

Chapter

20

Budgeting

Learning Objectives

After reading this chapter, you should be able to:

1. explain concept of budgeting, its objectives and functions, advantages and limitations;
2. understand budgeting process, organisation for budgeting, budget manual, budget period, budget centres, principal budget factor;
3. explain elements of a successful budgeting plan;
4. distinguish between budgets and standard costs;
5. importance and differences between fixed and flexible budgeting;
6. discuss the procedure of preparing different types of functional and financial budgets, and
7. explain the concept of Zero Base Budgeting (ZBB), Planning, Programming and Budgeting System (PPBS), Performance Budgeting.

CONCEPT OF BUDGETING

One of the primary objectives of cost accounting is to provide information to business managements for planning and control. Budgeting acts as tool of both planning and control. Budgeting is a formal process of financial planning using estimated financial and accounting data. The Institute of Cost and Management Accountants (UK) defines a budget as "a financial and/or quantitative statement, prepared and approved prior to a defined period of time, of the policy to be pursued during that period for the purpose of attaining a given objective. It may include income, expenditure and the employment of capital."

Budgeting and Forecasting

Sometimes the terms "budgeting" and "forecasting" are used interchangeably. Both terms have some similarities, for example, both relate to future events and involve prediction of something. The basic difference between budgeting and forecasting lies in degree of sophistication involved in the predictions used by them. According to the National Association of Accountants (USA), "forecasting is a process of predicting or estimating a future happening". Forecasting is an

essential part of the budgeting process. Forecasting is estimating future events and their effects on the budget. Forecasting comes to an end after mere estimating. Budgeting is a process of preparing budgets and further control aspects are involved in its procedure. Besides, forecasting can be made by a firm for purposes other than budgeting, such as a forecast of general business conditions. Such forecasts are sometimes not used in budgeting.

Thus, budgeting is not merely forecasting of a particular event. It is not simply an estimation or prediction; it is a plan. In simple terms, budgeting is an attempt, at the beginning of the year (or at any other period), to plan the profit and loss account for the year and to aim for a definite balance sheet at its end, instead of relying upon chance.

CONCEPT OF BUDGETARY CONTROL

Budgetary control is a means of control in which the actual state of affairs is compared with the budget so that appropriate action may be taken with regard to any deviations before it is too late. Briefly, the use of a budget to control a firm's activities is known as budgeting control. Budgetary control has the following main objectives:

1. To provide an organised procedure for planning. It provides a detailed plan of action for a business over a definite period of time.
2. To coordinate all the activities of various departments of a business firm in such a manner that the maximum profit will be achieved for the minimum use of resources.
3. To provide a means of determining the responsibility for all deviations from the plan (budget), and to supply information on the basis of which necessary corrective action may be taken. Thus, budgetary control has the objective of controlling cost.

OBJECTIVES AND FUNCTIONS OF BUDGETING

An effective budgeting system is vital to the success of a business firm. Budgeting is needed in organisations to perform the following functions: (i) Planning, (ii) coordination, (iii) communication, and (iv) control and performance evaluation.

Planning

Almost all business activities require some planning to ensure efficient and maximum use of scarce resources. The budget is a formal planning framework that provides specific deadlines to achieve departmental objectives and contributes towards the overall objectives of an organisation. A budget incorporates expected performance and present managerial targets. These targets guide the business operations and help in overcoming problems and analysing the future. Budgeting influences the formulation of all business strategies and subsequently assists business managers in executing such strategies.

Coordination

Coordination is a managerial function under which all factors of production and all departmental activities are balanced and integrated to achieve the objectives of the organisation. The budgeting process provides the basis for individuals in all parts of the organisation to exchange ideas on how

best to achieve these objectives. According to Horngreen*, budgets help management to coordinate in the following ways:

1. The existence of a well-laid plan is the major step towards achieving coordination. Executives are forced to think of the relationships among individual operations, and the company as a whole.
2. Budgets help to restrain the empire-building efforts of executives. Budgets broaden individual thinking by helping to remove unconscious biases on the part of engineers, sales and production officers.
3. Budgets help to search out weaknesses in the organisational structure. The formulation and administration of budgets isolate problems of communication, of fixed responsibility, and of working relationships.

Communication

It is necessary in an efficient organisation that all people be informed about the objectives, policies, programmes and performances. This is made possible through their participation in the budgeting process. Budgets inform each manager of what others have agreed to do. They also inform managers of the resources available to achieve objectives and targets.

Control and Performance Evaluation

Budgeting enters into control at three points:

1. When a budget is being formulated, departments analyse their plans for the future and submit estimates as per their requirements, justifying each of their demands by demonstrating a need.
2. After budgets of different departments have been reviewed and approved they become targets that set desirable limits on spending.
3. At the end of the budget period, a comparison of actual expenditures with budget expenditure is made as a means of judging performance and fixing responsibility for deviations. Budgets are the basis of performance evaluation in an organisation as they reflect realistic estimates of acceptable and expected performance. It is more accurate, reliable and reasonable to measure current performance against a budget rather than against a vague expectation or against results of previous year when conditions might have changed.

