

MOCK TEST PAPER – 1
FINAL COURSE: GROUP – II
PAPER – 5: ADVANCED MANAGEMENT ACCOUNTING
SUGGESTED ANSWERS/HINTS

1. (a) The budgetary control system appears to have several very important shortcomings which reduce its effectiveness and may in fact cause it to interfere with good performance. Some of the shortcomings are explained below.

Lack of Coordinated Goals: Mr. Singh had been led to believe *high quality output* is the goal; it now appears *low cost* is the goal. He does not know what the goals are and thus cannot make decisions which lead toward reaching the goals.

Influences of Uncontrollable Factors: The actual performance relative to budget is greatly influenced by uncontrollable factors i.e. rush orders. Thus, the variance reports serve little purpose for evaluation of performance.

The Short-Run Perspectives: The monthly evaluation and the budget tightening on a monthly basis result in a very short-run perspective. This will result in inappropriate decisions.

The improvements in the budgetary control system must correct the deficiencies described above. Accordingly:

- Budgetary control system must more clearly define the company's objectives.
- Budgetary control system must develop an accounting reporting system which better matches controllable factors with supervisor responsibility and authority.
- Establish budget values for appropriate time periods which do not change monthly simply as a result of a change in the prior month's performance.

The entire company from top management down must be educated in sound budgetary procedures so that all parties will understand the total process and recognize the benefit to be gained.

(b) Traditional Variance (Actual Vs Original Budget)

$$\begin{aligned}\text{Usage Variance} &= (\text{Standard Quantity} - \text{Actual Quantity}) \times \text{Standard Price} \\ &= (2,500 \text{ Kg} - 2,700 \text{ Kg}) \times ₹1.50 \\ &= ₹ 300 \text{ (A)}\end{aligned}$$

$$\begin{aligned}\text{Price Variance} &= (\text{Standard Price} - \text{Actual Price}) \times \text{Actual Quantity} \\ &= (₹1.50 - ₹2.40) \times 2,700 \text{ Kg} \\ &= ₹2,430 \text{ (A)}\end{aligned}$$

Total Variance = ₹300 (A) + ₹2,430 (A) = ₹2,730 (A)

Operational Variance (Actual Vs Revised)

Usage Variance = (2,500 Kg – 2,700 Kg) x ₹2.25
= ₹450 (A)

Price Variance = (₹2.25 – ₹2.40) x 2,700 Kg
= ₹405 (A)

Total Variance = ₹450 (A) + ₹405 (A) = ₹855 (A)

Planning Variance (Revised Vs Original Budget)

Controllable Variance = (₹2.00 – ₹2.25) x 2,500 Kg
= 625 (A)

Uncontrollable Variance = (₹1.50 – ₹2.00) x 2,500 Kg
= 1,250 (A)

Total Variance = ₹625 (A) + ₹1,250 (A) = ₹1,875 (A)

Traditional Variance = Operational Variance + Planning Variance

= 855 (A) + 1,875 (A) = 2,730 (A)

(c) The methods by which initial feasible solution can be arrived at in a transportation model are as under:

- (i) North West Corner Method
- (ii) Least Cost Method
- (iii) Vogel's Approximation Method (VAM)

2. Statement Showing Standard Cost and Actual Cost of 320th Batch:

Standard Data			Actual Data			
Material						
SQ	SP	SQ x SP	AQ	AP	AQ x AP	SP x AQ
62.07 units (Refer W.N.1)	₹55	₹3,414	80	₹50.00	₹4,000.00	₹4,400.00
Labour						
SH	SR	SH x SR	AH	AR	AH x AR	SR x AH
12.42 hours (Refer W.N.2)	₹40	₹497	20	₹50.00	₹1,000.00	₹800

Variable Overhead						
SH	SR	SH x SR	AH	AR	AH x AR	SR x AH
12.42 hours (Refer W.N.2)	₹75	₹932	20	₹90.00	₹1,800.00	₹1,500

Computation of Variances:

