

## **Chapter -1 Cost Control and Cost Reduction**

**Meaning of Cost:** Cost is the amount of resource given up in exchange for some goods or services. The resources given up are money or money's equivalent expressed in monetary units.

**Definition of Cost:** The institute of management Accountants, London defines cost as "the amount of expenditure incurred on or attributable to a specified thing or activity

**Meaning of Costing:** The process of ascertaining the cost is known as costing. It consists of principles and rules governing the procedure of finding out the costs of goods/services.

**Cost Management:** It is the process of planning and controlling the budget of a business. Cost management is a form of management accounting that allows a business to predict impending expenditures to help reduce the chance of going over budget.

**Cost Control:** Cost Control is the first step to achieve the objective of cost reduction. Cost control is the means to achieve the end that is cost reduction. Cost control is carried out by budgets, by fixing standards, taking corrective measures when the actual results deviate from the set standards. It is more of a management function and comes to an end once the target is achieved.

It is an essential component of any system of cost accounting. It is exercised through comparing actual cost with predetermined standard cost so the difference between the two can be measured and when analyzed according to reasons for taking corrective actions.

**Definition:** CMA London has defined Cost Control as, "The regulation by executive action of the cost of operating and undertaking particularly where action is guided by cost accounting".

**Cost control involves the following steps and covers the various facets of the management:**

**(a) Planning:** First step in cost control is established plans/targets. The plan/target may be in the form of budgets, standards, estimates and even past actual may be expressed in physical as well as monetary terms. These serves as yardsticks by which the planned objective can be assessed.

**(b) Communication:** The plan and the policy laid down by the management are made known to all those responsible for carrying them out. Communication is established in two directions; directives are issued by higher level of management to the lower level for compliance and the lower level executives report performances to the higher level.

**(c) Motivation:** The plan is given effect to and performances starts. The performance is evaluated, costs are ascertained and information about results achieved are collected and reported. The fact that costs are being complied for measuring performances acts as a motivating force and makes individuals endeavour to better their performances.

**(d) Appraisal and reporting:** The actual performance is compared with the predetermined plan and variances, i.e. deviations from the plan are analyzed as to their causes. The variances are reported to the proper level of management.

**(e) Decision making:** The variances are reviewed and decisions taken. Corrective actions and remedial measures or revision of the target, as required, are taken.

### **Advantages of cost control:**

The advantages of cost control are mainly as follows:

(a) Achieving the expected return on capital employed by maximizing or optimizing profit

(b) Increase in productivity of the available resources

(c) Reasonable price of the customers

(d) Continued employment and job opportunity for the workers

(e) Economic use of limited resources of production

(f) Increased credit worthiness

(g) Prosperity and economic stability of the industry

**Cost Reduction:** Cost reduction begins where the cost control ends. It is achieved by improving the standards and improving the methods of production. It is oriented towards economizing all resources with view to reduce cost of production. Cost reduction is a self evaluation process which includes self analysis and self criticism.

**Definition:** ICWA publication of London defines cost reduction as” Cost reduction is to be understood as the achievement of real and permanent reduction in the unit costs of the goods manufactured or services rendered without imposing their suitability for the use that is intended”.

### **Areas covered under Cost Reduction:**

**1) Materials:** Materials form a major part of the total cost of the product. A small percentage of cost reduction in material cost will lead to considerable savings to the organization. Materials are as important as cash for manufacturing concern and therefore materials must be managed and controlled with great care. Materials cost reduction can be achieved by concentrated efforts in the following areas:

a) Design

b) Material Purchases

c) Storage

d) Transport

**2) Labour:** It is considered as variable cost by the cost accounting theory. Cost can be reduced or controlled by providing training and employing right person to the right job. Efficiency of the workforce can be improved by providing training, incentives, bonus coupled with good working conditions and ensuring their safety.

Sl. no	Cost control	Cost Reduction
1	Cost control represents efforts made towards achieving target or goal.	Cost reduction represents the achievement in reduction of cost
2	The process of cost control is to set up a target, ascertain the actual performance and compare it with the target, investigate the variances, and take remedial measures.	Cost reduction is not concern with maintenance of performance according to standard.
3	Cost control assumes the existence of standards or norms which are not challenged.	Cost reduction assumes the existence of concealed potential savings in standards or norms which are therefore subjected to a constant challenge with a view to improvement by bringing out savings.
4	Cost control is a preventive function. costs are optimized before they are incurred	Cost reduction is a corrective function. it operates even when an efficient cost control system exists. there is room for reduction in the achieved costs under controlled conditions

**3) Overheads:** It is considered as an integral part of the total cost. Controlling the overhead cost and reducing them will definitely result in significant reduction of cost. Optimizing the scale of operations will result in reduction of overhead cost.

### **Difference between Cost Control and Cost Reduction**

5	Cost control lacks dynamic approach	Cost reduction is a continuous process of analysis by various methods of all the factors affecting costs, efforts and functions in an organization. the main stress is upon the why of a thing and the aim is to have continual economy in cost
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**Product Design:** Product design process is the set of strategic and tactical activities, from an idea generation to commercialization, used to create a product design. In a systematical approach, product designers conceptualize and evaluate ideas.

Product design is essentially the efficient and effective generation and development of ideas through a process that leads to new products. The concept product design has not been properly defined. It can be understood to be the designing of a product keeping in mind the purpose behind making the product and the target customer.

**Target costing:** It has a history of more than 40 years in the Japanese industry. In 1959, Toyota developed the preliminary target costing approach. Although many manufacturers in Japan use target costing, the system used at Toyota Motor Corporation is the oldest and considered by many the most technically advanced.

**Meaning:** Target costing is an approach to determined product's life-cycle cost which should be sufficient to develop specified functionality and quality, while ensuring its desired profit. It involves setting a target cost by subtracting a desired profit margin from a competitive market price.

Target Costing is **defined** as “a structured approach in determining the cost at which a proposed product with specified functionality and quality must be produced, to generate a desired level of profitability at its anticipated selling price.”

#### **Objectives of Target Costing:**

- ❖ To lower the cost of new products so that the required profit level be ensured.
- ❖ The new products meet the levels of quality, delivery timing and prices requirement.
- ❖ To motivate all the employees of the firm to achieve the target profit during new product development by making target costing a companywide profit management activity.

#### **Features of Target Costing System**

- It is an integral part of the product design and introduction of new products.
- Target selling price is determined using different forecasting techniques for any given product.
- It determines cost reduction targets.
- It is integral to setting the target selling price for the establishment of target production volumes, given the relationship between price and volume.
- The target is broken down into various components, each component is studied and opportunities for cost reductions are identified. These activities are often referred to as value engineering and value analysis.

#### **Steps in Target costing:**

### **Step1: Customer product Design Specification:**

- i. The customer requirements as to the functionality and quality of the product is of prime importance
- ii. The design specification of the new product is based on customer's tastes, expectations and requirements.
- iii. Competitor's products and the need to have extra features over competitor's products are also considered. However the need to provide improved products, without significant increase in prices, should be recognized as charging a higher price may not be possible in competitive conditions.

### **Step 2 & Step 3: Market - Target Selling Price and Production Volume:**

- i. The target selling Price is determined using various sales forecasting techniques.
- ii. The price is also influenced by the offers of competitors, product utility, prices, volumes and margins.
- iii. In view of competition and elasticity of demand, the Firm has to forecast the price volume relationship with reasonable certainty. Hence the target selling Price is market driven and should encompass a realistic reflection of the competitive environment.
- iv. Establishment of target Production Volumes is closely related to target selling price, given the relationship between price and volume.
- v. Target Volumes are also significant in computation of unit costs particularly Capacity Related Costs and fixed Costs. Product costs are dependent upon the production levels over the life cycle of the product.

### **Step 4: Profitability –Target Profit Margin:**

- i. Since profitability is Critical for survival, a Target Profit Margin is established for all new products.
- ii. The Target Profit Margin is derived from the company's long term business plan, objectives and strategies.
- iii. Each product or product line is required to earn at least the Target Profit Margin.

### **Step 5: Setting Target Costs:**

- i. The difference between the Target Selling Price and Target Profit Margin indicates the "Allowable Cost" for the product.
- ii. Ideally, the Allowable Cost becomes the "Target Cost for the product". However, the Target Cost may exceed the allowable cost, in light of the realities associated with existing capacities and capabilities.

### **Step 6: Computing Current Costs:**

- i. The "Current Costs" for producing the new product should be estimated.
- ii. The estimation of current cost is based on existing technologies and components, taking into account the functionalities and quality requirements of the new product.
- iii. Direct Costs are determined by reference to design specifications, materials prices, labour processing time and wage rates. Indirect costs may be estimated using activity Based costing Principles.

### **Step 7: Setting Cost Reduction Targets:**

- i. The difference between current cost and target cost indicates the required cost reduction.
- ii. This amount may be divided into two constituents namely –
  - a. Target cost - reduction objective and
  - b. Strategic cost - reduction challenge.
- iii. The former is viewed as being achievable (yet still a very challenging target) while the latter acknowledges current inherent limitations.
- iv. After analyzing the cost reduction objective, a Product-Level target cost is set which is the difference between the current cost and the target cost -reduction objective.

#### **Step 8: identifying Cost Reduction opportunities:**

- i. After the Product-Level target cost is set, a series of analytical activities, commence to translate the cost challenge into reality.
- ii. These activities continue from the design stage until the point when the new product goes into production.
- iii. The total target is broken down into its various components, each component is studied and opportunities for cost reductions are identified.
- iv. These activities are referred to as a) Value engineering (Ve) and b) Value analysis (Va).

