mat × CPU + Eq. units of lab × CPU
+ Eq units of OH × CPU =

Ab. Loss = Eq. units of mat × CPU + Eq. units of lab × CPU
+ Eq units of OH × CPU =

Same for FIFO & WT Avg

Step IV

Process A/C

To Op WIP	Xxx	Xxx	By NL	XX	@ SV
To Mat		Xxx	By Process B	XX	as per val'n
To Lab		Xxx	By Ab. Loss	XX	—"—
To OH		Xxx			
To Ab. gain	Xxx as per val'n				

For Inter-process profits :- refer Q22 of the book.

Imp Questions :- Q5, Q7, Q8, Q9, Q14, Q16
Q22, Q23

Costing

Cost Accounting System

Types

Non-Integrated Accounting System	Integrated Accounting System
[Cost & financial books are separately prepared]	[Cost & financial books are not prepared separately]

Non-Integrated A/c'ing system

List of Accounts prepared :- (to be made in the same order)

1. Stores Ledger Control A/c
2. Wages Control A/c
3. Factory Overhead Control A/c
4. WIP Stock Control A/c
5. Admin O/H Control A/c
6. Finished goods Stock Control A/c
7. S&D O/H Control A/c
8. Cost of Sales A/c
9. Costing Profit & Loss A/c
10. General ledger Adjustment A/c / Cost ledger Account

make sure to write Control A/c

Proforma Ledger Accounts

Stores Ledger Control A/c	Admin O/H Control A/c
	F.G. Control A/c
	S&D A/c
Wages Control A/c	COS A/c
FOH Control A/c	Costing P&L
WIP Control A/c	GLA A/c

Stores Ledger related entries

i) **Material purchased.**

    Stores
        To GLA

2) **Material purchased returned**

    GLA
        To Stores

3) **Material issued for production**

    WIP A/c
        To Stores

4) Mat. issued returned

      Stores
        To WIP A/c

5) Mat. issued for factory maint./admin office/sales Dpt.

    Factory OIH / Admin OIH / S&D
          To Stores

6) Deficiency found in stock taking.

  1) If Normal
       Factory OIH A/c
         To Stores

  2) If abnormal

     Costing P&L A/c
        To Stores ledger

Wages related entries.

7) Wages Incurred

    Wages
      To GLA.

8) Wages charged to production

    WIP A/c
      To Wages

9) Indirect wages charged

    FOH A/c
      To Wages.

Wages A/c will always tally. There will be no balance !!

Factory Overheads related entries

10) Factory Overheads Incurred

     Factory Overheads A/C
          To GLA.

11) Factory Overhead charged/applied/absorbed

     WIP A/C
          To GLA.

WIP Control A/c related entries.

12) Finished goods at cost/cost of goods manufactured / cost of goods trfd to warehouse./ net factory cost

     Finished goods A/C   Dr
          To WIP A/C.

Admin O/H related entries.

13) Admin O/H incurred.

     Admin O/H A/C
          To GLA

14) FOH charged/Applied/absorbed

     FG A/C   Dr
          To Admin

Finished goods A/C related entries

15) Finished goods sold/COGS

     COS A/C
          To FG Stock.

Selling & Distribution A/c related entries

16) S & D incurred

$$S \& D$$
$$\quad TO \ GLA.$$

17) S & D charged/applied/absorbed

$$COS \ A/C$$
$$\quad TO \ S \& D.$$

S & D is always applied on units sold. Factory OH & Admin OH are applied on units manufactured. S & D will always tally unless otherwise specified.

COS related entries.

18) Trf. of COS balance to Costing P&L

$$Costing \ P\&L \ A/C$$
$$\quad TO \ COS.$$

COS will close automatically. No balance.

19) Sales

$$GLA \ A/C$$
$$\quad TO \ Costing \ P\&L$$

Notes: Any balance in the overhead A/c will either be carried forward or written off. If there is any balance in the opening Trial balance, then carry forward the current balance or else writeoff.

Reconciliation between cost & financial Profits

Type 1	Type II	Type III
Differences are given	Financial P&L will be given.	Prepare only 4 A/c's
Start from profit as per cost books	Details about cost data will be given	→ Stores → Wages → FOH → WIP
+/− adjustments		
Reach profit as per financial books	→ Prepare cost sheet → Prepare Differences → Prepare Reconciliation VOILA!!	Get profit as per cost books
		Prepare Financial P&L
		Only three differences (max)

Common Adjustments & its treatment [Always start from cost books unless otherwise mentioned]. Even if start with a loss, do not change the treatment. It will be the same.

