1

COST CONTROL ACCOUNTS
(INTEGRAL & NON - INTEGRAL ACCOUNTING)

Unit structure :

1.0 OBJECTIVES

After studying the unit the students will be able to:

- Understand the Non-integral Accounting system and solve the problems
- Know the Integral Accounting System and solve the problems.

1.1 INTRODUCTION

Under integral accounting system, only one set of books of accounts is prepared and the accounts are written in such a manner that due justice is done to all the Cost Accounting and financial Accounting principles. The accounts to be opened would depend on ultimate outcome expected and ultimate outcome of integral accounting system is the cost sheet for cost accountant and profit and loss A/c and balance sheet for financial accountant.

1.2 NON-INTEGRAL ACCOUNTING/ INTERLOCKING ACCOUNTING SYSTEM/ COST LEDGER ACCOUNTING SYSTEM

Under non-integral accounting system, two different sets of books are maintained. One for financial and other for cost accounting purposes. Since we are concerned only with cost accounting under this system, in the problem on non-integral accounting, we only need to know how

the accounts are to be written for cost accounting purposes. In non-integral system of accounting, we need to make reconciliation statement for knowing the reasons of difference in the profit which have been calculated incost accounting system and financial accounting system.

Necessary Accounts to be opened:

1. **General Ledger Adjustment A/c or Cost Ledger ControlA/c:**

   This is practically a dummy account and is to be used where one of the two parts of the journal is recorded. One is a cost sheet item and the other is a Balance Sheet item. Since Balance Sheet items have no place in our system, the Balance Sheet part of the Journal, whether debit or credit, is to be replaced by this account. If both the parts of the journal are balance sheet items or both the parts are cost sheet items, then naturally this account has no use.

2. **Stores Ledger Control A/C.**

   This is in respect of raw material when raw material is purchased, this account is debited and when raw material is issued to the production department, it is credited to this a/c and debited to Work in-progress a/c. The material issued for repairs and maintenance is also credited to this account and debited to factory overheads account. Likewise, abnormal loss of material is credited to this account and debited to costing profit and loss A/c.

3. **Work - In - Progress Ledger Control A/C :**

   On the debit side of this A/c, we write opening balance and factory cost incurred. On the credit side, factory cost of production completed is transferred to finished goods ledger control a/c and balance is closing stock. Also, if there is some abnormal loss, the factory cost of abnormal loss (Prime Cost and Factory Overheads) is credited to this A/c and debited to abnormal loss A/c and similarly, abnormal gain is debited to this a/c and credited to abnormal gain a/c.

4. **Finished Goods Ledger Control A/C :**

   On the debit side of this A/c, we write opening stock of finishedgoods, factory cost of production completed and transferred to warehouse and administration overheads. On the credit side, the production cost of goods sold is transferred to cost of sales a/c and the balance is closing stock of finished goods.

5. **Wage Control A/C :**

   On the debit side of this a/c, we write the wages incurred, whether direct or indirect. On the credit side, the indirect wages could be factory, administration or Selling & Distribution overheads and depending on that, we transfer them to Factory overheads Control A/c, administration Overheads Control A/c or S & D overheads Control A/c. direct wages are transferred to Work-in-progress account. It is also

possible (in fact, better) to transfer to this account, only direct wages and to transfer indirect wages directly from GLA A/c to respective oveheads accounts.

6. Factory overheads Control A/c, Administrative OverheadsControl A/c, Selling and Distribution overheads Control A/c.

On the Debit side of each of these accounts, we write the amount actually spent.

The factory overheads, to the extent recovered, are transferred to Work-in-progress Ledger Control A/c. The administrative overheads are similarly transferred to Finished Goods Ledger Control A/c and Selling & Distribution Overheads are transferred to Cost of Sales a/c.

As regards the difference between the amount spent and recovered, if there is some instruction, direct or indirect, itshould be followed. In the absence thereof, there are two alternatives. One is to transfer the difference to Costing Profit & Loss A/c and the other is to carry it forward by showing the difference as closing balance. It is also possible to follow supplementary rate system.

If opening trail balance is given and such items do appear in it then that means the company follows the policy of carrying forward the difference to the next period. If they do not appear in the opening trial balance then, in the absence of information to the contrary, these A/c's should be closed by transferringthe difference to Costing Profit & Loss A/c. If the supplementary system is to be followed, then, the difference should be transfered to the same account to which absorption is transfered.

7. Cost Of Sales A/C :

On the debit side of this A/c we write production cost of goods sold (which is transferred from finished goods ledger control a/c) and Selling and Distribution Overheads. The total being cost of sales, we transfer it to Costing Profit and Loss A/c.

8. Sales A/C :

On the credit side of this a/c, we write the amount of sales by debiting General ledger Adjustment A/c and we close this A/c by transferring sales to costing Profit and Loss A/c.

9. Abnormal Loss / Gain A/C :

These are the a/c's for recording the transactions of abnormal nature and we close these a/c's by transferring the balance to profit and Loss A/c.

10. Costing Profit And Loss A/C :

On the debit side of this A/c, we write the cost of sales and abnormal losses and on the credit side sales and abnormal gain. Based on the

policy as regards overheads, the under / over absorption may also be written on the debit side or as the case may be on credit side. We close this a/c by transferring the profit (loss) to General Ledger adjustment A/c.

11. Trial Balance :

Whether asked for or not, it is always advisable to prepare the trial balance. Obviously, the closing balances would be inventory accounts, General Ledger Adjustment accounts and Overhead A/c's (If the policy is to carry forwards the difference).

1.3 INTEGRAL ACCOUNTING SYSTEM

Here, the balance sheet is also required and therefore General Ledger Adjustment Account (dummy A/c) obliviously hasno place. If there are some items of financial nature (Income Tax, Fine Penalty etc.), then only it is essential to prepare Costing Profit & Loss A/c, we prepare Profit & Loss A/c and we write all the items of Financial nature in the profit and loss A/c. In that case, the net profit that we get in Costing Profit & Loss A/c is transferred to this Profit and Loss A/c. Final Net profit is then to be transferred to Reserve and Surplus A/c.

As regards overheads, the under or over-recovery of overheads is to be transferred to be adjusted in current year only. Then, there are as many more accounts as the number of balance sheet items in the problem. We given very normal two effects to every transaction and then close all the accounts. Finally, we prepare trial balance or, as the case may be, the balance sheet.

1.4 COST CONTROL ACCOUNTS

14.1 Meaning :-

Cost Accounting means the process of accounting for cost from the point at which the expenditure is incurred to the establishment of its ultimate relationship with cost center and cost units.

1.4.2 Control and Profitability:-

The scope of cost accounting extends to preparation of statistical data or cost control accounts. There are two types of cost accounting integrated and Non-integrated.

1.4.3 Integrated System :-

It is a system in which the Financial and Cost Account are integrated to insure that all relevant expenditure is absorb into the cost account.

1.4.4 Non - Integrated System :-

It is a system in which the cost account are different from the Financial account, the two sets of accounts being kept continuously in agreement

by the use of cost control. Under this system the separate account are prepared called as Cost Journal and Cost Ledger.

1.4.5 Journal Entries

Financial Account	Cost Account
1) Credit Purchase of Material for Stock	
Purchases A/c - Dr	Store ledger control A/c - Dr
To Sundry Creditors	To Cost ledger control A/c
2) Cash Purchase of Material for Stock	
Purchase Ac - Dr	Stock ledger control A/c - Dr
To cash A/c	To Cost ledger Control A/c
3) Purchase of Special Material for Direct Use in a Process or Job	
Purchase A/c - Dr	WIP Control A/c - Dr
To Sundry Creditors / Cash A/c	To Cost ledger Control A/c
4) Purchase of Material for Immediate Repair Work	
	Factory O.H. Control A/c Dr
	To Cost Ledger Control A/c
5) Material Return of Supplier From Stock	
Sundry Creditors A/c - Dr	Cost Ledger Control A/c - Dr
To Purchase Return A/c	To Store Ledger Control A/c
6) Payment to Creditors or Supplier	
Sundry Creditors A/c - Dr	No Entry
To Cash / Bank A/c	
7) Issue of Direct Material for Production to Factory Job	
	WIP Control A/c - Dr
	To Store Ledger Control A/c
8) Issue of Indirect Material	
	Factory O.H. Control A/c - Dr
	To Store ledger Control A/c

9) Return of Direct Material to Store

Store Ledger Control A/c - Dr

To WIP Control A/c

10) Return of Indirect Material

Store Ledger Control A/c - Dr

To factory O.H. Control A/c

11) Adjustment of normal loss in Material Stock

Factory O.H. Control A/c - Dr

To Store Ledger Control A/c

12) Adjustment of Normal Surplus in material stock

Store Ledger Control A/c - Dr

To Factory O.H. Control

13) Payment of Wages

Wages A/c - Dr

To Insurance A/c

To Tax A/c

To PF A/c

To Cash A/c

Wages Control A/c - Dr

To Cost Ledger Control A/c

14) Analysis and Distribution of Wages

WIP Control A/c (Direct Wage) - Dr

Factory O.H. Control (Indirect Wages) - Dr

Admin O.H. Control (Office Salary) - Dr

Selling & Dis O.H. Control (Sale Staff Salary) - Dr

To Wages Control A/c

15) Payment for Expenses

Expenses A/c - Dr	Factory O.H. Control A/c - Dr
To Cash/Bank A/c	Admin O. H. Control A/c - Dr
	Selling & Distribution O. H. Control A/c
	To Cost Ledger Control

16) Recording Depreciation on Fixed Asst

Depreciation A/c - Dr	Factory / Admin/ Selling Control A/c
To Fixed Asset A/c	To Cost Ledger Control A/c

17) Recording of Manufacturing O.H. applying at departmental Rate

WIP Control A/c - Dr

To Factory O.H. Control A/c

18) Abnormal Loss Due to Wastage

Costing P & L A/c - Dr

To WIP Control A/c

19) Scrap Taken on Stock Charge

Store Control A/c - Dr

To WIP Control A/c

20) Recording Cost of Goods Transfer to Finished Goods

Finished Goods Control A/c - Dr

To WIP Control A/c

21) Recording Sales

Debtors / Cash A/c - Dr

Cost Ledger Control A/c - Dr

To Sales (S. P.) A/c

To Casting P & L A/c (Profit)

22) Absorption of Admin O.H.

Finished Goods Control A/c - Dr

To Admin O.H. Control A/c

23) Absorption of Selling & Distribution O.H.

Cost of Sales A/c - Dr

To Sell & Dist O.H. Control A/c

24) Under absorb Factory, Admin & Selling O.H.

Costing P & L A/c - Dr

Finished Goods / WIP / Cost of Sales - Dr

OR

Overheads Suspense A/c - Dr

To Factory / Admin / Sell & Dis Control A/c

25) Over absorb Factory, Admin & Selling O.H.

Factory / Admin / Sell & dis. O.H. Control - Dr

To Costing P & L A/c

OR

To WIP / Finished Goods /

Cost of Sales

OR

Overhead Suspense A/c

26) Recording Cost of Goods Gold

1) Cost of Sales A/c - Dr

To Finished goods A/c

2) Costing P & L A/c - Dr

To Cost of Sale Cost

1.4.6 Closing of the Ledger accounts:

After Completing the Journal Entries then Ledger A/c areclosed in the following manner.

1) Factory O.H. Controls A/c:

Difference in A/c Transfer to WIP or If the problem saidtransfer to next month (Closing Bal) by bal. c/d.

2) Admin O.H. Control A/c:

Difference in A/c Transfer to Costing P & L or O.H. Adjustment

A/c.

3) Selling & Distribution O.H. :

Difference in A/c Transfer to Costing P & L A/c or O.H.Adjustment A/c.

4) O.H. Adjustment A/c:

Difference in O.H. Adjustment A/c either transfer to costingP&L A/c or if the problem said transfer in trial balance.

5) Cost of Sales:

Transfer the difference in this A/c to Costing P & L A/c.

6) Costing P & L A/c:

Difference in this A/c Transfer to Cost Ledger Control A/c.

7) Cost Ledger Control A/c / WIP Control A/c / Store Ledger Control A/c / FCI Control A/c:

Difference in resection Account Transfer to The Trial Balance (Closing Balance)

1.5 SOLVED PROBLEMS

Illustration 1

C Ltd. Maintain a Separate Set of books for financial accounts andcost accounts.

The following information is provided for the year 2014.

Particulars	Amount
Material Control A/c	60,000
WIP Control A/c	90,000
Finished Goods Control A/c	1,40,000
Cost Ledger Control A/c	2,90,000
Transaction for the year	
Material Purchase	6,60,000
Material Issue as Direct Material	4,50,000
Indirect Material	1,20,000
Wages Paid Allocated as	
Direct Cost	2,70,000
Indirect Cost	90,000
Production Expenses	2,40,000
Value of Finished Goods Produce	10,80,000
Closing Stock of F.G.	1,20,000
Administration expenses	2,40,000
Selling expenses	1,80,000
Sales	18,00,000

Prepare the Necessary Control A/c in the books of CostingRecords.

Journal Entries

Date	Particulars	L/F	Debit ₹	Credit ₹
1.	Material Control A/c - Dr To Cost Ledger Control A/c		6,60,000	6,60,000
2.	WIP Control A/c - Dr To material Control A/c		4,50,000	4,50,000
3.	Factory O.H. Control A/c - Dr To Material Control A/c		1,20,000	1,20,000
4.	WIP Control A/c - Dr To Wages Control A/c		2,70,000	2,70,000
5.	Factory O.H. Control A/c - DrTo Wages Control A/c		90,000	90,000
6.	Factory O.H. Control A/c - Dr To Cost Ledger Control A/c		2,40,000	2,40,000
7.	Finished Goods Control A/c - DrTo WIP Control A/c		1,08,000	1,08,000
8.	Office & admin O.H. Control A/c -Dr To Cost Ledge Control A/c		2,40,000	2,40,000
9.	Sellings distribution O.H. Control A/c - Dr To Cost Ledger Control A/c		1,80,000	1,80,000
10.	Cost Ledger Control A/c - Dr to Costing P & L A/c (sales)		18,00,000	18,00,000

Cost Ledger Control A/c

Particulars	₹	Particulars	₹
To Costing P & L A/c	18,00,000	By Bal. b/d	2,90,000
		By Material Control A/c	6,60,000
		By Factory O.H. Control A/c	2,40,000
		By Office & Admin O.H. Control A/c	2,40,000
To Bal. C/d	4,50,000	By Selling & Distribution O.H. Control A/c	1,80,000
		By Salary Swages Control A/c	3,60,000
		By Costing P & L A/c	2,80,000
	22,50,000		22,50,000

Material Control A/c

Particulars	₹	Particulars	₹
To Bal. b/d	60,000	By WIP Control A/c	4,50,000
To Cost Ledger Control a/c	6,60,000	By Factory O.H. Control a/c	1,20,000
		By Bal. c/d	1,50,000
	7,20,000		7,20,000

WIP Control A/c

Particulars	₹	Particulars	₹
To Bal. b/d	90,000	By Finished Goods	10,80,000
To Wages Control A/c	2,70,000	By Bal c/d	1,80,000
To Material Control a/c	4,50,000		
To Factory O.H. Control A/c	4,56,000		

Finished Goods Control A/c

Particulars	₹	Particulars	₹
To Bal. b/d	1,40,000	By Costing A/c (Cost of Sales)	11,00,000
To WIP Control A/c	10,80,000	By Bal c/d	1,20,000
	12,20,000		12,20,000

Factory O.H. Control A/c

Particulars	₹	Particulars	₹
To Material Control A/c	1,20,000	By WIP Control A/c	4,50,000
To Wages Control A/c	90,000		
To Cost ledger Control A/c	2,40,000		
	4,50,000		4,50,000

Office & Adin Control A/c

Particulars	₹	Particulars	₹
To Cost Ledger A/c	2,40,000	By Costing P & L A/c	2,40,000
	2,40,000		2,40,000

Selling & Distribution A/c

Particulars	₹	Particulars	₹
To Cost Ledger A/c	1,80,000	By Costing P & L A/c	1,80,000
	1,80,000		1,80,000

Salary & Wages A/c

Particulars	₹	Particulars	₹
To Cost Ledger A/c	3,60,000	By WIP Control A/c	2,70,000
		By Factory O.H.	90,000
	3,60,000		3,60,000

Costing P & L A/c

Particulars	₹	Particulars	₹
To Finished Goods Control a/c	4,00,000	By Cost Ledger A/c	18,00,000
To Admin O.H. Control A/k	2,40,000		
To Selling A/c	1,80,000		
To Cost Ledger Control a/c	2,80,000		
	18,00,000		18,00,000

Trial Balance

Particulars	Debit ₹	Credit ₹
Cost Ledger Control A/c		4,50,000
Material Control A/c WIP	1,50,000	
Control A/c Finished	1,80,000	
Goods	1,20,000	
	4,50,000	4,50,000

From 31st March 2013 the following balances extracted from the book of the co.

Trial Balance

Particulars	₹	₹
Store Ledger Control a/c	3,50,000	
WIP	3,80,000	
FCT	2,50,000	
Cost Ledger Control A/c		9,80,000
	9,80,000	9,80,000

Illustration 2:

Following Transaction took place in March 2013

Particulars	₹
Raw Material Purchases	9,50,000
Return to Supplier	30,000
Issue to Production	9,80,000
Return to Store	30,000
Production Wages	4,00,000
Indirect Labour	2,50,000
Factory O.H.	5,00,000
Selling Distribution O.H.	7,00,000
Cost of Finished Goods Transfer To Warehouse	21,30,000
Cost of Goods Sold	21,00,000
Sales	30,00,000

Factory O.H. are apply to production at 150% of on, any under or our absorbed overheads being carry forward for adjustments in the subsequent month. All selling & distribution O.H. are created as a period cost and charge to the Profit & Loan A/c of the month in which they are incurred.

Show the necessary control A/cs, Costing P & L A/c and trial balance.

Journal Entries

Date	Particulars	L/F	Debit ₹	Credit ₹
1.	Store Ledger Control A/c - Dr To Cost Ledger Control A/c		9,50,000	9,50,000
2.	Cost Ledger Control A/c - Dr To Store Ledger Control A/c		30,000	30,000
3.	WIP Control A/c - Dr To Store Ledger Control A/c		9,80,000	9,80,000
4.	Store Ledger Control A/c - DrTo WIP Control A/c		30,000	30,000
5.	WIP Control A/c - Dr To Wages Control A/c		4,00,000	4,00,000
6.	Factory O.H. Control A/c - DrTo Wages Control A/c		2,50,000	2,50,000
7.	Factory O.H. Control A/c - Dr To Cost Ledger Control A/c		5,00,000	5,00,000
8.	Selling & Distribution O.H.Control A/c - Dr To Cost Ledger Control A/c		4,00,000	4,00,000
9.	F. G. Control A/c - Dr To WIP Control A/c		21,30,000	21,30,000
10.	Cost of Sales A/c - Dr To Finished Goods Control A/c		21,00,000	21,00,000

11.	Cost Ledger Control A/c - Dr To Costing P & L A/c		30,00,000	
				30,00,000
12.	WIP Control A/c - Dr (4,00,000 x 150%) To Factory O.H. Control A/c		6,00,000	
				6,00,000

Cost Ledger Control A/c

Particulars	₹	Particulars	₹
To Store Ledger Control A/c	30,000	By Bal. b/d	9,80,000
To Costing P & L A/c	30,00,.000	By Store Ledger Control A/c	9,50,000
		By Factory O.H. Control A/c	5,00,000
		By Selling Distribution A/c	4,00,000
		By Wages Control A/c	6,50,000
		By Costing P & L A/c	5,00,000
	39,80,000		39,80,000

Store Ledger Control A/c

Particulars	₹	Particulars	₹
To Bal. b/d	3,50,000	By Cost Ledger Control A/c	30,000
To Cost Ledger Control A/c	9,50,000	By WIP A/c	9,80,000
To WIP A/c	30,000	By Bal c/d	3,20,000
	13,30,000		13,30,000

WIP

Particulars	₹	Particulars	₹
To Bal. b/d	3,80,000	By Store Ledger Control A/c	30,000
To Store Ledger Control A/c	9,80,000	By Finished Goods Control a/c	21,30,000
To Wages Control A/c	4,00,000	By Bal. c/d	2,00,000
To Factory O.H. A/c	6,00,000		
	23,60,000		23,60,000

Finished Goods

Particulars	₹	Particulars	₹
To Bal. b/d	2,50,000	By Cost of Sales	21,00,000
To WIP Control A/c	21,30,000	By Bal. c/d	2,80,000
	23,80,000		23,80,000

Wages Control A/c

Particulars	₹	Particulars	₹
Cost Ledger Control A/c	6,50,000	By WIP	4,00,000
		By Factory O.H. Control A/c	2,50,000
	6,50,000		6,50,000

Factory O.H. Control A/c

Particulars	₹	Particulars	₹
To Wages Control A/c	2,50,000	By WIP	6,00,000
To Cost Ledger A/c	5,00,000	By Bal. c/d	
	7,50,000		7,50,000

Selling & Distribution Control A/c

Particulars	₹	Particulars	₹
To Cost Ledger A/c	4,00,000	By Costing (Bal) P & L A/c	4,00,000
	4,00,000		4,00,000

Costing P & L A/c

Particulars	₹	Particulars	₹
To Selling & Distribution	4,00,000	By Cost Ledger A/c	30,00,000
To Cost of sales	21,00,000		
To Cost Ledger A/c (Profit) (Bal.)	5,00,000		
	30,00,000		30,00,000

Cost of Sales A/c

Particulars	₹	Particulars	₹
To F. G. A/c	21,00,000	By Costing P & L (Bal.)	21,00,000
	21,00,000		21,00,000

Trial Balance

Particulars	Dr. ₹	Cr. ₹
Cost Ledger Control A/c		9,50,000
Store Ledger Control A/c	3,20,000	
WIP	2,00,000	
F. G	2,80,000	
Factory O.H. Control A/c	1,50,000	
	9,50,000	9,50,000

1.6 EXERCISE

A. Fill in the blanks:

1. Under ---------- accounting system, only one set of books of accounts is prepared (integral)
2. Under ---------- accounting system, two sets of books of accounts are prepared (non-integral)
3. In integral accounting system the transaction having both the parts of the journal are balance sheet items then this transaction is not recorded in ---------- adjustment a/c. (General ledger orCost Ledger)
4. It both the parts of the journal entry are cost sheet items, then there is no entry in ----------.(General ledger or Cost Ledger)
5. Cost and financial accounts are required to be reconciled under---------- accounting system (non-integral)

B. Practical problems

Q. 1 The financial and cost accounts of XYZ ManufacturingCompany for the year ended 31 March, 2007 have been reconciled as below:

Financial Profit and Loss A/c. for The Year Ended 31st March, 2007.

Particulars		Rs.	Particulars	Rs.
Raw Materials:				
Opening Stock	56,450		Cost of Goods Manufactured (Trf. To Trading A/c)	8,10,000
Purchase	3,24,560			
	3,81,010			
Less: Closing Stock	58,060	3,22,950		
Production Overheads		2,39,370		
Direct Wages		2,47,320		
Work in Progress:				
- Opening Stock	18,620			
- Closing Stock	18,260	360		
		8,10,000		8,10,000
Finished Goods:				
Opening Stock	1,42,350		Sales	11,03,500
Cost of Goods Manufactured	8,10,000			
	9,52,350			
Closing Stock	1,46,850	8,05,500		
Gross Profit		2,98,000		
		11,03,500		11,03,500
Administration Expenses		1,24,620	Gross Profit	2,98,000
Selling Expenses		87,380	Discount Received	1,600
Discount Allowed		1,240		
Debenture Interest		6,360		
Net Profit		80,000		
		2,99,600		2,99,600

Reconciliation that means they are foil non interned A/c system of financial and cost accounts for the year ending on 31st March, 2007.