#### **Advantages of Target Costing:**

- **Innovation:** It reinforces top-to-bottom commitment to process and product innovation, and is aimed at identifying issues to be resolved.
- **Competitive Advantage:** It enables a Firm to achieve competitive advantage over other Firms in the industry. The firm which achieves cost reduction targets realistically stands to gain in the long run.
- **Market Driven Management:** It helps to create a company's competitive future with market-driven management for designing and manufacturing products that meet the price required for market success.
- **Real Cost Reduction:** It uses management control systems to support and reinforce manufacturing strategies, and to identify market opportunities that can be converted into real savings to achieve the best value rather than simply the lowest cost.

#### **Value Analysis**

The Value analysis (Va) technique was developed after the Second World War in America at general electric during the late 1940s. Since this time the basic Value analysis approach has evolved and been supplemented with new techniques that have become available and have been integrated with the formal Va process.

#### **Meaning of Value Analysis:**

It is a disciplined approach which ensures the necessary functions for the minimum cost without diminishing quality, reliability, performance and appearance.

#### **Definition of Value Analysis:**

Value analysis is a function-oriented, structured, multi-disciplinary team approach to solving problems or identifying improvements

### **Value Engineering:**

Value engineering is an organized/systematic approach directed at analyzing the function of systems, equipment, facilities, services, and supplies for the purpose of achieving their essential functions at the lowest life-cycle cost consistent with required performance, reliability, quality, and safety.

### **Definition of Value Engineering:**

“A systematic approach to analyzing functional requirements of products or services for the purposes of achieving the essential functions at the lowest total cost”.

Value engineering is an effective problem solving technique. Value engineering is essentially a process which uses function analysis, team- work and creativity to improve value. Value Engineering is not just “good engineering.” it is not a suggestion program and it is not routine project or plan review. It is not typical cost reduction in that it doesn’t “cheapen” the product or service, nor does it “cut corners.”

### **Value Chain Analysis:**

Value chain analysis is a process where a firm identifies its primary and support activities that add value to its final product and then analyze these activities to reduce costs or increase differentiation.

### **Business Process Re-Engineering (BPR) :**

Business Process re-engineering (BPR) refers to the fundamental rethinking and redesign of business processes to achieve improvement in critical measures of performance such as cost, quality, service, speed and customer satisfaction.

### **Characteristics of Re-engineering Process**

- Several jobs are combined into one
- Often workers make decisions
- The steps in the process are performed in a logical order
- Work is performed, where it makes most sense
- Quality is built in.
- Manager provides a single point of contact
- Centralized and decentralized operations are combined

### **Benefits of Implementation of BPR:**

- 1) Reallocation of jobs and processes will reduce the number of to be executed in natural order, simultaneously and by the least possible number of employees.
- 2) Reorganization of the company’s structure and labour force empowerment.
- 3) Jobs and processes become flexible so as to execute according to the needs of each case, both company’s needs and customer’s needs.

## **Chapter-2 Marginal Costing**

### **Introduction:**

Marginal Costing is not a method of costing like job, batch or contract costing. It is in fact a technique of costing in which only variable manufacturing costs are considered while determining the cost of goods sold and also for valuation of inventories. In fact this technique is based on the fundamental principle that the total costs can be divided into fixed and variable. While the total fixed costs remain constant at all levels of production, the variable costs go on changing with the production level. It will increase if the production increases and will decrease if the production decreases. The technique of marginal costing helps in supplying the relevant information to the management to enable them to take decisions in several areas.

### **Meaning of Absorption Costing:**

Under this method, the cost of the product is determined after considering the total cost i.e., both fixed and variable costs. Thus this technique is also called traditional or total costing. The variable costs are directly charged to the products where as the fixed costs are apportioned over different products on a suitable basis, manufactured during a period. Thus under absorption costing, all costs are identified with the manufactured products.

### **Meaning of Marginal Costing:**



Marginal costing is “the ascertainment of marginal costs and of the effect on profit of changes in volume or type of output by differentiating between fixed costs and variable costs.”

**Definition:**

Marginal Costing has been defined as, ‘Ascertainment of cost and measuring the impact on profits of the change in the volume of output or type of output. This is subject to one assumption and that is the fixed cost will remain unchanged irrespective of the change.’

**Features of Marginal Costing:**

The main features of marginal costing may be summed up as follows:

1. Appropriate and accurate division of total cost into fixed and variable by picking out variable portion of semi variable costs also.
2. Valuation of stocks such as finished goods, work-in-progress is valued at variable cost only.
3. The fixed costs are written off soon after they are incurred and do not find place in product cost or inventories.
3. Prices are based on marginal cost and marginal contribution.
4. It combines the techniques of cost recording and cost reporting.

**Difference between Marginal costing & Absorption costing**

<b><u>Sl.No</u></b>	<b><u>Marginal Costing</u></b>	<b><u>Absorption Costing</u></b>
1	Both fixed and variable costs are considered for product costing and inventory valuation.	Only variable costs are considered for product costing and inventory valuation.
2	Fixed costs are charged to the cost of production. Each product bears a reasonable share of fixed cost and thus the profitability of a product is influenced by the apportionment of fixed costs.	Fixed costs are regarded as period costs. The profitability of different products is judged by their P/V ratio.
3	Cost data are presented in conventional pattern. Net profit of each product is determined after subtracting fixed cost along with their variable cost.	Cost data are presented to highlight the total contribution of each product.
4	The difference in the magnitude of opening stock and closing stock affects the unit cost of production due to the impact of related fixed cost.	The difference in the magnitude of opening stock and closing stock does not affect the unit cost of production.
5	In case of absorption costing the cost per unit reduces, as the production increases as it is fixed cost which reduces, whereas, the variable cost remains the same per unit.	In case of marginal costing the cost per unit remains the same, irrespective of the production as it is valued at variable cost.

### **Advantages or Merits or Applications of Marginal Costing:**

1. Marginal costing system is simple to operate than absorption costing because they do not involve the problems of overhead apportionment and recovery.
2. When a business concern consists of several units and produces several products and evaluation of performance of such components can well be made with the help of marginal costing.
3. It is helpful in forecasting.
4. Sales of each and every product to get maximum profit can also be determined with the help of marginal costing.
5. Marginal costing avoids, the difficulties of having to explain the purpose and basis of overhead absorption to management that accompany absorption costing

### **Limitations Of Marginal Costing:**

- (1) It may be very difficult to segregation of all costs into fixed and variable costs.
- (2) Marginal Costing technique cannot be suitable for all type of industries. For example, it is difficult to apply in ship-building, contract industries etc.
- (3) The elimination of fixed overheads leads to difficulty in determination of selling price.
- (4) It assumes that the fixed costs are controllable, but in the long run all costs are variable.
- (5) Marginal Costing does not provide any standard for the evaluation of performance which is provided by standard costing and budgetary control.
- (6) Under Marginal Costing semi variable and semi fixed costs cannot be segregated accurately.

### **Break Even Analysis/ CVP analysis.**

Break-Even Analysis is also called Cost Volume Profit Analysis. The term Break-Even Analysis is used to measure inter relationship between costs, volume and profit at various level of activity. A concern is said to break-even when its total sales are equal to its total costs. It is a point of no profit and no loss. This is a point where contribution is equal to fixed cost.

In other words, the break-even point where income is equal to expenditure {or} total sales equal to total cost.

### **Objectives of Break-Even Analysis.**

- 1) To forecasts the profits accurately.
- 2) To evaluate performance of business.
- 3) To enable determination of the pricing policies.
- 4) To facilitate preparation of flexible budgets.

**Contribution:** It is the difference between the selling price and the variable cost of sales. The excess of contribution over fixed costs is the profit. If the total contribution does not meet the entire fixed cost there will be loss.

**Profit-Volume Ratio:** The percentage of contribution to sales is known as P/V Ratio. The ratio is also called as marginal income ratio, contributions to sales ratio or variable profit ration. It is the rate at which profit increases with that of the volume.

**Margin of Safety:** The term Margin of safety refers to the excess of actual sales over the break-even sales. Any sales beyond breakeven sales will result in profits. The business will be in a safe zone as long as there is margin of safety.

**Break-Even Chart:** A break-even chart is a graphical presentation which indicates the relationship between cost, sales and profit. The chart depicts fixed costs, variable cost, break-even point, profit or loss, margin of safety and the angle of incidence. Such a chart not only indicates break-even point but also shows the estimated cost and estimated profit or loss at various level of activity. Break-even point is an important stage in the break-even chart which represents no profit no loss.

#### **Advantages of Break-Even Chart**

- (1) It enables to determine the profit or loss at different levels of activities.
- (2) It is useful to measure the relationship between cost volume and profit.
- (3) It helps to determine the break-even units, i.e., output and sales volume.
- (4) It helps to measure the profitability of various products.

#### **Limitations of Break-Even Chart**

- (1) It is based on number of assumptions which may not hold good.
- (2) Break-even charts are rarely of value in a multi-product situation.
- (3) A break-even chart does not take into consideration semi-variable cost, valuation of opening stock and closing stock.
- (4) Determination of selling price is based on many factors which will affect the constant selling price.
- (5) Capital employed, Government policy, Market environment etc. are the important aspects for managerial decisions. These aspects are not considered in break-even chart.

**Angle of Incidence:** The angle formed by the sales line and the total cost line at the break-even point is known as Angle of Incidence. The angle of incidence is used to measure the profit earning capacity of a firm. A large angle of incidence indicates a high rate of profit and on the other hand a small angle of incidence means that a low rate of profit.

