DEPARTMENT OF COMMERCE [CA]

Cost and Management Accounting (18MCC31C)

Semester: III

II M.Com (CA) Unit - II

Materials - Issue of Materials - LIFO, FIFO. Simple and weighted Average - Labour - System of wage payment - Idle time and over time only.

Reference Books:

1. Cost Accounting
   By T.S. Reddy & Y. Hari Prasad Reddy
2. Management Accounting
   By T.S. Reddy & Y. Hari Prasad Reddy
3. Cost and Management Accounting
   Theory, Problems and Solutions
   By M.N. Arora

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Cost Accounting

Meaning :-

Cost accounting Provides detailed Cost information to various levels of Management for ~~efficiency~~ efficient Performance of their functions.

The information Supplied by cost accounting acts as a tool of Management for making optimum use of Scarce resources and ultimately add to the profitability of business.

Cost finding by any Process (or) techniques. It consists of principles and rules which are used for determing:

(a) the cost of Manufacturing a product
(eg) · Motor car, furniture, chemical, paper etc.

(b) the cost of providing a Service
(eg). electricity, transport, education Hospital etc.

Objectives of Cost Accounting

(1) Ascertainment of cost

- It is different techniques and systems of costing are used under different circumstances.

(2) Control of cost

It aims at improving efficiency by controlling and reducing cost.
It is becoming increasingly important for growing competition.

(3) Guide to Business policy

Cost data provides guidelines for various Managerial decisions like ~~Rate~~ Make (or) buy, Selling below cost, introduction of a new product etc.,

(A) Determining of Selling Price

Cost Accounting Provides cost estimation on the basis of which

Selling Prices of Products (or) Services may be fixed.

(5) Measuring and Improving Performance

Cost accounting measures efficiency by classifying and analysing cost data and then suggest various steps in improving performance for increasing Profitability.

Methods of Costing

(1) Job Cost : Cost unit (or) Job order

Job order costing is a Job (or) work order for which costs are separately collected and accumulated.

(eg) Building construction — interior decorations, paintings, electrical fittings.

(2) Contract Costing

— Contract costing is big and Job costing is small.

(eg) Construction Buildings, dams, bridges, and roads etc.

(3) Batch Costing

This method is used in Companies engaged in the production of readymade garments, toys, shoes, tyres and tubes, component parts etc.

(4) Process Costing.

This method is used in Mass production industries, Manufacturing Standardised products in continuous process of Manufacturing.

- Raw material has to pass through number of processes in a particular sequence to completion stage.

(eg) Textile mills, Chemical works, Sugar mills, Soap Manufacturing.

(5) Operation Costing

A process may consist of a number of operations and operation costing involves cost ascertainment for each operation.

(6) Unit Costing

The units of output are identical, the cost per unit is found by dividing the total cost by the number of units produced.

(7) Service Costing (or) operating costing.

operating costing is used in undertaking which provide services instead of manufacturing products.

(eg) Transport service, hotels, hospitals, etc.

Techniques of costing

(1). Standard costing.

2) Budgetory control

(3) Marginal costing.

(4) Total absorption costing

(5) uniform costing.

Classification of Costs.