	₹		₹
Profit as per Financial A/c	80,000	Profit as per Cost A/c	84,550
Discount Allowed	1,240	Discount Received	1,600
Debenture Interest	6,360	Difference in Stock valuation:	
Difference in Stock Valuation:		Raw Material: Opening	700
Work in progress : Closing	480	Raw Materials : Closing	750
Finished Goods : Opening	720	Work in Progress: Opening	620
		Finished Goods: Closing	580
	88,800		88,800

Direct in The Cost Accounts Include :	₹	
Direct Material Price Variance	3,120	Adverse
Direct Material Usage Variance	1,280	Adverse
Direct Labour Rate Variance	4,160	Favourable
Direct Labour Efficiency Variance	4,470	Favourable
Production Overhead Expenditure Variance	4,880	Favourable
Production Overhead Volume Variance	1,680	Adverse
Administration Overheads Cost Variance	620	Adverse
Selling and Distribution Cost Variance	620	Adverse
Selling Price Variance	5,000	Favourable
Sales Volume Variance	1,500	Adverse

You are required from the above data to show the necessary accounts as they should appear in the cost ledger under :

a) Partial Plan b) Single Plan

Q.2 Upto Date Ltd. which keeps cost control accounts in additionto the normal financial books of accounts is in the habit of preparing half - yearly accounts for ascertaining its performance.

From the information supplied hereunder, you are required to write up the cost ledger and prepare a costing profit and loss account showing the appropriate variances for the first half of the current year. Also ascertain

the profit of the same period as given by the financial accounts, reconciling this with the profit shown in the cost accounts. In the cost accounts, the balance at the end of the previous year were:

	At Standard Cost ₹. (000)	
General Ledger Control A/c.		3,450
Raw Materials	1,025	
Work in Progress	1,840	
Finished Goods	585	
	3,450	3,450

The Summary of Transactions During the first half of the current year is :

	₹.(000)	
Purchase of raw material on credit	4,045	
Material Price Variance	95	Adverse
Material usage Variance	75	Adverse
Direct Wages Actual (6,50,000 hrs.)	3,390	
Standard Wages at ₹2.50 per hour	3,275	
Indirect Wages	1,155	
Indirect Materials and Expenses	965	
Depreciation	525	
Administration, Selling and Distribution Expenses	2,925	
Material Issued to Production at Standard Price	4,000	
Factory Overheads absorbed to production at ₹2.00 per standard direct labour hour	2,620	
Sales on Credit	15,735	
Items of Purely Financial Nature:		
Debenture Interest Paid	180	
Interest Received on Investments	35	
Donations and Charities	135	

	Costing Booksat Standard	Financial Books at Actual
	₹	₹
Opening Stock:		
Raw Materials	1,025	1,050
Work in Progress	1,840	1,825
Finished Goods	585	625
Closing Stock:		
Raw Materials	?	895
Work in Progress	1,725	1,755
Finished Goods	595	600

Please take not that the administration, selling and distribution expenses will be charged to Costing Profit and Loss Account.

Q.3 Chem-Tech is a firm belonging to chemical industry. It has a system of budgetary control and standard costing in operation. For accounting purposes, in follows integral system. As far as accounting for standard cost goes, it follows single plan.

The following trial balance was developed as on 30th April, 2007.

L. F. No.	Account Head	₹.(000)	
		Debit	Credit
101	Raw Material	12	
102	Fixed Assets	85	
103	Share Capital		200
104	Work in Progress	80	
105	Finished Goods	40	
106	Creditors Control		23
107	Debtors Control	59	
108	Cash and Bank	19	
109	Depreciation Provision		12
110	Reserves		40
111	Material Price Variance	4	
112	Labour Cost Variance	8	
113	Factory Overhead Variance		2
114	Sales		500
115	Standard Factory Cost of Sales	470	
		777	777

Following Transactions Took Place in May, 2007	**₹.(000)**
Purchases on Credit	50
Payment to Sundry Creditors	80
Labour Cost Incurred	22
Indirect factory Expenses	13
Standard Cost of Material Purchased	47
Collection from Customers	65
Stock of Raw Material as on 31-5-2007	14
Work in Progress as on 31-5-2007	
Direct Wages	13
Factory Overheads	8
Factory cost of Production:	
Material	60
Labour	22
Overheads	12

Sales in May ₹40,000. Opening Balance in WIP A/c. was developed with the help of a statement of equivalent production. This balance included labour cost of ₹15,000 and overheads cost of ₹10,000. Factory cost of sales 33,000. You are required to give effect to the above transactions and prepare the resultant trial balance as on 31st May, 2007.

Ignore Taxation.

2

CONTRACT COSTING

Unit Structure :

2.0 OBJECTIVES

After studying the unit the students will be able to:

- Understand the features of Contract Costing
- Explain the important concepts used in Contract costing.
- Know the format of Contract Account.
- Solve the problems on Contract Costing

2.1 INTRODUCTION

A contract is nothing but a big job having the following main features:

1) It May be completed within a months or years.

2) It usually for a higher price like lakhs or thousands.

3) The actual work may be take place, or at a site which is away from the main office of the contractor.

Contract costing is the method of costing which is used to find out the cost or particular contract. It may be generally calculated from the point of view or the contractor.

2.2 IMPORTANT CONCEPTS

Some of the important terms used in contract costing:-

1) Contract :-

A contract is an agreement between the contractor and contractee it include the time period taken to complete the contract, price of the contract and so on.

2) Contractor :-

A person who undertakes the contract.

3) Contractee :-

A person for whom the job is being undertaken.

4) Contract Price:-

The amount which is to be paid by the contractee to the contractor, for completing the contract work.

5) Work Certified :-

It is an amount of work done by the contractor and certificated by the architect as per the terms of contract.

6) Work Uncertified :-

It is an amount of work completed by the contractor but not certified by the architect at the end of the particular accounting year.

7) Retention Money:-

It is an part of value of work certified by the architect which is aretained by the contractee as a security. It means, the cash paid by the contractee to the contractor in between the contract period is depend on the value of work certified by the architect. From this work certified amount some of percentage being paid by the contractee and the balance of this is called as retention money.

For e.g. → If the work certified is ₹ 8,00,000 then the contractee is being paid the amount is being 90% of ₹ 8,00,000 as per the agreement and the balance or 10% of work certifiedis called as Retention Money.

2.3 DIFFERENT COST OF THE CONTRACT:

1. Material :-

Material which is required for contract is either purchased or issued from store because contract site is away from the headoffice of the contractor. Material May be taken from different way –

a. Material Issue / Purchased :-

It is debited to contract A/c.

b. Material Transferred:-

If the Materials transferred from one contract to another contract, then those who received the material are debited and who gives the material are credited to the respective contract A/c.

c. If the material is supplied by the contractee then it is not debited to contract A/c.

d. Material Returned to Store / Supplier:-

If the material is return to store or supplier it may be credited to the contract A/c.

g. Material Lost or Destroyed:-

If the Material Lost or destroy then the cost of material is credited to costing Profit & Loss A/c.

f. Sale of Material:-

If the material or scrap is sold, then the actual cost of material is credited to the contract A/c and the difference of any profit or loss may be transferred to costing Profit & Loss A/c.

2. Labour:-

Any labour charges related to the particular contract is either paid or outstanding are debited to the contract Account.

3. Direct Expenses:-

Any direct expenses which are related to the particular contract is either paid or outstanding are debited to the contract A/c. It includes architect fees, sanitary fitting, etc.

4. Indirect Expenses:-

Any indirect expenses which are related to the particular contract is either paid or outstanding are debited to the contract A/c. It induces head office expenses, general administrative expenses etc.

5. Special Plant:-

Plant which is specialty purchases for a particular contract and it is also used for that particular contract only, is called as special plant. Plant is also charged to the contract A/c but only upto the extent of depreciation amount, which is called as 'direct Method.' or otherwise we can use also capital method. Under capital Method, we debit the opening balance of plant value to the contract A/c and at the end of the year or contract credit

the W.D.V. of the plant. It means, we give the debit effect of the depreciation of the particular plant.

For eg. During a contract plant is purchase for ₹2,00,000 andat the end of the contract the valuation of the plant is₹1,80,000.

The effect given under Direct Method.

Dr. **Contract A/c** **Cr.**

Particular	₹	Particulars	₹
To Dept on Sp. Plant	20,000		

Effects of plant as for capital Method

Dr. **Contract A/c** **Cr.**

Particular	₹	Particulars	₹
To Special Plant	2,00,000	By WDV of Special Plant	1,80,000

Under both method the net effect of appreciation is ₹20,000.

6. Common Plant:-

A common Plant, it means a plant which is used for any contractwhenever needed. The treatement of the common plant is given in the same way of special point. It means either we can use 'Direct Method' of charging depreciation or plant on the debit side of the contract A/c of 'Capital Method or Debiting the opening value of the plant to the contract A/c and creating the WDV of the plant at the end of the contract of accounting year.

7. Work in Progress in Balance Sheet:-

At the end of the accounting year under incomplete contract work in progress may be appear under Asset side of the Balance Sheet.

Extract of Balance Sheet

Assets Side	**Amt**
Cost of Work Certified	xx
(+) Work Uncertified	xx
(-) Profit & Loss A/c (Reserve)	xx
	xx
(-) Cash Received from Contracted Work in progress	xx
	xx

2.4 PROFIT ON CONTRACT

1) Complete Contract :-

If the contract is completed then the profit or loss on contract, it may be debited or credited to the contract A/c. There is no need to transfer the profit to the reserve, it is entirely transferred to profit and loss a/c.

2) Incomplete Contract:-

If there is an incomplete contract then whatever difference is find out between the value of work in progress certified (Cr. Side of the contract A/c) and the cost of work in progress certified (Dr. Side of the contract A/c) is transfer to national profit.

Then me national profit is distributed between the Profit & Loss A/c and work in progress (Reserve profit) Firstly we have to find out the transfer of Profit and Loss A/c. is as under:-

a. If the contract is complete upto 25% - then profit & loss a/c is nil. It means there is no need to transfer any profit from notional profit to profit & loss a/c. The entire amount of notional profit is transferred to work in progress (profit reserve).

b. If the contract is completed between 25% to 50% - Then the profit & loss is calculated as -

$$\text{Profit \& Loss A/c} = \frac{1}{3} \times \text{Notional Profit} \times \frac{\text{Cash Received}}{\text{Work Certified}}$$

c. If the contract is completed between 50% to 90% - then the profit & loss a/c is calculated as,

$$\text{Profit \& Loss A/c} = \frac{2}{3} \times \text{Notional Profit} \times \frac{\text{Cash Received}}{\text{Work Certified}}$$

d. Nearing Completion - If the contract is completed between 90% to 99% then profit & loss a/c is calculated as,

$$\text{Profit \& Loss} = \text{Estimated Profit} \times \frac{\text{Cash Received}}{\text{Contract Price}}$$

OR

Sometimes it is given in the problem.

Contract completed is calculated by comparing with the contract price to the work certified.

For eg - If the contract price is ₹10,00,000 and work certified is ₹6,00,000 then the percentage of contract completed is calculated as,

Contract Price = 10,00,000 = 100%

Work Certified 6,00,000 = ?

$$\therefore 6,00,000 \times \frac{100}{10,00,000} = 60\%$$

∴ Contract completed is 60% the 2.3 formula can be used to transfer profit to the profit & loss a/c.

2.5 FORMAT OF CONTRACT ACCOUNT

Format of Contract A/c

(If Contract is 100% complet)

Particulars	₹	Particulars	₹
To Material	xx	By Material Returned / Sales / Destroyed	xx
To Labour	xx		
To Direct Expenses	xx	By WDV of Common Plant (Capital Method)	xx
To Indirect Exp.	xx	By WDV of Special Plant (Capital Method)	xx
To Common Plant		By Contractee's A/c (Full Contract Price	xxx
Depreciation (Direct Method)	xx	By Profit & Loss A/c (Loss)	xx
Cost (Capital Method)	xx		
To Special Plant Depreciation	xx		
(Direct Method) OR	xx		
Cost (Capital Method)			
To Profit & Loss A/c (Profit)	xx		
	xxx		xxx

Material Returned / Sold / Destroyed is credited to the contractA/c only at original cost whatever profit or Loss is transferred to costing profit and Loss A/c.

Particulars	₹	Particulars	₹
To Material	xxx	By Material Returned / Sold / Destroyed	Xx
To Labour	xx	By WDV of Common Plant (Capital Method)	xx
To Direct Exp.	xx	By WDV of Special Plant (Capital Method)	xx
To Indirect Exp.	xx	By Contractee's A/c (Full Contract Price)	xx
To CommonDepreciation Plant	xx	By Profit & Loss A/c (If Loss)	xx
(Direct Method) OR	xx		
Cost of Plant (CapitalMethod)			
To Special PlantDepreciation	xx		
(Direct Method) OR	xx		
Cost of Special Plant(Capital Method)			

To Notional Profit c/d (If Profit)	xx		
	xx		xx
To Profit & Loss A/c	xx	By National Profit b/d	
To working Progress c/d to Balance Sheet (ReserveProfit)	xx		
	xx		xx

Under Incomplete contract, if there is profit, it must be transferto Notional Profit.

2.6 SOLVED PROBLEMS

Illustration : 1

(Contract Complete Less than 20%).

On 1st October 2013 Arvind Undertook a contract for ₹ 5,00,000. The following information is available in respect oF a contract for the year ended 31/12/2013

Particulars	₹
Work Certified	80,000
Wages Paid	30,000
Material Supplied	45,000
Other Expenses	5,000
Work Uncertified	1,800
Material Lying at Site	1,500
Wages Outstanding	1,000
Plant	20,000

Provide 10% depreciation on plant p.a. prepare contract A/c in the books of Arvind.

Solution:-

Dr. Contract A/c (3 Months) Cr.

Particulars		₹	Particular	₹
To Material		45,000	By work in Progress	
			c/d	
To Wages	30,000		Material at Site	1,500
(+) O/s	1,000	31,000		
To Other Expenses		5,000	Work Certified	1,800
To Depreciation on Plant		500	Work Uncertified	80,000
To Notional Profit c/d		1,800		
		83,300		83,300
To Profit & Loss A/c		Nil	By Notional Profit b/d	1,800
To Work in Progress		1,800		
(Reserve)				
		1,800		1,800

$Dep.on\ Plant = 20000 \times 10\% \times \frac{3}{10} = 500\ (For\ 3\ Month)$

Out of Notional Profit some amount transfer to Profit & Loss A/c is calculated by comparing work certified with the contract price firstly to find out now much percentage (%) the contract is completed.

$Contract\ \text{Pr}ice - 5,00,000 = 100\%$

$Work\ Certified \quad 80,000 = ?$

$Contract\ Completed = 80,000 \times \frac{100}{5,00,000} = 16\%$

$Contract\ Completed = 16\,\%$

∴ Profit Transfer to Profit & Loss A/c is Nil. Total notional Profit is transfer to work in progress (Reserve).

Illustration : 2

In Complete Contract.

M/s. ABC builder undertook a contract for a contract price of ₹60,00,000 and commenced the work on 1st July 2013. The following particulars are available for 9 months ended 31-03-2014

Particulars	₹
Material Issued from Stores	4,00,000
Material Bought Directly	20,50,000
Wages Paid	19,00,000
Direct Expenses	3,00,000
Establishment Charges	1,50,000
Plant	6,50,000
Sub - Contract Charges	1,00,000
Scrop Sold	30,000
Work Certified	50,00,000

The following further information was available:-

a) Outstanding wages and direct expenses were ₹10,000 and ₹20,000 respectively on 31-03-2014.

b) Material at site at the end of the year is Valued at ₹1,20,000.

c) Value of work uncertified ₹2,00,000 on 31.03.2014.

d) Included in wages is the salary paid to supervisor @ ₹30,000 p.m. who had devoted half of the time on this contract.

e) Working life of the plant is estimated to be 5 years at the end or which it is estimated to be realized ₹50,000 as scrap value. The plant was purchased exclusively for this contract only.

Prepare contract A/c for the year ended 31-03-2014

Solution:-

Dr. M/s ABC Builders Cr.

Particulars	₹	Particulars	₹
To Material Issued From Stores	4,00,000	By Scrop Sold	30,000
To Material bought directly	20,50,000	By Work in Progress Work Certified	50,00,000
To Wages (WN)	17,75,000	Work Uncertified	2,00,000
To Direct Expenses (WN)	3,20,000	Material at Site	1,20,000
To Establishment Charges	1,50,000		
To Depreciation on Plant (WN)	90,000		
To Sub - Contract Charges	1,00,000		
To Notional Profit & Loss A/c	4,65,000		
	53,50,000		53,50,000
To Profit & Loss A/c (WN)	3,10,000	By National Profit b/d	4,65,000
To Work in Progress (Reserve)	1,55,000		
	4,65,000		4,65,000

Working Note:-

i) Wages :-

Wages Paid	19,00,000
(+) Outstanding	10,000
	19,10,000
(-) Supervisions Salary half of the time devoted to other ∴ half salary recovered $(30,000\,p.m. \times 50\% \times 9 Month)$	1,35,000
Total Wages	17,75,000

ii) Direct Expenses

Direct Expenses	30,000
(+) Outstanding	20,000
Total Direct Expenses	3,20,000

iii) Depreciation on Plant

Contract A/c to be prepared for 9 month (i.e. from 1st July 2013 to 31-03-2014)

$$\therefore Depreciation = \frac{Original\ Cost - Scrop\ Value}{Estimated\ Life}$$

$$= \frac{6,00,000 - 50,000}{5} = 1,20,000\ p.a.$$

$$\therefore 1,20,000\ p.a. \times \frac{9}{12} = 90,000\ for\ 9\ months$$

iv) Notional Profit = 4,65,000

Out of this transfer to Profit & Loss A/c is calculated by howmuch % the contract is completed.

Contract Price = 60,00,000 = 100%

Work Certified = 50,00,000

$$Contract\ Completed = 50,00,000 \times \frac{100}{60,00,000}$$

$$= 83.33\%$$

Profit & Loss A/c is calculated as 8.33% contract completed then used the formula.

(50 – 90%)

$$P\ \&\ L\ A/c = \frac{2}{3} \times Notional\ \Pr ofit$$

$$= \frac{2}{3} \times 4,65,000$$

$$\Pr ofit\ \&\ Loss\ A/c = 3,10,000$$

v) Work in progress (Reserve) is calculated as

= Notional Profit – Profit & Loss A/c (Profit)

= 4,65,000 – 3,10,000

1,55,000

Illustration : 3

The Maharashtra construction company undertook the construction of a building at a contract price of ₹ 12,00,000. The date of commencement of contract was 1st April 2013.

The following cost information is given for the year ended 31- 03-2014

Particulars	₹
Material Sent to the site	3,00,000
Wages	4,40,000
Archited Fees	55,500
Office & Administrative Overheads	1,51,000
Work Uncertified	55,000
Material at site at the end of the year	10,000
Cash Received from the Contractee	9,45,000
(Being 90% of the work certified)	
Material Destroyed by Five	5,000
Supervisors Salary	60,000
Plant and Machinery at Cost	2,00,000

(Date or Purchase - 1st July 2013. The estimated working life of the plant - 10 years and its estimated scrap value at the end ₹ 20,000)
You are required to prepare a contract account for the yearended 31st March 2014.

Solution:

Maharashtra construction company contract A/c
for the year ended 31-03-2014 (12 months)

Dr. **Cr.**

Particulars	₹	Particulars	₹
To Material Sent to Site	3,00,000	By Material destroy by Fire (Profit & Loss A/c)	5,000
To Wages	4,40,000	By Work in progress Work Certified	10,50,000
To Architectures Fees	55,500	Work Uncertified	55,000
To Office and Administrative Overhead	1,51,000	Material at Site	10,000
To Depreciation on Plant (WN)	13,500		
To Supervisors Salary	60,000		
To Notional Profit c/d	1,00,000		
	11,20,000		11,20,000
To Profit & Loss A/c (wn)	60,000	By Notional Profit b/d	1,00,000
To working Progress (Reserve)	40,000		
	1,00,000		1,00,000

Working Note:-

i) Depreciation on Plant:-

(For 9 Months)

(Plant Purchase on 1/7/13 upto 31/03/2014)

$$Depreciation = \frac{Origional\ Cost - Scrap\ Value}{Estimated\ Life\ of\ Plant}$$

$$= \frac{2,00,000 - 20,000}{10} = \frac{1,80,000}{10}$$

$Depreciation\ 18,000\ p.a.$

$\therefore Depreciation\ for\ 9\ months$

$$= 18,000 \times \frac{9}{12} = 13,500$$

ii) Notional Profit = 1,00,000 it is distributed between profit & Loss A/c and work in progress (Reserve). Profit & Loss A/c should be calculated by how much % contract is completed compare with contract price & work certified.

$Contract\ Price = 12,00,000 = 100\%$

$Work\ Certified = 10,50,000 = ?$

$$= 10,50,000 \times \frac{100}{12,00,000} = 87.5\%$$

$Contract\ Completed = 87.5\%$

$Formula\ used\ 50 - 90\%)$

$$\therefore Profit\ \&\ Loss = \frac{2}{3} \times Notional\ Profit \times \frac{Cash\ Received}{Work\ Certified}$$

$$= \frac{2}{3} \times 1,00,000 \times \frac{90}{100}$$

$Profit\ \&\ Loss\ A/c = 60,000$

iii) Work in progress (Reserve) =

= Notional Profit – Profit & Loss A/c
= 1,00,000 – 60,000
= 40,000

Note:-

Cash Received ₹ 9,45,000 (being 90% or the work certified)

$\therefore Work\ Certified = 9,45,000 = 90\%$

$Work\ Certified = \ ?\qquad 100\%$

$\therefore Work\ Certified\ can\ be\ calculated\ as$

$= 9,45,000 \times \frac{100}{90}$

$10,50,000$

$\therefore Work\ Certified = 10,50,000$

Estimated Contract:-

Under Estimated contract we have to find out the total estimated profit after completion of contract, nothing but if the contract period is more than one year then the total contract cost deducted from the total contract price and find out the profit. It is not the actual profit it is our estimation in short after completion of contract we will earn the profit.

Estimated profit is calculated for the purpose of transferring profit to the profit & Loss A/c.

Illustration : 4

Uddan Constructors Pvt. Ltd. provide you the following information:

a) The project commenced on 1st September 2013 and it was estimated to be completed by 31st March 2015.

b) The contract price was negotiated at ₹680 lacs.

c) The actual expenditure upto 31st March, 2014 and subsequent additional estimated expenditure upto 31st March, 2015 is furnished as under:

Particulars	Actual Exp. During 1-9-13 to 31-3-2014 ₹	Estimated Exp. during 1-4-14 to 31-3-2015 ₹
Direct Material	195,60,000	127,40,000
Indirect Material	14,23,000	11,77,000
Direct Wages	42,46,500	41,33,500
Supervision Charges	4,14,400	5,55,600
Archited Fees	8,17,500	12,82,500
Construction Overheads	31,52,600	21,47,400
Administrative Overheads	14,16,000	24,34,000
Closing Material at Site	7,50,000	--
Work Uncertified at the end of the year	13,80,000	--
Work Certified during the year	350,00,000	330,00,000

The Value of plant and machinery sent to site was ₹60 Lacs, whereas the scrap value of the plant and machinery at the end at the project was estimated to be ₹3,00,000.

It was decided that the profit to be taken credit for should be that proportion of the estimated net profit to be realized on completion of the project which the certified value of work as on 31- 03-2014, bears to the total contract price. You are required to prepare contract account for the period ended 31st March 2014 alongwith the working of profit to be taken credit for.

Solution:-

Uddan Constructors Pvt. Ltd.

Contract A/c

for the Period from 1-9-2013 to 31-3-2014

Dr. **Cr.**

Particulars	₹	Particulars	₹
To Direct Material	195,60,000	By Work Progress	
To Indirect Material	14,23,000	Work Certified	350,00,000
To Direct Wages	42,46,500	Work Uncertified	13,80,000
To Supervision Charges	4,14,400	Material at Site	7,50,000
To Architect Fees	8,17,500		
To Construction Overheads	31,52,600		
To Administrative Overheads	14,16,000		
To Depreciation on Plant & Machinery	21,00,000		
To Notional Profit c/d	40,00,000		
	371,30,000		371,30,000
To Profit & Loss A/c	35,00,000	By Notional Profit b/d	40,00,000
To Work Progress (Reserve)	5,00,000		
	40,00,000		40,00,000

Dr. Memorandum Contract A/c (1-9-2013 to 31-3-2015) Cr.