**Relationship between Angle of Incidence, Break-Even Sales and Margin of Safety Sales**

(1) When the Break-even sales are very low, with large angle of incidence, it indicates that the firm is enjoying business stability and in that case margin of safety sales will also be high.

(2) When the break-even sales are low, but not very low with moderate angle of incidence, in that case though the business is stable, the profit earning rate is not very high as in the earlier case.

(3) Contrary to the above when the break-even sales are high, the angle of incidence will be narrow with much lower margin of safety sales.

**Cash Break-Even Point:** In cash break-even chart, only cash fixed costs are considered. Non-cash items like depreciation etc. are excluded from the fixed costs for computation of break-even point. Cash Break-Even Chart depicts the level of output or sales at which the sales revenue will be equal to total cash outflow.

**Format for calculating Income Statement under Absorption costing**

Particulars	Amount	Amount
<b>Sales</b>		Xxx
Less: <u>Factory / Manufacturing Cost</u>		
Direct material consumed	Xxx	
Direct Labour/Wages cost	Xxx	
Variable Factory/Manufacturing cost	Xxx	
Fixed Manufacturing/Factory cost	Xxx	
<b>Cost of Goods produced</b>	Xxx	
Add: <u>Opening Stock Of Finished Goods</u>	Xxx	
<b>Cost of goods available for sale</b>	Xxx	
Less: <u>Closing stock of finished goods</u>	Xxx	
<b>Cost of Goods sold</b>	Xxx	
Add/Less: <u>Under or over absorption of Fixed manufacturing cost</u>	Xxx	
Add: Selling and Distribution costs	Xxx	
Administration costs		
		Xxx
<b>Total costs</b>		Xxxx
<b>Profit( Sales – Total costs)</b>		

Formula's

**Profit Volume Ratio:**

- 1) Profit volume ratio =  $\frac{\text{Contribution}}{\text{Sales}} \times 100$
- 2) Profit volume ratio =  $\frac{\text{Sales} - \text{Variable Cost}}{\text{Sales}} \times 100$
- 3) Profit volume ratio =  $\frac{\text{Fixed Cost} + \text{Profit}}{\text{Sales}} \times 100$
- 4) Profit volume ratio =  $\frac{\text{Change in Profit}}{\text{Change in Sales}} \times 100$

The following formula can be used to ascertain the sales or fixed cost or profit

$$\text{Sales (Value)} = \frac{\text{Fixed cost} + \text{Profit}}{\text{Profit Volume Ratio}}$$

$$\text{Sales (Units)} = \frac{\text{Fixed Cost} + \text{Profit}}{\text{Contribution per unit}}$$

**Contribution :**

- 1) Contribution = Sales – Variable Cost
- 2) Contribution = Fixed Cost + Profit
- 3) Contribution = Sales × Profit volume ratio

**Break Even Point:**

- 1) BEP( Unit) =  $\frac{\text{Fixed Cost}}{\text{Contribution per unit}}$
- 2) BEP (Value) =  $\frac{\text{Fixed Cost}}{\text{Profit volume ratio}}$
- 3) BEP (Value) =  $\frac{\text{Fixed Cost}}{\text{Contribution}} \times \text{Sales}$

**Margin of safety :**

- 1) Margin of safety = Actual sales – BEP
- 2) Margin of safety =  $\frac{\text{Profit}}{\text{Profit Volume ratio}}$

**Problems:**

1) Sales – 4,000 units @ Rs.10 per unit, break even point - 1,500 units, fixed cost – Rs.3, 000. What is the amount of a) Variable cost, b) profit?

2) You are given the following data for the year 2012 of DS co. Ltd:

Variable cost	6,00,000
Fixed cost	3,00,000
Net profit	1, 00,000
Sales	10,00,000

Find out a) Break – even point, b) P/V ratio and c) Margin of safety.

3) Given the following information:

Units of output	-	Rs. 5,00,000
Fixed cost	-	Rs. 7, 50,000
Variable cost per unit	-	Rs.2
Selling price per unit	-	Rs.5

You are required to determine:

- The breakeven point
- The sales needed for a profit of rs.6, 00,000.
- The profit if 4,00,000 units are sold at rs.6 per unit.

4) A company annually manufacturers and sells 20,000 units of a product, the selling price of which is Rs.50 and profit earned id Rs.10 per unit. The analysis of cost 20,000 units is :

Material cost	Rs.3,00,000
Labour cost	Rs. 1,00,000
Overheads (50% variable)	Rs.4,00,000

You are required to compute:

- Break even sales in units and in rupees
- Sales to earn a profit of Rs.3, 00,000
- Profit when 15,000 units are sold.

5) You are given the following data :

Particulars	Sales	Profit
Year 2015	Rs.1,20,000	8,000
Year 2016	Rs.1, 40,000	13,000

Find out –

- P/V ratio
- B.E point
- Profit when sales are Rs.1,80,000
- Sales required to earn a profit of rs.12,000
- Margin of safety in year 2016.

6) You are given the following data :

Particulars	Sales	Profit
Period I	Rs.1,50,000	20,000
Period II	Rs.1,70,000	25,000

Find out – a) P/V ratio b) B.E point c) Profit when sales are Rs.1,80,000 d) Sales required to earn a profit of rs.40,000 e) Margin of safety at a profit of rs.1,25,000.

7) The following figures are available from the records of V.K enterprise as at 31 march of 2015 and 2016.

Particulars	2015( in lakhs)	2016 (in lakhs)
Sales	150	200
profit	30	50

Calculate: a) The P/V ratio and total fixed expenses b) The breakeven level of sales c) Sales required to earn a profit of Rs.90lakh d) Profit or loss that would arise if the sales were Rs.280 lakh.

8) Company A and Company B, both under the same management make and sell the same type of product. Their Budgeted profit and loss account for the half year ending 30<sup>th</sup> June 2017 are as follow:

Particular	Company-A	Company –B
Sales	3,00,000	3,00,000
Variable Cost	24,0000	2,00,000
Fixed Cost	30,000	70,000
Profit	30,000	30,000

You are required to calculate.

- 1) profit volume ratio of each.
- 2) Break even point of each.
- 3) Margin of safety of each.
- 4) The sales volume at which each of the two companies will a profit of ₹ 10,000.
- 5) Which company makes more profit in Case of:
  - a) Heavy demand for products?
  - b) Low demand for products?

9) The sales and profits during two years were as follow:

Year	Sales	Profits
2016	1,50,000	20,000
2017	1,70,000	25,000

You are required to calculate

- 1) P/V ratio
- 2) Fixed Cost
- 3) BEP
- 4) The sales required to earn of ₹ 40,000
- 5) The profit made sales are ₹ 2,50,000
- 6) Margin of safety at a profit of ₹ 50,000
- 7) Variable cost of the two period.

10) From the following particulars calculate BEP

Sales ₹2,00,000

Variable Cost ₹1,20,000

Fixed overheads ₹30,000

Also calculate:

- 1) New BEP, if selling price is reduced by 10%
- 2) New BEP, if variable cost is increased by 10%
- 3) New BEP, if fixed cost is increased by 10%

11) From the following particulars calculate

- 1) P/V ratio
- 2) BEP
- 3) Margin safety
- 4) Sales required to earn a profit of ₹ 1,50,000
- 5) Profit, when sales amount to ₹ 10,00,000

6) Margin of safety if the company is earning a profit of ₹ 2,00,000

Fixed Cost = ₹ 1,50,000

Profit = ₹ 1,00,000

Sales = ₹ 5,00,000

12) Assuming that cost structure and selling prices will remain the same in period – I and period –II find out:

- 1) P/V ratio
- 2) Break Even Point
- 3) Profit when sales amounted to ₹ 1,00,000
- 4) Sales required to earn a profit of ₹ 20,000
- 5) Margin of safety at a profit of ₹ 15,000
- 6) Variable cost in period II

13) Raj corporation has prepared the following budget estimate for the year 2017-18

Sales ( units ) 15,000

Fixed cost ₹ 34,000

Sales value ₹ 1,50,000

Variable cost per unit ₹ 6

You are required to calculate:

- 1) P/V ratio
- 2) Break Even point
- 3) Margin of safety
- 4) Calculate the revised P/V ratio, BEP and Margin of safety in each of the following cases:
  - a) Decrease of 10% in selling price.
  - b) Increase of 10% in variable cost.
  - c) Increase of sales units by 2000.
  - d) Increase of ₹ 6000 in fixed cost.

14) From the following particulars, calculate

- i) BEP in terms of sales value and in units.
- ii) No. of units that must be sold to earn a profit of ₹ 90,000.

Fixed factory overheads - ₹ 60,000

Fixed selling overheads - ₹ 12,000

Variable manufacturing cost per unit - ₹ 12

Variable selling cost per unit - ₹ 3

Selling price per unit - ₹ 24

15) From the following data, you are required to calculate:

- a) P/V ratio.
- b) Break Even Point in sales value and in units.
- c) Sales required to earn a profit of ₹ 4,50,000
  - Fixed Expenses ₹ 90,000
  - Variable cost per unit
  - Direct Material - ₹ 5
  - Direct Labour - ₹ 2
  - Variable overheads are 100% of Direct Labour.
  - Selling price per unit. ₹ 12



**16) Calculate**

- a) The amount of Fixed Expenses.
- b) The No. of units to Break Even
- c) The No. of units to earn a profit of ₹40,000.

The selling price per unit can be assumed at ₹100. The company sold in two successive periods, 7,000 units and 9,000 units and has incurred a loss of ₹10,000 and earned ₹10,000 as profit respectively.