(1) Direct cost and Indirect cost

(2) fixed and variable cost

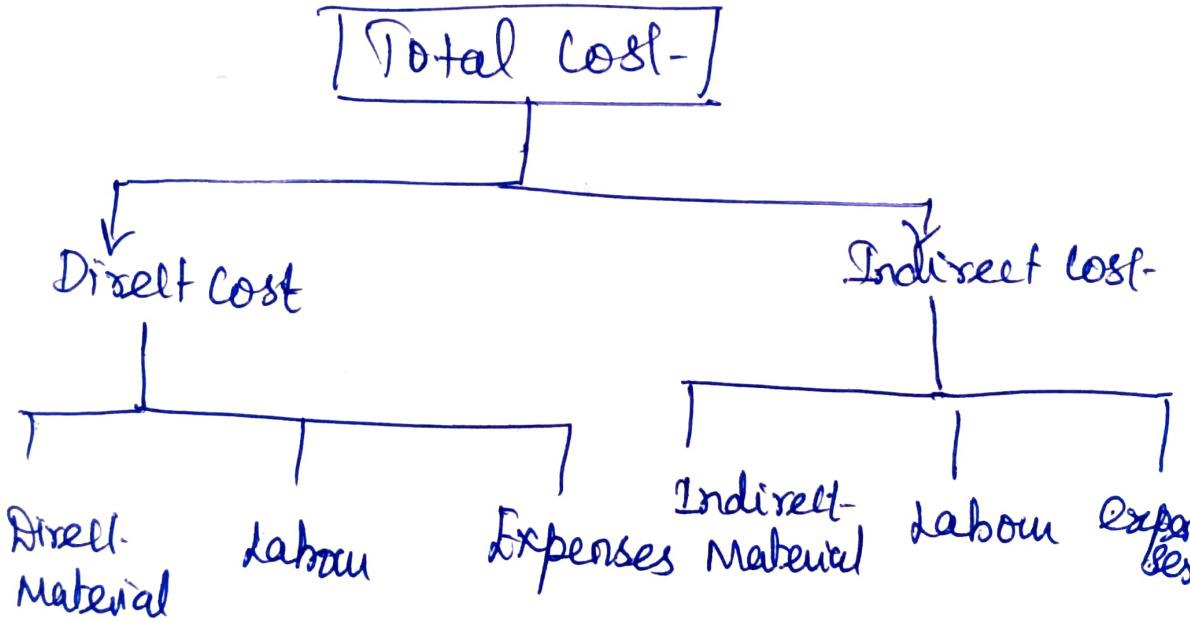
(3) Controllable cost- and Non Controllable cost-.

↓ Purchase the raw materials

↓ factory Rent- increase Salary to employee.

(4) Normal cost and Abnormal cost-

Elements of Cost



Elements of Cost (or) Total Cost

Prime Cost = Direct Material + Direct Labour + Direct Expenses.

Work Cost (or) Factory Cost = Prime Cost + factory overheads.

Cost of Production = Work Cost + Administration overheads.

Total Cost (or) Cost of Sales = Cost of Production + Selling and Distribution cost overheads.

Inventory (OR) Material Control

→ Material is the largest single element of cost.

→ efficient System of Material Control leads to a significant economy in the total cost of production.

Techniques of Inventory Control

(1) ABC Technique
(2) Minimum, Maximum and re-order level
(3) Economic Order Quantity
(4) Proper Purchase Procedure.
(5) Proper Storage of Materials
(6) Inventory turnover ratio to review Slow and non-Moving Materials.
(7) Perpetual Inventory System
(8) Material budgets.

ABC Technique.

→ ABC technique is a Value-based System of Material Control.
→ Materials are analysed according to their values so that costly and more valuable materials are given greater attention and care.

→ All Materials are classified according to their value (i.e) high, Medium and low value which are known as A, B and C

ABC → Always Better Control Method

Stock levels

→ one of the major objectives of Material control is to ensure that there is no "Understocking (or) Overstocking"

→ Always they should be Maitain the level of Materials.

levels of Materials are:

(1) Minimum level
(2) Maximum level
3) Re-order level.
4) Danger level.
5) Average stock level.

Formula:

(1) Maximum Level

$$\text{Maximum level} = \text{Re order level} + \text{Re-order Quantity} - \left[\text{Minimum Consumption} \times \text{Minimum re-order period}\right]$$

2) Minimum Level

$$\text{Minimum level} = \text{Reorder level} - \left(\text{Normal Consumption} \times \text{Normal re-order period}\right)$$

3) Re order level

$$\text{Re order level} = \text{Maximum Consumption} \times \text{Maximum re-order period}$$

4) Danger level

$$\text{Danger level} = \text{Average (or) normal Consumption} \times \text{Maximum re-order Period for emergency purchase.}$$

5) Average Stock level

$$\text{Average Stock level} = \frac{\text{Minum level} + \text{Maximum level}}{2}$$

$$\text{Average Stock level} = \text{Minum level} + \frac{1}{2}\left(\text{Re order quantity}\right)$$

Materials Issue - Problems

Problem - 1

In a Manufacturing Company a Material is used as follows:

Maximum Consumption - 12000 units per week
Minimum Consumption - 4000 units per week
Normal Consumption - 8000 units p. week
Re-order Quantity - 48000 units.
Time required for delivery - Minimum 4 weeks
Maximum 6 weeks

Calculate: (1) Re-order level, (2) Minimum level (3) Maximum level (4) Danger level and (5) Average Stock level.