ADVANTAGES OF BUDGETING

Budgeting plays an important role in the effective use of resources and achieving overall organisational goals. It has the following advantages:

1. Budgeting compels and motivates management to make an early and timely study of its problems. It generates a sense of caution and care, and adequate study among managers before decisions are made by them.
2. Budgeting provides a valuable means of controlling income and expenditure of a business as it is a "plan for spending".
3. Budgeting provides a tool through which managerial policies and goals are periodically evaluated, tested and established as guidelines for the entire organisation.

* Charles T. Horngreen, *Cost Accounting, A Managerial Emphasis*, Prentice-Hall of India, New Delhi, p. 123.

4. Budgeting helps in directing capital and other resources into the most profitable channels.
5. Budgeting coordinates and correlates all business activities. It enables management to decentralise responsibility without losing control of the business. It reveals weaknesses, inefficiencies, deviations in the organisation very promptly which can be checked immediately to achieve a desired goal.
6. The use of budgeting in an organisation develops an attitude of "cost consciousness," stimulates the effective use of resources, and creates an environment of profit-mindedness throughout the organisation.
7. It provides a norm, basis or yardstick for measuring performance of departments and individuals working in organisations.
8. Budgeting encourages productive competition, provides incentive to perform efficiently and gives a sense of purpose to each individual in the organisation.
9. Budgeting provides a systematic and disciplined approach to the solution of problems in the organisation. Horngreen observes: "The uppermost point is that budgets provide a discipline that brings planning to the forefront as a key managerial responsibility."
10. Budgeting, if executed in nearly every enterprise, helps the total national economy by providing stability of employment, economic use of resources and effective prevention of waste.

LIMITATIONS OF BUDGETING

While budgeting has many advantages that are vital to an organisation, it has certain limitations which require careful consideration:

1. Planning, budgeting or forecasting is not an exact science; it uses approximations and judgement which may not be cent per cent accurate. At best, a budget is an estimate; no one knows precisely what will happen in the future.
2. The success and utility of budgeting depends on the cooperation and participation of all members of management. Many a time budgeting has failed because executive management has paid only lip service to its execution.
3. A budget is only a tool and does not eliminate nor take over the place of management. Executives generally feel "circled in" by a budget and its related figures. They fail to understand that budget is meant to provide detailed information, goals and targets which may help them in achieving the company objectives.
4. The establishment of a budgeting process takes time. Also, sometimes too much is expected from a budget and in case expectations are not fulfilled, the blame is put on the budget.
5. Excessive emphasis on budgeting may result in attempts by lower level management and employees to buck the system by providing inaccurate estimates of future costs and revenues. As the end of budget period approaches and employees realise that actual expenses have not been as great as allowed by the budget, there may be a temptation to spend excessive amounts in order to "use up" the budget allowance. Such activities result in sub-optimal profits for the company.

BUDGETING PROCESS

The budgeting process or programme varies widely from one organisation to another. Differences in management style, organisation objectives, structure of competition and similar factors affect

the procedures companies adopt in budget preparations. However, there are a set of guidelines (procedures) which are used in the budgeting process by a large number of organisations. These common steps can be listed as follows:

1. *Obtaining estimates of sales, production levels, expected costs, and availability of resources from each sub-unit/division/department* The departmental heads or managers are required to provide estimates of future conditions and activities that will have an impact on the company.
2. *Coordinating estimates* In many organisations, the budget committee evaluates the different plans submitted by the various organisational units to determine the potentiality of plans in the overall interest of the company and to estimate what resources are available and can be fairly allocated among the various units of the organisation.
3. *Communicating the budget to responsible managers and the concerned departments* After individual budget plans have been approved in the light of organisational goals and availability of resources, the budgets should be communicated to departments and responsible managers. Changes and modifications incorporated in the final budget should be made known to managers to obtain their cooperation and support for the budgets.
4. *Implementing the budget plan* The final budget is presented to the managers concerned and adopted as the plan of operation for the coming budget period.
5. *Reporting interim progress towards budgeted objectives* As a feedback in the budgeting process, performance reports are prepared to inform departmental managers and top management about the performances achieved in terms of budgeted figures. Such an investigation may call for a need to revise the budget during the year. This feedback of information can also be used as a basis for preparing the next year's budget.

ORGANISATION FOR BUDGETING (THE BUDGET COMMITTEE)

Responsibility for budget direction and execution is usually placed in the hands of a Budget Committee which reports directly to top management. In large companies the budget committee is composed of executives incharge of major functions of the business and includes the sales manager, HRD manager, finance manager, the production manager, the chief engineer, the treasurer and the chief accounts officer.