**17) From the following information calculate**

i) Contribution / Sales ratio

ii) Margin of Safety

Total sales	₹ 3,60,000
Selling price per unit	₹ 100
Variable cost unit	₹ 50
Fixed cost	₹ 1,00,000

iii) Break Even point

iv) If the selling price is reduced to ₹ 90 by how much is the margin of safety reduced?

### **Chapter 03:- Standard Costing**

#### **Standard Cost:**

Standard Cost is defined as, 'a pre-determined cost which is calculated from management's standard of efficient operation and the relevant necessary expenditure. It may be used as a basis for price fixation and for cost control through variance analysis.'

#### **Standard Costing:**

Standard Costing is defined as, 'preparation and use of standard costs, their comparison with actual costs and analysis of variances into their causes and points of incidences.'

#### **Features of standard cost:**

1. Standard cost is a pre planned or pre-determined cost.
2. Standard cost is not an estimated cost.
3. Standard cost can be used as a basis for price fixation as well as for exercising control over the cost.
4. Standard costing involves setting of standards for various elements of cost.
5. Standard costing ensures that there is a constant comparison between the standards and actual and the difference between the two is worked out. The difference is known as 'variance' and it is to be analyzed further to find out the reasons behind the same.

#### **Setting of Standard Costs**

1. **Direct Material Cost Standard:** Direct material is an important element of cost and in several industries; the direct material cost is 50% - 55% of the total cost. In case of industry like sugar, the material cost is nearly 65 –70 % of the total cost. In view of this, there is a need to monitor the cost of material closely and take steps to control and reduce the same.
2. **Direct Labour:** Labour is also an important element of cost and the standard labour cost indicates the labour cost that should be incurred. Two factors need to be taken into consideration while fixing the standard labour cost. The first one is the standard time and the second one is the standard rate.
3. **Factory Overhead Standards:** Setting of standard for overhead costs, there is a need to determine, a] standard capacity and b] standard overhead cost for that capacity. The standard overhead cost can be computed using normal capacity. Normal capacity is not the total installed capacity but it is the practical capacity, which is based on the resources available and efficient utilization of the same.
4. **Direct Expenses:** If at all there are some items of standard expenses, rate per unit of the same may be determined on the basis of budgeted output and budgeted direct expenses.

#### **Advantages of Standard Costing:**

- Standard Cost provide yardstick against which actual cost is measured to determine efficiency or inefficiency of actual performance.
- Standard costs are predetermined costs are useful in planning and budgeting.
- An effective delegation of authority is possible in standard costing.
- Standard costing system enables the management to perform its function more effectively.

#### **Limitations of Standard Costing:**

- Standard costing is an expensive technique for small concerns.
- It is quite difficult to establish accurate standard costs. Inaccurate and unreliable standards do more harm than benefit.
- Standard costing is unsuitable in job order industries where production is of a non-repetitive nature.

#### **Analysis of Variances:**

The difference between the standard cost and the actual cost is known as 'cost Variances'. If actual cost is less than the standard cost, the variance is favourable. If the actual cost is more than the standard cost, the variance is unfavorable. A favourable variance indicates efficiency, while an unfavorable one denotes inefficiency.

#### **Computation of Variances**

- **Material Variances:** In the material variances, the main objective is to find out the difference between the standard cost of material used for actual production

and actual cost of material used. Thus the main variance in this category is the cost variance, which is thereafter broken down into other variances.

These variances are given below.

**Material Cost Variance:** As mentioned above, this variance shows the difference between the standard cost of material consumed for actual production and the actual cost.

**Material Price Variance:** One of the reasons for difference between the standard material cost and actual material cost is the difference between the standard price and actual price. Material Price Variance measures the difference between the standard price and actual price with reference to the actual quantity consumed.

**Material Quantity [Usage] Variance:** This variance measures the difference between the standard quantity of material consumed for actual production and the actual quantity consumed and the same is multiplied by standard price.

**Material Mix Variance:** In case of several products, two or more types of raw materials are mixed to produce the final product.

**Material Yield Variance:** The difference between the standard yield specified and the actual yield obtained. This is also a sub-variance of material usage variance.

- **Labour Variances:** Like the material variances, labour variances arise due to the difference between the standard labour cost for actual production and the actual labour cost. The following variances are computed in case of direct labour.

**Labour Cost Variance:** This variance is the main variance in case of labour and arises due to the difference between the standard labour cost for actual production and the actual labour cost.

**Labour Rate Variance:** One of the reasons for labour cost variance is the difference between the standard rate of wages and actual wages rate. The labour rate variance indicates the difference between the standard labour rate and the actual labour rate paid.

**Labour Efficiency Variance:** It is of paramount importance that efficiency of labour is measured. For doing this, the actual time taken by the workers should be compared with the standard time allowed for the job.

**Labour Mix Variance or Gang Composition Variance:** This variance is similar to the material mix variance and is computed in the same manner. In doing a particular job, there may be a particular combination of labour force, which may consist of skilled, semi skilled and unskilled workers.

**Labour Yield Variance:** This variance indicates the difference between the actual output and the standard output based on actual hours. In other words, a comparison is made between the actual production achieved and the production that should have been achieved in actual number of working hours. The variance will be favourable if the actual output achieved is more than the standard output.

**Idle Time Variance:** This variance indicates the loss caused due to abnormal idle time. While fixing the standard time, normal idle time is taken into consideration. However if the actual idle time is more than the standard/normal idle time, it is called as abnormal idle time.

- **Overhead Variances:** The overhead variances show the difference between the standard overhead cost and the actual overhead cost. In case of direct material and direct labour variances, there is no question of dividing them into fixed and variable as the direct material and direct labour costs are variable. However, in case of overheads, it is necessary to divide them into fixed and variable for computation of variances.
- **Fixed Overhead Variances:** The following variances are computed in case of fixed overheads.
- **Fixed Overhead Cost Variance:** This variance indicates the difference between the standard fixed overheads for actual production and the actual fixed overheads incurred.
- **Fixed Overhead Expenditure/Budget Variance:** This variance indicates the difference between the budgeted fixed overheads and the actual fixed overhead expenses. If the actual fixed overheads are more than the budgeted fixed overheads, it is an adverse variance as it means overspending as compared to the budgeted amount.
- **Fixed Overheads Volume Variance:** This variance indicates the under/over absorption of fixed overheads due to the difference in the budgeted quantity of production and actual quantity of production. If the actual quantity produced is more than the budgeted one, this variance will be favourable but it will indicate over absorption of fixed overheads.
- **Fixed Overhead Efficiency Variance:** It is that portion of volume variance which arises due to the difference between the output actually achieved and the output which should have been achieved in the actual hours worked. This variance will be favourable if the actual production is more than the standard production in actual hours.

- **Fixed Overhead Capacity Variance:** This variance is also that portion of volume variance, which arises due to the difference between the capacity utilization, i.e. the capacity actually utilized and the budgeted capacity. If the capacity utilization is more than the budgeted capacity, the variance is favourable, otherwise it will be adverse.
- **Fixed Overheads Calendar Variance:** This variance indicates the difference between the budgeted quantity of production and actual quantity of production achieved arising due to the difference in the number of days worked and budgeted.
- **Variable Overhead Variances:** The following variances are computed in case of variable overheads.
  - **Variable Overhead Cost Variance:** This variance indicates the difference between the standard variable overheads for actual overheads and the actual overheads. The difference between the two arises due to the variation between the budgeted and actual quantity.
  - **Variable Overheads Expenditure Variance:** This variance indicates the difference between the standard variable overheads to be charged to the standard production and the actual variable overheads. If the actual overheads are less than the standard variable overheads, the variance is favourable, otherwise it is adverse.
  - **Variable Overheads Efficiency Variance:** It indicates the efficiency by comparing between the outputs actually achieved and the output that should have been achieved in the actual hours worked. [Standard Production] This variance will be favourable if the actual output achieved is more than the standard output.

**Formulae:**

- 1) Material Cost Variance =  $(SQ \times SP) - (AQ \times AP)$ 

SQ= Standard Quantity

SP= Standard Price

AQ= Actual Quantity

AP= Actual Price
- 2) Material Price Variance: Actual Quantity [Standard Price – Actual Price]
- 3) Material Quantity [Usage] Variance: Standard Price [Standard Quantity – Actual Quantity]
- 4) Material Mix Variance = Standard Cost of Standard Mix – Standard Cost of Actual Mix

Or

Material Mix Variance = Standard cost of revised standard Mix - Standard cost of Actual Mix

5) Material Yield Variance= Standard Rate (Actual Yield-Standard Yield)

$$\text{Standard Rate} = \frac{\text{Standard cost of Standard Mix}}{\text{Standard Yield}}$$

6) Labour Cost Variance= (Standard Hours×Standard Rate) – (Actual Hours×Actual Rate)

7) Labour Rate Variance= Actual Hours [Standard Rate – Actual Rate]

8) Labour Efficiency Variance = Standard Rate [Standard Hours – Actual Hours]

9) Labour Mix Variance = Standard Cost of Standard Mix – Standard Cost of Actual Mix.

Or

Labour Mix Variance= Standard cost of Revised Standard Mix – Standard cost of Actual Mix.

10) Idle Time Variance = Idle hour × Standard Rate.

**Problems:**

1. Calculate Material Cost Variances from the following:

Standards	Actual
Material A – 20% @ Rs.2 per kg	Material A – 8 kg @ Rs.3 per kg
Material B – 80% @ Rs.8 per kg	Material B – 4 kg @ Rs.7 per kg

2. The standard cost card shows the following details relating to materials:

Standard Price=10

Standard Quantity=4,000 Units.