Solution

(1) Re order level

= Maximum Consumption × Maximum re order period

= 12000 × 6 = 72000 units

(2) Minimum level

= Re order level − (Normal consumption × Normal re order period)

= 72000 − (8000 × 5)

= 72000 − 40000 = 32000 units.

(3) Maximum level

= Re order level + Re order quantity + (Minimum Consumption × Minimum Re-order Period)

= 72000 + 48000 − (4000 × 4)

= 72000 + 48000 − 16000

= 104,000 units.

(4) Danger level

= Average consumption × Maximum reorder period for emergency Purchases.

= 8000 × 2 weeks (assumed)

= 16000 units.

(5) Average Stock level

= Minimum level + ½ of Re order Quantity

= 32000 + ½ (48000)

= 56000 units.

Cost and Management Accounting

Economic Order Quantity (or) EOQ.

Re-order Quantity is sometimes known as Economic Order Quantity because it is the Quantity which is most economic to order. EOQ is the size of the order which gives Maximum Economy in purchasing any Material and ultimately Contributes towards Maintaining the Material at the optimum level and at the Minimum cost.

EOQ : Formula:

① $EOQ = \sqrt{\frac{2AB}{C.S}}$

where EOQ = Economic Order Quantity

A = Annual Consumption

B = Buying (or) Ordering cost per order

C = Cost per unit of Material

S = Storage and Carrying cost % of cost. (OR)

② $EOQ = \sqrt{\frac{2AB}{S}}$ where A = Annual Consumption
B = cost of placing order
S = Storage cost.

Problem - 1

From the following information, Calculate Economic Order Quantity and the number of orders to be placed in one quarter of the year.

(i) Quarterly consumption of Materials 2000 kg
(ii) Cost of Placing one order ₹ 50
(iii) Cost per unit ₹ 40
(iv) Storage and Carrying cost 8% of average inventory.

Solution

$$EOQ = \sqrt{\frac{2AB}{CS}}$$

where : A = Annual Consumption (2000×4) 8000 kg.

B = Buying (or) cost of placing one order (₹ 50)

C = Cost per unit (₹ 40)

S = Storage cost 8%

$$= \sqrt{\frac{2 \times 8000 \times 50}{40 \times 8\%}} = 500 \text{ kg}$$

No of orders per Quarter $= \frac{2000}{500} = 4$ Orders.

Problem - 2.

XP Ltd. required 1000 units of Material X on an average for a week which is purchased at a price of ₹ 30 per unit. The ordering cost is ₹ 150 per purchase order and inventory Carring Cost per unit amounted to ₹ 0.06 per week. The re-order Period is 1 to 3 weeks and the weekly usage of Material X varies from 750 to 1250 units.

you are required to Compute:

(a) The Economic Order Quanity (EOQ)

(b) Re-order Stock level, Minimum Stock level and Maximum Stock level.

Solution:

(a) $EOQ = \sqrt{\frac{2AB}{S}}$

where A = Annual consumption

B = Buying (or) ordering cost

S = Storage cost

$= \sqrt{(1000 \times 52)}$

$= \sqrt{\frac{2 \times (1000 \times 52) \times 150}{(0.06 \times 52)}}$

$= \sqrt{50,00,000}$

$= 2,236$ units //.

(b) Re-order level = Maximum Reorder Period X Maximum Usage.

= 3 weeks X 1250 units

= 3750 units.

Minimum level : Reorder level – (Average reorder period X Average usage)

= 3750 X
3750 – (2 X 1000)

= 1750 units

Maximum level : Re order level + Re order Qty – (Minimum Reorder period X Minimum usage)

= 3750 + 2236 – (1 X 750)

= 5236 £

Problem - 3

RPL Ltd. manufactures a special Product which requires 'PEE'. The following particulars were collected for the year 2010-11.

(i) Monthly demand PEE	7500 units
(ii) Cost of placing an order	₹ 500
(iii) Re-order Period	5 to 8 weeks
(iv) Cost Per unit	₹ 60
(v) Copying Cost % P.a	10%
(vi) Normal Usage	500 units Per week
(vii) Minimum Usage	250 units Per week
(viii) Maximum Usage	750 units Per week

Required:

a) Re-order Quantity
b) Re-order level
c) Minimum Stock level
d) Maximum Stock level
e) Average Stock level.