Particulars	Actual Exp. (1-9-2013 to 31-3-2014) 7 Month	Estimated Exp. (1-4-14 to 31-3-15) 12 Month	Total 7 + 12 = 19 Months	Particulars	₹
To Direct Material	1,95,60,000	1,27,40,000	3,23,00,000	By Contraction's A/c (Full Contract Price	6,80,00,000
To Indirect Material	14,23,000	11,77,000	26,00,000		
To Wages	42,46,500	41,33,500	83,80,000		
To Super Vision Charges	4,14,400	5,55,600	9,70,000		
To Archited Fees	8,17,500	12,82,500	21,00,000		
To Administrative on	14,16,000	24,34,000	38,50,000		
To Dept on Plant	21,00,000	36,00,000	57,00,000		
To Con Struction Overheads	31,52,600	21,47,400	53,00,000		
Total Exp.	3,31,30,000	2,80,70,000	6,12,00,000		
Estimated Profit			68,00,000		
			6,80,00,000		6,80,00,000

Working Note:-

1) Depreciation on Plant & Machinery :-

$$Depreciation = \frac{Origional\ Cost - Scrap\ Value}{Estimated\ Life\ of\ Plant}$$

$$= \frac{60,00,000 - 3,00,000}{19\ Months} = \frac{57,00,000}{19}$$

Depreciation = ₹3,00,000 p.m.

Depreciation is also calculated for actual and estimated period.

i) Actual Period (from 1-9-2013 to 31-3-2014) for 7 months.

$\therefore Dep.3,00,000\ p.m. \times 7\ Months$

$= 21,00,000$

ii) Depreciation for estimatedperiod (from 1-4-2014 to 31-3-2015) = 12 months

$\therefore Dep.3,00,000\ pm. \times 12\ months$

$= 36,00,000$

2) Notional profit is ₹40,00,000 distributed between profit & Less A/c & Work in progress (Reserve).

Notional Profit is ₹40,00,000

Estimated Profit is ₹68,00,000

For Profit & Loss A/c Formula is given in the problem as.

$$\text{Profit \& Loss A/c} = \text{Estimated Profit} \times \frac{\text{Work Certified as on } 31-3-2014}{\text{Total Contract Price}}$$

$$= 68,00,000 \times \frac{3,50,00,000}{6,80,00,000}$$

$$\text{Profit \& Loss A/c} = 35,00,000$$

Illustration : 5

Ratnagiri Construction Pvt. Ltd. provides you the following information:

a) The project commenced on 1st May 2013 and it was estimated to be completed by 31st January 2015.

b) The contract price was fixed at ₹2,70,00,000.

c) The actual expenditure upto 31st March 2014.and subsequent additional estimated expenditure upto 31st January 2015 isfurnished as under:

Other Information:-

Particulars	Actual Exp. 1-5-13 to 31-3-14	Estimated Exp. 1-4-14 to 31-1-15
Work Certified (cumulative)	1,62,00,000	2,70,00,000
Cash Received	1,29,60,000	1,40,40,000
Work Uncertified	3,85,000	--
Direct Material	87,14,500	37,92,500
Direct Wages	17,47,500	18,58,500
Direct Expenses	8,44,400	4,32,600
Indirect Material	3,25,600	2,85,500
Supervision Charges	1,98,500	1,65,600
Administrative Overheads	9,47,600	8,54,600
Sub Contract Charges	1,87,900	1,80,200
Material Return to Stores	75,500	--
Architect Fees	3% of W. C.	3% of W.C.
RCC Consultant Fees	4% of W.C.	4% of W.C.
Plant Issued at Commencement	40,00,000	--
Material at site as on 31-03-2014	1,39,500	--

1) The estimated value of the issued plant at the end of theproject is to be ₹5,35,000.

2) It was decided that the profit to be taken credit for should be that proportion of the estimated net profit to be realized on completion of the contract which the certified value of work as on 31st March 2014, bears to the total contract price.

Prepare contract A/c for the period ended 31st March 2014 and show your calculation profit to be credited to Profit and Loss A/ for the period ended 31st March 2014.

Solution:-

Ratnagiri Construction Pvt. Ltd.

Contract Account

Dr (From 1-5-13 to 31-3-15) 11 Months Cr.

Particulars	₹	Particulars	₹
To Direct Material	87,14,500	By Material Return to Store	75,500
To Direct Wages	17,47,500	By Work in Progress	
To Direct Expenses	8,44,400	Work Certified	1,62,00,000
To Indirect Material	3,25,600	Work Uncertified	3,85,000
To Supervision Charges	1,98,500	Material at Site	1,39,500
To Administrative Overheads	9,47,600		
To Sub Contract charges	1,87,900		
To Architect Fees (3% of 1,62,00,000)	4,86,000		
To RCC Consultant Fees (4% of 1,62,00,000)	6,48,000		
To Depreciation on Plant (1,65,000 p.m. x 11)	18,15,000		
To Notional Profit c/d	8,85,000		
	1,68,00,000		1,68,00,000
To Profit & Loss A/c	6,65,700	By Notional Profit b/d	8,85,000
To Work in Progress (Reserve)	2,19,300		
	8,85,000		8,85,000

Memorandum Contract A/c

Particulars	Actual Exp. (1-5-13 to 31-3-14) 11 Months	Estimated Exp. (1-4-14 to 31-1-15) 10 Months	Total Exp. 21 Months	Particulars	₹
To Direct Material	87,14,500	37,92,500	1,25,07,000	By Contractee's A/c (Full Contract Price)	2,70,00,000
To Direct Wages	17,47,500	18,58,500	36,06,000		
To Direct Exp.	8,44,400	4,32,600	12,77,000		
To Indirect Material	3,25,600	2,85,500	6,11,100		
To Supervision Charges	1,98,500	1,65,600	3,64,100		
ToAdministrative Overheads	9,47,600	8,54,600	18,02,200		
To Sub Contract Charges	1,87,900	1,80,200	3,68,100		
To Architect Fees	4,86,000	3,24,000	8,10,000		
To RCC Cons. Fees	6,48,000	4,32,000	10,80,000		
To Depreciation on Plant	18,15,000	16,50,000	34,65,000		
Total Exp.	1,59,15,000	99,75,500	2,58,90,500		
Estimated Profit			11,09,500		
			2,70,00,000		2,70,00,000

Working Note:-

i) Depreciation on Plant

$$Depreciation = \frac{Origional\ Cost - Scrop\ Value}{Estimated\ Life\ or\ Plant}$$

Estimated Life of Plant =

1) Actual Life 1-5-13 to 31-3-14 = 11 Months

2) Estimated Period 1-4-14 to 31-1-15 = 10 Months

21 Months

$$Dep. = \frac{40,00,000 - 5,35,000}{21}$$

$$\therefore Depreciation\ 1,65,000\ p.m.$$

$$\therefore Depreciation\ for\ Actual\ Period$$

$$= 1,65,000 \times 11\ Months = 18,15,000$$

$$\therefore Depreciation\ for\ Estimated\ Period$$

$$= 1,65,000 \times 10\ Months = 16,50,000$$

ii) Transfer to Profit & Loss A/c Out of Notional Profit = 8,85,000

$$\therefore \text{Profit \& Loss A/c} = \text{Estimated Profit} \times \frac{\text{Work Certified as on } 31-03-14}{\text{Total Contract Price}}$$

$$= 11,09,500 \times \frac{1,62,00,000}{2,70,00,000}$$

$$\text{Profit \& Loss A/c} = 6,65,700$$

iii) *Work in progress* (Reserve)

$$= \text{Notional Profit} - \text{Profit \& Loss A/c (Reserve)}$$

$$= 8,85,000 - 6,65,700$$

$$= 2,19,300$$

Many Contracts – (More than 1 Contract aa a time)

Illustration : 6

Mr. Bean Contractor has under taken two contracts one at Mumbai and another at Thane. The details of the contracts are given below. For the year ended 31st March 2014.

Particulars	Contract at Mumbai	Contract at Thane
Date of Commencement	**01/07/2013**	**01/10/2013**
	₹	₹
Contract Price	10,00,000	15,00,000
Direct Labour	2,55,000	1,82,000
Material Issued from Stores	2,20,000	2,00,000
Material Returned to Stores	10,000	15,000
Plant Installed at Site	2,00,000	3,50,000
Direct Expenses	40,000	30,000
Office Overheads	15,000	10,000
Material Sold (Cost `8,000)	10,000	-
Material at Site	18,000	16,000
Cash Received from Contractee (Representing 80% of Work Certified)	4,80,000	2,40,000
Work Uncertified	13,000	9,000
Architect Fees	7,000	3,000

i) Provide depreciation on plant at 20% p.a.

ii) During the year material costing ₹10,000 were transferred from Thane contract to Mumbai Contract.

You are required to prepare contract A/c of Mumbai andThane Contract.

Solution:-

Mr. Bean Contractor

Mumbai Contract A/c (1-7-13 to 31-3-14 - 9 Months)

Dr. **Cr.**

Particulars	₹	Particulars	₹
To Material Issued	2,20,000	By Material Returned	10,000
To Direct Labour	2,55,000	By Material Sold	8,000
To Direct Expenses	40,000	By Work in Progress c/d	
To Office Overhead	15,000	Work Certified (W.N)	6,00,000
To Architect Fees	7,000	Work Uncertified	13,000
To Depreciation on Plant	30,000	Material at Site	18,000
To Material from Thane Contract	10,000		
To Notional Profit Ltd	72,000		
	6,49,000		6,49,000
To Profit & Loss A/c	38,400	By Notional Profit b/d	72,000
To Work in progress (Reserve)	33,600		
	72,000		72,000

Working Note:-

i) Work Certified -

Cash Received being 80% of Work Certified - ₹ 4,80,000

$\therefore Cash\ \text{Re}ceived = 4,80,000 = 80\%$

$\therefore Work\ Certified = \ ? \ = 100$

$\therefore Work\ Certified = 4,80,000 \times \frac{100}{80}$

$\therefore Work\ Certified = 6,00,000$

ii) Depreciation on Plant.

Total Contract Period is 9 Months (from 1-7-13 to 31-3-14)

$Depreciation = 2,00,000 \times 20\% \times \frac{9}{12}$

$Depreciation = 30,000$

iii) Out of Notional Profit ₹72,000 transfer to Profit & Loss A/c is calculated by finding out how much contract is completed between work certified with the contract price.

Contract Price = 10,000,000 = 100%

Work Certified = 6,00,000 = ?

$$\therefore Contract\ Completed = 6,00,000 \times \frac{100}{10,00,000}$$

$$\therefore Contract\ Completed = 60\%$$

$\therefore$ Profit & Loss A/c transferred is calculated by following formula contract completed between 50-90%

$$\text{Profit \& Loss A/c} = \frac{2}{3} \times Notional\ \text{Profit} \times \frac{Cash\ \text{Received}}{Work\ Certified}$$

$$= \frac{2}{3} \times 72,000 \times \frac{4,80,000}{6,00,000}$$

$$\text{Profit \& Loss A/c} = 38,400$$

iv) Work in Progress (Reserve) =

Notional Profit – Profit & Loss A/c

72,000 – 38,400 = 33,600

Thane Contract A/c
(From 1-10-2013 to 31-3-2014 - 6 Months)

Dr. **Cr.**

Particulars	₹	Particulars	₹
To Material Issued	2,00,000	By Material Return	15,000
To Direct Labour	1,82,000	By Material Transferred	10,000
		to Mumbai Contract	
To Direct Expenses	30,000	By Work in Progress c/d	
To Office	10,000	Work Certified	3,00,000
Overheads			
To Architect Fees	3,000	Work Uncertified	9,000
To Depreciation on	35,000	Material at Site	16,000
Plant			
		By Profit & Loss A/c	1,10,000
		(Loss)	
	4,60,000		4,60,000

Working Note:-

i) Calculation of Depreciation on plant.

Contract Period is 6 months.

(From 01-10-2013 to 31-03-2014)

$$\text{Depreciation} = 3,50,000 \times 20\%$$

$$= 70,000 \ p.a.$$

$$\therefore Dep.\ For\ 6\ months = 70,000 \times \frac{6}{12}$$

$$\therefore Depreciation = 35,000$$

ii) Calculation of work certified :-

Cash Received ₹2,40,000 = 80%

$$\therefore Cash\ \text{Re}ceived = 2,40,000 = 80\%$$

$$Work\ Certified = ? = 100$$

$$\therefore Work\ Certified = 2,40,000 \times \frac{100}{80}$$

$$\therefore Work\ Certified = 3,00,000$$

Illustration : 7

Ram contractor undertook a contract for ₹15,00,000 on 1st July2012. The contract was completed on 31st March 2014. The contractor prepares his accounts as on 31st March. The details of the contract are:

Particulars	Period 1-7-12 to 31-3-13	Period 1-4-13 to 31-3-14
Material Issued	1,52,000	3,30,000
Direct Wages	1,25,000	4,65,000
Direct Expenses	30,000	45,000
Material Returned to Stores	22,000	15,000
Material at Site	20,000	8,000
Uncertified Work	48,000	--
Office Overheads	23,000	66,000
Material Lost by Fire	--	5,000
Work Certified	3,00,000	15,00,000
Plant Issued	3,00,000	1,50,000

Provide depreciation @ 20% on plant. Prepare contract A/c for the year ended 31-03-2013 and 31-03-2014.

Solution:

Ram Contractors
Contract Account
(From 1-7-12 to 31-3-13 - 9 Months)

Dr. **Cr.**

Particulars	₹	Particulars	₹
To Material Issued	1,52,000	By Material Returned to Store	22,000
To Direct Wages	1,25,000	By Work in Progress	
To Direct Expenses	30,000	Work Certified	3,00,000
To Office Overheads	23,000	Work Uncertified	48,000
To Depreciation on Plant	45,000	Material Site	20,000
To Notional Profit c/d	15,000		
	3,90,000		3,90,000
To Profit & Loss A/c	NIL	By Notional Profit b/d	15,000
To Work in Progress (Reserve)	15,000		
	15,000		15,000

Working Note:-

i) Depreciation on Plant :

(Perido or Contract 01-07-2012 to 31-03-13-9 Months)

Depreciation = $3,00,000 \times 20\%$ *p.a.*

= 60,000 p.a.

Depreciation for 9 Months = $60,000 \times \frac{9}{12}$

Depreciation for 9 Months = 45,000

ii) Notional Profit - ₹15,000 out of transfer to Profit & Loss A/c is NIL.

Because contract completed is less than 25%. To find out contract completed compare with work certified to the contract price.

$\therefore Contract\ \text{Pr}ice = 15,00,000 = 100\%$

$Work\ Certified \quad 3,00,000 = \ ?$

$$\therefore \%\ of\ Contract\ Completed = 3,00,000 \times \frac{100}{15,00,000} = 20\%$$

Dr. Contract Account Cr.

(From 1-4-13 to 31-3-14 - 12 Months)

Particulars	₹	Particulars	₹
To Work in Progress b/d		By Work in Progress b/d (Reserve)	15,000
Work Certified	3,00,000	By Material Returned	15,000
Work Uncertified	48,000	By Material at Site	8,000
Material at Site	20,000	By Material Lost by Fire	5,000
To Material Issued	3,30,000	By Contractee's A/c (Full Contract Price)	15,00,000
To Direct Wages	4,65,000		
To Direct Expenses	45,000		
To Office Overheads	66,000		
To Depreciation on Plant (WN)	81,000		
To Profit & Loss A/c (Profit)	1,88,000		
	15,43,000		15,43,000

Working Note:-

i) Depreciation on Plant :

Depreciation is calculated on WDV basic.

Plant which was used for 1 Year its Opening Balance is 3,00,000

(-) Depreciation on 1st Year 45,000

WDV of Plant

$\therefore$ *Depreciation on* 1^{st} *Plant*

$1,50,000 \times 20\% - \underline{51,000}$

Depreciation on 2^{nd} *Plant*

$1,50,000 \times 20\% - \underline{30,000}$

$\therefore$ *Total Depreciation for* 2 *year is* $= 51,000 + 30,000 = 81,000$

Many Contract (Opening W/P given)

Illustration : 8

Navin Ltd has under taken three Contracts. It furnishes the following information for the year ended 31st March 2014:

Particulars	Goa Contract	Roha Contract	Surat Contract
1) Balances on 1/4/2013			
Material at Site	100	2,000	--
Uncertified Work	25,000	4,000	--
Plant at Site	22,000	3,100	--
Work Certified	19,500	1,400	--
Provision for Contingencies	10,000	600	--
2) Transactions During the Year:			
Material Issued	--	6,200	8,000
Subcontract Charges	600	11,800	9,000
3) Balances on 31-03-14			
Material at Site	--	1,000	800
Uncertified Work	--	1,000	3,850
Plant at Site	--	2,000	950
Work Certified	25,000	30,000	12,000
4) Contract Price	25,000	40,000	50,000
5) Amount Received	25,000	27,000	10,800

6) Value of Plant Transferred from Goa Contract to Surat Contract ₹ 1,550.
7) The Company consistently adopt the policy of taking credit for the contract profit considering the proportion of amounts received to the contract price.

You are required to:

a) Prepare the respective contract accounts for the year ended 31st March 2014.
b) Find the net profit as per profit & Loss A/c.

Solution:

Navin Ltd

Dr. Goa Contract A/c Cr.

Particulars	₹	Particulars	₹
To Opening Balance		By Provision for Contingencies b/d	1,000
Work in Progress		By Contractee's A/c (Full Contract Price)	25,000
Work Certified	19,500		
Work Uncertified	2,500		
Material at Site	100		
To Sub Contract Charges	600		
To Depreciation on Plant (WN)	650		
To Profit & Loss A/c (Profit)	2,650		
	26,000		26,000

Working Note:-

i) Depreciation on Plant.

Op. Balance of Plant in Goa A/c	2,200
(-) Transferred to Surat Contract	1,550
Plant Depreciation of Goa Contract	650

Dr. Roha Contract A/c Cr.

Particulars	₹	Particulars	₹
To Opening Balance		By Provision for Contingencies b/d	600
Work in Progress		By Work in Progress b/d	
Work Certified	1,400	Work Certified	30,000
Work Uncertified	4,000	Work Uncertified	1,000
Material at Site	2,000	Material at Site	1,000
To Material Issued	6,200		
To Sub Contract Charges	11,800		
To Depreciation on Plant	1,100		
To National Profit b/d	6,100		
	32600		32,600
To Profit & Loss A/c	4,118	By Notional Profit b/d	6,100
To Work in Progress (Reserve)	1,982		
	6,100		6,100

Working Note:-

i) Depreciation on Plant at Roha Contract

Opening Balance of Plant	3,100
(-) Closing Balance of Plant	2,000
Depreciation on Plant	1,100

ii) Notional Profit ₹6,100, out of that Transfer to Profit & Loss A/c, specific instruction given in the problem

$$\text{Profit \& Loss A/c} = \text{Notional Profit} \times \frac{\text{Cash Received}}{\text{Contract Price}}$$

$$= 6,100 \times \frac{27,000}{40,000} = 4,118$$

$$\text{Profit \& Loss A/c} = 4,118$$

iii) Work in progress (Reserve) = Notional Profit & Loss A/c 1982 = 6,100 – 4,118

Dr. Surat Contract Cr.

Particulars	₹	Particulars	₹
To Material Issued	8,000	By Work in Progress c/d	
To Sub Contract Charges	9,000	Work Certified	12,000
To Depreciation on Plant (1550 - 950)	600	Work Uncertified	3,850
		Material at Site	800
		By Profit & Loss A/c (Loss)	950
	17,600		17,600

Working Note:-

i) Depreciation on Plant for Surat Contract -

Plant Transform from Goa	1,550
Closing Plant at Surat	- 950
Depreciation on Plant	600

Dr. **Profit & Loss A/c** **Cr.**

Particulars	₹	Particulars	₹
To Surat Contract (Loss)	950	By Goa Contract (Profit)	2,650
To Net Profit c/d	5,818	By Roha Contract (Profit)	4,118
	6,768		6,768

2.6 EXERCISE

A. Objectives type Questions

Q.1 Multiple Choice Questions.

1. Retention money is

a) Payment received – Work certified
b) Work certified – Cash received
c) Work certified – work uncertified
d) Contract price – Work certified

2. Work in progress is valued at cost plus profit which has beentaken to the

A. Contract A'C B. Profit and loss A'C
C. Contractees A/C D. None of the above

3. If the contract completed 80% then transfer to profit and lossA'C out of

A. NIL B. 1/3 * Notional profit
C. 2/3 * Notional profit D . Entire profit

4. Cost of normal wastage of materials is

A. Debited to contract A'C B. Credited to contract A/C
C. Debited to P & L A/C D. Credited to P & L A/C

5. Cost of abnormal wastage of materials in a contract istransferred to the

A. Contract A/C B. Costing profit and loss A/C
C. Profit and Loss A/C D. None of the above

6. Cash received on contract is credited to

A. Contract A/C B. Contractees A/C
C. Profit and Loss A/C D. None of the above

7. If the contract price is RS. 10,00,000 work certified is 60 % ,the amount of the profit is 72,000 ,then the reserve will be RS .
   A . RS. 33,600 B. RS.30,600
   C.RS.32,200 D.RS. 40,000

8. If the contract completed is less than 20% then the amount of profit is transfer to P & L A/C
   A. Full amount B. 50%
   C. NIL D. 20%

9. Cash received is calculated by
   A. Work certified - Retention money
   B. Work certified x cash received as % of W.C.
   C. Contract price x % of W.C. x % of cash received
   D. All of the above

10. Notional profit is calculated by
   A. Work certified – Cost of Work certified
   B. Work certified –Work uncertified
   C. Work certified – Cash received
   D. Any of the above

(Answers : 1.A 2.B 3.C 4.A 5.B 6. B 7. A 8.C 9. D 10. A)

Q .2 True and False

1. Cash received = Value of work certified – Retention money
2. Cost of material transferred from one contract to another contract , the contract A/C which receives the material is credited to the particular contract A/C.
3. Contractor is the person who undertakes the contract.
4. Contertee is the person who undertakes the contract.
5. Sale of plant , the sale price is debited to the contract A/C.
6. Under capital method, the amount of depreciaton is debited to contract A/C.
7. Cash received is credited to the contract A/c.
8. If the contract is 100 % completed ,then the entire profit istransferred to P & L A/C.
9. The cost of material issued by stores is debited to thecontract A/c.

10. Work certified is that portion of the work completed which has been certified by the contractee's architect .

(Answers: True : 1,3,8,9,10 False : 2,4,5,6,7.)

B. Practical Problem:-

Q.1 Jai Hind Construction Company under took the construction of a building at a contract price of ₹2,00,00,000.

The Date of Commencement of contract was 1st May 2013. The following cost information is given for the period ended 31st March 2014:

1) Direct Material Sent to the Site - 5,000 tons @ ₹1.50 per kg.
2) Indirect Material ₹6,50,000.
3) Direct Labour - 12,000 Mandays @ ₹180 per Monday.
4) Indirect labour charged at 7.5% of Direct Labour.
5) sub Contract Charges Charged at 15% of Indirect Materials.
6) Direct Materials returned to stores 20 tons.
7) Direct Material lost in an accident 5 tons.
8) Supervision charges paid ₹8,000 per month.
9) Administrative Overheads incurred ₹12,000 per month.
10) Architect Fees Charged at 2% of Work Certified.
11) Plant & Machinery installed at site on the date of commencement of contract at a cost of ₹15,00,000. Which is to be depreciated @ 12% p.a. under original cost method.
12) Cash received from contractee ₹1,26,00,000 which is equal to90% of work certified.
13) Direct Material at site as on 31st March 2014 - 15.
14) Cost of work done but not certified was ₹2,04,500 on 31stMarch 2014.

You are required to prepare a contract Account for the period ended 31st March 2014, in the books of Jai Hind Construction Company and show what profit or loss should be taken into accountfor the period ended 31st March 2014.