Material Cost Variance = Standard Material Cost – Actual Material Cost

$$= SQ \times SP - AQ \times AP$$

$$= ₹ 3,414 - ₹4,000 = ₹586 (A)$$

Material Usage Variance = Standard Cost of Standard Quantity for Actual Output –

$$\text{Standard Cost of Actual Quantity}$$

$$= SQ \times SP - AQ \times SP$$

$$= ₹ 3,414 - ₹4,400 = ₹ 986 (A)$$

Material Price Variance = Standard Cost of Actual Quantity – Actual Material Cost

$$= AQ \times SP - AQ \times AP$$

$$= ₹ 4,400 - ₹4,000 = ₹ 400 (F)$$

Labour Cost Variance = Standard Cost of Labour – Actual Cost of Labour

$$= SH \times SR - AH \times AR$$

$$= ₹497 - ₹1,000 = ₹503 (A)$$

Labour Efficiency Variance = Standard Cost of Standard Time for Actual Output – Standard Cost for Actual Time

$$= SH \times SR - AH \times SR$$

$$= ₹497 - ₹800 = ₹303 (A)$$

Labour Rate Variance = Standard Cost for Actual Time – Actual Cost of Labour

$$= AH \times SR - AH \times AR$$

$$= ₹800 - ₹1,000 = ₹ 200 (A)$$

Variable Overhead Cost Variance

$$= \text{Standard Variable Overheads for Production} - \text{Actual Variable Overheads}$$

$$= ₹932 - ₹1,800 = ₹ 868 (A)$$

Variable Overhead Efficiency Variance

$$\begin{aligned}
&= \text{Standard Variable Overheads for Production} - \\
&\quad \text{Budgeted Variable Overheads for Actual Hours} \\
&= ₹932 - 20 \text{ Hours} \times ₹75 \\
&= ₹568 \text{ (A)}
\end{aligned}$$

Variable Overhead Expenditure Variance

$$\begin{aligned}
&= \text{Budgeted Variable Overheads for Actual Hours} - \\
&\quad \text{Actual Variable Overheads} \\
&= 20 \text{ Hours} \times ₹75 - ₹1,800 \\
&= ₹300 \text{ (A)}
\end{aligned}$$

Working Note:**(1) Working note showing Standard Quantity of Material for 320th Batch.**

Cumulative Number of Batches = 320

$$\text{Average Units of Material per batch} = 100 \times 320^{-0.074}$$

$$t = 100 \times 320^{-0.074}$$

$$\log t = \log 100 - 0.074 \log 320$$

$$\log t = \log 100 - 0.074 \times \log (2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 5)$$

$$\log t = \log 100 - 0.074 \times [\log 2^6 + \log 5]$$

$$\log t = \log 100 - 0.074 \times [6 \log 2 + \log 5]$$

$$\log t = 2 - 0.074 \times [6 \times 0.30103 + 0.69897]$$

$$\log t = 1.81462$$

$$t = \text{Antilog } (1.81462)$$

$$t = 65.26$$

Cumulative Number of Batches = 319

$$\text{Average Units of Material per batch} = 100 \times 319^{-0.074}$$

$$t = 100 \times 319^{-0.074}$$

$$\log t = \log 100 - 0.074 \log 319$$

$$\log t = \log 100 - 0.074 \times \log 319$$

$$\log t = 2 - 0.074 \times 2.50379$$

$$\log t = 1.81472$$

$$t = \text{Antilog } (1.81472)$$

$$t = 65.27$$

$$\text{Standard Quantity of Material for 320}^{\text{th}} \text{ Batch} = 320 \times 65.26 - 319 \times 65.27 = 62.07 \text{ units}$$

(2) Working note showing Standard Hours for 320th Batch.

