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SYLLABUS



PURUSHOTTAM SIR COSTING CLASSES

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CA Purushottam Sir Provides Costing Classes for CA Inter, CMA Inter (Paper 8), CA Final & CMA Final (Paper 15)

DIRECT MATERIAL COSTING

Background:-

- "One Product Cost" – Main Material cost, labour cost and overhead cost.
- Material cost - Major portion in total cost & Direct Material cost & Indirect Material cost
- Indirect Material cost – Overhead Cost
- Direct Material cost – Variable Cost

Purpose

- Marks Weightage – 8 Marks to 12 Marks
- More Profit - Reduce material Cost

Most Important Concepts

- EOQ
- Stock Levels

ECONOMIC ORDER QUANTITY (EOQ) – How Much to order in single order so that Carrying & Ordering cost are minimized Assuming Total Annual Purchase Cost remain Same.

1. Ordering cost (Cost of placing an order),
2. Carrying cost (cost of keeping material safe and usable till use in production) and
3. Purchase cost (Quantity purchased x price per unit)

Carrying Cost (%) = Insurance cost (%) + interest cost (%) + storage space cost (%) + obsolescence cost rate (%)

- Carrying cost per unit per annum normally remain same.
- Carrying cost shall change if it is given as a % of material price **and** material price keeps on Changing

Formula $Q = \sqrt{\frac{2 \times A \times O}{C}}$ (Derivation Covered in class)

Annual Ordering cost = Total number of orders in a year X Ordering cost per order

$$= \frac{\text{Annual requirement of raw material (A)}}{\text{Quantity ordered each time (C)}} \times \text{Ordering cost per order (O)} = \frac{A \times O}{Q}$$

Annual carrying cost = Average Inventory X Average carrying cost per unit

$$= \frac{\text{Quantity ordered each time (Q)}}{2} \times \text{Avg. carrying cost per unit (C)} = \frac{Q \times C}{2}$$

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How to Learn EOQ Formula

Background:- “Ek Ladka galike 2 ladko ko dhamki dete hue”

Tum DonokeDono (2)	Aa Jao (A)	Open (O)	Challenge (C) he	KaatDunga (Divide)	Gahr me ghuskar (Square root sign)
2	A	O	C	DIVIDE	$\sqrt{\quad}$

Exception:- (EOQ is not always optimum order size quantity)

- Optimum order size may not be EQO if **discount for bulk purchase** is given.
- Order size involving minimum material cost shall be optimum order size. (*Calculate total material cost at different order size including EOQ size)

Special EOQ:- EOQ in Range type-question

Range type question are those question in purchase price per unit decreases as order size is increased from one range to another.

Step 1:- Calculate EOQ for each range.

Step 2:- If EOQ falls within respective range then it will be valid EOQ otherwise invalid EOQ.

Frequency of order

- FOO is the time gap between placing two consecutive orders e.g.

$$FOO = \frac{\text{Total number of days in a year}}{\text{Total number of orders}}$$

Lead Time:

- it is time gap between date of placing the order with supplier and date of receipt of ordered material e.g. if order is placed on 4th Nov. 2016 and material is received on 8th Nov. 2016 then the lead time is 4 days.

Re-order Level

- When to Order
- It is that level of stock of raw material at which a fresh order for raw material should be placed otherwise the firm may face stock-out situation. This level lies between maximum and minimum level.

A Car tank petrol normal full capacity is 25 litre. Reserve level is 5 litre.

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Formula 1:- Maximum Usage X Max lead time

Formula 2:- Minimum Stock + Avg. Usage X Avg. Lead Time

Formula 3:- Safety Stock + Avg. Usage X Avg. Lead Time

Minimum Level:

- It is that level of stock below which stock in hand of raw material should not be allowed to fall.

Formula

F1 - Re-order Level – Avg. Usage X Avg. Lead Time **OR**

F2 - Max. Lead Time X Max. Usage – Avg. Lead Time X Avg. Usage **OR**

F3 - Safety Stock

Maximum level:

- It is that level of stock above which stock in hand of raw material should not be allowed to exceed. Like 25 litre in car petrol.