R. Limited commenced a contract on 01-07-2013. The Total contract price was ₹5,00,000 but R Limited accepted the same for ₹4,50,000. It was decided to estimate the total profit and to take to the credit of profit & Loss A/c that proportion of estimated profit on cash basis which the work completed and certified borne to the total contract. Actual expenditure till 31- 12-2013 and estimated expenditure in 2014 are given below.

Particulars	Accruals ₹	Estimate for 2014 ₹
Material	75,000	1,30,000
Labour	55,000	60,000
Plant Purchased (Original Cost)	40,000	--
Miscellaneous Expenses	20,000	35,500
Plant Returned to Stores (at Original Cost)	10,000	25,000
Material at Site	5,000	--
Work Certified	2,00,000	Full
Work Uncertified	7,500	--
Cash Received	1,80,000	Full

The plant is subjected to annual depreciation @ 20% of original cost. The contract is likely to be completed on 30-09-2014.

You are required to prepare the contract A/c for the year ended 31-12-2013. Working showed be clearly given.

It is the policy or the company to charge depreciation on time basis.

Q. 3 Raj and Company has undertaken two contract viz. A and B. The following particulars are available for the year ended 31st March 2014.

Particulars	Contract A	Contract B
Date of Commencement	01-07-2013	01-12-2013
Contract Price	6,00,000	5,00,000
Material Sent to Site	1,60,000	60,000
Material Returned	4,000	2,000
Closing Stock of Material at Site	22,000	8,000
Direct Labour	1,50,000	42,000
Direct Expenses	66,000	35,000
Establishment Expenses	25,000	7,000
Plant Installed at Site	80,00	72,000
Work Uncertified	23,000	10,000
Work Certified	4,20,000	1,35,000
Architect Fees	2,000	1,000

During the year Material Costing ₹9,000 have been transferred from contract A to contract B. The contractor charges depreciation @ 25% p.a. on plant.

You are required to prepare contract A/c, working for profits, if any, and show how the relevant items would appear in the Balance Sheet Assuming that contractce had paid 90% of the work certified.

Q.4 M/s Jadhav constructions under took contract For ₹5,00,00,000 on 1st August 2012. The contract was completed on 31st March 2014. The contractor closes his accounts on 31st March. The details of the contract are as follows:

Particulars	For the Period ended 31-03-13 ₹	For the Period ended 31-03-14 ₹
Material Issued	95,48,500	1,17,65,000
Direct Labour	31,37,800	45,40,000
Sub Contract Charges	7,88,900	28,13,000
Administrative Overheads	15,85,400	31,42,000
Supervision Charges	3,45,600	8,05,500
Material Returned to Stores	1,32,400	2,44,300
Work Uncertified	5,23,200	--
Work Certified (Cumulative)	2,00,00,000	5,00,00,000
Material at Site	1,00,600	--
Cash Received	1,80,00,000	3,20,00,000
Architect Fees	4% of Work Certified	4% of Work Certified

The Plant and Machinery purchased on 01/08/2012 for the contract was ₹84,25,000 and the estimated scrap value of the plant and machinery at the end of the contract was ₹4,25,000. It realized on completion of contract at its estimated scrap value.

You are required to prepare:

a) Contract A/c for the period indeed 31st March 2013 and

b) Contract A/c for the year ended 31st March 2014.

Q.6 Parna Kutir Ltd. furnishes you with the following information for the year ended 31st March 2013 and 31st March 2014.

Particulars	31-03-2013	31-03-2014
Material Issued	13,000	24,700
Sub - Contract Charges	4,500	20,000
Value of Work Certified During the year	20,000	80,000
Closing Stock of Material at Site	3,000	--

To Total contract Price is ₹1,00,000. The entire amount was received by 31st March 2014. As per the accounting policy adopted by the company no profit is to be considered unless the value of thework certified at the year end excess 25% of the contract price.

Prepare contract account for the years ended 31st March 2013 and 31st March 2014.

❖❖❖❖

3

PROCESS COSTING

Unit Structure :

3.0 OBJECTIVES

After studying the unit the students will be able to:

- Understand the meaning and costing procedure of ProcessCosting
- Know how to Normal and Abnormal process losses andAbnormal Gains.
- Calculate Process Cost per unit.
- Solve the problems on process costing.

3.1 INTRODUCTION

A process means a difference manufacturing operation or stages. When a product is produced, it means a row material will beconverted into finished product it is passes through difference stages, it is called as a process.

Process costing means to find out the cost or each process. For eg. - if a product passes through 3 processes at that time we have a find out the cost of each process.

3.2 COSTING PROCEDURE

Under Process Costing following procedures are as follows:

1) Separate Process A/c:-

Under process costing different process accounts are prepared, it means how many process are given separateprocess A/c is prepared.

2) Debit Side of Process A/c:-

Under each process the cost of each process divided as follows:-

i) Material : Whatever Material used for each process is debited to a Particular Account.

ii) Labour : Whatever labour used or wages paid to worker are debited to the particular process A/c.

iii) Overheads : Whatever expenses or overhead paid for particular process are debited to that A/c.

3) Credit Side of Process A/c:-

Any sale of scrap related to a particular process are credited to process A/c.

4) Cost of Process:-

To find out the net cost of process is total of Debit side Less Credit Side of process A/c which gives the net cost of a particular process i.e. (Total expenses (Dr. Side) - Sale or scrap (Cr. Side).

3.3 TREATMENT TO SEVERAL ITEMS

3.3.1 PROCESS LOSS :-

In many process, there is a weight loss. It means under any process there is surety of some % of loss on input. If there are total three process, we introduced input in process I, then there is surety that same % of loss on that input whatever balance transfer to next process i.e. process II. Again in process II if there is weight loss, and balance transfer to next process i.e. process III again in process III there is weight loss what balance is an actual output.

The loss may be divided into two categories.

i) Normal Loss

ii) Abnormal Loss.

i) Normal Loss :-

Under any process, before production we assume that there is a loss under each process which is called as normal loss. It is already assume before production process start.

ii) Abnormal Loss:-

As per above we can say that before production, assume some % of loss i.e. weight loss or normal loss. But after the production if there is an increase in normal loss, it means loss is over and above expectation is called as abnormal loss.

For e.g. if input is 1000 units, assumed that normal or weight Loss is 5% before production i.e. 50. It means expected output is 950 units, but after production actual output is 920 units then these

30 unit (950-920) are called as abnormal loss. In short, you expected only 50 units of normal loss but actual wastage is 80 so it is over and above expected loss as abnormal loss.

3.3.2 Abnormal Gains:-

In some process, there is a normal Loss but the actual productions are more than expectation. In short, output is over and above expectation, is called as abnormal gain. For eg - If input is 1000 units, assumed that normal loss or weight loss is 5% before production i.e. 50 unit. It means, expected output is 950 units but production actual output is 970 units then these 20 units (970 - 950) are called as abnormal gain. In short, you expected only 50 units of normal Loss but actual wastage is only 30 units, so these 20 units are over and above expectation known as abnormal gain.

Cost Per Unit:-

Under each process always find out cost per unit. In short find out net cost of each process. Firstly take the total of Debit side Minus Credit Side of Process A/c it is calculated by following

Formula

$$Cost\ Per\ Units = \frac{Total\ Cost\ (Dr.Side) - Scrap\ Value\ of\ Normal\ Loss\ (Cr.Side)}{Input\ (Units) - Normal\ Loss\ (Units)}$$

3.4 FORMAT OF PROCESS A/C

Process I A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Input				By Normal Loss			
To Direct Material				By Transfer to Process II A/c			
To Labour							
To Overheads							
To Expenses							

Process II A/c (Abnormal Loss)

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Transfer from Process I				By Normal Loss			
To Material				By Abnormal Loss A/c			
To Labour				By Transfer to Process III A/c			
To Overheads							
to Expenses							

c (Abnormal Gain)

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Transfer from Process II				By Normal Loss			
To Material				By Transfer to Finished Stock A/c			
To Labour							
To Overheads							
To Expenses							
To Abnormal Gain							

Normal Loss A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Process I To Process II To Process III				By Actual Sale Process I II III By Abnormal Gain (Process III)			

Abnormal Loss A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To ProcessII				By Actual Sales Process II By Costing P & L A/c			

Abnormal Gain A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Normal Loss To Costing Profit & Loss A/c				By Process III A/c			

Quantity Reconciliation

Particulars	I	II	III
Input (-) Normal Loss			
Expected Output (-) Actual Output			
Abnormal Loss / Gain			

- ❖ Abnormal Loss = Actual Output is Less than the expected Output.
- ❖ Abnormal Gain = Actual output is more than the expected output.

3.5 SOLVED PROBLEMS

Illustration : 1

Samar Ltd. manufactures a product which passes through two consecutive process viz. Purvardha and Uttarardha. The company provides you with the following information for the year ended 31st March 2014.

Particulars	Purvardha	Uttarardha
Basic Material	5000 units	--
Rate Per Unit	₹2.20	--
	₹	₹
Process Material	4,000	3,000
Wages	3,000	4,000
Factory Overheads	2,000	2,630
Process Loss as percentage of input	10%	10%
Scrap Value of process loss (per 100 units)	40	60

Prepare Process A/c and other relevant accounts.

The entire output of Uttarardha process was sold for `30,000.

Solution:-

Quantity Reconciliation

Particulars	Purvardha	Uttarardha
Input	5,000	4,500
(-) Normal Loss	500	450
Expected / Actual Output	4,500	4,050

Purvardha Process A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Material	5,000	2.20	11,000	By Normal Loss	500	0.40	200
To Process Material			4,000				
To Wages			3,000	By Transfer to Uttarardha Process	4,500	4.40	19,800
To Factory Overheads			20,000				
	5,000		20,000		5,000		20,000

$$Cost\ Per\ Units = \frac{Total\ Cost - Scrap\ Value\ or\ Normal\ Loss}{Input - Normal\ Loss}$$

$$= \frac{20,000 - 200}{5,000 - 500} = \frac{19,800}{4,500} = 4.40$$

Uttarardha Process A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Transfer from Purvardha Process	4,500	4.40	19,800	By Normal Loss	450	0.60	270
To Process Material			3,000	By Output c/d	4,050	7.20	29,160
To Wages			4,000				
To Factory Overheads			2,630				
	4,500		29,430		4,500		29,430
To Output b/d	4,050	7.20	29,160	By Sale	4,050		30,000
To Costing P/L A/c			840				
	4,050		30,000		4,050		30,000

$$Cost\ Per\ Units = \frac{Total\ Cost - Scrop\ Value\ of\ Normal\ Loss}{Input - Normal\ Loss\ Units}$$

$$= \frac{29,430 - 270}{4,500 - 450} = \frac{29,160}{4,050} = ₹7.20$$

Illustration : 2

Y Ltd. Manufacture a Chemical product which passes through three process. The cost records show the following particulars for the year ended 30th June 2014.

Particulars	Process I	Process II	Process III
Material	48,620	1,08,259	1,03,345
Labour	32,865	84,553	77,180
Expenses	2,515	10,588	16,275
Normal Loss	20%	15%	10%
Scrop Value Per Unit	1	2	3
Actual Output (Units)	18,000	16,000	15,000

Input to Process I 20000 Units @ ₹28 per unit. Prepare Process Accounts, Abnormal gain / Loss A/c Also show process cost per unit for each process.

Solution:-

Quantity Reconciliation

	Particulars	I	II	III
	Input	20,000	18,000	16,000
(-)	Normal Loss	4,000	2,700	1,600
	Expected Output	16,000	15,300	14,400
(-)	Actual Output	18,000	16,000	15,000
	Abnormal	2,000 Gain	700 Gain	600 Gain

Process I A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Input	20,000	28	5,60,000	By Normal Loss	4,000	1	4,000
To Material			48,620	By Transfer To Process II	18,000	40	7,20,000
To Labour			32,865				
To Expenses			2,515				
To Abnormal Gain	22,000	40	80,000				
	22,000		7,24,000		22,000		7,24,000

$$Cost\ Per\ Units = \frac{Total\ Cost - Normal\ Loss\ Scrap\ Value}{Input - Normal\ Loss\ Units}$$

$$= \frac{6,44,000 - 4,000}{20,000 - 4,000} = \frac{6,40,000}{16,000} = 40$$

Process II A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Transfer From Process I	18,000	40	7,20,000	By Normal Loss	2,700	2	5,400
To Material			1,08,259	By Transfer to Process III A/c	16,000	60	9,60,000
To Labour			84,553				
To Expenses			10,588				
To Abnormal Gain	700	60	42,000				
	18,700		9,65,400		18,700		9,65,400

$$CPU = \frac{9,23,400 - 5,400}{18,000 - 2,700} = \frac{9,18,000}{15,300} = 60$$

Process III A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Transfer from Process II	16,000	60	9,60,000	By Normal Loss	1,600	3	4,800
To Material			1,03,345	By Output (Finished Stock A/c)	15,000	80	12,00,000
To Labour			77,180				
To Expenses			16,275				
To Abnormal Gain	600	80	48,000				
	16,600		12,04,800		16,600		12,04,800

$$CPU = \frac{11,56,800 - 4,800}{16,000 - 1,600} = \frac{11,52,000}{14,400} = 80$$

Normal Loss A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Process I	4,000	1	4,000	By Actual Sale			
To Process II	2,700	2	5,400	Process I	2,000	1	2,000
To Process III	1,600	3	4,800	II	2,000	2	4,000
				III	1,000	3	3,000
				By Abnormal Gain			
				Process I	2,000	1	2,000
				II	700	2	1,400
				III	600	3	1,800
	8,300		14,200		8,300		14,200

Abnormal Gain A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Normal Loss A/c				By Actual Sales			
Process I	2,000	1	2,000	Process I	2,000	40	80,000
II	700	2	1,400	II	700	60	42,000
III	600	3	1,800	III	600	80	48,000
To Costing Profit & Loss A/c			1,64,800				
	3,300		1,70,000		3,300		1,70,000

Illustration : 3

Product A is manufactured after it passes through three distinct processes. The following information is obtained from the records of a company for the year ended 31st December 2013.

Particulars	Process I	Process II	Process III
Direct Material	2,500	2,000	3,000
Direct Wages	2,000	3,000	4,000
Output during the week	950	840	750
Percentage of Normal Loss to Input	5%	10%	15%
Value or Scrap Per Unit `	3/-	5/-	5/-

Product Overheads are ₹9,000. 1000 Units at ₹5 each were introduced to process I. There was no stock or materials or work in progress at the beginning and at the and of the year. The output of each process passes direct to the next process and finally to the finished stock A/c. Production overheads are recovered on 100% ofdirect wages.

Prepare Process Cost Accounts and Abnormal Gain or LossAccount for the year ended 31st December, 2013.

Solution:-

Quantity Reconciliation

	Particulars	Process I	Process II	Process III
	Input	1,000	950	840
(-)	Normal Loss	50	95	126
	Expected Output	950	855	714
(-)	Actual Output	950	840	750
	Abnormal	NIL	15	36
			Loss	Gain

Process I A/c

Particulrs	Units	Rate	₹	Particulars	Units	Rate	₹
To Input	1,000	5	5,000	By Normal Loss	50	3	150
To Direct Material			2,500	By Transfer to Process II A/c	950	11.95	11,350
To Wages			2,000				
To Product Overheads (100% of Wages)			2,000				
	1,000		11,500		1,000		11,500

$$Cost\ Per\ Units = \frac{Total\ Cost\ Normal\ Loss\ Scrop\ Value}{Input - Normal\ Loss\ Units}$$

$$= \frac{11,500 - 150}{1,000 - 50} = \frac{11,350}{950} = 11.95$$

Process II A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Transfer from Process I	950	11.95	11,350	By Normal Loss	95	5	475
To Material			2,000	By Abnormal Loss	15	22.07	331
To Wages			3,000	By Process III A/c Transfer	840	22.07	18,544
To Product Overheads			3,000				
	950		19,350		950		19,350

$$Cost\ Per\ Unit = \frac{19350 - 475}{950 - 95} = \frac{18875}{855} = 22.07$$

Process III A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Transfer from Process II	840	22.07	18,544	By Normal Loss	126	5	630
To Material			3,000	By Finished Stock A/c	750	40.49	30,372
To Wages			4,000				
To Product Overheads			4,000				
To Abnormal Gain	36	40.49	1,458				
	876		31,002		876		31,002

$$Cost\ Per\ Unit = \frac{29,544 - 630}{840 - 126} = \frac{28,914}{714} = 40.49$$

Normal Loss A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Process I	50	3	150	By Actual Sales			
To Process II	95	5	475	Process I	50	3	150
To Process III	126	5	630	Process II	95	5	475
				Process III	90	5	450
				By Abnormal Gain Process III	36	5	180
	271		1,255		271		1,255

Abnormal Loss A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Process II	15	22.07	331	By Actual Sales	15	5	75
				Process II			256
				By Costing Profit & Loss A/c			
	15		331		15		331

Abnormal Gain A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Actual Sale Process III	36	5	180	By Process III	36	40.49	1.458
To Costing Profit & Loss A/c			1,278				
	36		1,458		36		1,458

PARTLY OUTPUT - TRANSFER / STOCK / SALE

After completing each and every process, partly material either sold or transfer to next process and finally from last process 100%. material or output will be sold or transfer to warehouse.

Illustration : 4

M/s XYZ and company manufacture a chemical which passes through three processes. The following particulars gathered for the month of January, 2014.

Particulars	Process I	Process II	Process III
Material (Litre)	400	208	168
Material Cost	₹38,400	₹18,800	₹6,000
Wages	₹7,680	₹7,600	₹2,200
Normal Loss (% of input)	4%	5%	5%
Scrap Sale Value	--	₹ 3 Per Ltr.	--
Output Transferred to Next Process	50%	40%	--
Output Transferred to ware houses	50%	60%	100%

Overheads are charged @ 50% of Direct Wages. You are required to prepare Process Account.

Solution:-

Quantity Reconciliation

Particulars		Process I	Process II	Process III
	Transfer from Process	-	192	152
(+)	Input	400	208	168
	Total	400	400	320
(-)	Normal Loss	16	20	16
		384	380	304
Transfer to Next Process →		192	152	--
Transfer to Warehouse →		192	228	304

Process I A/c

Particulars	Ltr	Rate	₹	Particulars	Ltr	Rate	₹
To Material	400		38,400	By Normal Loss	16	--	--
To Wages			7,680	By Transfer to Next Process	192	130	24,960
To Overheads (50% of wages)			3,840	(50%)	130	130	24,960
				By Transfer to Warehouse (50%)	192		
	400		49,920		400		49,920

$$Cost\ Per\ Unit = \frac{Total\ Cost - Scrap\ Value\ of\ Normal\ Loss}{Input - Normal\ Loss\ Units}$$

$$C.P.U. = \frac{49,920 - Nil}{400 - 16} = \frac{49,920}{16} = 130$$

Process II A/c

Particulars	Ltr	Rate	₹	Particulars	Ltr	Rate	₹
To Transfer from Process II	192	130	24,960	By Normal Loss	20	3	60
To Material	208		18,800	By Transfer To Next Process III (40%)	152	145	22040
To Wages			7,600	By Transfer to Warehouse (60%)	228	145	33,060
To Overheads (50% ofwages)			3,800				
	400		55,160		400		55,160

$$Cost\ Per\ Unit = \frac{55,160 - 60}{400 - 20} = \frac{55,100}{380} = 145/-$$

Process III A/c

Particulars	Ltr	Rate	₹	Particulars	Ltr	Rate	₹
To Transfer from Process II	152	145	22,040	By Normal Loss	16	--	--
To Material	168		6,000	By Transfer to Warehouse (100%)	304	103.09	31,340
To Wages			2,200				
To Overheads (50% of wages)			1,100				
	320		31,340		320		31,340

$$Cost\ Per\ Unit = \frac{31,340 - Nil}{320 - 16} = \frac{31,340}{304} = 103.09$$

❖ Output Partly Sold and Partly Transferred to Next Process.

Illustration : 5

KT Ltd. provides you the following information for the year ended 31st March 2014.

Particulars	Process A	Process B	Process C
Raw Material (Units)	12,000	2,440	2,600
Cost of Raw Material Per Unit (₹)	5	5	5
Direct Wages ₹	34,000	24,000	15,000
Production Overheads ₹	16,160	16,200	9,600
Normal Loss (% of Total No. of Units entering to the process)	4%	5%	3%
Wastage (% of Total No. of Units Entering to the Process)	6%	5%	4%
Scrap Per Unit of Wastages ₹	3	4	5
Output Transferred Subsequent Process	70%	60%	--
Out Sold at the End of the Process	30%	40%	100%
Selling Price Per Unit ₹	12	16	17

Prepare Process A, B and C.

Solution:-

Quantity Reconciliation

Particulars		Process A	Process B	Process C
	Input	12,000	2,440	2,600
(+)	Transfer from Process	--	7,560	5,400
	Total	12,000	10,000	8,000
(-)	Normal Loss	480	500	240
(-)	Wastage	720	500	320
		10,800	9,000	7,440
→	Transfer to Next Process	7,560	5,400	--
→	Partly Sold	3,240	3,600	7,440 Sold

Process A A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Material	12,000	5	60,000	By Normal Loss	480	--	--
To Wages			34,000	By Wastage	720	3	2,160
To Production Overheads			16,160	By Output c/d	10,800	10	1,08,000
	12,000		1,10,160		12,000		1,10,160
To Output b/d	10,800	10	1,08,000	By Transfer to Process B(70%)	7,560	10	75,600
To Costing Profit & Loss A/c (Profit)			6,480	By Sold (30%)	3,240	12	38,880
	10,800		1,14,480		10,800		1,14,480

Process B A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Process A	7,560	10	75,600	By Normal Loss	500	--	--
To Material	2,440	5	12,200	By Wastage	500	4	2,000
To Wages			24,000	By Output c/d	9,000	14	1,26,000
To Overheads			16,200				
	1,000		1,28,000		10,000		1,28,000
To Output b/d	9,000	14	1,26,000	By Transfer to Process C / 60%)	5,400	14	75,600
To Costing Profit & Loss A/c (Profit)			7,200	By Sold (40%)	3,600	16	57,600
	9,000		1,33,200		9,000		1,33,200

Process C A/c

Particulars	Units	Rate	₹	Particulars	Units	Rate	₹
To Process B	5,400	14	75,600	By Normal Loss	240	--	--
To Material	2,600	5	13,000	By Wastage	320	5	1,600
To Wages			15,000	By Sales	7,440	17	1,26,480
To Overheads			9,600				
To Costing Profit & Loss A/c (Profit)			14,880				
	8,000		1,28,080		8,000		1,28,080

Illustration : 6

Assemblers Ltd. have three Assembly shop viz. General Assembly, Lower Assembly and Higher Assembly. Part of the output is transferred to the

next assembly and part is sold directly. The company furnished the following in formations.