The principal functions of the budget committee are to:

1. Decide the company's general policies and objectives.
2. Receive and review individual budget estimates concerning different departments/divisions.
3. Suggest changes, modifications in accordance with organisational objectives.
4. Approve budgets which act as an authority/target for departmental action.
5. Receive and analyse performance reports regarding the implementation of budgets.
6. Suggest corrective action to improve efficiency and achieve budgetary goals.

BUDGET MANUAL

A budget manual is a document which defines the responsibilities of persons engaged in a budgetary programme and sets out the routine, the forms and records required under budgeting. Budget manuals specify the procedures to be followed in developing the budget. Since organisations

differ in terms of structure, method of production, and operating requirements, it is difficult to prepare a budget manual suitable for use in all business enterprises.

THE BUDGET PERIOD

The budget period is an important factor in developing a comprehensive budgeting programme. The length of the budget period depends on the type of business, the length of the manufacturing cycle from raw material to finished product, the ease or difficulty of forecasting future market conditions and other factors. However, a business enterprise generally prepares a short-range budget, and a long-range budget.

Short-range Budget

Short-range budgets may cover periods of three, six or twelve months depending upon the nature of the business. Most manufacturing firms use one year as the planning period. Wholesale and retail firms usually employ a six-month budget which is related to their selling seasons. In determining the period of the short-range budget, the following factors should be considered:

1. The budget period should be long enough to cover complete production of various products.
2. For business of a seasonal nature, the budget period should cover at least one entire seasonal cycle.
3. The budget period should be long enough to allow for the financing of production well in advance of actual needs.
4. The budget period should coincide with the financial accounting period to compare actual results with budget estimates and thus to facilitate better interpretation of the performance.

Long-range Budget

A long-range budget or planning is defined as a systematic and formalised process for directing and controlling future operations towards a desired objective for periods extending beyond one year. Such budgets cover specific areas, such as future sales, future production, long-term capital expenditures, extensive research and development programmes, financial requirements, profit forecast. They evaluate the future implications associated with present decisions and help management in making present decisions and select the most profitable alternative.

There are many factors which are duly considered while preparing long term budgets, such as market trends, economic factors, growth of population, consumption pattern, industrial production, national income, government economic and industrial policy. Quantitative sales can be budgeted for a three to five years period. After forecasting sales, a budgeted profit and loss account can be prepared relating anticipated sales to corresponding cost and thus net operating profit can be forecasted. Likewise, a balance sheet for many years can be prepared to forecast cash, inventory levels, accounts receivable, accounts payable, liabilities, etc. The forecasted profit and loss account and balance sheet for a long-range is a very useful tool in accomplishing the objectives of the organisation as a whole.

ELEMENTS OF A SUCCESSFUL BUDGETING PLAN

The success of the budgeting process in an organisation depends on the following essential elements:

1. *Accurate forecasting of business activities* Forecasting is a prerequisite in a budgeting process. It is not only the starting point, but is also critical to the development of an accurate budget.
2. *Coordinating business activities* Budgeting needs to coordinate all the individual budgets into an integrated plan as each budget has certain implications for the other budgets. There must be coordination between sales, production, purchasing, personnel budgets.
3. *Communicating the budgets* The success of a comprehensive budgeting programme depends on communication of individual budgets to the different units in the organisation. Managers are not responsible for budget unless the budget is communicated clearly, concisely and in an authoritative manner to them.
4. *Acceptance and cooperation* Successful budgeting also requires that budgets should be accepted by the people who must execute them. Budgeting should have the active cooperation of the entire organisation from the top to the bottom.
5. *Reasonable flexibility* The budgeting programme should contain reasonable flexibility if the situation so demands. However, it should be noted that too much flexibility and too much tightness are both undesirable. Too much flexibility will weaken the cost control and the budget will become inoperative. Similarly, too much rigidity not permitting reasonable deviations will create problems and restrictions in the implementation of the budget.
6. *Providing a framework for evaluation* Budgeting provides a basis to evaluate the performance of different departments.

BUDGET CENTRES

An organisation is usually broken down into different budget centres for administrative and control purposes. A budget centre is the lowest level in an organisation for which detailed costs are budgeted, separately from those of other budget centres. The main factor is setting up budget centres is one of the fixing responsibility for action and inaction. To ensure adequate cost control, the budget centres should fulfil the following conditions:

1. The budget of a particular budget centre should specify precisely the costs controllable by the person responsible for that centre.
2. Costs for which responsibility is joint, for example, work carried out by a maintenance department, should be kept separate from costs which can be controlled by one manager.
3. Cost that are apportioned between two or more budget centres should also be controlled and for such costs one person should be made responsible.