Solution:

a) Re-order Quanity $= \sqrt{\frac{2AB}{CS}} = \sqrt{\frac{2 \times 7500 \times 12 \times 500}{60 \times 10\%}}$

$= \sqrt{1,50,00,000} = 3873$ units

(b) Re-order level

= Maximum re-order period × Maximum usage

= 8 weeks × 750 units Per week

= 6000 units

(c) Minimum Stock level

= Re-order level − (Normal usage × Average re order period)

= 6000 − (500 × 6·5)

= 2750 units

(d) Maximum Stock level

= Reorder level + Re order qty − (Minimum usag × Minimum reorder Period)

= 6000 + 3873 − (5 × 250)

= 8623 units

(e) Average Stock level

= ½ (Minimum Stock level + Maximum Stock level)

= ½ (2750 + 8623)

= 5687 units.

Issue of Materials — FIFO Method.

Problem - 1

The following is the record of receipt and issue of a certain Materials in the factory during a week:

April

1. opening Balance 50 tonnes @ ₹ 10 Per tone
2. Issued 30 tonnes
2. Received 60 tonnes @ ₹ 10.20 Per tonne
3. Issued 25 tonnes (stock verification reveals loss of 1 tonne)
4. Received back from orders 10 tonnes (Previously issued at ₹ 9.15 per tonne)
5. Issued 40 tonnes
6. Received 22 tonnes @ ₹ 10.30 Per tonne
7. Issued 38 tonnes

At what Price will you issue the Materials? use Two most important Methods for this purpose and show the Comparative results.

Date	Receipts			Issues			Balance		
	Quantity tonnes	Rate ₹	Amount ₹	Qty tonnes	Rate ₹	Amount ₹	Qty tonnes	Rate ₹	Amount ₹
April 1	–	–	–	–	–	–	50	10.00	500
April	–	–	–	30	10.00	300	20	10.00	200
April 2	60	10.20	612	–	–	–	20 60	10.00 10.20	200 612
April 3	–	–	–	(25) (20+5) 5	10.00 10.20	200 51	55 54	10.20 10.20	561.00 550.80
April 3	–	–	–	1 (loss)	10.20	10.20	54 10	10.20 9.15	550.80 91.50
April 4	10 (Return)	9.15	91.50	–	–	–	14 10	10.20 9.15	142.80 91.50
April 5	–	–	–	40 ~~60~~	10.20 ~~9.15~~	408 ~~549~~	14 10	10.20 9.15	142.80 91.50
April 6	22	10.30	226.60	–	–	–	14 10 22	10.20 9.15 10.30	142.80 91.50 226.60
April 7	–	–	–	14 10 14	10.20 9.15 10.30	142.80 91.50 114.20	8	10.30	82.40

Labour Cost:-

Labour Turnover:-

In all business organisations it is a common feature that some workers leave the employment and new workers join in place of those leaving. This change in work force is known as labour turnover.

Measurement of labour turnover:-

① **Separation method:-**

This method takes into account only those workers who have left the organisation during a particular period.

Its formula is:-

$$\text{Labour turnover Rate} = \frac{\text{No of workers left during a period}}{\text{Average No of workers during the period}} \times 100$$

$$\text{Average Number} = \frac{\text{No. of workers at the begining} + \text{No of workers at the end of the period}}{}$$

② Replacement Method:

This Method takes into account only those new workers who have joined in place of those who have left. Its formula is:

$$\text{Labour Turnover Rate} = \frac{\text{No. of workers Replaced during the period}}{\text{Average no. of workers during the Period}} \times 100$$

If additional workers are engaged for expansion programme (or) any other such purpose, they are generally not considered for this computation.

③ Flux Method:

This shows the total change, in the composition of labour force due to separation and replacement of workers.

Its formula is:

$$\text{Labour Turnover Rate} = \frac{\text{No of workers left} + \text{No of workers replaced}}{\text{Average No. of workers}} \times 100$$

Problem (1) :

From the following data given by the Personnel Department, calculate the labour turnover rate by applying:

(a) Separation method (b) Replacement method

(c) Flux method.

No of workers on the payroll:

At the begning of the month 900

At the end of the month 1100

During the month, 10 workers left, 40 persons were discharged and 150 workers were recruited, of these 25 workers are recruited in the vacancies of those leaving, while the rest were engaged for an expansion scheme.