Particulars	General	Lower	Higher
Raw Material (In Ltrs)	5,000	1,920	3,576
Material Cost Per Ltr.	₹60	₹40	₹80
Labour Cost	4,28,000	1,06,000	2.10.000
Direct Expenses	88,000	2,85,200	1,04,800
Wastage as percentage of Total input	4%	5%	10%
a) Output Transferred			
To Lower Assembly	60%	--	--
To Higher Assembly	--	40%	--
b) Output Sold in Market	40%	60%	100%
Sales Price Per Ltr.	₹200	₹205	₹250

Administrative Overheads - ₹36,000

Marketing Overhead - ₹48,000

Prepare Various Assembly A/c and costing Profit & Loss A/c

Solution :

Quantity Reconciliation

Particulars	General	Lower	Higher
Input	5,000	1,920	3,576
(+) Transfer from Process	--	2,880	1,824
Total	5,000	4,800	5,400
(-) Normal Loss	200	240	540
Actual Output	4,800	4,560	4,860
(-) Sold Out	1,920	2,736	4,860
(-) Transfer to Next Process	2,880	1,824	--

General Process A/c

Particulars	Ltrs	Rate	₹	Particulars	Ltrs	Rate	₹
To Material	5,000	60	3,00,000	By Normal Loss (Wastage)	200	--	--
To Labour			4,28,000	By Outputc/d	4,800	170	8,16,000
To Direct Exp.			88,000				
	5,000		8,16,000		5,00		8,16,000
To Outputb/d	4,800	170	8,16,000	By Transfer to Lower	2,880	170	4,89,600
To Costing P/L A/c (Profit)			57,600	By Sales	1,920	200	3,84,000
			8,73,600				8,73,600

Lower Assembly A/c

Particulars	Ltrs	Rate	₹	Particulars	Ltrs	Rate	₹
To General Assembly Transfer	2,88`0	170	4,89,600	By Wastage	240	--	--
To Material	1,920	40	76,800	By Output c/d	4,560	210	9,57,600
To Labour			1,06,000				
To Direct Exp			2,85,200				
	4,860		9,57,600		4,860		9,57,600
To Output b/d	4,560	210	9,57,600	By Transfer to Higher	1,824	210	3,83,040
				By Sales	2,736	505	5,60,880
				By Costing P/L A/c (Loss)			13,680
	4,560		9,57,600		4,560		9,57,600

Higher Assembly A/c

Particulars	Ltrs	Rate	₹	Particulars	Ltrs	Rate	₹
To Lower Assembly A/c (Transfer)	1,824	210	3,83,040	By Wastage	540	--	--
To Material	3,576	80	2,86,080	By Output c/d	4,860	202.45	9,83,920
To Labour			2,10,000				
To Direct Exp.			1,04,800				
	5,400		9,83,920		5,400		9,83,920
To Output b/d	4,860	202.45	9,83,920	By Sales	4,860	250	12,15,000
To Costing P/L A/c (Profit)			2,31,080				
	4,860		12,15,000		4,860		12,15,000

$$Cost\ Per\ Unit = \frac{Total\ Cost - Normal\ Loss\ Scrap\ Value}{Input - Normal\ Loss\ (Units)}$$

$$General\ Assembling = \frac{8,16,000 - Nil}{5,000 - 200}$$

$$= \frac{8,16,000}{4,800} = 170$$

$$Lower\ Assembly \quad = \frac{9,57,600 - Nil}{4,800 - 240}$$

$$= \frac{9,57,600}{4,560} = 210$$

$$Higher\ Assembly \quad = \frac{9,83,920 - Nil}{5,400 - 540}$$

$$= \frac{9,86,920}{4,860} = 202.45$$

Costing Profit & Loss A/c

	₹	Particulars	₹
To Lower Assembly	13,680	By General Assembly	57,600
To Administrator Overheads	36,000	By Higher Assembly	2,31,080
To Marketing Overheads	48,000		
To Net Profit c/d	1,91,000		
	2,88,680		2,88,680

Process Stocks :-

Under Process Costing, Whatever output of each and every process is transfer to next process or sold out partly or entirely transfer to next process and after completion of process at the end the output is sold. But when there is process stock given then the entire output of a particular process would be transfer to particular process stock A/c, then added opening stock and deducting closing stock whatever balance remain it transfer to next process. For eg.In a process a input are 1000 units normal loss is 50 units. Process stock A/c shows opening balance 100 units, closing stock is 150 units then transfer to next process is calculated as

Input	-	1000	
(-) Normal Loss	-	50	
Expected Output	-	950	Actual Output
(+) Opening Stock	-	100	
		1,050	
(-) Closing Stock	-	150	
		900	- Transfer to Next Process

Illustration : 7

Reliance Yarn Ltd. manufactures a yarn product. The product passes through three consecutive processes F.Y., S. Y., and T. Y., Relevant details for the months of March 2014 are as under:

Particulars	F. Y.	S. Y.	T. Y.
Quantitative in Formation in Kg.			
Basic input kg @ 10 Per Kg.	2000	--	--
Output during the month	1950	1925	1679
Stock of Process			
- On 1st March 2014	200	300	100
- On 31st March 2014	150	400	59
% of Normal Loss to input in process	2%	5%	8%
Monetary Information	₹	₹	₹
Process Material	9000	2100	2716
Wages	9064	1860	4000
Value or Opening Stock	3880	6720	2800
Scrap Value per kg	₹1	₹2	₹4

Closing Stock is to be valued at the respective cost of each process.

Prepare process A/c, Process Stock A/c, Abnormal Loss and Abnormal Gain A/c. Find out the costing profit, when the sales outof T.Y. Process Stock are made at ₹40 per kg.

Solution:

Quantity Reconciliation

	Particulars	F. Y.	S. Y.	T. Y.
	Input	2000	2000	1825
(-)	Normal Loss	40	100	146
	Expected Output	1960	1900	1679
(-)	Actual Output	1950	1925	1679
	Abnormal Loss / Gain	10 (Loss)	(25) Gain	-
	Actual Output	1950	1925	1679
(+)	Opening Stock	200	300	100
(-)	Closing Stock	(150)	(400)	(59)
	Transfer to Next Process	2000	1825	1720 Sold

F. Y. Process A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Input	2000	10	20,000	By Normal Loss	40	1	40
To Material				By Abnormal Loss			
			9,000		10	19.40	194
To Wages				By Transfer To F.Y. Process			
			9,064		1950	19.40	37,830
				Stock A/c			
	2000		38,064		2000		38,064

$$Cost\ Per\ Unit = \frac{Total\ Cost - Normal\ Loss\ Scrap\ Value}{Input - Normal\ Loss\ Units}$$

$$= \frac{38064 - 40}{2000 - 40} = \frac{38024}{1960} = 19.40$$

F. Y. Process Stock A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Balanceb/d	200	19.40	3,880	By Transfer to S. Y. Process A/c	2000	19.40	38,800
To Transfer From F. Y. Process	1950	19.40	37,830	By Balance c/d	150	19.40	2,910
	2150		41,710		2150		41,710

S. Y. Process A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Transfer from F. Y. Process	2000	19.40	38,800	By Normal Loss	100	2	200
Stock							
To Material				By Transfer			
			2,100	To S. Y. Process Stock A/c	1925	22.40	43,120
To Wages			1,860				
To Abnormal Gain	25	22.40	560				
	2025		43,320		2025		43,320

S. Y. Process Stock A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Balanceb/d	300	22.40	6,720	By Transfer To T. Y.Process	1825	22.40	40,880
To Transfer from S. Y. Process	1925	22.40	43,120	By Balance c/d	400	22.40	8,960
	2225		49,840		2225		49,840

$$S.Y.\text{Process} = \frac{42760 - 200}{2000 - 100}$$

$$= \frac{42560}{1900} = 22.40$$

T. Y. Process A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Transfer from S. Y. Process Stock A/c	1825	22.40	40,880	By Normal Loss	146	4	584
To Material			2,716	By Transfer To T. Y. Process Stock A/c	1679	28	47,012
To Wages			4,000				
	1825		47,596		1825		47,596

T. Y. Process Stock A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Transfer from T. Y. Process A/c	1679	28	47,012	By Transfer to Costing P/L A/c	1720	28	48,160
To Bal b/d	100	28	2,800	By Balancec/d	59	28	1,652
	1779		49,812		1779		49,812

$$Cost\ Per\ Unit = \frac{Total\ Cost - Normal\ Loss\ Scrap\ Value}{Input - Normal\ Loss\ Units}$$

$$T.Y.\text{Pr}ocess = \frac{47596 - 584}{1825 - 146} = \frac{47012}{1679} = 28$$

Normal Loss A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To F. Y. Process	40	1	40	By Actual Sales			
To S. Y. Process	100	2	200	F. Y. Process	40	1	40
To T. Y. Process	146	4	584	S. Y. Process	75	2	150
				T. Y. Process	146	4	584
				By Abnormal Gain			
				Process S. Y.	25	2	50
	286		824		286		824

Abnormal Loss A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To F.Y. Process	10	19.40	194	By Actual Sales	10	1	10
				By Costing P/L A/c			184
	10		194		10		194

Abnormal Gain A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Normal Loss	25	2	50	By S. Y. Process A/c	25	22.40	560
To Costing P/L A/c			510				
	25		560		25		560

Costing Profit & Loss A/c

Particulars	₹	Particulars	₹
To TY Process Stock A/c	48,160	By Abnormal Gain A/c	510
To Abnormal Loss A/c	184	By Sales (1720 x 40)	68,800
To Net Profit c/d	20,966		
	69,310		69,310

Illustration : 8

Satyug Times Ltd. submits the following information in respect of its product which passes through 3 consecutive process viz Ingestion process, Idigestion process and Assimilation process for the month ended 31st January, 2014.

Particulars	Ingestion	Digestion	Assimilation
Quantitative Information (kgs)			
Basic Raw Material @ `40 per kg.	80,000	--	--
Normal Yield	80%	60%	70%
Output during the month	62,000	36,000	21,000
Stock of Process Output:			
31-12-2013	8,000	8,000	5,000
31-01-2014	10,000	4,000	4,000
Other Additional Informational			
Process Material	₹3,45,000	₹8,26,000	₹6,17,000
Labour Mandays	2,400	1,500	1,000
Labour Rate Per Manday	₹80	₹100	₹150
Machine Overheads	60% of Wages	50% of Process Material	₹2,34,000
Other Manufacturing Overheads	2,75,800	1,63,000	1,27,000
Value of Opening Stock Per Kgs.	₹60	₹140	₹300
Scrap Value Per Kgs.	₹10	₹15	₹20

Finished Stock of assimilation process was sold at ₹350 per kg.

Prepare the process A/c, Process Stock A/c, Normal Loss A/c and the Abnormal Gain / Loss A/c.

Ingestion Process A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Input	80000	40	32,00,000	By Normal Loss	16000	10	1,60,000
To Process Material			3,45,000	By Abnormal Loss	2000	62	1,24,000
To Labour (2400 x 80)			1,92,000	By transfer to Process Stock A/c	62,000	62	38,44,000
To Machine Overheads (60% of Labour)			1,15,200				
To Manufacturing Overheads			2,75,800				
	80000		41,28,000		80,000		41,28,000

Ingestion Process Stock A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Balance b/d	8000	60	4,80,000	By Transfer to Digestion Process	60,000		37,04,000
				By Balance c/d			
To Transfer from Ingestion Process A/c	62000	62	38,44,000		10000	62	6,62,000
	70,000		43,24,000		70,000		43,24,000

Digestion Process A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Transfer from Ingestion Process Stock	60000		37,04,000	By Normal Loss	24000	15	3,60,000
To Process Material			8,26,000	By Transfer to Process Stock A/c	36,000	136	48,96,000
To Labour (1500 x 100)			1,50,000				
To Machine Overheads (50% Process Material)			4,13,000				
			52,56,000				52,56,000

Digestion Process Stock A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Balance b/d	8,000	140	11,20,000	By Transfer to Assimilation Process A/c	40,000		54,72,000
To Transfer From Digestion Process A/c	36,000	136	48,96,000	By Balance c/d	4000	136	5,44,000
	44000		60,16,000		44000		60,16,000

Assimilation Process A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Transfer from Digestion Process Stock A/c	40000		54,72,000	By Normal Loss	20000	20	4,00,000
To Process Material			6,17,000	By Transfer To Process Stock A/c	21000	310	65,10,000
To Labour (1000 x 150)			1,50,000				
To Machine Overheads			2,34,000				
To Manufacturing Overheads			1,27,000				
To Abnormal Gain	1000	310	3,10,000				
	41000		69,10,000		41000		69,10,000

Assimilation Process Stock A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Bal b/d	5000	300	15,00,000	By Sales	22000	350	77,00,000
To Transfer from Assimilation Process Stock A/c	21000	310	65,10,000	By Balance c/d	4000	310	12,40,000
To Costing P/L A/c			9,30,000				
	26000		89,40,000		26000		89,40,000

Normal Loss A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Ingestion	16000	10	1,60,000	By Actual Sales			
To Digestion	24000	15	3,60,000	Ingestion	16000	10	1,60,000
To Assimilation	20000	20	4,00,000	Digestion	24000	15	3,60,000
				Assimilation	19000	20	3,80,000
				By Abnormal Gain			
				Assimilation	1000	20	20,000
	60,000		9,20,000		60,000		9,20,000

Abnormal Loss A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Ingestion Process	2000	62	1,24,000	By Actual Sale	2000	10	20,000
				By Costing P/L A/c (Loss)			1,04,000
	2000		1,24,000		2000		1,24,000

Abnormal Gain A/c

Particulars	Kgs.	Rate	₹	Particulars	Kgs.	Rate	₹
To Normal Loss A/c	1000	20	20,000	By Assimilation Process A/c	1000	310	3,10,000
To Costing P/L A/c (Profit)			2,90,000				
	1000		3,10,000		1000		3,10,000

Costing Profit & Loss A/c

Particulars	₹	Particulars	₹
To Abnormal Loss	1,04,000	By Assimilation Process A/c	9,30,000
To Net Profit c/d	11,16,000	By Abnormal Gain	2,90,000
	12,20,000		12,20,000

$$Cost\ Per\ Unit = \frac{Total\ Cost - Scrap\ Values\ of\ Normal\ Loss}{Input - Normal\ Loss\ Units}$$

$$Ingestion = \frac{4128000 - 160000}{80,000 - 16,000} = \frac{39,68,000}{64,000} = 62$$

$$Digestion = \frac{52,56,000 - 3,60,000}{60,000 - 24,000} = \frac{48,96,000}{36,000} = 136$$

$$Assimilation = \frac{6600000 - 400000}{40000 - 20000} = \frac{62,00,000}{20,000} = 310$$

Quantity Reconciliation:

	Particular	Ingestion	Digestion	Assimilation
	Input	80,000	60,000	40,000
(-)	Normal Loss	16,000	24,000	20,000
	Expected Output	64,000	36,000	20,000
(-)	Actual Output	62,000	36,000	21,000
	Abnormal Loss / gain	2,000 (Loss)	Nil	1,000 (Gain)
	Actual Output	62,000	36,000	21,000
(+)	Opening Stock	8,000	8,000	5,000
(-)	Closing Stock	(10,000)	4,000	4,000
	Transfer	60,000	40,000	22,000 Output Sold

* Instead of Normal Loss, Normal Yield is given. It means total input - Normal Yield = Normal Loss.

If input is 100%

∴ Ingestion Process Normal Yield is 80%

∴ Normal Loss = Input - Normal Yield

= 100 - 80

∴ Normal Loss = 20%

Input of Ingestion Process 80,000 x 20% = 16,000

Some way of Digestion & Assimilation Process.

3.6 EXERCISE

A. Objective Questions

Q.1 Multiple Choice Questions

1. The cost of units of abnormal Loss is

A. Credited to the process A/C
B. Debited to the process A/C
C. Credited to the normal Loss A/C
D. Debited to the normal Loss A/C

2. The cost of units of abnormal loss is

A. Credited to the normal loss A/C
B. Debited to the normal loss A/C
C. Credited to the process A/C
D. None of the above

3. The cost of units of abnormal gain is

A. Debited to the process A/C
B. Debited to profit and loss A/C
C. Credited to the process A/C
D. None of the above

4. Normal loss is calculated as

A. Actual output –Normal output
B. Normal output – Actual output
C. Input x % of Normal loss
D. None of the above

5. Normal output is equal to

A. Input – normal loss
B. Input – abnormal loss
C. Input –abnormal gains
D. None of the above

6. Abnormal loss is equal to
A. Input –Actual output
B. Actual output – Normal output
C. Normal output – Actual output
D. Actual output – input

7. Abnormal gain is equal to
A. Actual output – Normal output
B. Normal output –Actual output
C. Actual output – Input
D. Input –Actual output

8. Cost Per Unit is calculated as
A. Total Cost /Normal output
B. Normal cost/ Total cost
C. Cost of process –sale value of normal loss / Input – Normal Loss
D. Total cost/ Total Output

9. Allocation of joint cost deals with ----------
A. CAS-3
B. CAS-5
C. CAS-4
D. CAS-2

10. Sale of residue or scrap is ----------
A. Credited to process A/C
B. Credited to P & L A/C
C. Credited to Abnormal Loss A/C
D. None of the above

(Answers :- 1. A 2.C 3.A 4. C 5. B 6. C 7. A 8.C 9. C 10. A)

Q.2 True and False

1. The cost of good units is increased by the abnormal gain in process costing.
2. The cost of units of abnormal loss is debited to the process A/C.
3. Invisible waste has sale value .
4. The cost of units of abnormal gain is credited to the processA/C.
5. The sale value of residue is credited to the process A/C.
6. Under contribution margin method , variable costs apportion on the basis of units produced.
7. Joints products are of unequal importance.

8. Under Net Realizable value method, the estimated profit margin deducted.
9. The proportion of joint products can be changed at the will of the management.
10. Joint products are produced from the different processes.

(Answer: True :- 1, 5, 6, 8. False :- 2, 3, 4, 7, 9, 10.)

B. Practical Problems:

1) Product *x* is obtained after it is processed through 3 distinct processes:-

The following information is available for the month of March 2014.

Particulars	Process A	Process B	Process C	Total
Material Consumed	10,400	8,000	4,100	22,500
Direct Labour	9,000	14,720	5,600	29,320
Production Overhead	-	-	-	29,320

2000 Units at ₹4 per unit were introduced in process A. Production overheads to be distributed as 100% on direct labour. The actual output and normal loss of the respective process are :

Particulars	Output in Units	Normal Losson Input	Value of Scrap Per Unit
Process A	1800	10%	2.00
B	1360	20%	4.00
C	1080	25%	5.00

There is no stock or work in progress in any process. You are required to prepare process a/c

2) Product 'A' is obtained after it is processed through process *x, y and z* .

The following cost information is available for the month ended 31st March, 2014.

Particulars	*x*	y	z
Number of Units introduced in the process	500	--	--
Rate per unit of units introduced ₹	04	--	--
Cost of Material	2,600	2,000	1,025
Direct Wages	2,250	3,680	1,400
Production Overheads	2,250	3,680	1,400
Normal Loss (% on Units Introduced of each Process)	10%	20%	25%
Value of Scrop per Unit	2/-	4/-	5/-
Output in Units	450	340	270

There is no stock in any process. You are required to preparethe Process A/c.

3) The product of a company process through of distinct processes to completion. These process or known as *x, y and z* .

From the past experience, it is ascertained that wastage is incurred in each process as under - process *x* 2% , Process y - 4%,Process z - 10%

The Wastage at each process possess scrap value. The wastage of process *x and y* is sold at ₹2.50 per unit, and that of process z at ₹5.00 per unit. The output of each process passes immediately to the next process and finished units are transferred from process z into stock. The following information is obtained.

Particulars	*x*	y	z
Material	2,70,000	2,60,000	1,20,000
Wages	4,30,000	2,40,000	1,30,000
Direct Expenses	1,37,500	1,45,000	1,80,000
Output of each process (in units)	48,750	47,000	42,000

50,000 units were put in process *x* at a cost of ₹10/- per unit. There is no stock of work in progress in any process. Prepare process A/c. Abnormal Loss and Gain A/c.

4) A product of a manufacturing concern passes through twoprocess viz A and B and then to finished stock. The following figures have been taken from its books for the year ended 31st March 2013.

Particulars	Process A	Process B
Raw Material Introduced in Process (Units)	10,000	700
Cost of Raw Material introduced (per unit ₹)	125	200
Wages (₹)	2,80,000	1,00,000
Machine Expenses (₹)	20,000	10,000
Direct Expenses (₹)	10,000	10,000
Other Factory Expenses (₹)	45,000	22,500
Indirect Material (₹)	5,000	10,000
Normal Loss in Weight (% of total units introduced in each process)	5%	5%
Normal Scrap (% on total Units Introduced in each process)	10%	10%
Realizable Value of Scrap (per 10 units)	(₹) 800	(₹) 2,000
Output (Units)	8,300	7,800

Prepare Process A/c, Abnormal Loss and Abnormal Gain A/c.

5) ABC and Co. manufactures a chemical which passes through three processes. The following particulars garnered for the month of January 2014.

Particulars	Process I	Process II	Process III
Material (Litre)	4000	208	168
Material Cost	₹38,400	₹18,800	₹6,000
Wages	₹7,680	₹7,600	₹2,200
Normal Loss (% of input)	4%	5%	5%
Scrap Sale Value	--	₹3 per Ltr.	--
Output Transferred to Next Process	50%	40%	--
Output Transferred to Warehouse	50%	60%	100%

Overheads are charged @ 50% of Direct Wages. You arerequired to prepare Process A/c.

❖❖❖❖

4

INTRODUCTION TO MARGINAL COSTING

Unit Structure :

4.0 OBJECTIVES

After studying the unit the students will be able to:

- Distinguish between Marginal Costing and Absorption Costing.
- Understand the equations and basic concepts in Marginal Costing.
- Solve the practical problems on Marginal Costing.

4.1 INTRODUCTION

Marginal costing is defined as the ascertainment of cost by differentiating between fixed and variable costs and also find out the effect on profit changes whenever change in the volume as well as type of output.

Marginal cost is the aggregate of all variable cost excluding fixed expenses. It is increased by adding every extra unit. If output increase the marginal cost increases.

Absorption Costing :-

It refers to the analysis of the total cost for the purpose of distribution of cost unit wise. All fixed as well as variable cost charged to products.

4.2 MARGINAL COST EQUATIONS AND BASIC CONCEPTS

1) Sales - Variable = Contribution

2) Contribution - Fixed Cost = Profit

3) Sales - Variable = Fixed Cost + Profit

4) $\text{Profit Volume Ratio} = \frac{Contribution}{Sales} \times 100$

5) $Contribution = Sales \times PV\ Ratio$

6) $Sales = \frac{Contribution}{PV\ Ratio}$

7) $BEP\ (In\ Units) = \frac{Fixed\ Cost}{Contribution\ Per\ Unit}$

8) BEP (in ₹) $= \frac{Fixed\ Cost}{PV\ Ratio}$

OR

BEP (in ₹) $= \frac{Fixed\ Cost}{Contribution} \times Sales$

9) Required Sales

(₹) $= \frac{Fixed\ Cost + Desired\ \text{Profit}}{PV\ Ratio}$

10) $\text{Required Sales (in Units)} = \frac{Fixed\ Cost + Desired\ \text{Profit}}{Contribution\ Per\ Unit}$

11) $Actual\ Sales = \frac{Fixed\ Cost + \text{Profit}}{PV\ Ratio}$

12) Margin or Safety (₹) = $Actual\ Sales - B \in P\ Sales$

13) Margin of Safety (in Units) = Actual Sales (in Units) - $B \in P\ (in\ Units)$

14) $\text{Profit} = \text{Margin of Safety} \times PV\ Ratio$

Contribution:-

Contribution is the profit before deducting fixed cost and after deducting variable cost.

Profit Volume Ratio:-

Marginal costing is the ascertainment of cost as well as the effect on profit of changes in value and type of output. Such impact of changes in volume of output on profit is called as profit volume ratio.

Break Even Point:-

. $(B \in P-)\ B \in P$ Means the point at which no profit and no loss. Whatever total cost = total income. Total cost include fixed as wellas variable cost. There is no profit, no loss.

4.3 SOLVED PROBLEMS

Illustration 1

1) From the following data, calculate Break-even Point ($B \in P$)

Selling Price Per Unit ₹40/-

Variable Cost Per Unit ₹30/-

Fixed overheads ₹40,000.

If sales are 20% above $B \in P$, calculate the net profit.

Solution:-

i) $PV\ Ratio = \dfrac{Contribution}{Sales} \times 100$

Contribution = Selling Price - Variable Cost

$= 40 - 30$

$= 10$

$\therefore PV\ Ratio - \dfrac{10}{40} \times 100 = 25\%$

ii) $B \in P$ (in ₹) $= \dfrac{Fixed\ Overheards}{PV\ Ratio}$

$= \dfrac{40,000}{25\%} = 1,60,000$

iii) If sales are 20% above $B \in P$, then profit is,

$B \in P$ = 1,60,000 + (20%) 32,000 = 1,92,000

∴ Sales	-	1,92,000	
(-) Variable Cost		1,44,000	75%
Contribution	→	48,000	
(-) Fixed Cost		40,000	
Profit	→	8,000	

If PV Ratio = Contribution

Then 100% - PV Ratio = variable Cost

i.e. 100 – 25 = 75%

Illustration 2

From the following data compute -

1) P / V Ratio

2) $B \in P$ in Rupees and Unit.

3) Number of Units to be sold to earn a profit of ₹7,50,000.