LIMITING OR PRINCIPAL BUDGET FACTOR

When budgets are made, there is invariably some factor which governs or sets a limit to the quantity which can be made or sold. This is known as the limiting or principal budget factor. The Institute of Cost and Management Accountant (UK) defines a principal budget factor as "the factor the extent of whose influence must first be assessed in order to ensure that the functional budgets are reasonably capable of fulfilment." In the field of sales, the limiting factor is customer demand which is influenced by many factors, such as price and quality of the product, competition, the general purchasing power of the public, advertising, etc. In the field of production, the

principal budget factor may be plant capacity, the supply of labour of the right quality, or the availability of scarce materials.

Some examples of key factors are:

- Shortage of raw material
- Shortage of Labour
- Plant capacity availability
- Sales capacity availability
- Cash availability

BUDGETS AND STANDARD COSTS

Standard costs and budgets are both vital tools in planning, operation and control of a business enterprise. Both differ in the following respects:

1. A standard costing system can operate without any comprehensive budgeting system. But budgets in absence of standard costs will only be fair estimates and cannot provide a reasonable base against which the actual results can be compared.
2. The objectives of budgeting are different from standard costing. A budget is a profit plan reflecting anticipated financial inflows and outflows. Budgets include both income and expenditure, but standards are set usually for expenses only.
Standard costs are developed only for the production and related manufacturing cost.
3. Budgets project the volume of business and levels of costs which should be maintained. That is, they reflect cost ceilings which should not be exceeded if the budgeted profit is to be attained. Budgeted costs are expected costs.

Standard costs emphasise the cost levels to which cost should be reduced. If costs reach this level, profit will be increased. Standards are minimum targets which are to be attained by actual performance at specific efficiency. Standard costs aims at what the costs should be.

4. Budgets covering the entire business present the forecasted profit and loss account and sometimes balance sheet also. Therefore, budgets act as guides for operating the business on a definite course of action.

Standards are frequently used only in labour operation and do not represent expected costs but the cost that should be in a certain assumed conditions of performance. Horngreen^{*} observes that the term "standard" is a unit concept and the term budgeted cost is a total concept. It may be helpful to think of a standard as a budget for the production of a single unit of output.

5. Budgets if achieved by the organisation do not usually involve much variance analysis. Under standard costing detailed variance analysis is carried out to find out deviations so that corrective action may be taken.
6. Review and revision of budgets is more frequently based on the changing circumstances than those of standard costs.

Standard costs are more static and subject to less change.

* Charles T. Horngreen, *Cost Accounting, A Managerial Emphasis*, Prentice-Hall of India, New Delhi, p. 73.

7. Budgets are equally important for planning, organisation, coordination and control functions of management.

Standard costs contribute relatively more to the control function than other managerial functions although standards are used for all business functions.

8. Budgets are the maximum limits of expenses above which expenditure should not be incurred. Budgets are projects of financial accounts.

Standards are minimum targets which are to be attained.

9. In budgeting, no further analysis is required if costs are within the budgets.

Detailed analysis is needed in case of variances whether they are favourable or unfavourable.

In spite of the above differences, there are some similarities between standard costing and budgeting. Both have in common the establishment of predetermined measures of performance and the comparison of actual and planned performance so as to disclose deviations which are used for the purpose of cost control. Both help in the preparation of reports which compare actual costs and predetermined costs for management planning and control. Standards are almost indispensable to the work of establishing and operating a budget. A study made by the national Association of Accounts (USA) concludes that standard costs are especially valuable in developing the cost side of the budget because they provide a reliable and convenient source of data for converting the budgeted production schedule into requirements for raw materials, labour and services.

FIXED AND FLEXIBLE BUDGETING

Fixed Budgeting

The Institute of Costs and Management Accounts (UK) defines a fixed budget as the budget which is designed to remain unchanged irrespective of the level of activity actually attained. It is based on a single level of activity. A fixed budget performance report compares data from actual operations with the single level of activity reflected in the budget. **Fixed budgets do not change when production level changes.**

However, in practice, fixed budgeting is rarely used. The main reason is that actual output is often significantly different from the budgeted output. In such a case the budget cannot be used for the purpose of cost control. The performance report may be misleading and will not contain very useful information. For example, if actual production is 12000 units in place of the budgeted 10000 units, the costs incurred cannot be compared with the budget which relates to different levels of activity. Since, in fixed budgeting, units are overlooked, a cost to cost comparison without considering the units may give misleading results. The performance report prepared under fixed budgeting merely discloses whether actual costs were higher or lower than budgeted costs. Therefore, the fixed budget is unable to provide useful information when actual output differs significantly from expected or budgeted output. **The fact the costs and expenses are affected by fluctuations in volume limits the use of the fixed budget.** Clearly, the idea of comparing performance at one activity level with a plan that was developed at some other activity level is nonsense from the viewpoint of judging how efficiently the manager has produced any given output.

A fixed budget can be usefully employed when budgeted output is close enough to the actual output. If output can be estimated within close limits, the fixed budget can be a good basis for performance measurement. Maximum managerial control may be exercised by making comparisons with actual operating figures.