→ **Overheads underabsorbed**

It means cost incurred is more in the financial books and lesser in the cost books.

∴ Profit in the cost books is higher ∴   LESS

→ **Overheads overabsorbed**

    Exact reversal of the above   ∴   ADD.

→ **Debit Items Included In the financial P&L & not the Cost sheet.**

These debit items reduce the financial profit which automatically increases the cost profit. Thus Cost Profit has to   **LESS**

Examples :- • Income Tax provided.
        • Obsolecence charged in financial bks
        • Goodwill w/off

→ **Credit Items Included In the financial P&L & not the Cost sheet.**

These credit items increase the financial profit which automatically reduces the cost profit. Thus Cost Profit has to   **ADD**

Examples :- • Dividend received
        • Transfer fee
        • Bank interest received

→ **Notional rent of own premises charged in cost accounts.**

Notional costs can be charged only in cost books & not in financial books. Financial books only record actuals. Charging notional cost will reduce the cost books profits & thus have to be   **ADD**

→ **Stocks** .

Opening Stocks :-

Opening stocks reduce profits. Thus, you will have to understand, where

the profit is lesser and accordingly ADD or LESS

Closing Stocks:-

Closing Stocks increase profits. Thus, you will have to understand, where the profit is lesser & accordingly ADD or LESS.

Same treatment for Depreciation too.

→ If profit is reducing in the Cost bks then: ADD
→ If profit is Increasing in the financial bks then : LESS.

<u>Type II</u> :- Financial P&L will be given. Cost Sheet to be made & difference to be drawn.

THINGS TO BE KEPT IN MIND:-

• Always first ascertain the UNITS PRODUCED before drawing the Cost Sheet.

• If details pertaining to a particular element is not available, the use the data present in the financial P&L. For ex:- Direct Material, Direct Lab. etc.

• Whatsoever may be the case, the value of CLOSING FG. will always be as per COST OF PRODUCTION as per COST SHEET.

• After the Cost Sheet is done, draw the differences & work the difference as discussed above.

Type III !- Drawing Cost & Financial P&L & then the differences.

Step I :- Draw only 4 cost accounts:-

→ Stores
→ Wages
→ FOH
→ WIP.

→ The difference between Wages Incurred & wages applied, Is the amount of INDIRECT WAGES. Charge it to 'FOH.' A/c

→ The balance amount from FOH A/c is the underabsorption figure. Do not write it off. Carry it forward.

→ From WIP, the NET FACTORY Cost is what is sold @ profit. The profit can be ascertained from over there & also sales value

Step II :- Draw Financial P&L

Dr	Financial Profit & Loss A/c		Cr
Particulars	Amt.	Particulars	Amt.
To Opening stock		By Sales	from Cost A/c
Materials	given in Question		
WIP		" Closing Stock	
" Materials Purchased	given in Question	Materials	→ Cost A/c given in Question
" Wages		WIP	
" Overheads Incurred			
" Loss on sale of fixed assets	Only if given	" Income from Investments	Only if given
		" Sold as a special case @ cost	only if given.

<u>Reconciliation Statement</u>

→Profit/Loss as per the cost books

+/- Over/under absorption of overheads

- Loss on sale of fixed assets — if given
+ Income on investment — if given

Profit/Loss as per the financial books. _____

Integrated Accounting.

The corresponding effects given in the GLA A/c, will be given in its respective A/c's. All A/c's will be opened given in the Opening Trial Balance, plus the following A/c's of the cost ledger

→Stores	→ Admin	A GENERAL P&L A/c will be
→ Wages	→ FG	drawn instead of Costing P&L
→ FOH	→ S&D	A/c.
→ WIP	→ COS	

Joint Products & By Products

Only two types of Questions are expected from this section.

<u>Type I</u>

Joint cost allocation & profitability

4 methods

<u>Type II</u>

Depth of processing

2 methods.

Joint cost allocation methods

1) Physical measure method a.k.a. Physical Output method:-

Under this method, the Joint Cost will be allocated between the joint products in the ratio of the physical Output received at the time of split-off.

2) Sales value @ split off method :-

Under this Method, the Joint cost will be allocated between the joint products in the ratio of the sales value achieved at the time of split-off.

3) Net realizable value method (NRV):-

Formula for NRV:-

Sale value of the final product (post processing)	xxx
(-) Further processing cost	(xxx)
Net realizable value.	

The NRV's so arrived will be used as a ratio to allocate the Joint Costs.