Actual Price=12.5 per Unit

Actual Usage of Materials= 4,100 units.

Calculate:

Material Cost Variance

Material Price Variance

3. The standard cost card shows the following details relating to materials:

Standard Price=15

Standard Quantity=4,000 Units.

Actual Price=18 per Unit

Actual Usage of Materials= 4,100 units.

Calculate:

Material Cost Variance

Material Price Variance

4. From the following particulars compute all Materials Variances.

Quantity of material purchased =3,000 units.

Value of material purchased =Rs.9,000.

Standard quantity of material required per tone of output =30 units.

Standard Price of material =Rs. 2.5 per unit.

Opening stock of material =Nil

Closing stock of material = 500 units.  
Output during the period = 80 tones.

5. The standard material required to manufacture 1 unit of product A is 5 Kgs and the standard price per kg of material is Rs.3. The cost accountants records however, reveal that 16,000kgs of materials costing Rs.52,000 were used for producing 3,000 units of product A. Calculate the material Variances.
6. The standard material required to manufacture 1 unit of product A is 10Kgs and the standard price per kg of material is Rs.6. The cost accountants records however, reveal that 32,000kgs of materials costing Rs.1,04,000 were used for producing 6,000 units of product A. Calculate the material Variances.
7. The standardized material required for producing 100 units is 120 kgs. A standard price of Rs. 0.50 per kg is fixed and 2,40,000 units were produced during the period. Actual materials purchased were 3,00,000 kgs at a cost of Rs. 1,65,000.

Calculate:

Material Cost Variance  
Material Price Variance  
Material Usage Variance

8. From the following particulars, calculate
  - a. Material Cost Variance
  - b. Material Price Variance
  - c. Material Usage VarianceStandard price per kg of material = Rs. 50  
Standard quantity of material per unit 4kgs.  
Actual production 1,000 units  
Materials actually consumed 4,300 kgs.  
Actual purchase price per kg of material Rs.55

9. The standard cost of a chemical mixture is as under:  
4 tons of material X at Rs.20 per ton.  
6 tons of material Y at Rs. 30 per ton.  
Standard yield is 90% of input.  
Actual cost for a period is as under:  
4.5 tons of Material X at Rs. 15 per ton.  
5.5 tons of material Y at Rs. 34 per ton.  
Actual yield is 9.1 tons.  
Compute all Variances.

10. The standard cost of a chemical mixture is as under:  
2 tons of material X at Rs.20 per ton.  
3 tons of material Y at Rs. 30 per ton.  
Standard yield is 90% of input.  
Actual cost for a period is as under:  
2.5 tons of Material X at Rs. 15 per ton.  
3.5 tons of material Y at Rs. 34 per ton.  
Actual yield is 6.1 tons.  
Compute all Variances.
11. The standard cost of a chemical mixture is as under:  
40% of Material C at Rs. 20 per kg.  
60% of Material D at Rs. 30 per kg.  
A standard loss of 10% of input is expected in production. The cost records for a period showed the following usage:  
90 kgs of material C at a cost of Rs. 18 per kg.  
110 kgs of material D at a cost of Rs, 34 per kg.  
The quantity produced was 182 kgs of good product.  
Calculate all possible material variances.
12. The standard cost of a chemical mixture is as under:  
40% of Material C at Rs. 40 per kg.  
60% of Material D at Rs. 30 per kg.  
A standard loss of 10% of input is expected in production. The cost records for a period showed the following usage:  
90 kgs of material C at a cost of Rs. 42 per kg.  
160 kgs of material D at a cost of Rs, 28 per kg.  
The quantity produced was 230 kgs of good product.  
Calculate all possible material variances.
13. Using the following information calculate:
- Labour Cost Variance
  - Labour Rate Variance
  - Labour Efficiency Variance
- |                    |                  |
|--------------------|------------------|
| Standard Hours     | 4,000            |
| Actual Hours       | 5,000            |
| Standard Wage rate | Rs. 3 per hour   |
| Actual Wage rate   | Rs. 2.5 per hour |
14. Using the following information calculate:
- Labour Cost Variance
  - Labour Rate Variance
  - Labour Efficiency Variance
- |                |       |
|----------------|-------|
| Standard Hours | 8,000 |
|----------------|-------|



Actual Hours	10,000
Standard Wage rate	Rs. 6 per hour
Actual Wage rate	Rs. 5 per hour

15. From the following, calculate labour variances of department A.

Actual direct wages	Rs. 2,000.
Standard hours	8,000.
Standard rate per hour	Rs. 0.30 paise.
Actual hours worked	8,200.

16. The following details are available from the records of XYZ Ltd. Engaged in the manufacturing of a product during the month of April, 2019.

Particulars	Hours	Rate per Hour	Total
Skilled Labour	10	3	30
Semi-Skilled Labour	8	1.5	12
Unskilled Labour	16	1.0	16
			<b>58</b>

The actual production was 1,000 articles for which the actual hours worked and rates are given below.

Particulars	Hours	Rate per Hour	Total
Skilled Labour	9,000	4	36,000
Semi-Skilled Labour	8,400	1.5	12,600
Unskilled Labour	20,000	0.90	18,000
			<b>66,600</b>

From the above set of data you are asked to calculate.

- Labour Cost Variance
- Labour Rate Variance
- Labour Efficiency Variance
- Labour Mix variance

17. Using the following information calculate labour variances.

Gross direct wages	-Rs.3,000
Standard hours produced	-1,600
Standard rate per hour	-Rs. 1.50
Actual hours paid - 1,500 hrs, out of which hours not worked are 50 (Idle time)	

18. The following details relating to product X during the month of March 2019 are available. You are required to compute labour and material variances with the help of following data:

Standard cost per unit

Materials	-50 kgs at Rs. 40 per kg.
Labour	-400hrs at Rs. 1per hour.

Actual cost for the month

Materials -4,900 kgs at Rs. 42 per kg.

Labour - 39,600 hours at Rs. 1.10 per hour.

Actual production 100 units.

19. The standard cost on material and labour for making of a unit of certain product are estimate as under:

Material 80kgs at Rs. 1.50 per kg.

Labour 18 hours at Rs.1.25 per hour.

On completion of the production of a unit it was found that 75 kgs of materials costing Rs 1.75 per kg has been consumed and that the time taken was 16 hours. The wage rate being Rs. 1.50 per hour. You are required to calculate material and labour variance.

20. Akash industries manufactures only one article, the prime cost standards for which have been established as follows:-

	Per completed unit
Materials 5kgs at Rs. 4.20	Rs. 21
Labour 3hours at Rs. 3.00	Rs. 9

The production schedule for the month of July 2019 required completion of 5,000 units. However, 5,120 units were actually completed.

Purchases for the month of July 2019 amounted to 30,000kgs of material at the total invoice price of Rs. 1, 35,000.

Production records for the month of July 2019 showed the following actual results:

Material requisition and used 25,700 kgs.

Direct labour – 15,150 hours at Rs. 48,480.

Calculate appropriate Material and Labour variances.

21. The standard cost card for a product shows:

	Cost per Unit
Materials 2kgs at Rs. 2.50	5.0
Wages 2 hours at 50paise each	Rs. 1.00

The actual which have emerged from business operations are as follows;

Production -8,000

Materials consumed 16,500 kgs at Rs. 2.40 per kg -Rs. 39,600

Wages paid 18,000 hours at 40 paise, per hour -Rs. 7,200

Calculate appropriate material and labour variances.

## **Chapter 04: Budgetary Control**

**Budget** has been defined by CIMA U.K. as, 'A financial and/or quantitative statement prepared prior to a defined period of time, of the policy to be pursued during that period for the purpose of achieving a given objective.

**Budgetary Control** is actually a means of control in which the actual results are compared with the budgeted results so that appropriate action may be taken with regard to any deviations between the two.

**Budgetary control has the following stages:**

1. **Developing Budgets:** The first stage in budgetary control is developing various budgets. It will be necessary to identify the budget centers in the organization and budgets will have to develop for each one of them. Thus budgets are developed for functions like purchase, sale, production, manpower planning as well as for cash, capital expenditure, machine hours, labor hours and so on. Utmost care should be taken while developing the budgets. The factors affecting the planning should be studied carefully and budgets should be developed after a thorough study of the same.
2. **Recording Actual Performance:** There should be a proper system of recording the actual performance achieved. This will facilitate the comparison between the budget and the actual. An efficient accounting and cost accounting system will help to record the actual performance effectively.
3. **Comparison of Budgeted and Actual Performance:** One of the most important aspects of budgetary control is the comparison between the budgeted and the actual performance. The objective of such comparison is to find out the deviation between the two and provide the base for taking corrective action.
4. **Corrective Action:** Taking appropriate corrective action on the basis of the comparison between the budgeted and actual results is the essence of budgeting. A budget is always prepared for future and hence there may be a variation between the budgeted results and actual results. There is a need for investigation

of the same and take appropriate action so that the deviations will not repeat in the future. Responsibilities can be fixed on proper persons so that they can be held responsible for any such deviations.

### **Objectives of Budgeting**

**Planning:** Planning is necessary for doing any work in a systematic manner. A well-prepared plan helps the organization to use the scarce resources in an efficient manner and thus achieving the predetermined targets becomes easy. A budget is always prepared for future period and it lays down targets regarding various aspects like purchase, production, sales, manpower planning etc. This automatically facilitates planning.

