

**CHAPTER 3 - DIVISIONAL TRANSFER PRICING**

**Q. 1.** S. V. Ltd. manufactures a product which is obtained basically from a series of mixing operations. The finished product is packaged in the company made glass bottles and packed in attractive cartons.

The company is organised into two independent divisions viz. one for the manufacture of the end product and the other for the manufacture of glass bottles. The product manufacturing division can buy all the bottle requirements from the bottle manufacturing divisions.

The general manager of the bottle manufacturing division has obtained the following quotations from the outside manufacturers for the supply of empty bottles.

Volume (empty bottles)	Total purchase value (₹)
8,00,000	14,00,000
12,00,000	20,00,000

A cost analysis of the bottle manufacturing division for the manufacture of empty bottles reveals the following production costs.

Volume (empty bottles)	Total cost ₹
8,00,000	10,40,000
12,00,000	14,40,000

The production cost and sales value of the end product marketed by the product manufacturing division are as under :

Volume (Bottles of end product)	Total cost of end product (excluding cost of empty bottles)	Sales value (Packed in bottles)
8,00,000	₹ 64,80,000	₹ 91,20,000
12,00,000	₹ 96,80,000	₹ 1,27,80,000

There has been considerable discussion at the corporate level as to the use of proper price for transfer of empty bottles from the bottle manufacturing division to product manufacturing division.

This interest is heightened because a significant portion of the Divisional General Manager’s salary is an incentive bonus based on profit centre results.

As a corporate management accountant responsible for defining the proper transfer prices for the supply of empty bottles by the manufacturing division to the product manufacturing division, you are required to show for the two levels of volumes of 8,00,000 and 12,00,000 bottles, the profitability by using,

- (i) Market price
- (ii) Shared profit relative to the costs involved basis for the determination of transfer prices.

The profitability position should be furnished separately for the two divisions and the company as a whole under each method.

**Q. 2.** B Ltd. producing a range of minerals, is organised into two trading groups. One handles wholesale business and the other sales to retailers.

One of its products is a moulding clay. The wholesale group extracts the clay and sells it to external wholesale customers as well as to the retail group. The production capacity is 2,000 tonnes per month but, at present, sales are limited to 1,000 tonnes wholesale and 600 tonnes retail.

The transfer price was agreed at ₹ 200 per tonne in line with the external wholesale trade price at 1 July which was beginning of the budget year. As from 1 December, however competitive pressure has forced the wholesale trade price down to ₹ 180 per tonne. The members of the retail group contend that the transfer price to them should be the same as for outside customers. The wholesale group refute the argument on the basis that the original budget established the price for the whole budget year.

The retail group produces 100 bags of refined clay from each tonne of moulding clay which it sells at ₹ 4 a bag. It would sell a further 40,000 bags if the retail trade price were reduced to ₹ 3.20 a bag.

Other data relevant to the operation are :

	Wholesale Group ₹	Retail Group ₹
Variable cost per tonne	70	60
Fixed cost p.m.	1,00,000	40,000

You are required to :

- (a) prepare profitability statements for the month of December for each group and for B Ltd. as a whole based on transfer prices of ₹ 200 per tonne and of ₹ 180 per tonne when producing at :
    - (i) 80% capacity; and
    - (ii) 100% capacity utilising the extra sales to supply the retail trade :
  - (b) comment on the results achieved under (a) and the effect of the change in the transfer price; and
  - (c) propose an alternative transfer price for the retail sales which would provide greater incentive for increasing sales, detailing any problems that might be encountered.
- Q. 3.** Department X is a profit centre manufacturing products  $V_x$ ,  $X_1$  and  $X_t$ . Each of the products can be sold in the outside market to the extent of the following :

- $V_x$  900 units
- $X_1$  300 units
- $X_t$  600 units

Market price per unit is ₹ 24, ₹ 23 and 20 for  $V_x$ ,  $X_1$  and  $X_t$  respectively. Other details are given below :

Products	$V_x$	$X_1$	$X_t$
	₹	₹	₹
Variable cost of production	17	12	14
Labour hours required	3	2	4

Product  $V_x$  can be transferred to department y, but the maximum quantity that might be required for transfer is 400 units of  $V_x$ . The Manager of department y has powers to buy the product  $V_x$  from the external market at a much cheaper price of ₹ 22.

What should be the transfer price for each unit for 400 units of  $V_x$ , if the total labour hours available in Department x is :

- (a) 4,800 hours                      (b) 6,200 hours?