$$\text{Cumulative Number of Batches} = 320$$

$$\text{Average Labour Hours per batch} = 100 \times 320^{-0.322}$$

$$t = 100 \times 320^{-0.322}$$

$$\log t = \log 100 - 0.322 \times \log 320$$

$$\log t = \log 100 - 0.322 \times \log (2 \times 2 \times 2 \times 2 \times 2 \times 5)$$

$$\log t = \log 100 - 0.322 \times [\log 2^6 + \log 5]$$

$$\log t = \log 100 - 0.322 \times [6 \log 2 + \log 5]$$

$$\log t = 2 - 0.322 \times [6 \times 0.30103 + 0.69897]$$

$$\log t = 1.19334$$

$$t = \text{Antilog } (1.19334)$$

$$t = 15.61$$

$$\text{Cumulative Number of Batches} = 319$$

$$\text{Average Labour Hours per batch} = 100 \times 319^{-0.322}$$

$$t = 100 \times 319^{-0.322}$$

$$\log t = \log 100 - 0.322 \times \log 319$$

$$\log t = 2 - 0.322 \times 2.50379$$

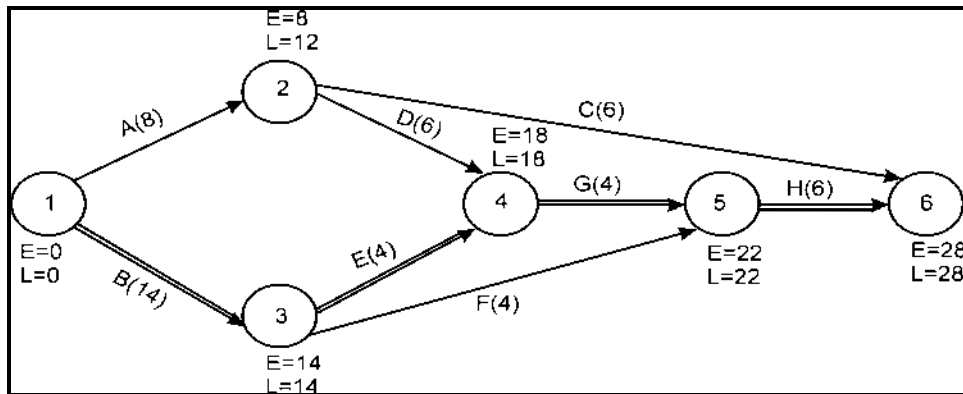
$$\log t = 1.19378$$

$$t = \text{Antilog } (1.19378)$$

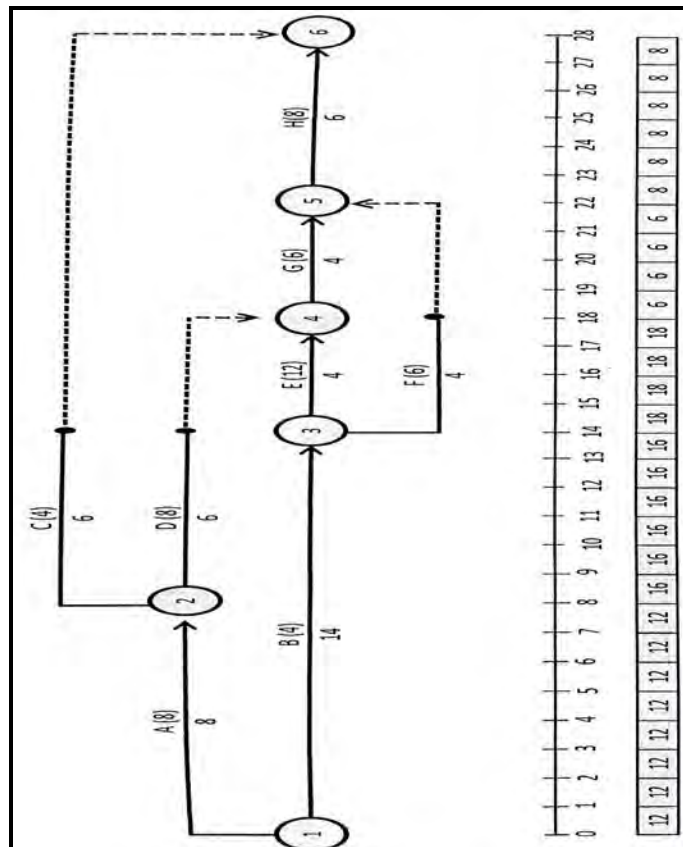
$$t = 15.62$$

$$\text{Standard Hours for 320}^{\text{th}} \text{ Batch} = 320 \times 15.61 - 319 \times 15.62 = 12.42 \text{ hours}$$