If at all. a product is sold @ split off, then, for that product, the sale value @ split off is considered as NRV.

4) Constant Gross margin NRV:-

Formulation :-

Step 1:- Calculate the gross margin for the firm as a whole:-

Total sale value of all the products post processing	xx.
(-) Further processing costs	
(-) Joint costs	
Gross margin	
Gross margin % to sales.	

Step 2 :- Allocation of Joint Cost :-

	Product A	Product B
Sales value of the final product		
(-) Gross margin		
Total Costs		
(-) Further processing costs		
Joint cost allocated.		

Depth of processing :-

Depth of processing refers to whether a product should be further processed or not.

This can be ascertained via two methods.

▷ Check profits before further processing & after further processing.

Profit before further processing :-

	A	B
Sales value @ split off	xx	xx
(-) Joint cost		
Profit before further processing.		

Profit after further processing :-

	A	B
Sales value after further processing	xx	xx
(-) Further processing costs	(xx)	(xx)
(-) Joint cost	(xx)	(xx)
Profit after further processing.		

Wherever profit is higher, choose that option.

▷ Compare NRV with sales value @ split off.
→ If sale value @ split off is ↑, then do not further process
→ If NRV is ↑, then do further process.

Contract Costing.

Type 1
Calculation of Notional Profit

Type 2
Calculation of Estimated profit.

Type 1 :-

Contract A/c.

Particulars	Amt	Particulars	Amt.
To Opening work cert. —u— Uncertified.	If given	By work Certified	@value
u all costs related to the contract	X X	u work uncertified	@ cost
		u Materials @ site	XX
u Notional Profit	X X	u Materials sold, returned etc	@ cost ALWAYS
		u Loss for the year	XX.

Profit is always NOTIONAL. Losses are actual. Never use the term Notional Loss as there is no such term.
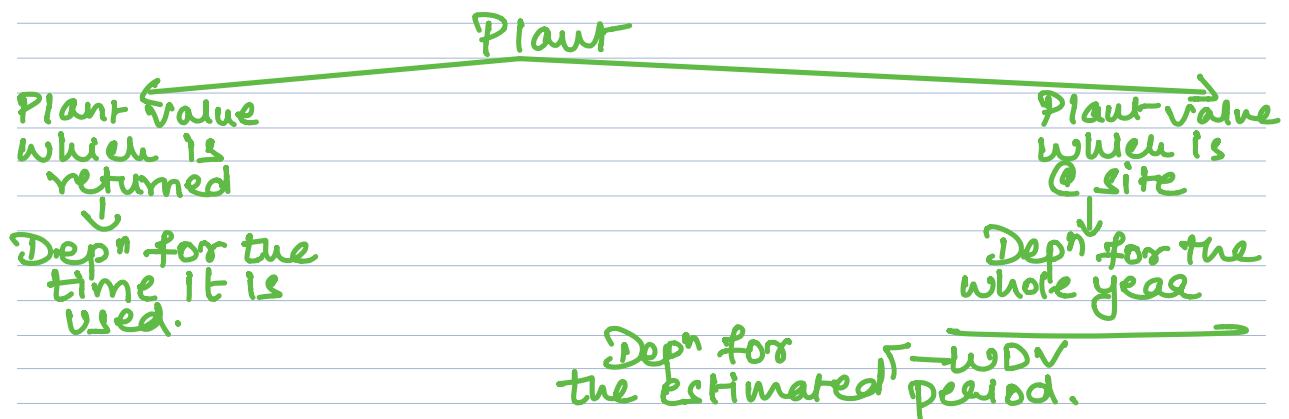
Type II

Step I :- Prepare Contract A/c as prepared in Type I

Step II :- Prepare Statement of Estimated Profit as follows.

Statement of Estimated Profit.

Materials :-	
Materials + Materials − Closing Stock for Yr 1 for Yr 2 in Yr 2	xxx
Labour	
Wages paid + wages paid +/- O/s wages/ In Yr 1 in Yr 2 prepaid wages	xxx.
Expenses	
Expenses paid + Expenses paid +/- O/s Expenses/ in Yr 1 in Yr 2 prepaids	xxx.
Depreciation	
Yr 1 Depreciation + Yr 2 Depreciation	xxx
Total Estimated cost	xxx
Contract price	xxx
Estimated Profit	xxx

Depreciation Calculation:- Divide the plant in the parts it has been returned.

Plant

Plant value which is returned → Depⁿ for the time it is used.