F1 - Re-order Level + Re-order quantity – Minimum Usage X Minimum Lead Time.

Average Stock Level

Formula 1:- Avg. stock held by an organization = $\frac{\text{Max. Stock Level} + \text{Minimum Stock Level}}{2}$

Formula 2 :- Min. Stock Level + $\frac{\text{Re-order Quantity}}{2}$

Danger Level:-

- It is the level at which raw material kept for emergency is used for production of FG (Normal issues of raw material is not possible).

When all petrol in car is used. Now car is running on reserve. This is danger level.

Danger Level = Avg. Usage X Max. Lead Time for emergency purchase

Material Turnover Ratio / Inventory Turnover Ratio for raw material

MTR:-It is a ratio between raw material consumed during a year and average stock of raw material maintained during the year.

MTR Formula = $\frac{\text{Raw material consumed during a year}}{\text{Avg. stock of raw material}}$

Avg. stock of raw material = $\frac{\text{Opening Stock} + \text{Closing stock}}{2}$

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Raw Material holding period or Inventory Turnover period:- it is a ratio between No. of days/months in a year and MTR.

$$\text{Formula} = \frac{365 \text{ Days or } 12 \text{ months}}{\text{Material Turnover Ratio}}$$

It tell number of days material is kept (holded) in godown before further use.

Low MTR means High RM holding period which means high carrying cost hence unfavourable. (RM called slow moving)
High MTR means low RM holding period which means less carrying cost hence favourable. (RM Called fast moving)

Valuation of raw material:- while calculating per unit cost of raw material purchased, some items are considered as follows:-

1. Trade Discount	Deduct from purchase price
2. Quantity Discount	Deduct from purchase price
3. Cash Discount	Not Deduct from purchase price since it is finance benefit.
4. Road Tax/Toll Tax / Octroi / Entry Tax	Add to purchase cost
5. GST Integrated GST - paid on inter-state supply of goods and services State GST – Paid on intra-state supply of goods and services Central GST – Paid on mfd& supply of goods	Add to purchase cost if no input tax credit availed. Unless specifically mentioned in question, it will be excluded from cost of purchase assuming that credit is available.
6. Demurrages / Detention Charges / Fine / Penalty	Deduct from purchase price since it is a penalty
7. Insurance Cost / Comm. / Brokerage Paid / Freight Inwards	Add to purchase cost
8. Cost of containers (if specifically charged)	• Add to purchase cost if it is non-returnable. • Don't add to purchase cost if it is returnable.
9. Normal Loss	Good units shall absorb cost of normal loss of material.

Note:-Cost per unit =
$$\frac{\text{Total Cost}}{\text{Total units} - \text{normal loss units}}$$

How to Calculate cost of material consumed and cost of closing stock of material if material purchase prices keeps on changing

3 methods

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1. FIFO (First in First Out):- Material issued for production shall be priced at the price of material purchased **first** till its quantity exhausts. When the quantity exhausts, **next** price shall be used as basis.
2. LIFO (Last in First Out):-Material issued for production shall be priced at the price of material purchased **LAST** till its quantity exhausts. When the quantity exhausts, **previous** price shall be used as basis.
3. Weighted Average method:- With every receipt of material, price is averaged and this averaged price used for issue of material till next receipt of material. On next receipt of material, average price changes. Used when difficult to identify material physically e.g. petrol storage in a tank.

Note:- We will prepare stores ledger Account to find out cost of material issued and closing stock.

Treatment of normal and abnormal loss of units in valuation

- a. Normal Loss in units:- Price per unit of remaining material shall be increased.
- b. Abnormal loss in units:- it shall be treated as issue of material. Cost of material lost shall be charged to costing P&L A/c as loss.

If given in question "Shortage will be charged as overhead" then it means cost of such issues shall be treated as overhead cost (material Cost became indirect material cost). It is neither normal loss nor abnormal loss.

ABC ANALYSIS (Example of a Father having 3 daughters)

Practical steps to classify material in category A, B and C

Step 1:- Calculate value of each raw material by multiplying annual consumption of each raw material by its unit price.