**Q. 4.** A large business consultancy firm is organized into several divisions. One of the divisions is the Information Technology (IT) division which provides consultancy services to its clients as well as to other divisions of the firm. The consultants in the IT divisions always work in a team of three professional consultants on each day of consulting assignment. The external clients are charged a fee at the rate of ₹ 4,500 for each consulting day. The fee represents the cost plus 150% profit mark up. The break up of cost involved in the consultancy fee is estimated at 80% as being variable and the balance is fixed.

The textiles division of the consultancy firm which has undertaken a big assignment requires the services of two teams of IT consultants to work five days in a week for a period of 48 weeks. While the director of the textiles division intends to negotiate the transfer price for the consultancy work, the director of IT division proposes to charge the textiles division at ₹ 4,500 per consulting day.

In respect of the consulting work of the textiles division, IT division will be able to reduce the variable costs by ₹ 200 per consulting day. This is possible in all cases of internal consultations because of the use of specialized equipment.

You are required to explain the implications and set transfer prices per consulting day at which the IT division can provide consultancy services to the textiles division such that the profit of the business consultancy firm as a whole is maximized in each of the following scenarios :

- (i) Every team of the IT division is fully engaged during the 48 week period in providing consultancy services to external clients and that the IT division has no spare capacity of consultancy teams to take up the textiles division assignment.
- (ii) IT division will be able to spare only one team of consultants to provide services to the textiles division during the 48 week period and all other teams are fully engaged in providing services to external clients.
- (iii) A new external client has come forward to pay IT division a total fee of ₹ 15,84,000 for engaging of two teams of consultants during the aforesaid period of 48 weeks.

**Q. 5.** Bright Furniture Company has two divisions Division 'FXR' and Division 'FQR' Both divisions are independent. Each division serves a different market in the furniture industry.

Division 'FXR' manufactures furniture that is used by the canteens/ coffee bars. The division plans to introduce cushioned seat for the counter chairs. A cushioned seat currently made by the Division 'FQR' for use on its stylish stool could be modified for use on the new counter chair. Division 'FQR' can make the necessary modifications to the cushioned seat easily.

The raw materials used in Division 'FXR' seat are slightly different and should cost about 20 percent more than those used in Division 'FQR' stylish stool. However, the labour time should be the same because the seat fabrication operation is basically the same.

Division 'FQR' is operating at full capacity. By making the cushion seats for Division 'FXR' Division 'FQR' have to cut its production of stylish stools. However, Division 'FQR' can increase its production of normal stools. The labour time freed by not having to fabricate the frame or assemble the stylish stool can be shifted to the frame fabrication and assembly of the normal stool. Division 'FQR' can switch its labour force between these two models of stools without any loss of efficiency. Labour hours cannot be increase. Division 'FQR' has excess demand for both products. Following are Division 'FQR's' standard costs for the two stools and a schedule of Division 'FQR's' manufacturing overhead.

**'FQR' DIVISION  
STANDARD SELLING PRICE AND COST**

	Stylish Stool		Normal Stool	
	₹	₹	₹	₹
Selling Price		225.00		160.00
Less: Raw Materials				
Farming	32.60		39.04	
Cushioned Seat				
- Padding	9.60		----	
- Vinyl	16.00		----	
Moulded Seat (Purchased)	----	58.20	24.00	63.04
Less: Direct Labour				
Frame Fabrication				
-(0.5 x ₹ 30.00/DLH*)	15.00		----	
-(0.5 x ₹ 30.00/DLH)	----		15.00	
Cushion Fabrication				
-(0.5 x ₹ 30.00/DLH)	15.00		----	
Assembly*				
-(0.5 x ₹ 30.00/DLH)	15.00		----	
-(0.3 x ₹ 30.00/DLH)	----	45.00	9.00	24.00
Less: Manufacturing Overhead				
-(1.5DLH x ₹ 51.20/DLH)		76.80		----
-(0.8DLH x ₹ 51.20/DLH)		----		40.96
<b>Profit / (Loss)</b>		<b>45.00</b>		<b>32.00</b>

(\*) Attaching seats to frames and attaching rubber feet.