Flexible Budgeting

A flexible budget is a budget that is prepared for a range, that is, for more than one level of activity. It is a set of alternative budgets to different expected levels of activity. The flexible budget is also known by other names, such as variable budget, dynamic budget, sliding scale budget, step budget, expenses formula budget and expenses control budget. The underlying principle of a flexible budget is that every business is dynamic, ever-changing, and never static. Thus, a flexible budget might be developed that would apply to a "relevant range" of production, say 8000 to 12000 units. Under this approach, if actual production slips to 9000 units from a projected 10000 units, the manager has a specific tool (that is, the flexible budget) that can be used to determine budgeted cost at 9,000 units of output. The flexible budget provides a reliable basis for comparisons because it is automatically geared to changes in production activity. A flexible budget has the following important features:

1. It covers a range of activity (output).
2. It is flexible, that is, easy to change with variation in production levels.
3. It facilitates performance measurement and evaluation.

Planning or budgeting for a range of activity rather than for a single level of activity is always preferable due to the uncertainty about the changes in activity levels. In flexible budgeting, that range of activity is selected which is likely to occur. Most often, one activity level at each extreme of the activity range is selected, with one or more in between. Among different activity levels the most likely activity level is made the basis for planning business operations. Flexible budgeting makes it easy to adjust plans to changing production levels without any delay. The flexibility involved in this budget makes a very useful decision making tool for management.

Steps in Flexible Budgeting

The following steps (stages) are involved in developing a flexible budget:

1. Deciding the range of activity to which the budget is to be prepared.
2. Determining the cost behaviour patterns (fixed, variable, semi-variable) for each element of cost to be included in the budget.
3. Selecting the activity levels (generally in terms of production) to prepare budgets at those levels.
4. Preparing the budget at each activity level selected by associating the activity level with corresponding costs. The corresponding costs to be attached with each activity level are determined in terms of their behaviour, that is, fixed, variable, semi-variable.

Advantages of Flexible Budgeting

Flexible budgeting is budgeting that is automatically tailored to any level of activity. Although it is most often associated with the control of overhead, a flexible budget may also include direct materials and direct labour. Welsch* has listed three specific uses of the flexible budget.

1. To facilitate development of the departmental expense budgets for inclusion in the profit plans.
2. To provide expense goals for the managers of responsibility centres during the period covered by the profit plan.

3. To provide adjusted budget allowances for comparison purposes (against actual expenses) in the monthly performance reports.

In general, flexible budgeting has the following important advantages:

1. *Accurate budgeting* The use of flexible budgets may result in the preparation of more accurate budgets. Flexible budgeting techniques require that consideration is to be given to the output factor in budget preparation. Since all costs do not behave in the same manner (as some costs rise faster than others when production increases) a budget giving consideration to the volume (output) factor is bound to be more accurate than one where volume is not considered.
2. *Accurate performance measurement* The flexible budgeting technique incorporates changes in activity level and compares actual results with the budget in terms of output achieved. This facilitates more meaningful comparison and evaluation between actual and budgeted data as comparable data are compared.
3. *Coordination* Flexible budgeting results in coordination between all activities/departments of a business. Production is planned in relation to expected sales, materials and labour are acquired to meet expected production requirements. Facilities are provided to achieve budgetary goals, and funds are made available for the investments necessary to have higher output.
4. *Control tool* Flexible budgeting is an effective management control tool. Comparisons between the budgeted costs (at the actual production level) and actual costs form the basis for analysing cost variances and fixing responsibility for the same. In fact, managers themselves feel motivated in controlling costs for which they are responsible. This contributes to cost control throughout the organisation.

Example 20.1

The following are the budget estimates of plant servicing department in a manufacturing company:

Items of cost	Planned at 6000 service hour		Planned at 9000 service hour	
	(₹)	(₹)	(₹)	(₹)
Salaries	28,000		28,000	
Indirect materials	42,000		63,000	
Miscellaneous costs	16,000		20,500	

Required:

Prepare a flexible budget for the department for 7,000, 8,000 and 9,500 service hours.

(B.Com. (Hons), Delhi, 2007)

Solution

Flexible Budget of the Department

	7000 Service	8000 Service	9,500 Service
	hrs (₹)	hrs (₹)	hrs (₹)
Salaries (fixed)	28,000	28,000	28,000
Indirect materials	49,000	56,000	66,500

(Contd.)