3. Critical path of the network is 1-3-4-5-6 (i.e., B-E-G-H). The duration of the project is 28 weeks.

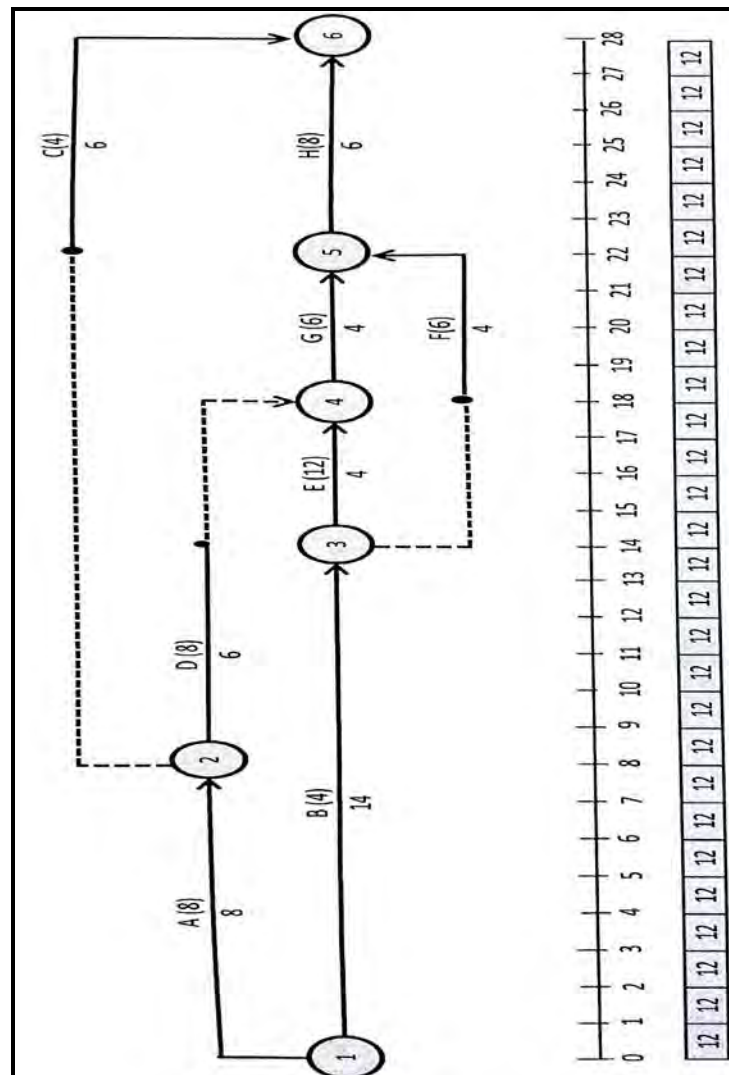


It can be seen from below given resource accumulation table and the time-scaled version of the project that demand on the resources is not even on the 15th, 16th, 17th and 18th week the demand of workers is as high as 18 on the 19th, 20th, 21st and 22nd week, it is only 6. If workers are to be hired for the entire project duration for 28 weeks, then during most of the days, they will be idle.



Re-Scheduling of Activities: As mentioned above the maximum demand of the resources occurs during 9th weeks to 14 weeks (i.e., 16 workers) and during 15th week to 18th weeks (i.e.18 workers). The activities on these days will have to be shifted depending upon their floats such that the demand comes down. As can be seen from the above time –scaled version, activity C has a float of 14 weeks and activity F has a float of 4 weeks. We will try to shift activity C by Fourteen weeks so that it starts on 23rd week instead of 9th week. This reduces demand of workers from 16 to 12 workers during 9th to 14th week.

Similarly, we will try to shift activity F by four weeks so that it starts on 19th week instead of 15th week. The requirement during 15th to 18th week now reduces to 12 workers instead of 18 workers required earlier.



The modified resource accumulation table and the time-scaled version of the project are given above. As can be seen from the above figure the requirement for workers reduces to 12 as against 18 workers originally estimated. Hence, by judiciously utilizing the float, we can smooth the demand on the resources.