Step 2:- Calculate total value of all raw materials.

Step 3:- Calculate % of value of each raw material in relation to total value of all raw materials.

Step 4:- Assign ranking to above calculated % i.e. Rank 1 to highest %, Rank 2 to second highest % and so on.

Step 5:- Classify items having nearly 70% value under category A, 20% value under category B and 10% value under category C.

Input-output ratio

It explains the relationship between input consumption and output produced using that input.

$$\text{Formula} = \frac{\text{input}}{\text{output}} \times 100$$

Example:- suppose in a manufacturing process, output obtained is 200 kg from use of input of 260 kg then input-output ratio shall be 130% i.e. $\frac{260 \text{ kg}}{200 \text{ kg}} \times 100$

If input-output ratio is 130%, it means that

- Input consumption is 130% of the output.
- manufacturing loss is of 30% of output.

This ratio is treated as unfavorable if it is more than 100% while it is regarded as favorable if it is near 100%.

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Material cost for 1 unit of output = Input – Output Ratio x Purchase price of RM ([Derivation Explained in Class](#))

Stock-out situation

When a supplier could not supply ordered units of FG then such a situation is called Stock out situation.

$$\text{Stock-out ratio (Finished Goods)} = \frac{\text{units for which order got cancelled}}{\text{total units for which orders received in whole year}}$$

Inventory turnover ratio for FG (ITR for FG)

1. Inventory turnover ratio for finished goods = $\frac{\text{Cost of sales}}{\text{Average inventory of finished goods}}$
2. Average inventory of finished goods = $\frac{\text{Opening stock of FG} + \text{closing stock of FG}}{2}$
3. Avg. stock of finished goods = $\frac{365 \text{ days or 12 months}}{\text{inventory turnover ratio of FG}}$

Low ITR for FG means High inventory holding period which means high holding cost hence unfavourable.
High ITR for FG means Low Inventory holding period which means low holding cost hence favourable.

Stock out cost = stock out units x Stock out cost per unit x probability (%).

Raw material mix ratio

- When 2 or more type of raw materials are required in producing a product then the ratio in which material is used is, called raw material mix ratio.

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Direct Labour Cost (DLC)

Basic Knowledge

- Direct wages Cost is major portion in total cost of a product hence a company always desires to minimize to earn good profit.
- DLC includes payment made to those workers who are directly involved in production. It means DLC does not include payment made to those workers who are not directly involved in production.
- Example Salary paid to guard sitting at factory gate is indirect labour cost since he is not doing any production in factory
- Direct Workers are paid wages based on 3 basis
 1. Time basis: in such case workers are paid on time basis e.g. Rs. 100 per hour, Rs. 1000 per day
 2. Piece rate basis: in such case workers are paid on the basis of production e.g. Worker shall be apdi Rs.200 per unit produced.
 3. Piece rate wage system with guaranteed time wages:- in this system, Worker is paid according to piece rate with minimum security of getting guaranteed time wages.
- Total Wages of a worker under time based wage method = No. of hours worked x wage rate per hour.
- Total Wages of a worker under piece rate wage system = No. of units produced x piece rate per unit.
- This chapter is totally dedicated to study techniques which motivate. Pay more to workers and get more work

Company always focus on win-win situation

- Suppose a worker is producing 10 units in 1 day of 8 hours and getting Rs.100 per hour. Ta end of the day he will receive Rs.800.
- Suppose worker is told that if will produce 10 units in lesser time then company will pay him 50% of wages equivalent to time saved.
- Now workers produced 10 units in 4 hours.
- Now total wages of worker shall be = Rs.100 x 4 working hours + Rs.100 x 4 Saved hours x 50% = Rs.600

Analysis of above situation

Before motivation	Worker got Rs.800	DLC Per unit to Company = $\frac{Rs.800}{10 \text{ units}}$ = Rs.80 Per unit
After motivation	Worker got Rs.600 & 4 hours extra as enjoy time	DLC Per unit to Company = $\frac{Rs.600}{10 \text{ units}}$ = Rs.60 Per unit

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- Worker will be happy since he is getting paid for enjoy time also.
- Company will be happy since its DLC per unit reduces.