Solution:

Average No of workers $= \frac{1}{2}(900+1100) = 1000$ workers

No of workers left $= 10+40 = 50$ workers.

(1) Separation Rate $= \frac{50}{1000} \times 100 = 5\%$

(2) Replacement Rate $= \frac{25}{1000} \times 100 = 2.5\%$

(3) Flux Rate $= \frac{50+25}{1000} \times 100 = 7.5\%$

Additional workers are not considered because they engaged for expansion plan only.

Methods of Wage Payment-

Labour Remuneration

Methods of Labour remuneration:

(1) Time Rate System
(2) Piece Rate System
(3) Incentive Schemes.

Time Rate System:

Wages = Hours Worked × Rate Per day (or)
Days worked × Rate Per day

piece Rate System:

Wages = Rate Per unit × No of units Produced

Incentive Schemes:-

Important incentive plans:-

(1) Halsey plan
(2) Rowan plan
(3) Taylor's Plan
(4) Merrick's Plan.

① Halsey Plan:

Halsey Plan is a simple combination of time and piece methods of wage payment under this plan, amount of bonus depends upon the time saved by the workes. A standard time is fixed for each job and if a worker completes the job in less than the standard time, he gets wages for the time worked plus a bonus equal to 50% of the value of time saved. But if a worker completes the job in full standard (or) more than standard time, he gets wages at the time rate. Thus wages according to time basis are guaranteed.

Calculation of bonus and total earnings

$$\text{Bonus} = 50\% \left(\text{Time Saved} \times \text{Rate per hour}\right)$$

$$\text{Total earnings} = \left(\text{Time taken} \times \text{Rate per hour}\right) + 50\% \left(\text{Time Saved} \times \text{Rate per hour}\right)$$

$$\text{where Time Saved} = \text{Standard Time} - \text{Time taken.}$$

Rowan Plan

In this plan, bonus is that Proportion of the wages of the time taken which the time saved bears to the Standard time.

Formula:

$$\text{Bonus} = \frac{\text{Time Saved}}{\text{Standard Time}} \times \text{Time taken} \times \text{Rate Per hour.}$$

$$\text{Total earnings} = (\text{Time taken} \times \text{Rate per hour}) + \text{Bonu}$$

Rowan Plan assures wages according to time basis.

Taylor's Differential Piece Rate System

Under this system, the Standard task is established after careful time and Motion study and two Piece rates are set. The low rate is for Sub-Standard Performan and high rate for Standard and above Standard Performance.

The Main features of the Scheme

(1) Day wages are not guaranteed
(2) A Standard time for job is established.

(3) Two piece rates are fixed. If the worker does the work within the Standard time, he receives the higher piece rate, where as if he takes longer time he receives the lower piece rate.

Usually these rates are 83% of the piece work rate for inefficient workers and 175% of the piece rate for efficient workers.

Merrick Differential Piece Rate

This is a Modification of the Taylor's Differential Piece Rate System and uses three wage rates, instead of Two, and workers producing below the Standard output are not penalised by the low piece rate. The basic features of this Scheme are:

(a) up to 83% of the Standard output, workers are paid at the Ordinary Piece rate.

(b) 83% to 100% of the Standard output, at 110% of the ordinary piece rate and

(c) above 100% at 120% of the ordinary piece rate.

Problems - 1

Standard time fixed for a job in a Manufacturing Concern is 40 hours. Time rate is 60 paise per hour. The actual time taken by the workers A, B and C is 20 hours, 15 hours and 30 hours respectively. Calculate total remuneration of A, B, C on the basis of (i) Halsey Plan (ii) Rowan Plan

Solution. Calculation of wages

	Workers		
	A	B	C
Standard time (Hrs)	40	40	40
Less: Actual time (hrs)	20	15	30
Time Saved	20	25	10

(6) (29)

	Workers A	B	C
(a) Time wages (@ 60 paise per hour for actual time)	12	9	18
b) Bonus — Halsey Plan (50% of time saved @ 60 paise per hour)	6	7.50	3
c) Bonus = Rowan Plan $\left[\frac{\text{Time taken}}{\text{Standard Time}} \times \text{Time saved}\right)$ 60 paise	6	5.63	4.50
Total wages.			
Halsey Plan (a+b)	18	16.50	21
Rowan Plan (a+c)	18	14.63	22.50