4. (a) 1. Projected Raw Material Issues (Kg):

	'A'	'B'	'C'
'X' (48,000 units-Refer Note)	60,000	24,000	---
'Y' (36,000 units-Refer Note)	<u>72,000</u>	<u>-</u>	<u>54,000</u>
Projected Raw Material Issues	<u>1,32,000</u>	<u>24,000</u>	<u>54,000</u>

Note:

- Based on this experience and the projected sales, the FML has budgeted production of 48,000 units of 'X' and 36,000 units of 'Y' in the eighth period.
 $= 52,500 \times 40\% + 45,000 - 18,000 = 48,000$
 $= 27,000 \times 40\% + 42,000 - 16,800 = 36,000$
- Production is assumed to be uniform for both products within each four-week period.

2. and 3. Projected Inventory Activity and Ending Balance (Kg):

	'A'	'B'	'C'
Average Daily Usage	<u>6,600</u>	<u>1,200</u>	<u>2,700</u>
Beginning Inventory	96,000	54,000	84,000
Orders received:			
Ordered in 5 th period	90,000	-	60,000
Ordered in 6 th period	<u>90,000</u>	-	-
Sub Total	276,000	54,000	144,000
Issues	<u>132,000</u>	<u>24,000</u>	<u>54,000</u>
Projected ending inventory balance	144,000	30,000	90,000

Note:

- Ordered 90,000 Kg of 'A' on fourth working day.
- Order for 90,000 Kg of 'A' ordered during fifth period received on tenth working day.
- Order for 90,000 Kg of 'A' ordered on fourth working day of sixth period received on fourteenth working day.
- Ordered 30,000 Kg of 'B' on eighth working day.

- Order for 60,000 Kg of 'C' ordered during fifth period received on fourth working day.
- No orders for 'C' would be placed during the sixth period.

4. Projected Payments for Raw Material Purchases:

Raw Material	Day/Period Ordered	Day/Period Received	Quantity Ordered	Amount Due	Day/Period Due
'A'	20 th /5 th	10 th /6 th	90,000 Kg	₹90,000	20 th /6 th
'C'	4 th /5 th	4 th /6 th	60,000 Kg	₹60,000	14 th /6 th
'A'	4 th /6 th	14 th /6 th	90,000 Kg	₹90,000	4 th /7 th
'B'	8 th /6 th	18 th /7 th	30,000 Kg	₹60,000	8 th /8 th

(b) It may be justifiable to sell at a price below marginal cost for a limited period under the following circumstances:

- Where materials are of perishable nature.
- Where stocks have been accumulated in large quantities and the market prices have fallen.
- To popularize a new product.
- Where such reduction enables the firm to boost the sale of other products having larger profit margin.
- To capture foreign markets.
- To obviate shut down costs.
- To retain future market.

(c) Examples of batch level activities:

- Material ordering.
- Machine set up costs.
- Inspection of products – like first item of every batch.

- 5. (a) 1.** The transfer price should be ₹ 35 per unit, the regular price charged to other customers. Since the 'Dx' Division is operating at capacity, it will lose ₹ 14 in contribution margin for each outside sale given up in favor of sales to the 'Dz' Division (₹ 35- ₹ 21= ₹ 14).

Transfer Price = Variable Cost per unit + Lost Contribution Margin per unit on outside sales

$$= ₹ 21 + ₹ 14 = ₹ 35$$

2. The lower limit is ₹ 35, the price obtained in (1). The upper limit is also ₹ 35, since ₹ 35 is the intermediate market price. That is, it would not be fair to charge the other division more than the price being charged to regular customers. However, an upper limit is not really relevant in this situation since no transfers will be made between the two divisions.
3. The price being paid to the outside supplier, net of the quantity discount, is only ₹ 31.50. If this price is met by the 'Dx' Division, then profits in the 'Dx' Division and in the company as a whole will drop by ₹ 8,750 per year

Minimum Transfer Price	₹ 35
Outside Supplier's Price	<u>₹ 31.50</u>
Loss in contribution margin per unit	₹ 3.50
No. of units per year	<u>x 2,500</u>
Total loss in profits	<u>₹ 8,750</u>

Profits in the 'Dz' Division will remain unchanged, since it will be paying the same price internally as it is now paying externally.