**Co-ordination:** For achieving the predetermined objectives, apart from planning, coordinated efforts are required. Budgeting facilitates coordination in the sense that budgets cannot be developed in isolation.

**Control:** Planning is looking ahead while controlling is looking back. Preparation of budgets involves detailed planning about various activities like purchase, sales, production, and other functions like marketing, sales promotion, manpower planning. But planning alone is not sufficient. There should be a proper system of controlling which will ensure that the work is progressing as per the plan.

### **Benefits of Budgetary Control**

- a. Budgeting facilitates planning of various activities and ensures that the working of the organization is systematic and smooth.
- b. Budgeting is a coordinated exercise and hence combines the ideas of different levels of management in preparation of the same.
- c. Any budget cannot be prepared in isolation and therefore coordination among various departments is facilitated automatically.
- d. Budgeting is an effective means for planning and thus ensures sufficient availability of working capital and other resources.
- e. As the resources are directed to the most productive use, budgeting helps in reducing the wastages and losses.

### **Limitations of Budgetary Control**

- a. It may be impossible to achieve budgeted targets as estimates may not be accurate.
- b. Budgets may be revised frequently; frequent revision is a costly affair.
- c. Co-ordination of various budgets is also expensive.
- d. Budget is only a tool of management and is not a substitute of management.

### **Types of Budgets**

#### **1. On the basis of Area of Operation**

A. **Functional Budgets:** Functional Budgets: The functional budgets are prepared for each function of the organization. These budgets are normally prepared for a period of one year and then broken down to each month.

- **Sales Budget:** A Sales Budget shows forecast of expected sales in the future period [the period is well defined] and expressed in quantity of the product to be sold as well as the monetary value of the same. A Sales Budget may be prepared product wise, territories/area/country wise, customer group wise, salesmen wise as well as time wise like quarter wise, month wise, weekly etc.

- **Production Budget:** This budget shows the production target to be achieved in the next year or the future period. The production budget is prepared in quantity as well as in monetary terms. Before preparation of this budget it is necessary to study the principal budget factor or the key factor.

- **Material Purchase Budget:** This budget shows the quantity of materials to be purchased during the coming year. For the preparation of this budget, production budget is the starting point if it is the key factor. If the raw material availability is the key factor, it becomes the starting point. The desired closing inventory of the raw materials is added to the requirement as per the production budget and the opening inventory is subtracted from the gross requirements.

- **Cash Budget:** A cash budget is an estimate of cash receipts and cash payments prepared for each month. In this budget all expected payments, revenue as well as capital and all receipts, revenue and capital are taken into consideration. The main purpose of cash budget is to predict the receipts and payments in cash so that the firm will be able to find out the cash balance at the end of the budget period.

B. **Master Budget:** All the budgets described above are called as 'Functional Budgets' that are prepared for planning of the individual function of the organization. For example, budgets are prepared for Purchase, Sales, Production, Manpower Planning, and so on. A Master Budget which is also called as 'Comprehensive Budget' is a consolidation of all the functional budgets. It shows the projected Profit and Loss Account and Balance Sheet of the business organization.

- **Fixed Budgets:** When a budget is prepared by assuming a fixed percentage of capacity utilization, it is called as a fixed budget. For example, a firm may decide to operate at 90% of its total capacity and prepare a budget showing the projected profit or loss at that capacity.

- **Flexible Budgets:** A flexible budget is a budget that is prepared for different levels of capacity utilization. It can be called as a series of fixed budgets prepared for different levels of activity. Thus a flexible budget covers a range of activity, it is flexible i.e. easy to change with

variation in production levels and it facilitates performance measurement and evaluation.

2. **Classification of Budgets According to Time:** According to this classification, budgets are divided in the following categories.

A. **Short Term Budget:** Any budget that is prepared for a period up to one year is known as Short Term Budget. Functional budgets are normally prepared for a period of one year and then it is broken down month wise.

B. **Medium Term Budget:** Budget prepared for a period 1-3 years is Medium Term Budget. Budgets like Capital Expenditure, Manpower Planning are prepared for medium term. \_\_\_

C. **Long Term Budgets:** Any budget exceeding 3 years is known as Long Term Budgets. Master Budget is normally prepared for long term. In the modern days due to uncertainty, very few budgets are prepared for long term.

- **Zero Base Budgeting:** Zero Base Budgeting is method of budgeting whereby all activities are re-valuated each time budget is formulated and every item of expenditure in the budget is fully justified. Thus the Zero Base Budgeting involves from scratch or zero.

#### **Problems on Flexible & Cash Budget:**

1. The expenses budgeted for the production of 10,000 units in a factory is furnished below:

Elements of cost	Cost per unit
Material	70
Labour	25
Variable overheads	20
Fixed Overheads(1,00,000)	10
Variable expenses (Direct)	5
Selling Expenses (10% Fixed)	13
Distribution Expenses (20% Fixed)	7
Administration Expenses (Rs. 50,000 fixed for all levels)	5
<b>Total</b>	<b>155</b>

Prepare a budget for the production of 6,000 units and 8,000 units.

2. The expenses budgeted for the production of 8,000 units in a factory is furnished below:

Elements of cost	Cost per unit
------------------	---------------

Material	70
Labour	25
Variable overheads	20
Fixed Overheads(1,00,000)	10
Variable expenses (Direct)	5
Selling Expenses (10% Fixed)	13
Distribution Expenses (20% Fixed)	7
Administration Expenses (Rs. 50,000 fixed for all levels)	5
<b>Total</b>	<b>155</b>

Prepare a budget for the production of 3,000 and 5,000 units respectively.

3. ABC Ltd. Prepared a budget for the production of 10,000 units of the only commodity manufactured by them.

<b>Elements of cost</b>	<b>Cost per unit</b>
Direct Material	2.52
Direct Labour	0.75
Direct Expenses	0.10
Works Overheads (60% Fixed)	2.50
Administrative overheads (80% Fixed)	0.50
Selling Expenses (50% Fixed)	0.20

Prepare a flexible budget for the production of 8,000 units and 6,000 units.

4. Happy limited working at full capacity manufacturers 10,000 units of a product, at 50% capacity the product cost is Rs. 180 and sales price is Rs. 200. The breakup of the total cost is as follows:

<b>Elements of cost</b>	<b>Cost per unit</b>
Direct Material	100
Direct Labour	30
Factory overheads (40% Fixed)	30
Administrative Overheads (50% Fixed)	20

At 60% working raw material cost goes up by 2% and sales price falls by 2%. At 80% working raw materials cost increases by 5% and sale price decreases by 5%. Prepare a statement to show profitability at 60% and 80% capacity.

5. Cost of an Article at a capacity level Of 7,500 units is given under A. For variation of 20% capacity above or below this level the individual expenses vary as indicated under B below:

<b>Elements of cost</b>	<b>A</b>	<b>B</b>
Material	37,500	100% Varying
Labour	22,500	100% Varying
Repair and Maintenance	1,875	80% Varying

Power	3,000	75% Varying
Stores	1,500	100% Varying
Inspection	750	20 % Varying
Depreciation	15,000	100% Varying
Administration overheads	7,500	25 % Varying
Selling overheads	4,500	50 % Varying
<b>Total</b>	<b>94,125</b>	

Find out the cost of the product at production levels of 6,000 units and 9,000 units.

6. A factory engaged in manufacturing plastic toys is working at 40% capacity and produces 10, 000 toys per month. The present cost break up for one toy is as under.

Material: Rs.10

Labor: Rs.3

Overheads: Rs.5 [60% fixed]

The selling price is Rs.20 per toy. If it is decided to work the factory at 50% capacity, the selling price falls by 3%. At 90% capacity, the selling price falls by 5% accompanied by a similar fall in the price of material. You are required to prepare a statement showing the profits/losses at 40%, 50% and 90% capacity utilization.

7. A manufacturing company is currently working at 50% capacity and produces 10, 000 units at a cost of Rs.180 per unit as per the following details.

Materials: Rs.100

Labor: Rs.30

Factory Overheads: Rs.30 [40% fixed]

Administrative Overheads: Rs.20 [50% fixed]

Total Cost per Unit: Rs.180

The selling price per unit at present is Rs.200. At 60% working, material cost per unit increases by 2% and selling price per unit falls by 2%. At 80% working, material cost per unit increases by 5% and selling price per unit falls by 5%.

Prepare a Flexible Budget to show the profits /losses at 50%, 60% and 80% capacity utilization.

8. Prepare a flexible budget for overheads on the basis of data given below. Ascertain overhead rate at 50% and 70% capacity.

Elements of cost	50%	60%	70%
Variable Overheads	-----	-----	-----
Indirect materials	-----	6,000	-----
Indirect Labour	-----	18,000	-----
Semi variable overheads	-----	-----	-----
Electricity (40% Fixed)	-----	30,000	-----
Repairs and maintenance (80% Fixed)	-----	3,000	-----



Fixed Overheads	-----	-----	-----
Depreciation	-----	16,500	-----
Insurance	-----	4,500	-----
Salaries	-----	15,000	-----
<b>Total Overheads</b>	-----	<b>93,000</b>	-----
Estimated Direct labour hours	-----	1,86,000	-----

9. The budgeted output of a factory specializing in the production of single product at optimum capacity of 6,400 units per annum amounts to Rs. 2,00,000 as detailed below:

Fixed cost	- Rs. 45,000
Variable cost	
Power	- Rs. 4,500
Repairs	- Rs. 2,000
Miscellaneous	- Rs. 500
Direct Materials	- Rs. 45,000
Direct Labour	- Rs. 1,03,000
Total Cost	- Rs. 2,00,000

Having regard to possible impact on sales turnover by market trends, the company decided to have a flexible budget with a production target 3,200 units and 4,800 units. Prepare a flexible budget for production level of 50% and 75% assuming selling price per unit is maintained at Rs. 40 as at present. Indicate the effect on net profit, administration, selling and distribution continues at Rs. 4000.