Plant value which is @ site → Depⁿ for the whole year

Depⁿ for the estimated period. ⌐→WDV

$$\begin{aligned}\text{Amount to be taken to P \& L} &= \text{Estimated profit} \times \frac{\text{Cash received}}{\text{work certified}} \times \frac{\text{Work Certified}}{\text{Contract price.}}\\ &\quad\text{OR}\\ &= \text{Estimated profit} \times \frac{\text{Cash received}}{\text{Contract price.}}\end{aligned}$$

Employees Cost & Direct Expenses

Basic payment formulas.

| Time rate = Hours worked × rate p/hr | Piece rate = No. of pieces × piece rate. |

Conversion of time rate into piece rate.

Example:- Time rate:- 20/hr   1 unit = 15mins.

| 1 unit = 15mins. | 1 hr = 20/- | 1 unit = 5/- |
| 4 units = 60mins | 4 units = 20/- | |

$$\text{Effective hourly rate} = \text{Earnings}/\text{hrs worked.}$$

$$\text{Effective hrly rate} \times \text{hrs worked} = \text{Earnings.}$$

* Wherever there is Effectively hourly rate given in the question, then use the above formula always.

Incentive Schemes :-

Differential Piece rate system.

Taylors differential piece rate system.

Efficiency	Payment
Less than 100%	83% of piece rate
100% or above	125% of piece rate

Merricks differential piece rate system

Efficiency	Payment
Upto 83%	Ordinary piece rate
83% − 100%	110% piece rate
above 100%	120% of piece rate

Combination of time & piece rate.

Gantt task & bonus scheme.

Output	Payment
Output below standard	Guaranteed time rate
—u— at standard	Time rate + 20%
—u— above standard	Piece rate + 20%

Emmerson's Efficiency formula.

Efficiency	Payment
Upto 66.66%	basic Time rate, no bonus
66.66% − 100%	120% Time rate
↑100%	120% + 1% ↑ in bonus for 1% ↑ in Efficiency.

Premium bonus plan :-

Halsey plan:-

$$\text{Earnings} = \underset{\text{worked}}{\text{Hours}} \times \underset{\text{p/hr}}{\text{rate}} + \left(50\% \underset{\text{saved}}{\text{Time}} \times \underset{\text{p/hr}}{\text{rate}}\right)$$