	7000 Service hrs (₹)	8000 Service hrs (₹)	9,500 Service hrs (₹)
(Variable @ ₹7 per hour)			
Miscellaneous costs:			
Variable @ ₹1.5 per hour	10,500	12,000	14,250
Fixed	7,000	7,000	7,000
	94,500	1,03,000	1,15,750

Working Notes:

- (i) Salaries are fixed as they are constant at both 6000 service hours and 9000 service hours.
- (ii) *Indirect materials*
- | | |
|---|-----------------------|
| Increase in cost | = ₹63,000 - ₹42,000 |
| Increase in service hours | = ₹21,000 |
| | = 9000 - 6000 |
| | = 3000 hours |
| Variable portion of indirect material | = ₹21,000 ÷ 3000 hrs |
| Indirect material at 6000 hrs | = ₹7 per hour |
| Indirect material at 9000 hrs | = 6000 × ₹7 = ₹42,000 |
| Thus, indirect materials in total are variable cost | = 9000 × ₹7 = ₹63,000 |
- (iii) *Miscellaneous costs*
- | | |
|---|----------------------------|
| Increase in cost | = ₹20,500 - 16,000 |
| Increase in hrs | = 4,500 |
| Variable portion | = 9000 - 6,000 = 3000 |
| | = ₹4,500 ÷ 3000 hrs |
| | = ₹1.5 per hour |
| Miscellaneous cost at any level, say 6000 hrs | |
| Variable portion | = 6000 hrs × 1.5 = ₹9,000 |
| Remaining fixed miscellaneous cost | = ₹16,000 - 9,000 = ₹7,000 |

Example 20.2

The following are the estimated sales of Philips company for eight months ending 30-10-2008:

April 2008	— 12,000 units
May 2008	— 13,000 units
June 2008	— 9,000 units

July 2008	—	8,000 units
August 2008	—	10,000 units
September 2008	—	12,000 units
October 2008	—	14,000 units
November 2008	—	12,000 units

As a matter of policy, the company maintains the closing balance of finished goods and raw materials as follows:

- (i) Finished goods—closing stock of a month will be 50% of the estimated sales for the next months.
- (ii) Raw material—closing stock of a month will be equal to estimated consumption for the next month.

Each unit of production consumes 2 kg of raw material costing ₹6 per kg.
Prepare the following budgets for the half year ending 30-9-2008:

- (i) Production budget (monthwise in units)
- (ii) Raw material purchase budget (monthwise in units and cost).

(B.Com. (Hons), Delhi University, 2008)

Solution

Production Budget for the half year ending 30-9-08

	April	May	June	July	Aug.	Sep.	Total
Sales (units)	12,000	13,000	9,000	8,000	10,000	12,000	
Add: Closing stock	6,500	4,500	4,000	5,000	6,000	7,000	
Less: Opening stock	(6,000)	(6,500)	(4,500)	(4,000)	(5,000)	(6,000)	
Estimated production	12,500	11,000	8,500	9,000	11,000	13,000	

Raw Material purchase Budget for half year ending 30-9-08

	April	May	June	July	Aug.	Sep.	Total
Material @ 2 kg per unit of production (kg.)	25,000	22,000	17,000	18,000	22,000	26,000	
Add: Closing stock	22,000	17,000	18,000	22,000	26,000	26,000	
Less: Opening stock	(25,000)	(22,000)	(17,000)	(18,000)	(22,000)	(26,000)	
Purchases	22,000	17,000	18,000	22,000	26,000	26,000	
Cost @ ₹6 per kg	1,32,000	1,02,000	1,08,000	1,32,000	1,56,000	1,56,000	7,86,000

Example 20.3

Appex Co. can produce 4,000 units of a product at 100% capacity. The following information is available from its records:

	April	May
Units produced	2,800	3,600
	₹	₹
Power	1,800	2,000
Repair and maintenance	500	560
Indirect labour	700	900
Consumable stores	1,400	1,800
Inspection	200	240
Depreciation	1,400	1,400
Salaries	1,000	1,000

Direct material cost per unit is ₹1 and direct wages per hour is ₹4. Rate of production per hour is 10 units.

You are required to:

- Compute the cost of production at 100%, 80% and 60% capacity levels showing variable, fixed and semi-variable items under the flexible budget.
- Compute overhead absorption rate at 80% capacity.

(B.Com. (Hons), Delhi University, 2008)

Solution

Flexible Budget					
	60%	80%	100%		
Units of production	2,400	3,200	4,000		
Variable costs	₹	₹	₹		
Direct materials	2,400	3,200	4,000		
Direct wages	960	1,280	1,600		
Indirect labour	600	800	1,000		
Consumable stores	1,200	1,600	2,000		
Semi-variable costs					
Power	1,700	1,900	2,100		
Inspection	180	220	260		
Repairs and maintenance	470	530	590		
Fixed costs					
Depreciation	1,400	1,400	1,400		
Salaries	1,000	1,000	1,000		
Total cost	9,910	11,930	13,950		

(ii) Overhead absorption rate at 80% capacity	₹
Total cost at 80%	11,930
Less: Direct materials	3200
Direct labour	1,280
Overhead cost	<u>4,480</u>
	<u>7450</u>

$$\text{Overhead rate per unit} = \frac{\text{₹7,450}}{3,200 \text{ units}} = \text{₹2.33}$$

Example 20.4

The following budget of Tecpro Ltd. has been prepared for the year 2011–12 at 100% capacity:

	(% of sales value)
Raw materials	40
Direct wages	25
Factory overheads (variable)	10
Factory overheads (fixed)	5
Administrative and selling and distribution overheads (variable)	6
Administrative and selling and distribution overheads (fixed)	12
Profit	<u>2</u>
Sales value	<u>100</u>

After considering the quarterly performance, it is felt that the budgeted volume of sales would not be achieved. But the company expects to achieve 80% of the budgeted sales (equal to a sales value of ₹1.60 lakhs).