Sale Price - ₹20 per unit.

Direct Material - ₹5 per unit.

Direct Wages - ₹6 per unit

Variable Administrative overheads - ₹3 per unit

Fixed Factory Overhead ₹6,40,000 per year

Fixed Administrative Overhead s ₹1,52,000 per year.

Solution:-

Total Variable Cost = Direct Material + Variable Adm. Overhed + Direct Wages 14 = 5+6+3

Total Fixed Overheads = Fixed Factory Overhead + fixed Adm. Overheads

7,92,000 = 6,40,000 + 1,52,000

$\therefore Contribution\ Per\ Unit = Selling\ \text{Pr}ice - Variable\ Cost$

$6 = 20 - 14$

i) $PV\ Ratio = \dfrac{Contribution}{Sales} \times 100$

$= \dfrac{6}{20} \times 100 = 30\%$

ii) $B \in P$ in ₹ & Unit

$$B \in P \text{ (in ₹) \& Unit} = \frac{Fixed\ Cost}{PV\ Ratio} = \frac{7,92,000}{30\%} = 2,64,000$$

$$B \in P \text{ (in Unit)} = \frac{Fixed\ Overheads}{Contribution\ Per\ Unit} = \frac{7,92,000}{6}$$

$$= 1,32,000\ Unit$$

iii) Number of Units Sold to earn a profit of ₹7,50,000

$$\text{Required Sales (in Units)} = \frac{Fixed\ Cost + Desired\ Profit}{Contribution\ Per\ Unit}$$

$$= \frac{7,92,000 + 7,50,000}{6}$$

= 2,57,000 Units

Illustration 3

The Following Figures relates to M/s. Deepak Industries:

Fixed Overheads	₹2,40,000
Variable Overheads	₹4,00,000
Direct Wages	₹3,00,000
Direct Material	₹8,00,000
Sales	₹20,00,000

Calculate (1) PV Ratio (2) $B \in P$ (3) Margin of Safety.

Solution:-

Total Variable Overheads = Variable Overheads + Direct Wages + Direct Material

15,00,000 = 4,00,000 + 3,00,000 + 8,00,000

$$\therefore Contribution = Sales - Total\ Variable\ Cost$$

$$5,00,000 = 20,00,000 - 15,00,000$$

i) $$PV\ Ratio = \frac{Contribution}{Sales} \times 100$$

$$25\% = \frac{5,00,000}{20,00,000} \times 100$$

2) $B \in P$ (in ₹) $= \frac{Fixed\ Cost}{PV\ Ratio} = \frac{2,40,000}{25\%} = 9,60,000$

MOS = 10,40,000

Illustration 4

Following Particulars are available for A Ltd and B Ltd.

Particulars	A Ltd.	B Ltd
Sales	6,00,000	6,00,000
PV Ratio	25%	20%
Fixed Cost	90,000	80,000

Calculate for each company.

i) Break even Point.

ii) Margin of Safety.

iii) Sales required to earn a profit of ₹90,000.

i) $B \in P$ (in ₹) $= \frac{Fixed\ Cost}{PV\ Ratio}$

$A\ Ltd = \frac{90,000}{25\%} = 3,60,000$

B $Ltd = \frac{80,000}{20\%} = 4,00,000$

ii) Margine of Safety = Actual Sales = $B \in P$ Sales

A Ltd = 6,00,000 – 3,60,000

= 2,40,000

B Ltd = 6,00,000 – 4,00,000 = 2,00,000

iii) Sales Required to earn a profit of ₹90,000

$\text{Re}quired\ Sales = \frac{Fixed\ Cost + Desired\ \text{Pr}ofit}{PV\ Ratio}$

A Ltd $= \frac{90,000 + 90,000}{25\%} = 7,20,000$

B Ltd $= \frac{80,000 + 90,000}{20\%} = 8,50,000$

* Whenever 2 periods or 2 years are given in the problem then PV Ratio is calculated as,

$$PV\ Ration = \frac{Changes\ in\ Profit}{Changes\ in\ Sales} \times 100$$

All other formula's are same as it is.

Illustration 5

From the following particulars you are required to calculate:

1) Profit Volume Ratio,

2) $B \in P$

3) Profit when sales is ₹2,00,000

4) Sales required to earn a profit of ₹40,000,

5) Margin of Safety in the 2nd year.

Year	Sales ₹	Profit ₹
I	2,40,000	18,000
II	2,80,000	26,000

You may assume that the cost structure and selling price remain constants in two years.

i) $PV\ Ratio = \frac{Changes\ in\ Profit}{Changes\ in\ Sales} \times 100$

$$= \frac{26,000 - 18,000}{2,80,000 - 2,40,000} \times 100$$

$$= \frac{8,000}{40,000} \times 100 = 20\%$$

ii) $B \in P = \frac{Fixed\ Cost}{PV\ Ratio}$

	1st Year	2nd Year
Sales	2,40,000	2,80,000
(-) Variable Cost (80%)	1,92,000	2,24,000
Contribution (20%)	48,000	56,000
(-) Fixed Cost	30,000	30,000
Profit	18,000	26,000

$$\therefore B \in P = \frac{Fixed\ Cost}{PV\ Ratio} = \frac{30,000}{20\%} = 1,50,000$$

iii) Profit when Sales are ₹2,00,000

Sales		2,00,000
(-) Variable Cost (80%)		1,60,000
Contribution (20%)		40,000
(-) Fixed Cost		30,000
Profit	$\rightarrow$	10,000

iv) Required Sales to earn a profit of ₹40,000.

$$\text{Re}quired\ Sales = \frac{Fixed\ Cost + Desired\ \text{Pr}ofit}{PV\ Ratio}$$

$$= \frac{30,000 + 40,000}{20\%}$$

$$= 3,50,000$$

v) Margin of Safety (2nd Year) = Actual Sales - $B \in P$ Sales

= 2,80,000 – 1,50,000

= 1,30,000

Illustration 6

The following data have been extracted from the books or Alfa Ltd.

Year	Sales	Profit
2012	5,00,000	50,000
2013	7,50,000	1,00,000

You are required to calculate :-

i) PV Ratio

ii) Fixed Cost

iii) Break even sales

iv) Profit on Sales of ₹4,00,000

v) Sale to earn a Profit of ₹1,25,000.

i) $PV\ Ratio = \frac{Changes\ in\ Profit}{Changes\ in\ Sales} \times 100$

$$= \frac{1,00,000 - 50,000}{7,50,000 - 5,00,000} \times 100$$

$$= \frac{50,000}{2,50,000} \times 100 = 20\%$$

ii) Fixed Cost -

	2012	2013
Sales	5,00,000	7,50,000
(-) Variable Cost (80%)	4,00,000	6,00,000
Contribution (20%)	1,00,000	1,50,000
(-) Fixed Cost	**50,000**	**50,000**
Profit	50,000	1,00,000

iii) $Break\ Even\ Sales = \frac{Fixed\ Cost}{PV\ Ratio}$

$$= \frac{50,000}{20\%} = 2,50,000$$

iv) Profit on Sales of ₹4,00,000.

Sales		4,00,000
(-) Variable Cost	(80%)	3,20,000
Contribution	(20%)	80,000
(-) Fixed Cost		50,000
Profit		30,000

v) Sales to earn a Profit of ₹1,25,000

$$\text{Required Sales} = \frac{\text{Fixed Cost} + \text{Desired Profit}}{\text{PV Ratio}}$$

$$= \frac{50,000 + 1,25,000}{20\%} = 8,75,000$$

Illustration 7

Z Ltd. produces and sells a single article at ₹10 each. The marginal cost of production is ₹6 each and Fixed Cost is ₹400 per annum. Calculate:-

i) PV Ratio

ii) The break even Sales (in ₹. and Nos.)

iii) The Sales to earn a Profit of ₹500.

iv) Profit at Sales of ₹3,000.

v) New break even point if sales price is reduced by 10%

vi) Margin of Safety at sales of ₹1,500 and

vii) Selling price per unit if the break even point is reduced to 80 units.

Solution:-

Contribution = Sales – variable Cost (Marginal Cost)

4 = 10 - 6

i) $PV\ Ratio = \frac{Contribution}{Sales} \times 100$

$40\% = \frac{4}{10} \times 100$

ii) Break in Point (in ₹) $= \frac{Fixed\ Cost}{PV\ Ratio}$

$$= \frac{400}{40\%} = 1000$$

$$B \in P\ (in\ Units) = \frac{Fixed\ Cost}{Contribution\ Per\ Unit}$$

$$= \frac{400}{4} = 100\ Unit$$

iii) Sales to earn a profit of ₹500

$$\text{Required Sales (in ₹)} = \frac{Fixed\ Cost + Desired\ Profit}{PV\ Ratio}$$

$$= \frac{400 + 500}{40\%} = ₹2,250$$

iv) Profit at Sales or ₹3,000

Sales	3,000
(-) Variable Cost (60%)	1,800
Contribution (40%)	1,200
(-) Fixed Cost	400
Profit	800

v) New $B \in P$ if Sales Price is reduced by 10%

S.P. (Original)	- 10
(-) Reduced by 10%	1
New S. P.	9

Contribution = Sales – Variable Cost

3 = 9 – 6

$$PV\ Ratio = \frac{Contribution}{Sales} \times 100$$

$$= \frac{3}{9} \times 100$$

$$= 33,33\%$$

B $\frac{Fixed\ Cost}{PV\ Ratio}$ $\frac{400}{33.33\%}$ ₹1,200

vi) Margin of Safety at Sales of ₹1,500.

a) Old MOS = Actual Sales - $B \in P$ *Sales*

= 1,500 - 1,000

= 500

b) New MOS = Actual Sales - $B \in P$ *Sales*

300 = 1,500 - 1,200

vii) Selling Price per unit if the break even point is reduced to 80 units.

$$B \in P\,(in\,Units) = \frac{Fixed\ Cost}{Contribution\ Per\ Unit}$$

$$80 = \frac{400}{CPU}$$

$$\therefore \quad CPU = 5$$

$$\therefore New\ Selling\ \Pr ice = Contribution + Variable\ Cost$$

11 = 5 + 6

∴ New Selling Price ₹11

4.4 EXERCISE

A. Objective Questions

Q.1 Multiple Choice Question

1. When variable cost per unit increases then the break even point will
   A. Increase B. Decrease
   C. Remain Constant D. None of these

2. If a company increases fixed costs, then the break even pointwill be
   A. Lower B. Higher
   C. Remain Constant D. None of these

3. Contribution is equal to fixed cost is the point
   A. Break even point B. Margin of safety
   C. PV Ratio D. None of these

4. A decrease in variable cost per unit then PV Ratio also
   A. Increase B. Decrease
   C. Remain Constant D. None of these

5. A decrease in the contribution margin then the PV Ratio
   A. Increase B. Decrease
   C. Remain Constant D. None of these

6. An increase in the selling price per unit then the PV Ratio
   A. Increase B. Decrease
   C. Remain Constant D. None of these

7. Sales-Variables cost =
   A. Contribution B. Profit
   C. Fixed Cost D. None of these

8. Margin of safety is expressed as
   A. Profit/PV Ratio B) Actual Sales - B E P Sales
   C.Actual Sales – B E P Sales) / Actual Sales D. All of the above

9. The B E P units is equal to
   A. Profit/Volume B. Contribution/Sales
   C. Profit/Contribution D. Profit/Sales

10. Profit volume ratio is improved by reducing----------
   A.variable Cost B. Fixed Cost
   C. Both of them D. None of these

(Answers : - 1. B 2. A 3. A 4. A 5. B 6. A 7. A 8.D 9. B. 10. A.)

Q.2 True and False

1. Contribution equals to sales minus variable cost.
2. Fixed factory overhead costs is not deducted from sales revenue in computation of contribution.
3. The selling price per unit less the variable cost per unit is the fixed cost per unit.
4. PIV Ratio is equal to Profit/Contribution.
5. Profit volume ratio is improved by reducing variable cost.
6. The break even point in units is equal to Fixed cost * SaleTotal Contribution
7. When the fixed cost increase, the break even point increase.
8. When the variable cost decrease then the break even pointdecreases.
9. When the selling price decreases, the break even pointincreases.
10. When sales increase then break even point increases.

Answer: True :- 1, 2, 5, 7, 8, 9. False :- 3, 4, 6, 10.

A. Practical Problem:-

1) K. T. and Co. has prepared the following budgets estimates for the year 2002 - 2003. Sales 15,000 units, Sales Value ₹1,50,000, Fixed expenses ₹34,000. Variable Cost per unit ₹6/-. You are required to find:

i) Profit Volume Ratio,
ii) Break Even Point,
iii) Margin of Safety.

Also calculate revised Profit Volume Ratio, Break Even Point and Margin of Safety, if the selling price per unit is reduced by 10%.

2) A product is sold at ₹80 per unit. Its Variable Cost is ₹60,Fixed Cost is ₹6,00,000.

Compute the following:

1) PV Ratio, 2) Break Even Point, 3) Margin of Safety at a sale of 50,000 Units, 4) At What sale the producer will earn profit at 15% on sales?

3) The following is the cost structure or a product selling price ₹100 unit.

Variable Cost	Per Unit
Material	₹38
Labour	₹14
Direct Expenses	₹8
Fixed Overheads for the year	
Factory Overheads	₹2,80,000
Office Overheads	₹2,80,000

No of units produced and sold 40,000.
Calculate :-
1) PV Ratio,
2) $B \in P$ in Units
3) Martin of Safety Amount
4) $B \in P$ if fixed overheads increased by 20%.
5) Revised PV Ratio when selling price increased by 20%.

4) A company produces and sells 1500 units of a commodity at ₹20 each. The variable cost of production is ₹12 per unit and Fixed Cost ₹8,000 per annum.

Calculate:-

1) PV Ratio
2) Sales at $B \in P$ and
3) Additional Sales required to earn the same amount of profit if selling price is reduced by 10%.

5) You are given the following information:-
Selling Price ₹40 Per Unit.
Variable Cost ₹30 Per Unit
Fixed Cost ₹1,80,000

Calculate:-
1) PV Ratio
2) $B \in P$ (in ₹. and units)
3) Profit at Sales ₹9,60,000
4) New $B \in P$ Sales in ₹. if sale price is reduced by 10%.

6) Following information is available in respect of G. Ltd and D.Ltd.
Calculate:-
1) P/V Ratio of Both Companies.
2) Fixed Cost of Both Companies.
3) Sales to earn profit of ₹2,10,000 by each company.
4) Break Even Point of Both Companies.
5) Margin of Safety of 'D' Ltd.

Particulars	G. Ltd (₹)	D Ltd. (₹)
Sales	11,00,000	14,00,000
Variable Cost	8,80,000	10,50,000
Profit	1,20,000	2,00,000

7) M/s. EAR Enterprises furnish the following information:-

Year	Sales (₹)	Profit (₹)
2013	6,00,000	60,000
2014	8,00,000	1,00,000

From the above calculate the following
i) PV Ratio
ii) Fixed Cost
iii) $B \in P$
iv) Sales to Earn Profit of ₹2,00,000.
v) Margin of Safety of 2014.

8) From the following particulars, you are required to calculate:-

i) Fixed Cost

ii) Profit volume Ratio.

iii) Break Even Sales

iv) Sales to Earn Profit or ₹6,00,000.

v) Margin of Safety of the year 2012.

Particulars	**2012 (₹)**	**2013 (₹)**
Total Cost	12,96,000	18,72,000
Sales	14,40,000	21,60,000

Hint :- First Find out Profit by Sales - Total Cost.

❖❖❖❖

5

INTRODUCTION TO STANDARD COSTING

Unit Structure

5.0 OBJECTIVES

After studying the unit the students will be able to:

- Understand the meaning of Standard Costing and how it to beapply.
- Explain how to calculate Material Variances, Labour Variances, Overhead Variances, Sales Variances and Profit Variances.
- Solved the practical problems on calculating Variances.

5.1 INTRODUCTION

In corporate sector, there is a separation of ownership from management. The owners do not manage the business and the managers are not the owners. Even in non-corporate sector, with gigantic business affairs, it is almost impossible for the owners to manage the business themselves.

Accordingly, owners are compelled to delegate authority to the managers. Since the managers have no proprietory interest in the business, it is quite

possible that they may tend to be inefficient and a bit careless and because of this, the sales may come down, cost and rejection may increase resulting thereby in substantial lossof profit.

For this reason, the owners fell, and rightly so, that the performance of various managers should be subjected to some degrees of stringent control. There is a need to follow carrot and stick approach.

Control always presupposes some yardstick or standard. Accordingly, well before the period commences, detailed standards are laid down for various managers. These standards clearly show what is expected of the concerned managers. For example, in respect of sales, we lay down for sales manager, the types ofproducts to be sold, the quantity of each of them to be sold and the price to be charged. At the end of the relevant period the actual results are compared with the expected ones (the standards) and the difference, known as VARIANCE, is analysed to throw light on the precise factors responsible for the variation. As far as the examination is concerned, this is the end. In real life, further investigation is undertaken, if the variance amount is varied significant and corrective actions are taken so as to prevent adverse past from repeating itself in future.

We apply Standard Costing Technique to Six Area in all.

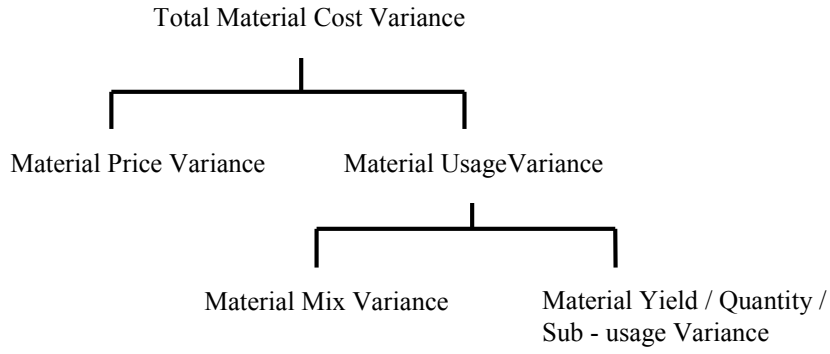
They are as follows:-

1. Material Cost
2. Labour Cost
3. Variable Overheads
4. Fixed Overheads
5. Sales Profit

5.2 MATERIAL VARIANCES

Explanation of the method followed in thesolution:

The following is the chart of the **Material Cost Variances.**



Check

Total Material Cost Variance	=	Material Price Variance+Material usage Variance
Material Usage Variance	=	Material Mix Variance+Material Yield Variance

5.2.2 Detailed Explanation:

i) Setting the Standards:

As we saw, the actual results are to be compared with the Standards and for this purpose, we must have comparable Standards.

The material cost is a variable cost item and the amount of cost that one incurs entirely depends on the quantity of output.thus, if the standard material cost per unit is ₹5, and if the actual output is 100 units, then, the standard cost is ₹500. In other words in the case of material cost, the standards are always for the actual output. It the production manager has produced, say, 1000 units, then we should find out the cost that he should have incurred for 1000 units and this cost should be compared with the actual cost to get the variance.

Example:

Standards For 1 Unit of Product X:

Material	Quantity	Price Per Unit	Total Cost (₹)
A	5 Kgs.	2	10
B	10 Kgs	3	30
	15 Kgs.		40

The production manager has produced 1000 units andincurred the cost as shown below.

Material	Quantity	Price Per Unit	Total Cost (₹)
A	4,800	2.5	12,000
B	10,600	2.9	30,740
	15,400		42,740

Very obviously, the given standards which are for the output level of 1 unit (₹40) can't be compared with the actual for 1000 units (₹42,740). The given standards are to be revised to make them represent actual output level, so that they become comparable.

This process of revising the standards is extremely simple. Since the cost is variable in nature, the quantity figures and therefore the total cost figures are just to be revised proportionately. For example, 1 unit of X needs 5 Kgs. of Material A and therefore 1000 units should need 5000 Kgs. of material A. The revised standard are shown below.

Material	Quantity	Price Per Unit	Total Cost (₹)
A	5,000	2	10,000
B	10,000	3	30,000
	15,000		40,000

In order to solve the problem, one should first pick up the information about the output level represented by the given Standards. One should, then pick up the actual output figure. If these two are some, then they are comparable and one should proceed further to calculate the variances. If they are not same, then given the Standards are to be proportionately revised to make them represent actual output level. Thus, whether the given Standard need to be revised or not depends on whether the output levels are some or not.

5.2.3 Calculation of Variances:

1. Total Material Cost Variance:

This variance shows the total loss or gain because of change in the total material cost. The variance is the difference between the total Standard material cost (obviously for actual output) and the total actual material cost.

2. Material Price Variance : (See also notes on Single /Partial Plans)

This variance accounts for that part of the total material cost variance which comes into being because of change in the material purchase price. Here, our aim is to know the total gain or loss because of change in the material purchase price.

The loss / gain per unit purchased and consumed can be calculated by simply comparing standard purchase price with the actual purchase price. However, we want to know the total gain or loss. The total loss / gain depends on the actual quantity purchasedand consumed.

Thus the Price Variance is:

Actual Quantity X (Standard Price - Actual Price)

3. Material Usage Variance:

This variance accounts for that part of the total material cost variance which comes into being because of change in the consumption of raw material. Here, our aim is to know the total gain / loss because of the

difference between material quantity consumed and the material quantity that should have been consumed.

Obviously, therefore, we have to compare the standard material quantity with the actual material quantity, the difference being the quantity of material lost or gained. In order to quantity this loss in money terms, we need to multiply this difference by the priceof raw material.

We have two prices: Standard Price and the Actual Price.

Which price should be used?

We have to use standard price for this. This is based on the following reasons.

It is possible that there is some difference between the standard price and the actual price. However, it is the job of the price variance to take care of that difference and once that is taken care of, we are left with standard price alone. The difference between the two prices always gets transferred to profit & lossaccount.

In the organisation, there is division of labour. For change in the price, purchase manager is answerable whereas for changes in the consumption of raw material, production manager is accountable. Now, if we multiply the quantity difference by the actual price, then the efficiency or otherwise of the purchase manager would affect the variance for the production manager. The price, therefore, has to remain constant and only standard price remains constant.

The standards are developed well before the period commences and we let our production manager know the quantityof raw material that he should consume and in case the actual consumption is more (or less) then we also let time know the rate atwhich the penalty, or reward, will be calculated. That means the price has to be known to the production manager well before the budget period commence. Obviously only the standard price can beknown in advance.

Thus the usage Variance is:

Standard Material Price X (Standard Raw Material Quantity - ActualRaw Material Quantity)

4. Material Mix Variance and Material yield Variance

These two variances, put together account for the total material usage variance. If the raw material consumed is not same as standard, then, that could be because of two reasons in all. Either the mix of the input may change and / or the absolute quantity of material may change. Consider the following example:

Material	Standard Quantity	Actual Quantity		
		(1)	(2)	(3)
X	50 Kgs.	40	55	55
Y	50 Kgs.	60	55	60
Total	**100 Kgs.**	**100**	**110**	**115**

As can be seen, in the first case, through the total input quantity is same as the standard, 10 Kgs. of Y have replaced 10 Kgs. of X. Thus total quantity remaining same, the mix of input has changed. In the second case, though the mix of input items (1:1) has remained the same as the standard mix, the absolute quantity has gone up by 10 Kgs. Thus, mix remaining constant, this time the actual quantity has changed. In the third case, the mix and the absolute quantity, both, have changed. In other words, change inthe mix and / or change in the quantity account for total material usage variance. For the purpose of calculation of these variances, each of them is to be calculated by keeping the other of them constant. Thus, when we speak about the mix variance, we presume that the quantity consumed is quite upto the mark and when we take-up yield variance, we presume that the mix is quite upto the mark.

5. Material Mix Variance:

Here our aim is to know whether the actual input of raw materials is as per standard or has changed. For this we pick up the figure of total actual input and we apply the standard mix ratioto it and we get the mix that ought to be, given the actual input. We compare this standard mix with the actual mix and multiply the difference by the standard material price.

6. Material Yield Variance:

This variance accounts for that part of the usage variance that comes into being because of change in the quantity of raw material consumed, the mix remaining constant. There are four methods for the calculation of this variance, as shown below:

1) Based on Input:

We just compare the total Standard input quantity with the total actual input quantity an we multiply the difference by the standard average cost. The standard average cost is the total standard cost divided by the total standard input quantity.