Various Motivation schemes to boost up moral of workers

There are 2 formula oriented bonus schemes as follows:-

1 Halsey Plan

Total wages = hours worked x wage rate + hours saved x $\frac{50}{100}$ x hourly wage rate (**Called Bonus**)

2 Rowan Scheme

Total Wages = hours worked x wage rate + hours saved x $\frac{\text{time taken}}{\text{time allowed}}$ x hourly wage rate (**Called Bonus**)

Example:- suppose time allowed for a work is 40 hours. Actual time taken by worker is 25 hours. Wage rate is Rs. 6 per hour. Calculate earnings for 25 hour time worked under Halsey and Rowan scheme?

Solution:- Time saved = 40 hour – 25 hour = 15 hour

Total Earning (Wages)	Hours worked x hourly wage rate + Hours Saved x Hourly wage rate x worker sharing ratio
Halsey	25 hour x Rs. 6 per hour + 15 hour x 50% x Rs.6 = 195
Rowan	25 hour x Rs. 6 per hour + 15 hour x $\frac{25 \text{ hour}}{40 \text{ hour}}$ x Rs. 6 per hour = Rs. 206.25

- Direct labour cost per unit = $\frac{\text{Total Wages}}{\text{Total Unit produced}}$
- Effective Wage Rate = $\frac{\text{Total Wages}}{\text{Total Actual hours worked}}$

Control Ratios

- ❖ Activity Ratio = $\frac{\text{std hours for actual output obtained}}{\text{budgeted hours for budgeted production}} \times 100 = \frac{S}{B}$
- ❖ Capacity ratio = $\frac{\text{actual hours worked}}{\text{budgeted hours for budgeted production}} \times 100 = \frac{A}{B}$
- ❖ Efficiency ratio = $\frac{\text{std.hours for actual output obtained}}{\text{actual hours worked}} \times 100 = \frac{S}{A}$

Treatment of Overtime

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- Overtime means working over & above normal working hours e.g. suppose job time is 9Am to 5Pm and worker works from 9AM to 7Pm hence he is doing overtime working for 2 hours.
- Worker is paid at more rate during overtime e.g. if worker is getting Rs.100 per hour during 9 to 5 Job then he will get more than Rs.100 per hour for overtime.
- Payment made to worker for overtime is called overtime payment. Here we will study how to treat this extra payment made for overtime i.e. add this cost as direct labour cost or production overhead cost

Cases	Treatment of overtime
1. When overtime working is always required due to shortage of labour. (Workers are not available in market hence overtime always needed by available workers)	Overtime payment is charged to product using <u>inflated wage rate.</u>
2. When worker has to work overtime since customer was demanding production instantly.	Overtime payment shall be charged to job (Recovered from customer)
3. When company had to overtime since working during day stopped due to abnormal situations e.g. breakdown of machine.	Overtime payment is charged as loss in costing profit and loss account.
4. When sometimes company to work overtime to fulfill production requirements.	Overtime payment is treated as production overhead. (Indirectly charged to products)

Labour Turnover Rate (LTR)

Labour turnover does not mean sales of labour. It is crime.

Labour turnover means change in workers of company as follows

1. Old worker resigns from company if they get better opportunity (**Called Resignation / Retirement / Left**).
2. Old workers are fired from company if they does not perform well (**Called retrenchment / discharged**).
3. New workers are recruited to fill in vacancy due to resignation/retrenchment (**Called Replacement**). **It is not due to expansion plan of company.**
4. New workers are recruited as additional work force if company opened a new factory (**Called Fresh recruitment**).

High LTR means high cost of replacement and training to workers hence company always desires Low LTR.