You are required to present the original budget and the revised budget based on 80% achievement of capacity sales, showing the contribution and profit (loss) for both levels.

(B.Com. (Hons), Delhi University, 2011)

Solution

Original and Revised Budget

	(S)	Figures in ₹'000	
		Original at 100% Capacity	Revised at 80% Capacity
Sales	200	160	
Raw materials	80	64	
Direct wages	50	40	
Factory overheads (variable)	20	16	

(Contd.)

		Figures in ₹'000
	Original at 100% Capacity	Revised at 80% Capacity
Administrative overheads (variable)	12	9.60
Total variable cost (V)	162	129.60
Contribution (S - V) (C)	38	30.40
Factory overheads (fixed)	10	10
Administrative overheads (fixed)	24	24
Total fixed overheads (F)	34	34
Profit or Loss (C - F)	4	(-) 3.60

Example 20.5

The monthly budgets for factory overheads for two levels of activity were as follows:

Budgeted production (units)	60%	100%
	600	1,000
	₹	₹
Wages	1,200	2,000
Consumable stores	900	1,500
Maintenance	1,100	1,500
Power and fuel	1,600	2,000
Depreciation	4,000	4,000
Insurance	1,000	1,000
Total	9,800	12,000

You are required to prepare a budget for 80% capacity. (B.Com., Delhi University, 2009)

Solution

Classification of cost according to the variability:

- (a) *Wages: ₹2 per unit (Variable cost)*
- (b) *Consumable Stores: ₹1.50 per unit (Variable cost)*
- (c) *Maintenance cost*

$$\begin{aligned} \text{Variable cost per unit} &= \text{Change in cost}/\text{Change in output} \\ &= ₹400/400 = ₹1 \text{ per unit} \end{aligned}$$

At 600 units variable maintenance cost are = $600 \times ₹1 = ₹600$

At 600 units maintenance fixed costs are = $₹1,100 - ₹600 = ₹500$

At 100 units the fixed maintenance costs are = $₹1,500 - ₹1,000$
 $= ₹500$

Thus, maintenance cost is a semi-variable cost.

- (d) *Power and Fuel Cost per unit*

$$\begin{aligned} \text{Variable cost per unit} &= \text{Change in cost}/\text{Change in output} \\ &= 400/400 = ₹1 \end{aligned}$$

At 600 units fixed power & fuel costs are = $₹1,600 - ₹600 = ₹1,000$

At 1000 units fixed powers & fuel costs are = ₹2,000 - ₹1,000 = ₹1,000
 Thus, power and fuel is a semi-variable cost

- (e) Depreciation remains constant at both levels of activity and therefore, it is fixed cost.
- (f) Insurance remains constant at both levels of activity and, therefore, it is fixed cost.

Budget for 80% Capacity

<i>Item</i>	<i>Nature</i>	<i>Costs</i>
Wages	Variable	1,600
Consumable stores	Variable	1,200
Maintenance	Semi-variable	
Variable	800	
Fixed	<u>500</u>	1,300
Power & Fuel	Semi-variable	
Variable	800	
Fixed	<u>1,000</u>	1,800
Depreciation	Fixed	4,000
Insurance	Fixed	<u>1,000</u>
	Total	10,900

Example 20.6

GMR Ltd. has supplied the following summary of its operating results for the year ending 31st March 2007:

	₹Lakhs
Sales (40000 units)	48.00
<i>Less: Trade discount</i>	2.40
Net Sales	<u>45.60</u>
Cost of sales:	
Direct materials	14.40
Direct wages	12.60
Factory overhead	6.30
Administration overhead	3.60
Selling and distribution overhead	4.50

The following changes are to be incorporated in the budget for the year ending 31st March 2008:

- (i) Sales quantity to be increased by 25%.
- (ii) Material prices to increase by 15%.
- (iii) Direct wage rates to go up by 12%.
- (iv) Factory overhead will increase by 15%. In addition, a new facility will be added to the factory laboratory at a recurring cost of ₹12,500 per annum.

- (v) Administration and selling and distribution overhead are estimated to go up by 10% and 14% respectively.
(vi) There will be no change in the rate of trade discount.
(vii) There will be no change in inventory.

You are required to present the budget for the year ending 31st March 2008 showing the details of total cost, sales and profit.