4. Yes, if costs can be avoided as a result of the inside business. The price would then be ₹ 35 less the avoided costs.

(b)

Service Sector	Cost Unit
Hotel	Bed nights available or occupied
School	Student hours or no. of full time students
Hospital	Patient-Day / Room-Day
Computer Department	Computer time to user departments.

(c) Examples of non-relevant costs:

- (1) All fixed costs are generally non-relevant.
- (2) Variable costs which do not vary with the decision are not relevant costs.
- (3) Book value of the asset is not relevant.

(d) In process costing system the cost of a service is obtained by assigning costs to masses of similar unit and then computing unit cost on an average basis. Retail banking, Postal delivery, Credit card etc. uses process costing method.

(e) Simulation is a quantitative procedure which describes a process by developing a model of that process and then conducting a series of organized trial and error experiments to product the behavior of the process over time.

6. (a) Statement Showing Impact on Airline's Profit if Flight GB-022 is Discontinued

		₹
Contribution Margin lost if the flight is discontinued		(5,88,000)
Less Flight Costs which can be avoided if the flight is discontinued:		
	₹	
Flight Promotion	28,000	
Fuel for Aircraft	2,38,000	
Liability Insurance	49,000	
(1/3 x ₹ 1,47,000)		
Salaries, Flight Assistants	31,500	
Overnight Costs for Flight Crew and Assistants	<u>12,600</u>	<u>3,59,100</u>
		<u>(2,28,900)</u>

If Golden Bird Airlines Ltd. goes for discontinuation of flight GB-022, its profit will go down by ₹ 2, 28,900.

Following costs are not relevant to the decision:

- Salaries, flight crew - Fixed annual salaries which will not change
- Baggage loading and flight preparation- This is an allocated cost, which will continue even if the flight is discontinued.
- Depreciation of aircraft -Sunk Cost
- Liability insurance (two third) - Sunk Cost
- Hanger parking fee- This cost will be incurred regardless of whether the flight is made.

- (b) Given that the unit (factory) works effectively for 7 hours and the processing time (in minutes) for each of the four products by different operators, we obtain the production and profit matrices as follows:

Production Matrix

Operator	Product			
	WW	WX	WY	WZ
A	140	84	60	70
B	120	168	280	210
C	140	120	84	84
D	42	84	56	56

Profit Matrix:

Operator	Product			
	WW	WX	WY	WZ
A	210	84	120	35
B	180	168	560	105
C	210	120	168	42
D	63	84	112	28

Subtract all the elements from the highest value and obtain the following matrix:

Operator	Product			
	WW	WX	WY	WZ
A	350	476	440	525
B	380	392	0	455
C	350	440	392	518
D	497	476	448	532

Subtracting row minimum, we obtain:

Operator	Product			
	WW	WX	WY	WZ
A	0	126	90	175
B	380	392	0	455
C	0	90	42	168
D	49	28	0	84

Subtracting column minimum and after assignment, we get:

Operator	Product			
	WW	WX	WY	WZ
A	0	98	90	91
B	380	364	0	371
C	0	62	42	84
D	49	0	0	0

Since required number of assignments could not be made, proceed further:

Operator	Product			
	WW	WX	WY	WZ
A	0	36	90	29
B	380	302	0	309
C	0	0	42	22
D	111	0	62	0

The optimum solution is:

Operator	Product	Profit (₹)
A	WW	210
B	WY	560
C	WX	120
D	WZ	28
Total Profit		918

7. (a) Essential requisites for the installation of uniform costing are as under:
- The firm's in the industry should be willing to share / furnish relevant data or information.
 - A spirit of cooperation and mutual trust should prevail among the participating firms.
 - Mutual exchange of ideas, methods used, special achievement made, research and know how etc. should be frequent.
 - Bigger firms should take the lead towards sharing their experience and know how with the smaller firm to enable the latter to improve their performance.
 - In case of accounting methods, principles, procedure and production method uniformity must be established.
- (b) Divestment involves a strategy of selling off or shedding business operations to divert the resources, so released, for other purposes. Selling off a business segment or product division is one of the frequent forms of divestment strategy. It may also include selling off or giving up the control over subsidiary where by the wholly owned subsidiaries may be floated as independently quoted companies.