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There are 4 methods of calculating labour turnover rates as follows:-

1. Labour turnover under **separation method**:-
$$\frac{\text{No. of separations in a year}}{\text{Average no. of workers on the roll during the period}} \times 100$$

Separations (S) = Resignation + Retirement + left ++ retrenchment+ discharged

Note:- Average no. of workers on roll =
$$\frac{\text{workers on the beginning of the period} + \text{workers at the end of period}}{2}$$

2. Labour turnover under **replacement method** =
$$\frac{\text{No. of replacements in the period}}{\text{Average no. of workers on roll during the period}} \times 100$$

Replacement (R) = New workers are recruited to fill in vacancy due to resignation/retrenchment

Replacement does not include those works who are engaged due to expansion scheme.

3. Labour turnover under **accession method** =
$$\frac{\text{No. of accessions in the period}}{\text{Average No. of workers on the roll during the period}} \times 100$$

Accession (A) = Replacement + Fresh recruitment

4. Labour turnover under **Flux method**

C.1:-(If fresh recruitment due to expansion not considered) =

$$\frac{(\text{No. of separations in a year} + \text{No. of replacements in a year})}{\text{Average no. of workers on the roll during the period}} \times 100$$

C.2:-(If fresh recruitment due to expansion considered) =

$$\frac{(\text{No. of separations in a year} + \text{No. of accessions})}{\text{Average no. of workers on the roll during the period}} \times 100$$

Since Accession includes **both replacement and fresh recruitment**.

Treatment of Normal Idle Time & Abnormal idle Time

Idle time when worker keep on sitting without working. Idle time is categorized in 2 categories:-

1. Normal Idle Time:- Like lunch time, small 10 minutes break etc.:- Cost of such normal idle time is absorbed into cost of product.
2. Abnormal idle time:- Like breakdown of machine, charged as a loss in costing P&L A/c. Cost of abnormal idle time is charged as loss to costing P&L Account.

Example:- Amitabh bacchan, a worker works from 9 AM to 5:30 PM with hour-an-hour break. He is paid Rs. 800 per day. Mr. bacchan takes 1 day in producing a product "A". When Mr. bacchan goes out for lunch break. People gather and ask Mr. bacchan "Reason of working in factory of Purushottam Sir". Mr. Amitabh bacchan says "Aaj khush to bhut hoge tum, ki mene Abhishek bacchan ko paida kiya" Jisne meri ue halat kardi, Haiiiiiii"

He wasted 4 hours outside factory?

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Calculate the wages chargeable to product?

Answer

working hours	4.50 hours	Rs. 100 per hour	Rs. 450	Shall be added to cost of product
Normal idle time	0.50 hours	Rs. 100 per hour	Rs. 50	Shall be added to cost of product
Abnormal idle time	3.00 hours	Rs. 100 per hour	Rs. 300	Shall be charged as loss in costing P&L A/c

Effective hours = Total hours – normal idle hours

$$\text{Effective wage rate per hour} = \frac{\text{Total wages}}{\text{Total effective hours}} = \frac{\text{Rs. 800}}{8 \text{ hours}} = \text{Rs. 100 per hour}$$

97 Marks in Costing

Roll Number	814964
Name	AYUSH RATHI
	
Group I	
Accounting	069
Corporate and Other Laws	057
Cost and Management Accounting	097
Taxation	065
Total	288
Result	PASS
Group II	
Advanced Accounting	072
Auditing and Assurance	057
Enterprise Information Systems & Strategic Management	046
Financial Management & Economics for Finance	080
Total	255
Result	PASS
Grand Total	543



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93 Marks in Costing

Intermediate (New) Examination Results Merit List, Nov 2018

(Top candidates upto 50 Ranks securing minimum of 55 percent and above marks)

Roll Number	802926
Name	ASHISH GARG
Reg No	NRO0457407
Total marks	591
Rank No	36

Intermediate (New) Examination Results, Nov 2018

Pass With Distinction

Roll Number	802926
Name	ASHISH GARG
	
Group I	
Accounting	092
Corporate and Other Laws	064
Cost and Management Accounting	093
Taxation	082
Total	331
Result	PASS
Group II	
Advanced Accounting	074
Auditing and Assurance	041
Enterprise Information Systems & Strategic Management	056
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Total	260
Result	PASS
Grand Total	591

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