2) Based on Process Loss:

Based on the actual input quantity, we find out the Standard process loss and we compare that with the actual process loss. The difference is output lost / gained because of excess / less rejection. We multiply this difference by the Standard average cost per unit of output.

3) Based on Yield / Output:

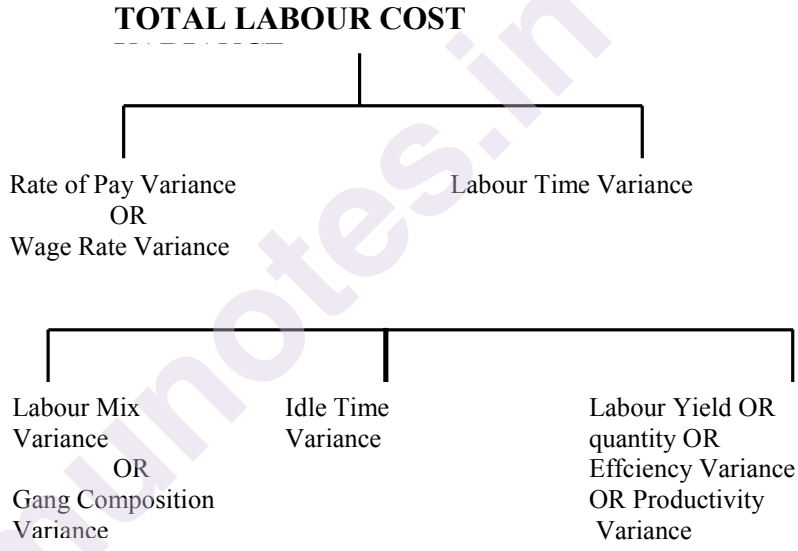
Based on the actual input quantity, we find out the Standard output and we compare that with the actual output. The difference is the output lost / gained. We multiply this difference by the Standard average cost per unit of output.

4) Based on Mix:

This time we compare the Standard Mix of Standard Input with the Standard Mix based on actual input (developed for the purpose of mix variance) and we multiply the difference by the Standard Price of relevant material item.

5.3 LABOUR VARIANCE

5.3.1 Labour Cost Variances



Check:

Total Labour Cost Variance=Rat of Pay Variance+Labour Time Variance
Labour Time Variance=Mix Variance+Idle Time Variance+Efficiency Variance

5.3.2 Detailed Explanation

i) Setting the Standard:

Like Material Cost, even this cost is also a variable cost item and therefore, like material cost, here also the Standard are to be for actual output. This means if the given Standards for labour cost do not represent actual output level, then, they must be proportionately revised to make them represent actualoutput level.

ii) Calculation of Variances:

The variance chart here almost resembles material variance chart with minor changes. In most of the cases the cost changes from material to labour and the variances are same. Accordingly, the explanations provided in respect of material cost variances is equally applicable to labour cost variances and therefore these details are not repeated.

5.3.3 Calculation of Variances

1. Total Labour Cost Variance:

This variance is the difference between the total Standardlabour Cost (for actual output) and total actual labour cost.

Rate of Pay Variance:

This is just like material price variance. The Variance is actual number of hours paid for multiplied by the wage rate difference.

In other words, it is:

Actual Hours X (Standard Rate - Actual Rate)

2. Labour Time Variance:

This is just like material usage variance. The variance is Standard wage rate multiplied by the difference between Standard hours and actual hours paid for.

3. Idle Time Variance:

This is abnormal idle hours for various categories multiplied byapplicable standard wage rates if there are two or more categories, then category wise break-up of idle time would, normally, be given. If not given, we must put presumption to get the break up. Preferably, the presumption should be that idle hours were in standard ratio.

4. Labour Mix Variance:

This is just like material mix variance. Thus, we apply theStandard mix ratio to the actual input of hours worked and we get Standard Mix for actual total hours. If there is idle time, it should be deducted from the gross input hours and the Standard ratio should be applied to the actual or productive hours paid for. This is because, out of gross hours, Idle time variance accounts for idle hours. Therefore, we now have to account for new hours worked.

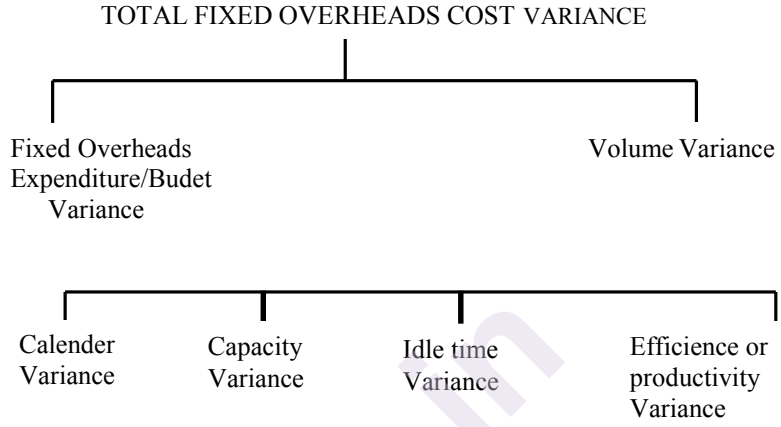
5. Labour Efficiency Variance:

This is just like material yield variance based on input. We compare total standard hours with the total actual (but net i.e. excluding idle time) input hours and we multiply the difference by Standard average rate per hour (Total Standard Cost, Standard input hours)

5.4 FIXED FACTOR OVERHEADS VARIANCES: (BASED ON ABSORPTION COSTING) :

5.4.1 Chart

The following is the chart of the fixed factory overheads costvariances under absorption costing:



Check:

Total Cost Variance=Expendure Variance+Volume Variance

Volume Variance=Calender Variance+Capacity Variance+Ideitem Variance+Efficience Variance

5.4.2 Detailed Explanation:

i) Setting the Standard:

Unlike the Raw Material Cost, this cost does not depend on the output. Rather, it depends on the period because it is a period cost. Obviously, therefore, the standards or, say budgets, are always for a period. Very soon well shall see that for calculating variances, we sometimes compare days, hours,expenditure and output figures for the given period and therefore we should know budgets as regards these items.

ii) Basic Explanation about fixed Overheads Variance:

For setting the selling price of a product, we generally add profit margin to the total cost. The total cost is the sum total of variable cost and fixed cost. Variable cost per unit isreasonably simple to get because it depends on the output. However, the fixed cost has nothing to do with the output, and the total cost remains constant irrespective of the quantity of the product that we produce. Then, how do we get the fixed cost per unit?

For this we have a system of recovering the overheads. Well before the budget period commences, we make an estimate as regards fixed overheads to be incurred and the quantity of the product to be produced Though there is no nexus between the cost and the output, after all the output that we are goingto have, must bear the charge of overheads cost

that we are going to incur. Thus, we lay down nexus between the two and divide the budgeted overheads by the expected output and we get overheads per unit.

Once, we get the Fixed Overheads rate per unit, every timewe produce a unit we charge the overheads at this predetermined rate. If everything goes as per our expectation, then, we notice at the end of the period that overhead amount charged to the output is exactly equal to the overheads cost incurred and thus, there is no variance. In other words, the overheads cost variance comes into being if the overheads charged or, say, recovered are not some as overheads incurred.

5.4.3 Calculation of Variances:

1. Fixed Overheads Cost Variances:

This variance comes into being if there is some difference between overheads recovered (obviously, on the basis of actual output) and overheads cost incurred. Thus, this variance is under orover absorption of overheads.

Consider the following example:

	Actuals				
	Budget	**A**	**B**	**C**	**D**
Fixed Overheads ₹	1,00,000	1,00,000	90,000	1,10,000	96,000
Output (units)	25,000	24,000	25,000	24,000	24,000
Absorption rate per unit	₹4				

In situation A, the amount recovered is ₹96,000 (24,000 X 4) whereas amount spent is 1,00,000. The amount spent is more which means there is under-recovery of overheads and the variance comes into being. Here, whereas fixed overheads, have remained constant, the output has changed. In situation B, theamount recovered is ₹1,00,000 whereas amount spent is ₹90,000. There is over recovery of overheads and the variance comes into being. Here, whereas output has remained the same, the overheads have changed.

In situation C, the amount recovered is ₹96,000 whereas the amount spent is ₹1,10,000. Again, there is under recovery of overheads. This time overheads and output, both, have changedbut not proportionately.

In situation D, though overheads and output, both, have changed, there is still not variance because the amount spent (₹96,000) and the amount recovered (24,000 X 4) are same.

This should suggest that the total overheads cost variance comes into being, if either only overheads change, output remaining constant, or

only output changes, overheads remaining constant, or both of them change, but not in the due proportion. Under-absorption implies that the actual fixed overheads cost per unit is more than the standard cost whereas over-absorption implies that the actual fixed overheads cost per unit is less then the standard cost. Absence of under / over absorption implies that the actual fixed overheads cost, per unit is same as standard cost. Accordingly, under-absorption is an adverse variance whereas over absorption is a favourable variance.

In other words, if output and overheads, both remain constant or both of them change but just in due proportion, then, there is no overheads cost variance at all.

To conclude, one should compare the amount of overheads recovered with the amount of overheads spent and the difference is the variance. Over-recovery signifies the favourable variance whereas under recovery signifies the adverse variance.

2. Fixed Overheads Expenditure Variance:

We just compare the volume or the output figures and the difference is to be multiplied by the recovery rate per unit. If the actual output is more than the budgeted output, the variance is favourable (because higher output reduces the overheads cost per unit) and if the actual output is less, the variance is adverse.

The analysis of volume variance is required to know the precise factors responsible for change in the output. The output depends on so many factors like number of working days, number of hours in working days, unproductive (idle) time and efficiency level.

Consider the following budget:

No. of days	250
Hours per day	500
Hours per unit	5
∴ Total Hours p.a.	1,25,000
∴ Total Output p.a.	25,000

Now if, instead of working for 250 days, the workers work for 251 days, then, other factors remaining constant, hours would increases by 500 and the output would increase by 100. The variance that comes into being because of change in number of day is called calendar Variance. We should compare the number of days as per budget with actual number of days and the difference should be multiplied by the recovery rate per day. If the actual number of days is more, then, the variance is favourable because the more the days, the more the hours and the more the output.

Now, days remaining constant, if the workers work for more or less than 500 hours per day, then, again the output would change. The variance that comes into being because of change in such capacity utilization is known as capacity Variance. We find out the number of hours that should have been paid for in actual number of days and we compare this with the actual number of hours paid for. The difference is multiplied by the recovery rate per hour. If the actual number of hours is more, then, the result variance is favourable because the more the hours, the more the output.

Sometimes in the problem, the student is not given information about number of days. In such cases, the calendar variance cannot be calculated. Even the capacity variance, in the manner shown above, cannot be calculated. In such cases, we compare budgeted hours with actual hours paid for. The difference is to be multiplied by the recovery rate per hour. This comparison takes care of calendar and capacity both. Therefore, if the information about days is not given, then, we calculate this variance and call it capacity variance. If the information about days is given, then we calculate calendar variance and capacity variance in a normal way but we use this variance (direct comparison of hour) as crosscheck. This variance has to be equal to calendar variance plus capacity variance.

The idle time variance is calculated by multiplying idle hours by recovery rate per hour.

The Efficiency Variance can be calculated in one of the twopossible ways, as shown below:

i) We find out the number of units that should have been produced in actual number of hours (net, excluding idle time). We compare this with the actual output and the difference is to be multiplied by the recovery rate per unit.

OR

ii) We find out the number of hours that should have been taken for the actual production and we compare this with actual number of hours (net, excluding idle time) taken. The difference is to be multiplied by the recovery rate per hour.

5.5 VARIABLE FACTORY OVERHEADS VARIANCES

5.5.1 Chart

TOTAL VARIABLE OVERHEADS COST VARIANCE

Variable Overhead Spending / Budget OR Expenditure Variance	Variable Overheads Utilization OR Efficiency Variance

Check:

Total Variable Overheads Cost Variance = Spending Variance + Utilization Variance

5.5.2 Detailed Explanation:

i) Setting the Standards:

This cost, being variable in nature, depends on the actual output and therefore, like material cost and labour cost, the Standards are always for actual output.

5.5.3 Calculation of Variances:

1. Total Variable Overheads Cost Variance:

This is the difference between total Standard Variable Cost and total actual variable cost.

2. Variable Overheads Spending Variance:

This is just like labour rate of pay variance. Thus, we multiply the rate difference by the actual labour hours paid for.

3. Variable Overheads Utilization Variance:

This is just like labour time variance. Thus, we multiply the labour hours differenced by the standard variable overheads rate per hour.

Here, the actual number of hours to be used should be gross number of hours if the variable overheads cost is incurredduring the idle time. If it is not incurred during the idle time, then, we should use net number of hours.

Note:

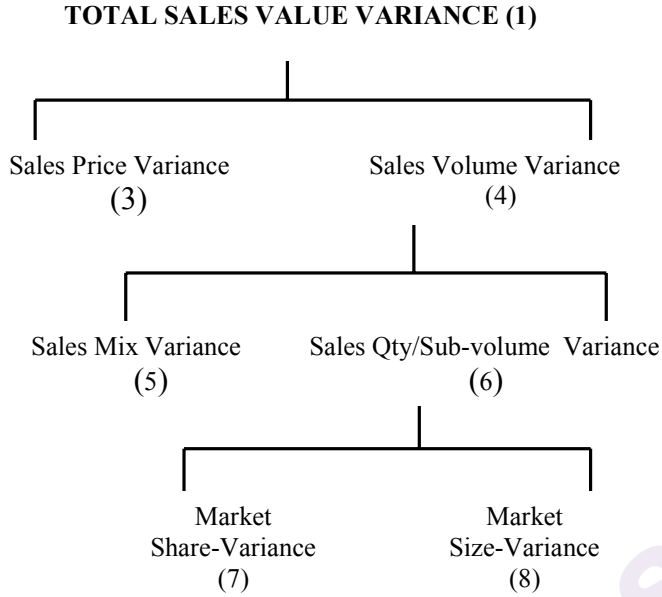
Though the analysis of Variable Overheads Cost variance, as explained above is possible, normally people calculate only the total variable overheads cost variance. The other variances are not calculated normally. There are some obvious reasons for this. The Spending Variance is rarely controllable. (Example: Increase in the electricity rate). The Utilization Variance comes into being if workers take more or less time and this factor is looked into when we calculate labour time variance. There is no point, in real life situation, in repeating the investigation. Thus, once workers take more time, variable overheads utilization also increases. Therefore, the people are not interested in analysing the total variable overheads cost variance.

It may also be noted that labour hours are common for labour cost variances and variable overheads cost variance.

5.6 SALES VARIANCES

5.6.1 Chart

The chart is as shown below:



Notes :

1) **Budget for Comparison :** The sales targets are always for a period. The budget to be compared with the actual result has to be for the same period for which the actual results are given. Thus whenever the budget is for the same period for which the actual results are given, the given budget itself is comparable with the actual and no revision is required. On the other hand, if the budget is not for the same period for which the actual results are given, the given budget has to be revised to make it represent the same period for which the actual results are given. Since we are talking about revenue and not the expenses, it is obvious that if actual quantity or price is more than the budget, then it gives us favourable variance.

5.6.2 Calculation of Variances

1. **Total Sales Value Variance:** This is the difference between the budgeted sales and the actual sales.

2. **Sales Price Variance:** This is just like material price variance and we get it by multiplying the sales price difference by actual quantity sold.

3. **Volume Variance:** This is just like material usage variance and we get it by multiplying the sales quantity difference of each product by standard selling price.

4. **Sales Mix Variance:** This is very usual mix variance. Accordingly, we apply standard ratio to the actual total quantity sold and we develop standard sales mix.

We compare this with the actual sales mix and the differenceis to be multiplied by standard selling price of each product.

5. Sales Qty./Sub-volume Variance: This is just like material yield

variance based on input and we get it by multiplying the total sales quantity difference by the standard average selling price per unit.

6. Market Share Variance: This is the change in total salesquantity due to change in market share. We multiply the actual market size by standard market share percentage to get standard sales quantity figure. We compare this with actual sales quantity and multiply he difference by standard average sales price per unit.

7. **Market Size Variance:** This is the change in total Sales quantity due to change in market size, multiplied by standard average sales per unit. We multiply the market size difference by standard market share percentage to get the change in total sales quantity.

5.7 PROFIT VARIANCES

The Chart is as shown on the last page of notes on this chapter.

NOTES:

1) Like Sales, the profit targets are also for the period and whenever the given budget is not for the same period forwhich the actuals are given, the given budget has to be revised. Also, the actual profit being more would be a favourable variance.

5.7.1 Calculation

1. **Total Profit Variance:** This is the difference between total budgeted profit and actual profit.
2. **Profit Variance due to Change in Sales:** This part of the chart is very similar to sales value variance chart. The only difference being the sales quantity difference is to be multiplied by standard sales price in sales value chart whereas the same quantity difference is to be multiplied by standard profit per unit in this part of the chart. The quantity variances in the two charts would be different only because of the difference between standard sales price and standard profit. The sales price variance in both charts is the same.
3. **Profit Variance due to change in S. P.:**This is usual price variance which we get by multiplying actual sales quantity bythe sales price difference.
4. **Profit Variance Due to Change in SalesVolume:** We get this variance by multiplying the sales quantity difference of each product by the standard profit per unit.

5. **Profit Variance Due to Change in Sales Mix:**This is usual mix variance and we get in by multiplying standard profit by the mix difference.

6. This is usual quantity variance and we get it by multiplying the total sales quantity difference by standard average profit perunit.

(a) (b) : These Variances are same as those in the sales chart, the only difference being, we multiply the quantity difference by standard average net profit per unit.

7. **Profit Variance Due to Change in Cost:** If only the totalstandard cost and actual cost per unit are given without breakup into material cost, labour cost etc., then we calculate only the total variance in the same way as we calculate sales price variance. Thus we get it my multiplying the cost difference by the actual quantity Produced per unit.

   It the break-up of cost is given then all variances in respect of each cost item are to be calculate by following usual principles applicable to a particular cost item.

8. **Change in Material Cost:** These are usual material cost variances and we compare the standards for actual output with the actuals and get normal Material Cost Variances.

9. **Change in labour Cost:** We follow usual principles applicable to labour cost variances and get the normal variances.

10. **Change in Variable Cost:** We follow usual principles applicable to Variable Overheads cost Variances and get the normal variances.

11. **Change in Fixed Overheads Cost:** We follow usual principles applicable to fixed overheads cost variances and get the normal variances.

12. **Change in Administration / Fixed A & D Overheads : (under financial accounting)** As regards fixed expenses, we calculate only one variance which is Fixed Overheads expenditure variance. We calculate the same by comparing budgeted fixed overheads with actual Fixed Overheads. It should be noted that whereas fixed production overheads cost variance is to be analysed into expenditure and volume variance, under absorption costing, the admn. and S & D fixed cost variance is only in respect of expenditure and there is nothing like volume variance here.

Under marginal costing, there would be only expenditure variance for all types of fixed overheads.

If there is variable S & D overheads given then we develop thestandards for actual quantity sold and the standard S & D variable cost would be compared with actual S & D cost to get Total variable S & D cost variance.

5.8 FORMULAS USED IN STANDARD COSTING

Material Cost Variance	Standard Material Cost Less Actual Material Cost
Material Price Variance	(Standard Price Less Actual Price) X Actual Quantity Purchased or Used.
Material usage Variance	(Standard Quantity for Actual Output Less Actual Quantity) X Standard Price
Material Mix Variance	(Actual Mix Less Standard Mix)X Standard Price
Material Yield Variance	(Standard Yield Less Actual Yield) X Standard Cost
Labour Cost Variance	Standard Wage Cost Less Actual Wage Cost
Labour Rate Variance	(Standard Rate Less Actual Rate) X Actual Hours
Labour Efficiency Variance	(Standard Hours for Actual Output Less Actual Hours Worked) X Standard Rate
Idle Time Variance	Idle Time X Standard Rate
Variable Production Cost Variance	Standard Variable Overhead Less Actual Variable Overhead
Variable Overhead Expenditure Variance	(Standard Overhead Rate Less Actual Overhead Rate) X ActualHours
Fixed Overhead Cost Variance	Overhead Absorbed Less Overhead Incurred
Fixed Overhead Expenditure Variance	(Budgeted Fixed Overhead Less Actual Fixed Overhead)
Fixed Overhead VolumeVariance	(Budgeted Volume-Actual Volume) X Standard Absorption Rate
Fixed Overhead Capacity Variance	(Budgeted Hours-Actual Hours)X Standard Absorption Rate
Fixed Overhead Productivity Variance	(Standard Hours for Actual Output-Actual Hours Worked) X Standard Absorption Rate

Sales value Variance	(Budgeted Quantity X Standard Selling Price) Less (Actual Quantity X Actual Selling Price)
Sales Price Variance	(Standard Selling Price-Actual Selling Price) X Actual Quantity Sold
Sales Volume Variance	(Budgeted Quantity - Actual Quantity) X Standard Selling Price or Standard Profit or Standard Contribution
Sales Margin Variance	(Budgeted Quantity X Standard Profit) - (Actual Quantity X Actual Profit)
Sales Contribution Variance	(Budgeted Quantity X Standard Contribution) - (Actual Quantity X Actual Contribution)
Sales Allowance Variance	(Budgeted Allowance-Actual Allowance) X Actual Quantity Sold
Sales Mix Variance	(Standard Mix-Actual Mix) X Standard Selling Price or Standard Profit or Standard Contribution
Sales Quantity Variance	(Budgeted Quantity-Actual Quantity in Standard Mix) X Standard Price or Standard Profit or Standard Contribution

5.9 SOLVED PROBLEMS

Q.1 From the following information Compute Fixed Overhead Variances.

	Standard	Actual
Days	50	54
Hours	5,000	5,500
Idle Hrs	.....	200
Units	5,000	5,100
Overheads	1,00,000	1,15,000

Also compute ratios for fixed overheads.