Reason for Divestment Strategy:

- In case of a firm having an opportunity to get more profitable product or segment but have resource constraint, it may selling off it's unprofitable or less

profitable division and utilized the recourse so released. Cost Benefit analysis is the useful tool for analyzing this type of situation.

- In case of purchase of new business, it may be found that some of the part of the acquired business is not up to the mark. In such type of situation disposal of the unwanted part of the business is more desirable than hold it.
 - In case where any business segment or product or subsidiary is pull down the profit of the whole organization, it is better to cut down of that operation of the product or business segment.
- (c) The conventional product cost system was in vogue when companies manufactured narrow range of products, overhead costs were relatively small and distortions arising from inappropriate overhead allocations were not significant. It used volume measures like direct labour hours or machine hours for charging overhead costs to products. In the case of a company using highly automated plant, direct labour is a small fraction of cost when compared with overheads (because of higher amount of depreciation). In case where such a company is multi product, overheads which are large in proportion to direct labour are influenced by number of set up, inspection, number of purchases etc. In these circumstances, the volume based method of recovery of overheads is no longer appropriate and such a measure will report inaccurate product costs. Hence, the traditional system of costing was found to over cost high volume products and under cost low volume products.

Activity Based Costing (ABC) system aims at refining the costing system used in automated plants in the following manner:

- ABC systems trace more costs as direct costs.
 - ABC systems create homogeneous cost pools linked to different activities.
 - For each activity cost pool, ABC systems seek a cost allocation base that has a cause-and-effect relationship with costs in the cost pool.
- (d) Multinational companies use transfer prices to minimize worldwide income taxes, import duties, and tariffs. For example, Nike might prefer to make its profits in a country, with its maximum corporate tax rate of 28%, rather than in some other place where the rate is 35%.

Suppose a division in a high-income-tax-rate country produces a sub-assembly for another division in a low-income-tax-rate country. By setting a low transfer price, the company can recognize most of the profit from the production in the low-income-tax-rate country, thereby minimizing taxes. Likewise, items produced by divisions in a low-income-tax-rate country and transferred to a division in a high-income-tax-rate country should have a high transfer price to minimize taxes.

Sometimes import duties offset income tax effects. Most countries base import duties on the price paid for an item, whether bought from an outside company or

transferred from another division. Therefore, low transfer prices generally lead to low import duties.

Financial restrictions imposed by some governments may be avoided by an effective use of transfer price. For example, in case a country restricts the amount of dividend paid to foreign owners, it may be easier for a company to get cash from a foreign division in form of payments for product transferred rather than cash dividend.

- (e) Traditionally, manufacturing companies classified the manufacturing costs to be allocated to the products into (a) direct materials, (b) direct labour and (c) indirect manufacturing costs. In the present day context, characterized by intensive global competition, large scale automation of manufacturing process, computerization and product diversification to cater to the changing consumer tastes and preferences has forced companies to refine their costing systems to provide better measurement of the overhead costs used by different cost objects. Accordingly, manufacturing costs are classified in to three broad categories as under:

1. *Direct cost*: As many total costs relating to cost objects as feasible are classified into direct cost. The objective is to trace as many costs as possible in to direct and to reduce the amount of costs classified into indirect because the greater the proportion of direct costs the greater the accuracy of the cost system.
2. *Indirect cost pools*: Increase the number of indirect cost pools so that each of these pools is more homogeneous. In a homogeneous cost pool, all the costs will have the same cause-and-effect relationship with the cost allocation base.
3. Use cost-and-effect criterion for identifying the cost allocation base for each indirect cost pool.

The change in the classification of manufacturing costs as above has lead to the development of Activity Based Costing (ABC). Activity Based Costing refines a costing system by focusing on individual activities as the fundamental cost objects. An activity is an event, task or unit of work with a specified purpose as for example, designing, set up, etc. ABC system calculates the costs of individual activities and assigns costs to cost objects such as products or services on the basis of the activities consumed to produce the product or provide the service.