Rowan plan :-

$$\text{Earnings} = \underset{\text{worked}}{\text{Hours}} \times \underset{\text{p/hr}}{\text{rate}} + \left(\frac{\text{Time saved}}{\text{Time allowed}} \times \text{Time Taken}\right) \text{rate p/hr}$$
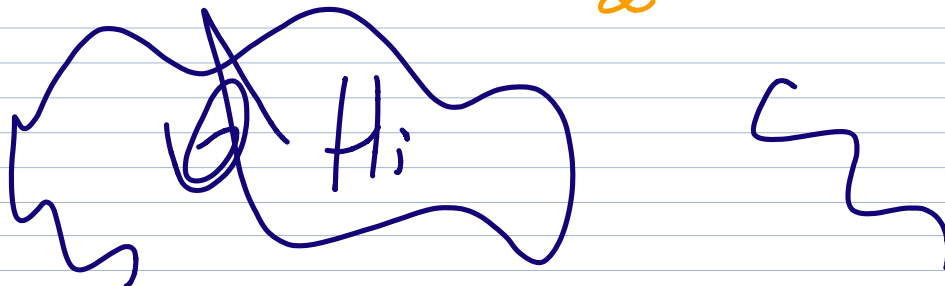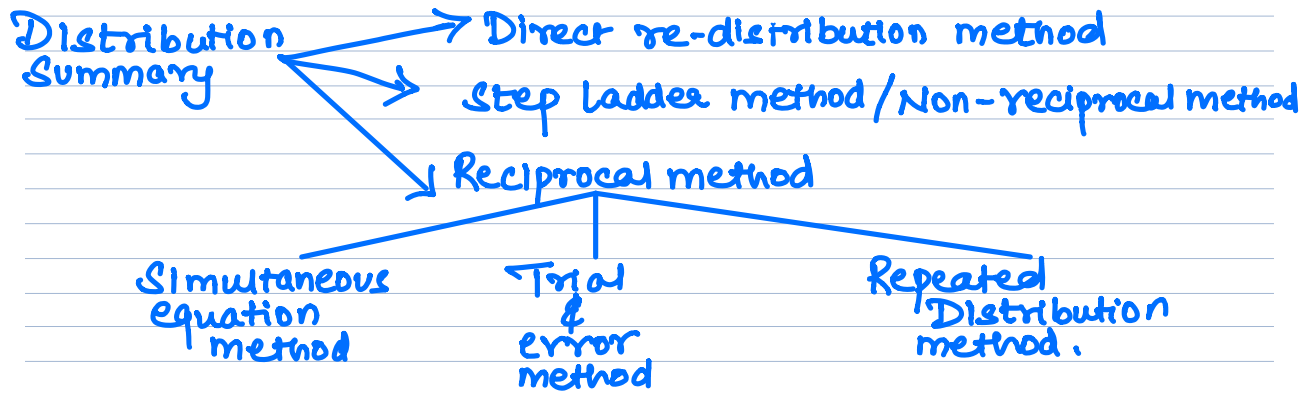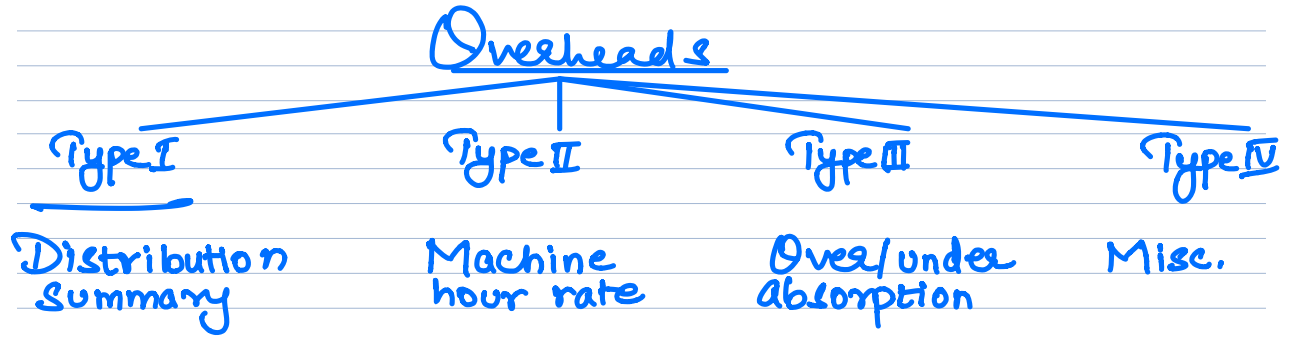

Labour Turnover

$$\underset{\text{method}}{\text{Replacement}} = \frac{\text{No. of employees replaced}}{\text{Avg. no. of Employees on roll}} \times 100$$

$$\underset{\text{method}}{\text{Separation}} = \frac{\text{No. of employees separated}}{\text{Avg no. of Employees on roll}} \times 100$$

$$\underset{\text{method}}{\text{Flux}} = \frac{\underset{\text{replaced}}{\text{no. of Emp}^e} + \underset{\text{separated}}{\text{no. of Emp}^e} + \underset{\substack{\text{newly} \\ \text{recruited}}}{\text{no. of Emp}^e}}{\text{Avg no. of Emp}^e \text{ on roll}} \times 100$$

$$\underset{\text{on roll}}{\text{Avg no. of Emp}^e} = \frac{\text{Opening Emp}^e + \text{Clg. Emp}^e}{2}$$

Hi

Overheads

Type I	Type II	Type III	Type IV
Distribution Summary	Machine hour rate	Over/under Absorption	Misc.

Distribution Summary
→ Direct re-distribution method
→ Step ladder method/Non-reciprocal method
→ Reciprocal method

- Simultaneous equation method
- Trial & error method
- Repeated Distribution method.

Machine → Similar to service sector problems
hour rate

$$= \frac{Total\ cost}{Total\ Effective\ hours}$$

Over/under absorption

Overheads incurred (will be given)	xxx
− Overheads absorbed (ab.rate per hr × no.of hours)	(xxx)
Overheads under-absorbed	xxx
(−) One of Expenses	(xxx)
Under-absorbed overheads	xxx

Own mistake (debit costing P&L)

[Create supplementary rate]

balance

CDS A/c (for Units sold) — WIP A/c (for units in WIP) — FG A/c (for FG stk)

Activity based Costing.

Step 1:- Calculate the total cost

step 2:- Calculate the total driver volume

Step 3:- Calculate cost driver rate.

Step 4:- Charge individual products with the required rates.

	$\frac{1}{10}$	$\frac{2}{10}$
S		
v/c	(2)	(3)
P		

Test Hello One two three

	A	B
P	100	30
V/C	(20)	(10)
P	80	20