(\*) DLH refers to Direct Labour Hour

**'FQR' DIVISION  
Manufacturing Overhead Budget**

<b>Overhead Item</b>	<b>(₹)</b>
Indirect Material (Variable - at Current Market Prices)	16,80,000
Indirect Labour (Variable)	15,00,000
Supervision (Non-Variable)	10,00,000
Power (Use Varies with Activity, Rates are Fixed)	7,20,000
Heat and Light (Non variable-Same Regardless of Production)	5,60,000
Micellaneous Overheads (Non Variable - Any Charge in Amounts or Rates is Independent of Prouduction)	8,00,000
Depreciation (Fixed)	68,00,000
Employee Benefits (20% of Supervision, Direct and Indirect Labour)	23,00,000
<b>Total Overhead</b>	<b>1,53,60,000</b>
Capacity in DLH	3,00,000
<b>Overhead Rate / DLH</b>	<b>₹ 51.20</b>

**Required :**

Assume that you are the corporate controller. What transfer price would you recommend for a 200 unit lot of seals?

- Q. 6.** Tripod Ltd. has three divisions - X, Y and Z, which make products X, Y, and Z respectively. For Divison Y, the only direct material is product X and for Z, the only direct material is product Y. Division X purchases all its raw material from outside. Direct selling overhead representing commission to external sales agents are avoided on all internal teransfers. Division Y additionally incurs ₹ 10 per unit and ₹ 8 per unit on units delivered to external customers and Z respectively. Y also incurs ₹ 6 per unit paicked up from X, whereas external suppliers supply at Y's facatory at the started prices of ₹ 85 per unit.

**Additional information is given below:**

	<b>Figures (₹) unit</b>		
	<b>X</b>	<b>Y</b>	<b>Z</b>
Direct Materials (external supplier rate)	40	85	135
Direct Labour	30	50	45
Sales Agent's Commission	15	15	10
Selling Price (in external market)	110	170	240
<b>Production Capacity (units)</b>	<b>20,000</b>	<b>30,000</b>	<b>40,000</b>
<b>External Demand (units)</b>	<b>14,000</b>	<b>26,000</b>	<b>42,000</b>

**Required :**

Discuss the range of negotiation for Manager X, Y and Z, for the number of units and the transfer price for internal transfers.

## CHAPTER 2 - PRICING DECISION

**Q. 1.** An IT Company Produces a CD, Particulars of which are detailed below:

	₹
Annual Production (Units)	40,000
Cost per Annum (₹)	
Material	1,00,000
Other Variable Cost	1,20,000
Fixed Cost	80,000
Apportioned Investment (₹)	3,00,000

Determine the unit selling price under two strategies mentioned below:

Assume company's tax rate as 30%

- i) 20% return on investment
- ii) 6% profit on list price, when trade discount is 40%

**Q. 2.** A company has developed two types of pocket T.V. sets operated on battery and having liquid crystal display. Model 'Sunny' is having single channel and model 'Deluxe' is having multi channels. The management of the company asked their accountant to recommend prices for these new products which will fetch a margin of 20% on price.

The accountant has collected following data for 1st year of operation.

	<b>Sunny</b>	<b>Delux</b>
(1) Maximum production and sale/units	2,500	1,500
(2) Variable cost per unit (₹)		
Direct materials	300	500
Direct labour	100	200
(3) Attributable fixed overheads (₹ lacs)	2.5	3.0
(4) Labour hours per unit	20	40
(5) Machine hours per unit	30	15

The marketing department is contemplating to sell the entire output produced during the year. The other common fixed overheads relating to these products are ₹ 8.58 lacs per annum.

The management wants to have a statement of costs, revenue and profit for both the products. The accountant, accordingly prepared two statements, one with common fixed costs absorbed on labour hour basis and another with common fixed costs absorbed on machine hour basis. However, he is not able to decide as to which one is correct for deciding prices of the products.

**REQUIRED :**

- (a) Present the statements showing annual costs, revenue and profit for each product using both the bases that were used by the accountant for absorbing common fixed overheads.
- (b) Which set of prices would you recommend?
- (c) Do you think that cost plus pricing decision is valid for a newly developed product ?
- (d) If product is a well established product in the market, what should be the basis for fixation of price? Set the minimum price on that basis.

**Q. 3.** RST Ltd is specialists in the manufacture of sports goods. They manufacture croquet mallets but purchase the wooden balls, iron arches and stakes required to complete a croquet set.