Std Rate

1) Abs Rate P.U. $= ₹20 = \left[\frac{10,00,000}{5,000}\right]$

2) Abs Rate P.H. $= ₹20 = \left[\frac{1,00,000}{5,000}\right]$

3) Abs Rate P. Day $= ₹2,000/- = \left[\frac{1,00,000}{5,000}\right]$

4) Std Hrs Per Day $= 100 \text{ hrs } \left[\frac{5,000}{50}\right]$

5) Std Hrs Per Unit $= 1 \text{ hr } \left[\frac{5,000}{5,000}\right]$

Calculation of Variances

FOH Cost Var $= \text{Actual FOH} - \text{FOH Abs}$

$= 1,15,000 - [5,100 \times 20]$

$= 13,000 \text{ A}$

FOH Exp….. Var $= \text{Budg FOH} - \text{Actual FOH}$

$= 1,00,000 - 1,15,000 = 15,000 \text{ A}$

FOH Volume Var $= \begin{bmatrix} Budg & Actual \\ & - \\ O/p & O/p \end{bmatrix} \times Abs\ Ratw\ PU$

$= [5,000 - 5,000] \times 20$

$= 2,000 \text{ F}$

$Check \rightarrow 13,000 \text{ A}$ $= 15,000 \text{ A} + 2,000 \text{ E}$

Calender Var $= [Budg.\ Days - Actual\ Days] \times \frac{Abs.\ Rate}{Per\ Day}$

$= [50 - 54] \times 2,000$

$= 8,000 \text{ F}$

OR

Calender Var →	↑ *in no. of days*	4
	× *Std hrs per day*	100
	↑ *In no of hours*	400
	÷ *Std hrs P.U.*	1
	↑ *in o / p (Units)*	400
	× A. *R. P. U.*	20
		₹8,000 F

Budgeted Out Put	5,000
Calender	+ 400
Capacity	+ 100
Idle Time Var	- 200
Efficiency	- 200
Actual Output	5,100

Capicity Variances :

$$= \begin{bmatrix} \text{Std hrs in} \\ \text{Act. Days} \end{bmatrix} - \begin{bmatrix} \text{Actual} \\ \text{Hours} \end{bmatrix} \times \begin{matrix} \text{A.R.} \\ \text{Per hr} \end{matrix}$$

$$= [5,400 - 5,500] \times 20$$
$$= 2,200\ F$$

OR

↑ *in no. of hours*	100
÷ *Std hrs P.U.*	1
↑ *in o / p*	100
× A.P.	20
	200 *F*

If No of Days Are Not Given

Sales Qty Var / Sub Vol. Var
$= (\text{Total Std Sales Qty} - \text{Total Actual Sales Qty})$
$\times$ *Std Weighted Avg SP*
$= (12,000 - 15,000) \times 70/12 = 17,500\ F$
$18,000 = 500\ F + 17,500\ F$

$$Capicity\ Var = \begin{bmatrix} Budgt - Actual \\ Hrs \qquad Hrs \end{bmatrix} \times \begin{matrix} A.R. \\ Per\ Hr. \end{matrix}$$

$$= [5,000 - 5,000] \times 20 = 10,000\ F$$

$$Cap\ Var\ By = Calender + Cap.Var\ By$$
$$Alternate = Var\ Normal\ Method$$
$$10,000\ F = 8,000F + 2000\ F$$

6) $Idle\ Time\ Var = Idle\ Times \times Abs\ Rate\ P.H.$
$= 200 \times 20$
$= 4,000$ A

OR

Idle Time (Hrs	200
÷ *Std Hrs P.U.*	1
↓ *in o / p (Units)*	200
× A. *R. P.U.*	20
	400

7) $FOH\ Efficiency\ Var = \begin{bmatrix} Std\ o/p\ in \\ Actual\ Net\ hr \end{bmatrix} \begin{matrix} Actual \\ O/P \end{matrix} \times \begin{matrix} Ab.Rate \\ P.U. \end{matrix}$

$\{5,300 - 5,100\} \times 20 = 4,000\ A$
$\neq WNI\ Std$ O / *P Actual Net hrs.*

	Hrs	*Unit*
Std	1	1
	5300	? → 5,300 *units*

$2000\ F = 8,000\ F + 2,000\ F + 4,000\ A + 4,000\ A$

1) $FOH\ Volume\ Ratio = \frac{Actual\ o/p}{Budge\ o/p} \times 100$
$= \frac{5100}{5000} \times 100$
$= 102\%$

2) $Calender\ Ratio = \frac{Actual\ Days}{Budgied\ Days} \times 100$
$= \frac{54}{50} \times 100$
$= 108\%$

3) $Capacity\ Ratio = \frac{Actual\ hrs}{Std\ hrs\ in\ actual\ days} \times 100$

$= \frac{5500}{5400} \times 100$

$= 101.85\%$

IF NO. OF DAYS NOT GIVEN

$Cap\ Ratio = \frac{Act\ Hrs}{Budg\ Hrs} \times 100$

$= \frac{5500}{5000} \times 100$

$= 110\%$

$FOH\ EFF\ Ratio = \frac{Actual\ o/p}{Std\ o/p\ in\ Act\ Net\ hrs} \times 100$

$= \frac{5100}{5300} \times 100$

$= 96.23\%$

Q.2 In department A the following data is submitted for the week ended 31st October.

Standard output for 20 hours per week	700 Unit
Standard fixed overheads	₹700/-
Actual output	600 Units
Actuals hours worked	16
Actuals Fixed overheads	₹750/-

Prepare a Statement of Variances and ratio in respect fixed overheads.

	1 Week Budget	1 Week Actual	Std Rate
Output (Units)	700	600	1 → Abs Rate P.O.
Hours	20	10	35 → Abs Rate P. H.
FOH (₹)	700	750	Std o/p P. Hrs = 35 unit p. hrs
Output Std hrs.	20 hrs	17.14285 hrs	

Calculation Variances :-

1) $FOH\ Cost\ Var = Actual - FOH$

$= FOH \quad Abs$

$= 750 - (600 \times 1) = 150\ A$

2) $FOH\ Exp.Var = \text{B}udgeted - \text{A}ctual$

$= FOH \quad FOH$

$= 700 - 750$

$= 50\ \text{A}$

3) $FOH\ Vol.Var = \begin{bmatrix} Budgeted - Actual \\ o/p \quad o/p \end{bmatrix} \times Abs\ Rate$

$= (700 - 600) \times 1 = 100\ A$

$Check\ 150\ A = 50\text{A} + 100\text{A}$

4) $Capacity\ Var = (Budg.Hrs - Act.Hrs) \times Abs\ Rate$

$= (20 - 16) \times 35$

$= 140\ A$

5) $Efficiency\ Variances = \begin{bmatrix} Std\ o/p\ for \quad - Actual \\ Actual\ Net\ ms \quad o/p \end{bmatrix} \times Abs\ Rate\ pu.$

$Std. \dfrac{Hrs}{1} \dfrac{Unit}{35}$

$16 \quad 560$

$= [\ 560 \ - \ 600\ ] \times 1$

$= 40\ F$

(We are comparing low much o/p should her been produce inactual net has & how much o/p is actual produced)

$FOH\ EFF = \begin{bmatrix} Std\ hrs\ for \quad - \text{A}ctual \\ Act\ o/p \quad Net\ hrs \end{bmatrix} \times A.R.Per\ hrs$

$Hrs \qquad Unit$

$1 \qquad 35 \qquad = (17.14285 - 16) \times 35$

$17.14285 \quad 600 \qquad = 40\ F$

$Check\ 100\ A = 140\ A + 40\ F$

Q.3 From the following information about state calculate necessary sales variances.

Product	Standard			Actual		
	Nos	Rate in ₹P.U	Total ₹	Nos	Rate in ₹P.U.	Total ₹
A	5,000	5	25,000	6,000	6	36,000
B	4,000	6	24,000	5,000	5	25,000
C	3,000	7	21,000	4,000	8	32,000
	12,000		70,000	15,000		93,000

The company's budgeted market share was 20% and theactual market size was 90,000 units.

$$\text{Total Sales} = \text{Std Sales} - \text{Actual Sales}$$

$$\text{Value Var} = 70,000 - 93,000$$

$$= 23,000\ F$$

$$\text{SP Variances} = (\text{Std SP} - \text{Act SP}) \times \text{Actual Sales Qty.}$$

$$A = (5-6) \times 6,000 = 6,000\ F$$

$$B = (6-5) \times 5,000 = 5,000\ A$$

$$C = (7-8) \times 4,000 = 4,000\ F$$

$$\text{Sales Vol V} = (\text{Std Sales Qs} - \text{Act Sales Qty}) \times \text{Std SP}$$

$$A = (5,000 - 6,000) \times 5 = 5,000\ F$$

$$B = (4,000 - 5,000) \times 6 = 6,000\ F$$

$$C = (3,000 - 4,000) \times 7 = 7,000\ F$$

$$\text{Check } 23,000\ F = 5,000\ F + 18,000\ F$$

$$\text{Sales Mix Var} = \begin{bmatrix} \text{Std Mix For} - \text{Actual} \\ \text{Act S.Qty} \qquad \text{Mix} \end{bmatrix} \times \text{Std S.P.}$$

$$A = (6,250 - 6,000) \times 5 = 1250\ A$$

$$B = (5,000 - 5,000) \times 6 =$$

$$C = (\underline{3,750} - 4,000) \times 7 = \underline{1,750\ F}$$

$$15,000 \qquad 500\ F$$

$$\text{Sales Qty Var / Sub Vol. Var}$$
$$= (\text{Total Std Sales Qty} - \text{Total Actual Sales Qty}) \times \text{Std Weighted Avg SP}$$
$$= (12,000 - 15,000) \times 70/12 = 17,500\ F$$
$$18,000 = 500\ F + 17,500\ F$$

Budget Mkt Share	Budget Mkt Size
20	100
1200	2 (66,000 Units

6) Mkt Size Variances

Budget Mkt Size	=	60,000
Act Mkt Size	=	90,000
in Mkt (Units)	=	30,000
Std Mkt Share		20%
in Sales due to		
in Mkt Size		6,000
x Std wt Avg pr		5.83
		35,000 F

7) Mkt Share Variance — Units

Actual Mkt Size	90,000
X Std Mkt share	20%
Expected Sale	18,000
(-) Actued Sales	15,000
in Mkt share	3,000
x Std wt Avg sp	70/12
	17,500 A

5.10 EXERCISE

A. Objective Questions

Fill in the blanks:

1. Material Price Variances + Material Usage variances =----------

   ----.(Total Material Cost Variances)

2. Material Mix Variances + Material Yield Variances = ----------

   (Material Usage Variances).

3. Difference between the budgeted sales and the actual sales is --

   ---------(Total Sales value variances)

4. Change in total Sales quantity due to change in market size * standard average sales per unit = (Market Size Variance)

5. The difference between total Standard Variable Cost and total actual variable cost means -------(Total variable overheads cost variance)

B. Practical Problems

1. X Ltd. manufactures product X which requires 2 hours of skilled men, 3 hours of semi-skilled men and 5 hours of unskilled men, per unit at ₹5, 3 & 2 per hour respectively. During April 2003, the production department reported output of 2500 units of product X. The labour cost incurred was as detailed below:

Type of labour	Hours paid for	Rate per hour
Skilled	4,500	₹7.00
Semi - Skilled	8,500	₹2.75
Unskilled	15,000	₹1.50
	28,000	

The total hours paid for included 500 idle hours due to machine break down etc., out of which 250 hours pertained to skilled men, 200 hours pertained to semi-skilled men and the balance to unskilled men.

Required:

1) Calculate the labour cost variances.

2) Recalculate the labour cost variances, given that the breakup of 500 idle hours is not given.

2. Given the following data, compute the variances.

	Skilled	Semi-Skilled	Unskilled
Number in Standard gang	16	6	3
Standard Rate Per Hour	3	2	1
Actual Number in Gang	14	9	2
Actual Rate of Pay	4	3	2

In a 40 hours week, the gang as a whole produced 900 standard hours.

3. From the following information compute fixed overhead variances.

	Standard	Actual
Days	50	54
Hrs.	5,000	5,500
Idle Hrs.	----	200
Units	5,000	5,100
Overheads	1,00,000	1,15,000

Also compute ratios for fixed overheads.

4. From the following information about sales, calculate necessary sales variances.

Product	Standard			Actual		
	Nos	Rate in ₹ Per Unit	Total ₹	Nos	Rate in ₹ Per Unit	Total ₹
A	5,000	5	25,000	6,000	6	36,000
B	4,000	6	24,000	5,000	5	25,000
C	3,000	7	21,000	4,000	8	32,000
	12,000		70,000	15,000		93,000

The company's budgeted market share was 20% and the actual market size was 90,000 units.

5. The Company has Budgeted the following data for a month.

Product	SP	Cost Per Unit	Units
A	10	4	600
B	20	15	400

Budgeted Market size of the industry in which company isoperating is 5000 units. The actual data for the month was:

Product	SP	Cost Per Unit	Qty.
A	12	5	800
B	19	13	700

Actual market share of the company was 25%.

Required:

1) Sales Variances
2) Profit Variances
3) Reasons for Sales mix variance being favourable but profit mix variance being adverse.

6. single product company operates a system of standard costing. The following data relate to actual output, sales, costs and variances for a month:

Actual Output	18,000 units
	₹
Actual Sales and costs incurred: Sales	12,15,000
Direct Materials Purchased and Used 63,000 kg.	2,04,750
Direct Wages	2,12,040
Variable Overheads	2,77,020
Fixed Overheads	3,25,000
Total Costs	10,18,810
Profit	1,96,190

Standard wage rate is ₹6 per hour. Budgeted output for themonth is 20,000 units. Variance are:

(Direct Materials	**-**	**Price Variance**	**15,750 A**
	-	**Usage Variance**	**27,000 A**
Direct Labour	**-**	**Rate Variance**	**6,840 A**
	-	**Efficiency Variance**	**10,800 F**
Variable Overheads	**-**	**Efficiency Variance**	**14,400 F**
	-	**Expense Variance**	**3,420 A**
Fixed Overheads	**-**	**Expense Variance**	**25,000 A**
		Sales Price Variance	**45,000 F)**

Required:

i) Present the original budget alongwith cost sheet showing the standard cost and profit per unit.

ii) Calculate the sales gross margin volume and fixed overheads volume variances.

iii) Prepare an operating statement reconciling the budgeted profit with actual profit.

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6

SOME EMERGING CONCEPTS OF COST ACCOUNTING

Unit Structure

6.0 OBJECTIVES

After studying the unit the students will be able to:

- Explain the meaning and stages involved under target costing.
- Know the Meaning of Life cycle Costing and Phases of product life cycle.
- Understand the meaning, steps and important terms in Activity Based Costing
- Explain the meaning, Steps and types of Bench Marking

6.1 INTRODUCTION

There are number of drawback in traditional costing. Under traditional costing we have to differential between direct cost and material cost, which also induce in material, Labour and overhead. Under this method, the profit and overhead are distributed as per volume and labour hours or machine hours of particular product but we have to also consider non volume factor. Therefore due to this traditional costing leads to over costing or under costing.

Total Cost of the product is required to calculate the profit, which is also required to find out the total revenue. To make a profit, total revenue must exceed total costs in the long term. Due toall above there is a need to study the different concept of emerging cost accounting.

A) Target Costing.

B) Life Cycle Costing

C) Bench Marking

D) Activity Based Costing (ABC)

6.2 TARGET COSTING

6.2.1 Meaning

Target Costing is a process of developing costs for a product or service based on Market driven considerations. It is a method that allows firms to provide customers with product that they want, a price that they can afford, and also earn desired financial returns.

Target costs are derived from target selling price is follows: Target cost or a product (or service) = Target Selling Price Less Target Profits.

By using above formula, a firm can find out back ward from a product's selling price to arrive at target costs. It becomes goal for designer and production personnel. It is also standard costs but the significance of target costing is how these standard are developed. Target costs are market driven standards.

6.2.3 Steps involved

The following steps / stages are involved under target costing -

i) Design and develop a product that customer desire.

ii) Determine the target price of the product based on customers' perceived value for it and competitive market price.

iii) Determine the desired profit margin.

iv) Derive target costs by detecting desired margin from target selling price.

v) Perform value engineering to advice target cost.

6.3 LIFE CYCLE COSTING

6.3.1 Meaning

Life Cycle costing is a technique which takes account of total cost of making a product or owing a physical asset, during its economic life. The product life cycle concept is very useful concept in sales forecasting, planning and control, as current company products cannot hold the market position indefinitely.

The concept of life cycle costing involves:-

a) Identifying product life cycle and estimating number of units to be produced per period over the life cycle of the product.

b) Estimating the costs involved for the same and.

c) Determining the overage cost of production over the product life.

6.3.2 Phase of Product Life Cycle:-

Each and every product has a product life cycle. It will change from a few months to several years. It can be divided into five phases.

1) Development
2) Introduction
3) Growth
4) Maturity
5) Decline

1) Development:-

Each and every product is passes trough development stage, at which the costs to be paid but there is no any generation of revenue.

2) Introduction:-

Under this stage, a product is introduced in the market. Then the company would find out the potential consumer for the product. The company will paid more amount on advertisement to make more aware of the product as well as to capture more market.

3) Growth:-

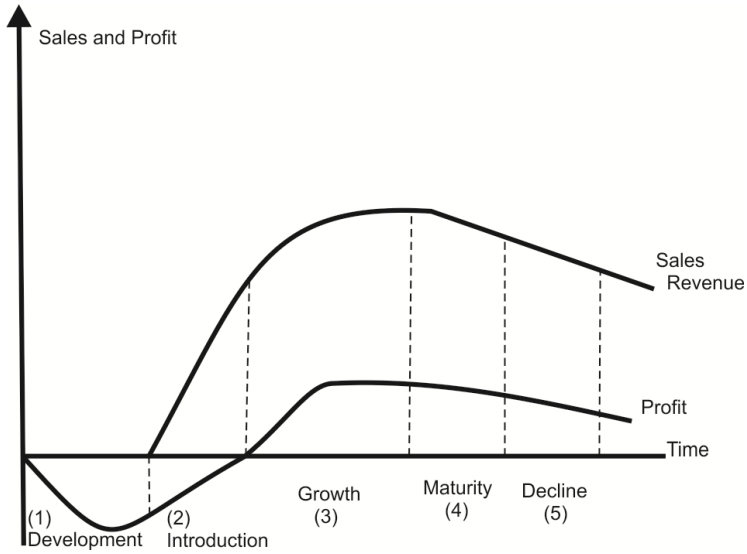
At this stage, Customers are more aware of the product as well as they buy the product at maximum level which gives more profit to the company.

4) Maturity:-

Under this stage the demand for the product slow down, which result in profitability but at minimum level. The product may be modified or improved, as a means of sustaining its demand.

5) Decline:-

At this stage, the market will have bought enough of the product and it will therefore reach 'saturation Point:' Demand will start to fall. Decline in sales volume, will leads to the last phase of the product life cycle.



6.4 BENCH MARKING

6.4.1 Meaning

A bench marking is a target fixed based on the best practice. It may be a financial or non financial measure or both. Bench marking is the continuous process of measuring products, serviceor activities against the best levels of performance that may be found either inside or outside the organization. It is a process or comparing a firms activities with best practices. The process involves establishments of bench marks or targets, through use of which the level of performance of the company is sought to be improved. It is a tool for continuous improvement because after identifying a best practice performance it becomes a target to beat.

6.4.2 Steps

The steps in bench marking are as follows:-

i) Together relevant data of participating departments, establish the bench marks based on the best practices and communicate them to the relevant departments or participating units.

ii) Measure actual performance to compare with the bench marks.

iii) Analyse the reasons for variations and report than to the management for taking preventive and corrective actions.

iv) Review the existing bench marks to set new targets for continuo's improvements.

Types of Bench Marking:-

1) Strategic Bench Marking:-
Strategic Bench Marking involves considering nigh level aspects such as core competencies, developing new products and improving capabilities for dealing with changes in external environment.

2) **Performance or Competitive Benchmarking:-**
It involves the comparison of competitors product, processes and business result with own product, processes and results. This type of analysis is done through trade association or third parties to protect confidentiality.

3) **Process Bench Marking:-**
It involves the comparison of in organizations critical business processes and operations against best practice organization in the same field. It also focus on improving specific critical processes and operations.

4) **Functional Bench Marking or Generic Bench Marking:-**
It is used when organisations look to bench mark with partners drawn from different business sectors or areas of activity to find ways of improving similar functions or work process.

5) **Internal Bench Marking:-**
It involves seeking partners from within the same organisation, for example, from business units located in different areas. It also involves bench marking business or operations from within the same organisation e.g. Branches in different countries.

6) **Global or International Bench Marking:-**
It is bench marking through which distinction in international culture, business process and trade practices across companies are bridged and their ramification / branches for business process improvement are understood and utilized.

7) **External Bench Marking:-**
It involves seeking help of outside organisation that are known to be best in class. It also provides opportunities of learning from those who are at the leading edge. It must be remembered that not every best practice solution can be transferred to others.

6.5 ACTIVITY BASED COSTING (ABC)

6.5.1 Meaning

According to CIMA ABC is defined as "Cost attribution to Cost units on the basis of benefits received from indirect activates i.e. ordering, setting up, assuming quality etc. ABC is a costing technique that assign costs to products, based on the activities those products require. It includes such as ordering material, processing purchase orders, and setting up machines.

6.5.2 Important Terms

Important terms used in Activity Based Costing are defined below:-

1. **Activity:-**
   An activity means an aggregate of closely related tasks having some specific functions which are used for completion of goals or objectives.

2. **Resources:-**
   Resources are elements that are used for performing the activities or factors helping in the activities.

3. **Cost:-**
   Cost is amount paid for resource consumed by the activity.

4. **Cost Object:-**
   It refers to an item for which cost measurement is required.

5. **Cost Pool:-**
   A cost pool is a term used to indicate grouping of costs incurred on a particular activity which drives them.

6. **Cost Driver:-**
   Any clement that would cause a change in the cost of activity is cost driver. Actually cost drivers are basis of charging cost of activity to cost object. They are used to trace cost to product by using a measure of resources consumed by each activity.

6.5.3 Different Stags/Steps in ABC:-

1) **Activities:-**
   An organisation can identify major activities.

2) **Cost Drivers:-**
   Identify the factors which determine the size of the cost of an activity because the cost of an activity, which are known as cost drivers.

3) **Cost Pool:-**
   Collect the costs associated with each cost driver into what are known as cost pools.

4) **Overheads Rate (OH Rate) :-**
   Calculate the overheads Rate for each and every activity (Cost Pool - Cost Driver)

5) **Total Cost:-**
   Charge costs to products on the basis of their usage of the activity (OH Rate x Usage of Activity)

6.6 EXERCISE

1. What is Target costing? Which are the stages involved in Target Costing?
2. Write a Short Note on Product Life Cycle.
3. What are the phase in Product Life Cycle explain in detail?
4. What is Bench Marking, what are its types.
5. Write Short Note on ABC analysis.
6. What is Activity Based Costing ? What are steps under ABC taken by an organisation?
7. Objective Questions

Q.1 Multiple Choice Questions.

1. The management process responsible for identifying, anticipating and satisfying customers requirements profitably isthe
   A. Target Costing B. Life cycle costing
   C. Benchmarking D. Activity Based Costing

2. Cost allocation bases in activity based costing should be
   A. Cost drivers B. Cost pools
   C. Activity centres D. Resources

3. In activity based costing, final cost allocations assign costs to
   A. Departments B. Process
   C. Products D. Activities

4. Relative to traditional product costing, activity based costing differs in the way cost are
   A. Processed B. Allocated
   C. Benchmarked D. Incurred

5. A batch level activity is
   A. Assembling B. product design
   C. Engineering changes D. Purchase ordering

6. A unit level Activity is a
   A. Painting B. Purchase ordering
   C. Inspection D. Material handing

7. It is not included in a facility level activity
   A. Plant depreciation B. Property taxes
   C. Engineering changes D. Utilities

8. It is not a unit level activity
   A. Drilling B. Cutting
   C. Sanding D. Inspecting

9. Providing the power required to run production equipment is an example of
   A. Unit level activity
   B. Batch level activity
   C. Product level activity
   D. Organization sustaining activity

10. In an activity based costing system, direct materials used would typically be classified as a
   A.Unit level cost
   B. Batch level cost
   C. Product sustaining cost
   D. Facility level cost

Answers : - 1. A, 2. A, 3. C, 4.B 5. D, 6. A, 7. C, 8. D, 9. A, 10. A.

Q .2 True and False

1. Property taxes is a facility level activity.
2. Purchase ordering is a batch level activity.
3. Product design is a product level activity.
4. Inspecting is not a unit level activity.
5. Assembling is a branch level activity.
6. Material bonding is a product level activity.
7. Product line activity is the cost of designing products.
8. Unit levels activity is the cost of processing purchase orders.
9. ABC is a method of allocating indirect costs.
10. Cost pool is a collection of overhead costs related to a cost object.

Answer: True :- 1, 2, 3, 4, 7, 9, 10. False :- 5, 6, 8,

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T.Y.B.Com Sem VI
Financial Accounting and Auditing Paper X
(Cost Accounting)

Question Paper Pattern

Maximum Marks: 100
Questions to be set: 05
Duration: 3 Hours

All Questions are Compulsory Carrying 20 Marks Each

Question No	Particular	Marks
Q-1	Objective Questions A) Sub Questions to be asked 12 and to be answered 10 B) Sub Questions to be asked 12 and to be answered 10 (*Multiple Choice/True or False/Fill in the blanks/Match the column)	20 Marks
Q-2	Practical Question	20 Marks
	OR	
Q-2	Practical Question	20 Marks
Q-3	Practical Question	20 Marks
	OR	
Q-3	Practical Question	20 Marks
Q-4	Practical Question	20 Marks
	OR	
Q-4	Practical Question	20 Marks
Q-5	A) Theory Questions	10 Marks
	B) Theory Questions	10 Marks
	OR	
	Short Notes To be asked 06 To be answered 04	20 Marks

Note: Practical questions of 20 marks may be divided into two sub questions of 10 marks each.