10. Jagadish and company produces an article, the estimated cost per unit are given below:

Materials	-Rs. 60
Labour	-Rs. 48
Other Expenses	-Rs. 12
Variable overheads	- Rs. 18

Semi-variable overheads at 100% activity level (10,000 units) are estimated to be Rs. 2,40,000 and these overheads vary in steps of Rs. 12,000 for each change in the output of 1,000 units.

Fixed overheads are estimated at 3,00,000 the selling price per unit also estimated at 240. Prepare a flexible budget at 50%, 70% and 90% Capacity.

11. Following data are available in a manufacturing company for the year 2018-19.

Elements of cost	In Lakhs
Fixed Expenses:	
Wages and salaries	9.5
Rent, rates and taxes	6.6
Depreciation	7.4

Sundry Administrative expenses	6.5
Semi- Variable Expenses (at 50% capacity)	
Repairs and maintenance	3.5
Indirect labour	7.9
Sales department salaries	3.8
Administrative department salaries	2.8
Variable Expenses (at 50% capacity)	
Direct Materials	21.7
Direct labour	20.4
Direct expenses	7.9

Assume that the fixed expenses remain constant for all levels of production, semi-variable expenses remain constant between 45% and 65% of capacity. Increasing by 10% between 65% and 80% capacity and by 20% between 80% and 100% capacity.

Sales at various levels are:

Capacity	In Lakhs
50% capacity	100
60% capacity	120
75% capacity	150
90% capacity	180
100% capacity	200

Prepare a flexible budget for the year and estimate the profits at 60%, 75%, 90% and 100% capacity.

12. The following details relating to a manufacturing firm are available. The figures of November and December are actual whereas those pertaining to January to April are projected.

Month	Sales	Purchases	Wages	Manufacturing Expenses	Administrative Expenses
November	4,00,000	1,80,000	80,000	60,000	40,000
December	4,25,000	2,00,000	85,000	75,000	40,000
January	4,50,000	2,10,000	90,000	75,000	40,000
February	5,00,000	2,25,000	85,000	60,000	40,000
March	4,50,000	1,60,000	80,000	60,000	40,000
April	4,00,000	1,60,000	75,000	45,000	40,000

The following details are also available:

- 20% of sales are on cash basis. The remaining amount is collected in two equal installments in the following two months.
- Suppliers of materials offer a credit period of one month.
- 25% of wages and manufacturing expenses are paid in the following month.
- Administrative expenses are paid in the same month.
- Cash balance on 1<sup>st</sup> January 2017 was Rs. 25,000.

You are required to prepare a cash budget for four months from January to April.

13. A company expects to have Rs. 37,500 cash in hand on 1<sup>st</sup> April 2018 and require you to prepare an estimate of cash position during the three months, April to June, 2018. The following information is supplied to you.

Month	Sales	Purchases	Wages	Factory Expenses	Office Expenses	Selling Expenses
February	75,000	45,000	9,000	7,500	6,000	4,500
March	84,000	48,000	9,750	8,250	6,000	4,500
April	90,000	52,500	10,500	9,000	6,000	5,250
May	1,20,000	60,000	13,500	11,250	6,000	6,570
June	1,35,000	60,000	14,250	14,000	7,000	7,000

Other Information:

- Period of credit allowed by suppliers – 2 months.
- 20% of sales are for cash and period of credit allowed customers for credit sales is one month.
- Delay in payment of all expenses- 1 month.
- Income tax of Rs. 57,500 is due to be paid on June 15, 2018.
- The company is to pay dividends to shareholders and bonus to workers of Rs. 15,000 and Rs. 22,500 respectively in the month of April.
- Plant has been ordered and is expected to be received and paid in May. It will cost Rs. 1,20,000.

14. ABC Company Ltd has given the following particulars. You are required to prepare a cash budget for the three months ending 31<sup>st</sup> December, 2017.

Month	Sales	Materials	Wages	Overheads
August	20,000	10,200	3,800	1,900
September	21,000	10,000	3,800	2,100
October	23,000	9,800	4,000	2,300
November	25,000	10,000	4,200	2,400
December	30,000	10,800	4,500	2,500

Credit terms are:

- Sales or Debtors – 10% sales are on cash basis, 50% of the credit sales are collected next month and the balance in the following month.
- Creditors- Materials 2 months.
- Wages-  $\frac{1}{4}$  month.
- Overheads  $\frac{1}{2}$  month.
- Cash balance on 1<sup>st</sup> October, 2017 is expected to be 8,000.
- A machinery will be installed in August, 2018 at a cost of Rs. 1,00,000. The monthly installment of Rs. 5,000 is payable from October onwards.
- Dividend at 10% on preference share capital of 3,00,000 will be paid on 1<sup>st</sup> December, 2017.
- Advance to be received for sale of vehicle Rs. 20,000 in December.
- Income- tax (advance) to be paid in December Rs. 5000.

15. Prepare a cash budget for the three months ending 30<sup>th</sup> June, 2018 from the information given below:

Month	Sales	Materials	Wages	Overheads
February	14,000	9,600	3,000	1,700
March	15,000	9,000	3,000	1,900
April	16,000	9,200	3,200	2,000
May	17,000	10,000	3,600	2,200
June	18,000	10,400	4,000	2,300

- Credit terms are:

Sales or Debtors- 10% sales are on cash basis, 50% of the credit sales are collected next month and the balance in the following month:

Creditors - Materials 2 months  
 - Wages  $\frac{1}{4}$  month  
 - Overheads  $\frac{1}{2}$  month

- Cash and bank balance on 1<sup>st</sup> April 2018 is expected to be Rs. 6,000.

- Other relevant information are:

- Plant and machinery will be installed in February, 2018 at a cost of Rs. 96,000. The monthly installment of Rs. 2,000 is payable from April onward.
- Dividend at 5% on preference share capital of Rs. 2,00,000 will be paid on 1<sup>st</sup> June.
- Advance to be received for sale of vehicles Rs. 9,000 in June.
- Dividends from investments amounting to Rs. 1,000 are expected to be received in June.
- Income Tax (Advance) to be paid in June is Rs. 2,000.

16. Prepare a cash budget for the three months ending 30<sup>th</sup> June, 2019 from the information given below:

Month	Sales	Materials	Wages	Overheads
February	14,000	8,000	3,000	1,700
March	15,000	10,000	3,000	1,500
April	16,000	12,000	3,200	2,300
May	17,000	9,500	3,600	2,000
June	18,000	10,500	4,000	1,800

- Credit terms are:

Sales or Debtors- 10% sales are on cash basis, 50% of the credit sales are collected next month and the balance in the following month:

Creditors - Materials 2 months  
 - Wages  $\frac{1}{4}$  month  
 - Overheads  $\frac{1}{2}$  month

- Cash and bank balance on 1<sup>st</sup> April 2019 is expected to be Rs. 6,000.
- Other relevant information are:
  - vi. Plant and machinery will be installed in February, 2019 at a cost of Rs. 96,000. The monthly installment of Rs. 2,000 is payable from April onward.
  - vii. Dividend at 5% on preference share capital of Rs. 2,00,000 will be paid on 1<sup>st</sup> June.
  - viii. Advance to be received for sale of vehicles Rs. 9,000 in June.
  - ix. Dividends from investments amounting to Rs. 1,000 are expected to be received in June.
  - x. Income Tax (Advance) to be paid in June is Rs. 2,000.

17. Prepare a cash budget for three months commencing 1<sup>st</sup> June, when the bank balance was Rs. 1,00,000.

Month	Sales	Purchase	Wages	Factory Expenses	Selling Expenses
April	80,000	41,000	5,600	3,900	10,000
May	76,000	40,000	5,400	4,200	14,000
June	78,000	38,000	5,400	5,100	15,000
July	90,000	37,000	4,800	5,100	17,000
August	95,000	35,000	4,700	6,000	13,000

20% of the sales are on cash basis. Customers are allowed 2 months credit.  
Suppliers allow one month credit.

Lag in payment of wages – 1 month.

Lag in payment of factory expenses-  $\frac{1}{2}$  a month.

Lag in payment of selling expenses-  $\frac{1}{4}$  a month.

## **Chapter 05: Activity Based Costing**

### **Introduction:**

A powerful tool for measuring performance, Activity-Based Costing (ABC) is used to identify, describe, assign costs to, and report on agency operations. A more accurate cost management system than traditional cost accounting; ABC identifies opportunities to improve business process effectiveness and efficiency by determining the “true” cost of a product or service. Activity Based Costing is a method for developing cost estimates in which the project is subdivided into discrete, quantifiable activities or a work unit. ABC systems calculate the costs of individual activities and assign costs to cost objects such as products and services on the basis of the activities undertaken to produce each product or services. It accurately identifies sources of profit and loss.