Mallets consist of a head and handle. Handle use 2.5 board feet per handle at ₹50 per board foot. Spoilage loss is negligible for the manufacture of handles. Heads frequently split and create considerable scrap

A head requires 0.40 board feet of high quality lumber costing ₹ 60 per board foot. Spoilage normally works out to 20% of the completed heads . 4% of the spoiled heads can be salvaged and sold as scrap at ₹ 10 per spoiled head

In the department machining and assembling the mallets, 6 men work 8 hours per day for 25 days in a month. Each worker can machine and assemble 12 mallets per uninterrupted 40 minutes time frame. In each 8 hours working day, 15 minutes are allowed for coffee-brea, 8 minutes on an average for training and 9 minutes for supervisory instructions. Besides 10 % of each day is booked as idle time to cover checking in and checking out changing operations getting materials and other miscellaneous matters. Workers are paid at a comprehensive rate of ₹ 6 per hour

The department is geared to produce 20,000 mallets per month and the monthly expenses of the department are as under

	(₹)
Finishing and painting of the mallets	20,000
Lubricating oil for cutting machines	600
Depreciation for cutting machine	1,400
Repairs and maintenance	200
Power to run the machine	400
Plant manager's salary	9,400
Other ovrheads allowed to the department	60,000

**Required :**

As the mallets are machined and assembled in lots of 250, prepare a total cost sheet for one lot and advise the management on the selling price to be fixed per mallet in order to ensure a minimum 33.33% margin on the selling price.

**Q. 4.** R.T. Ltd want to fix proper selling prices for their products A and B which they are newly introducing in the market. Both these products will be manufactured in Department D which is considered as a Profit Centre.

The estimated data are as under

	A	B
Annual Production (Units)	1,00,000	2,00,000
Direct Materials per unit	₹15.00	₹14.00
Direct Labour per unit (Direct Labour Hour rate ₹ 3)	₹9.00	₹6.00

The proportion of Overheads other than interest chargeable to the two products are as under :

Factory Overheads (50% fixed)100% of Direct Wages, Administration Overheads (100% fixed)10% of Factory Cost, Selling and Distribution Overheads(50% Variable) ₹ 3 and ₹ 4 respectively per unit of products A and B.

The fixed capital investment in the Department is ₹ 50 Lakhs.The working capital requirement is equivalent to 6 months stocks of cost of sales of both the products . For this project a term loan amounting too ₹ 40 Lakhs has been obtained from Financial Institutions at an interest rate of 14% per annum 50% of the working capital needs are met by Bank Borrowing carrying interest at 18% per annum. The Department is expected to give a return of 20% on its capital employed

**Required**

- (a) Fix the selling prices of product A and B such that the contribution per direct labour hour is the same for both the products
- (b) Prepare a statement showing in detail the over-all profit that would made by the Department.



**CHAPTER 8 - ACTIVITY BASED COSTING & ACTIVITY  
BASED COST MANAGEMENT (ABC & ABM)**

**Q. 1.** A company produces four products viz., P, Q, R and S. The data relating to production activity are as under :

Product	Quantity of production	Material cost / unit ₹	Direct labour hours / unit	Machine hours / unit	Direct labour cost / unit ₹
P	1,000	10	1	0.50	6
Q	10,000	10	1	0.50	6
R	1,200	32	4	2.00	24
S	14,000	34	3	3.00	18

Production overheads are as under :

(i) Overheads applicable to machine oriented activity	: ₹	1,49,700
(ii) Overheads relating to ordering materials	:	7,680
(iii) Set up costs	:	17,400
(iv) Administration overheads for spare parts	:	34,380
(v) Material handling costs	:	30,294

The following further information have been compiled :

Product	Number of set up	Number of materials orders	Number of times materials handled	Number of spare parts
P	3	3	6	6
Q	18	12	30	15
R	5	3	9	3
S	24	12	36	12

**Required :**

- (i) Select a suitable cost driver for each item of overhead expense and calculate the cost per unit of cost driver.
- (ii) Using the concept of Activity Based Costing, compute the factory cost per unit of each product.

**Q. 2.** A company produces three products A, B and C for which the standard costs and quantities per unit are as follows :

<b>Products</b>	<b>A</b>	<b>B</b>	<b>C</b>
Quantity produced	10,000	20,000	30,000
Direct material / p.u. (₹)	50	40	30
Direct labour / p.u. (₹)	30	40	50
Labour hours / p.u.	3	4	5
Machine hours / p.u.	4	4	7
No. of purchase requisitions	1,200	1,800	2,000
No. of set ups	240	260	300

Production overhead split by departments :

- Department 1 = ₹ 11,00,000

- Department 2 = ₹ 15,00,000

Department 1 is labour intensive and Department 2 is machine intensive.