### **Limitations of Traditional Costing System**

The cost of product arrived in traditional accounting system is not so accurate due to following reasons:

- a. The present Costing system has developed convenient overhead recovery basis and blanket overhead recovery are acceptable when valuing stocks for financial reporting, but they are inappropriate when used for decision making and typical product strategy decisions. Such decisions have implications over 3-5 years and over this period many fixed costs become variable.
- b. The traditional fixed versus variable cost split is often unrealistic since, as business grows they often become more complex.
- c. In case of companies manufacturing and selling multiple products usually make decisions on pricing, product-mix, process technology etc., based on distorted cost information due to difficulties in traditional costing system in collection, classification, allocation and recovery of overheads to individual products.
- d. The cost structure is changing especially when making direct labour component to small proportion.
- e. Traditional accounting was confined merely to furnishing information at product level. The new manufacturing technology demands the feed back of performance while production is still in progress rather than history.
- f. There is also an urgent need to integrate the activity measurement and financial measurement.

### **Activity-Based Costing**

The concepts of ABC were developed in the manufacturing sector of the United States during the 1970s and 1980s. It is a practice in which activities are identified and all related costs of performing them are calculated, providing actual costs chargeable. The focus of activity based costing is activities. Thus identifying activities is a logical

first step in designing an activity based costing. An activity is an event, task or unit of work with a specified purpose. For example; designing products, setting up machines, operating machines and distributing products.

**Activity Based Costing** is, ‘the collection of financial and operational performance information tracing the significant activities of the firm to product costs.’

### **Objectives of Activity Based Costing**

- 1) To remove the distortions in computation of total costs as seen in the traditional costing system and bring more accuracy in the computation of costs of products and services.
- 2) To help in decision making by accurately computing the costs of products and services.
- 3) To distribute overheads on the basis of activities
- 4) To focus on high cost activities.
- 5) To eliminate non value adding activities.

### **Working of Activity Based Costing**

- 1) Understanding and analyzing manufacturing process: - For installation of any costing system, study of manufacturing process is essential. For Activity Based Costing system also, it is necessary to study the manufacturing process and ascertain various stages involved in the same so that ‘activities’ involved in the same can be identified.
- 2) Study of the Activities involved: - The next step is to study the activities involved in the manufacturing process. This step is very crucial as the entire Activity Based Costing is based on identification of activities. In this step, the activities involved in a process are identified.
- 3) Activity Cost Pool: - Cost pool is defined by CIMA as, ‘the point of focus for the costs relating to a particular activity in an activity based costing system.’ Thus cost pool concept is similar to the concept of cost center. The cost pool is the point of focus or in other words, it is the total cost assigned to an activity. It is the sum of all the cost elements assigned to an activity.
- 4) Cost Drivers :- According to CIMA, ‘cost driver is any factor which causes a change in the cost of an activity, e.g. the quality of parts received by an activity is a determining factor in the work required by that activity and therefore affects the resources required. An activity may have multiple cost drivers associated with it.’ In other words, cost driver means the factors which determine the cost of an activity.
- 5) Identification of costs with the products: - The final stage in Activity Based Costing is to identify the cost with the final products which can also be called as cost objects. Cost objects include, products, services, customers, projects and contracts. As mentioned earlier, direct costs can be identified easily with the products but the indirect costs can be linked with the products by

identifying activities and cost drivers. Thus Activity Based Costing is the

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Activities	Resources	Cost pools	Cost driver
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of tracing costs first from resources to activities and then from activities to specific products.

### **Kalpan and Cooper's Approach:**

The rules developed by Kalpan and Cooper's for these processes are:

1. Focus on expensive resources, thus directing attention to resource categories where new costing process has the potential to make a big difference on product costs.
2. Emphasize resources whose consumption varies significantly by product and product type and.
3. Focus on resources whose demand patterns are non-correlated with traditional allocation measures. ABC is the process of tracing costs first from resources to activities and then from activities to specific products.

### **Important Terms in Activity Based Costing**

**Activity:** An activity means an aggregate of closely related tasks having some specific functions which are used for completion of goal or objectives.

**Resource :** Resources are elements that are used for performing the activities or factors helping in the activities.

**Cost :** Cost is amount paid for resource consumed by the activity. For example, salaries, printing stationary etc.

**Cost object:** It refers to an item for which cost measurement is required. e.g. a product, a service, or a customer.

**Cost pool:** A cost pool is a term used to indicate grouping of costs incurred on a particular activity which drives them.

**Cost driver:** Any element 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. Cost drivers are used to trace cost to product by using a measure of resources consumed by each activity.

### **For example:**



The cost drivers for various functions i.e., production, marketing, research, and development are given below	Consulting	Consultant, computer	Employee cost, maintenance cost	Level of consultant spent
	Laser printing	Printing staff, printer	Colour cost, maintenance cost, printing stationary	No. of pages printed, f
	Accounting administration	Administration staff	Salaries	No. of times produced
	Customer service	Telephone, staff	Telephone bill, salaries	Frequency of order, order, time spent in se no. of service calls
	Research development	Staff, equipment, material	Salaries, maintenance cost, material cost	No. of research project spent on a project, t complexities of project

Production	Number of units Number of set-ups
Marketing	Number of sales personnel Number of sales orders
Research& development	Number of research projects Personnel hours spend on projects Technical complexities of the projects
Customer service	Number of service calls Number of products serviced Hours spend on servicing products

### **Advantages of Activity Based Costing**

- (i) It provides more accurate product costing information by reducing arbitrary cost allocations.
- (ii) It improves the quality of information available for decision making by answering the questions such as what activities and events are driving cost and where efforts should be made to control cost ?
- (iii) It is easiest way to allocate overhead in the product.
- (iv) It helps to identify the activities that can be eliminated.
- (v) It links up cause and effect relationship.

(vi) ABC helps to identify the value added activities (that increase the customer's satisfaction) and non- value added activities (that creates the problems in customer's satisfaction)

(vii) ABC translates cost in to a language that people can understand and that can be linked up to business activities.

### **Limitations of Activity Based Costing**

- (i) More time consuming to collect data
- (ii) Cost of buying, implementing and maintaining activity based system
- (iii) In some cases, the establishment of cause and effect relationship between cost driver and costs not be a simple affair.
- (iv) ABC does not conform to generally accepted accounting principles in some areas.

### **Problems on Activity Based Costing**

1. From the following calculate Cost driver rates.

Activity	Total Cost	Cost allocation base
Set up	50,000	No. of Set ups-200
Machine activity	80,000	No. of machine hours-1,600
Inspection and quality control	25,000	No. of inspections-500
Stores receiving	36,000	No. of requisitions raised-600
Material handling and dispatch	14,000	No. of times material handled-280
Shipment	26,000	No. of shipments-130

2. A company manufactures two products furnishes the following data for a year:

Product	Annual Output	Total machine	Total no of purchase orders	Total no of setups
A	5,000	20,000	160	20
B	60,000	1,20,000	384	44

The annual overheads are as under:

Volume related activity costs                      -5,50,000

Setup related costs                                      -8,20,000

Purchase related costs                                  -6,18,000

You are required to calculate the cost per unit of each product A and B based on

A) Traditional method of charging overheads using machine hour rate method.

B) Activity based costing method.

3. The budgeted overheads and cost driver volumes of XYZ are as follows.

Cost pool	Budgeted overheads	Cost Drivers	Budgeted volume
Material procurement	5,80,000	No. of orders	1,100
Material handling	2,50,000	No. of movements	680
Set-up	4,15,000	No. of set ups	520
Maintenance	9,70,000	Maintenance hours	8400
Quality control	1,76,000	No. of Inspection	900
Machinery	7,20,000	No. of machine hours	24000

The company has produced a batch of 2,600 components of AX-15, its material cost was Rs. 1,30,000 and labor cost Rs. 2,45,000. The usage activities of the said batch are as follows.

Material orders – 26, maintenance hours – 690, material movements – 18, inspection – 28, set ups – 25, machine hours – 1,800.

Calculate – cost driver rates that are used for tracing appropriate amount of overheads to the said batch and ascertain the cost of batch of components using Activity Based Costing.

4. A company manufacturing two products furnishes the following data for a year

Product	Annual Output(Units)	Total Machine Hours	Total Number Of Purchase orders	Total Number Of Set Ups
A	5,000	20,000	160	20
B	60,000	1,20,000	384	44

The annual overheads are as under:

Particulars	Amount in Rupees
Volume related activity costs	5,50,000
Set up related costs	8,20,000
Purchase related costs	6,18,000
Total costs	19,88,000

You are required to calculate the cost per unit of each Product A and B, based on,

I. Traditional method of charging overheads

II. Activity Based costing method.

5. 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

Particulars				A	B
Output in units				20,000	30,000
Components use(Numbers)				16	8
Components cost(per unit in				9	7.2
Number of production runs				400	100
Machine hours per 100 units				5.2	10.6
Number of items packed in a carton				20 units	100 units
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 has been compiled:

Product	No.of set up	No.of materials orders	No. of times materials handled	No.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.

6. A Company assembles two products A and B details of their manufacture are given below:

Overheads costs are budgeted as below:

Particulars	Amount
Components purchasing and using cost	28,000
Production control cost	36,000
Machine setup cost	50,000
Machine running cost	1,28,000
Packing cost	62,400

You are required to calculate: a) Overhead recovery rate using ABC.

b) Cost of production per unit of the two components.

7. A company manufacturing two products furnishes the following data for the year.

Product	Annual output	Total machine hours	Total number of purchase order	Total number of set ups
A	10,000	40,000	320	40
B	1,20,000	2,40,000	768	88
Total	1,30,000	2,80,000	1088	128

The annual overheads are as follows

Volume related activity costs      11,00,000

Setup related cost                      16,40,000

Purchase related cost                  12,36,000

You are required to calculate the cost per unit of each product A and B based on:

A) Traditional method of charging overhead.

B) ABC method.