Production overhead split by activity :-

- Production scheduling / machine set up	₹ 12,00,000
- Receiving / inspecting	<u>₹ 14,00,000</u>
	<u>₹ 26,00,000</u>

Number of batches received / inspected = 5,000

Number of batches for scheduling and set - up = 800

You are required to :

- (i) Prepare product cost statement under traditional Absorption Costing and Activity Based Costing method.
  - (ii) Compare the results under two methods.
- Q. 3.** (a) During the Last 20 years, KL Ltd's manufacturing operation has become increasingly automated with Computer - controlled robots replacing operators. KL currently manufactures over 100 products of varying levels of design complexity. A single plant wise overhead absorption rate, based on direct labour hours, is used to absorb overhead costs.

In the quarter ended March, KL's manufacturing overhead costs were :

	(₹ '000)
Equipment operation expenses	125
Equipment maintenance expense	25
Wages paid to technicians	85
Wages paid to Storeman	35
Wages paid to despatch staff	<u>40</u>
	<b>310</b>

During the quarter, the company reviewed the Cost Accounting System and concluded that absorbing overhead costs to individual products on a labour hour absorption basis is meaningless. Overhead costs should be attributed to products using an Activity Based Costing (ABC) system and the following was identified as the most significant activities :

- (i) Receiving component consignments from suppliers
- (ii) Setting up equipment for production runs
- (iii) Quality inspections
- (iv) Despatching goods as per customers orders.

*Equipment operation and maintenance expenses are apportioned as :*

- \* Component stores 15%, manufacturing 70% and goods dispatch 15%

*Technician's wages are apportioned as :*

- \* Equipment maintenance 30%, set up equipment for production runs 40% and quality inspections 30%.

During the quarter :

- (i) a total of 2000 direct labour hours were worked (paid at ₹ 12 per hr.)
- (ii) 980 components consignments were received from suppliers
- (iii) 1020 production runs were set up
- (iv) 640 quality inspections were carried out
- (v) 420 orders were despatched to customers.

KL's production during the quarter included components R, S and T. The following information is available :

	Component	Component	Component
	R	S	T
Direct labour Hrs. worked	25	480	50
Direct Material Cost	₹ 1,200	₹ 2,900	₹ 1,800
Component Consignments Received	42	24	28
Production runs	16	18	12
Quality Inspections	10	8	18
Orders (goods) despatched	22	85	46
Quantity produced	560	12,800	2,400

**Required :**

- (1) Calculate the unit cost of R, S and T components, using KL's existing cost accounting system.
- (2) Explain how an ABC system would be developed using the information given. Calculate the unit cost of components R, S and T using ABC system.

**Q. 4.** X Ltd. is engaged in the production of four products : A, B, C and D. The price charged for the four products are ₹ 180, ₹ 175, ₹ 130 and ₹ 180 respectively, Market research has indicated that if X Ltd. can reduce the selling prices of its products by ₹ 5, it will be successful in getting bulk orders and gain a significant share of market of those products. The company's profit mark-up is 25 per cent on cost of the product. The relevant information of products are as follows :

<b>Products</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
Output in units	600	500	400	600
Cost per unit :				
Direct Material (in ₹)	40	50	30	60
Direct Labour (in ₹)	28	21	14	21
Machine hours (per unit)	4	3	2	3

The four products are usually produced in production runs of 20 units and sold in batches of 10 units. The production overhead is currently absorbed by using a machine hour rate, and the total of the production overheads for the period has been analysed as follows :

	<b>(₹)</b>
Machine department costs	52,130
Setup costs	26,250
Stores receiving	18,000
Inspection / Quality Control	10,500
Material handling and dispatch	23,100

The cost drivers to be used for the overhead costs are as follows :

<b>Cost</b>	<b>Cost drivers</b>
Setup costs	Number of production runs
Store receiving	Requisition raised
Inspection / Quality Control	Number of production runs
Materials handling and dispatch	Order executed

The number of requisitions raised in the stores was 100 for each product and the number of orders executed was 210, each order being for a batch of 10 units of a product.

**You are required :**

- (i) The compute the target cost for each product.
- (ii) To compute total cost of each product using activity based costing.
- (iii) Compare target cost and activity based cost of each product and comment whether the price reduction is profitable or not.