(B.Com. (Hons), Delhi, 2007)

Solution

Cost, Sales and Profit Budget for the years ending 31st March 2007

	₹Lakhs
Sales $48 \times \frac{125}{100}$	60
Less: Trade discount 5% of 60	<u>- 3</u>
(i) Net sales	<u>57</u>
Direct materials $14.40 \times \frac{125}{100} \times \frac{115}{100}$	20.70
Direct wages $12.60 \times \frac{125}{100} \times \frac{112}{100}$	17.64
Factory overheads $6.30 \times \frac{115}{100} + ₹0.125$ lacs	7.37
Administration overheads $3.60 \times \frac{110}{100}$	3.96
Selling and distribution overheads $4.50 \times \frac{114}{100}$	5.13
Cost of sales	<u>54.80</u>
Profit = $57 - 54.80$	<u>₹2.20 lakhs</u>

Example 20.7

A factory is currently running at 50% capacity and produces 5000 units at a cost of ₹90 per unit as per details given below:

Material	50
Labour	15
Factory overheads	15 (₹6 fixed)
Administrative overheads	10 (₹5 fixed)

The current selling price is ₹100 per unit. 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 2.5%. Prepare a flexible budget showing profits of the factory at 60% and 80% working and offer your comments. (B.Com. (Hons), Delhi 2004)

Solution

**Flexible Budget
Present Capacity 50% (5000 Unit)**

Nature of Cost	50% Capacity 5000 Units		60% Capacity 6000 Units		80% Capacity 8000 Units	
	Per Unit ₹	Total ₹ (Lakhs)	Per Unit ₹	Total ₹ Lakhs	Per Unit ₹	Total ₹ Lakhs
	V	50	2.50	51	3.06	52.50
Raw materials	V	50	2.50	51	3.06	52.50
Labour	V	15	0.75	15	0.90	15.00
Factory overhead (₹9)	V	09	0.45	09	0.54	09.00
Adm. overheads (₹5)	V	05	0.25	05	0.30	05.00
(1) Total Variable Cost		79	3.95	80	4.80	81.50
Factory overhead (₹6 fixed)	F	06	0.30	—	0.30	—
Adm. overheads (₹5 fixed)	F	05	0.25	—	0.25	—
(2) Total Fixed Cost		11	0.55	09	0.55	07.00
(3) Total Cost (1 + 2)		90	4.50	89	5.35	88.50
(4) Profit		10	0.50	09	0.53	09.00
(5) Sales		100	5.00	98	5.88	97.50
						7.80

Example 20.8

G.S. Ltd. manufactures a single product for which market demand exists for additional quantity. Present sales of ₹60,000 per month utilises only 60% capacity of the plant. Marketing manager assures that with the reduction of 10% in the price he would be in a position to increase the sale by about 25% to 30%.

The following data are available:

- (i) Selling price ₹10 per unit
- (ii) Variable cost ₹3 per unit
- (iii) Semi-variable cost ₹6,000 fixed + 50 paise per unit
- (iv) Fixed cost ₹20,000 at present level estimated to be ₹24,000 at 80% output.

You are required to prepare the following statements:

- (i) The operating profits at 60%, 70% and 80% levels at current selling price; and
- (ii) The operating profits at proposed selling price at the above levels.

(B.Com. (Hons), Delhi, 2004)

Solution**Statement of Cost and Profit (at Current Prices)**

	<i>60% capacity 6000 units</i>	<i>70% capacity 7000 units</i>	<i>80% capacity 8000 units</i>
	₹	₹	₹
Fixed cost	20,000	20,000	20,000
Semi-variable cost: Fixed	6,000	6,000	6,000
Variable @ 50 paise per unit	3,000	3,500	4,000
Variable costs @ ₹3 per unit	18,000	21,000	24,000
Total Cost	47,000	50,500	54,000
Sales	60,000	70,000	80,000
Profit	13,000	19,500	26,000

Statement of Cost and Profit (at Proposed Price)

	<i>60% capacity 6000 units</i>	<i>70% capacity 7000 units</i>	<i>80% capacity 8000 units</i>
	₹	₹	₹
Total Cost	47,000	50,500	54,000
Sales @ ₹9 per unit	54,000	63,000	72,000
Profit	7000	12,500	18,000

Example 20.9

Figures regarding sales, cost and profit at 50% capacity are given below:

	₹
Sales	20,00,000
Direct cost	8,00,000
Factory overheads	4,00,000
Office overheads	2,00,000
Selling overheads	3,00,000
Profit	3,00,000

Every 10% increase in sale beyond 50% capacity is possible only after reducing the price by 1% on the base level of 50% capacity. Direct material cost is 25% of the total direct cost at 50% capacity. With every 10% increase in capacity above this level, the price of direct material comes down by 2%. 50% of the factory overheads are fixed and the rest are full variable. Office overheads are of step character. Every 10% increase in output results in 2% increase in office overheads over 50% capacity. Selling overheads increase in proportion of sales value.

Prepare a flexible budget at 80% capacity level.

(B.Com. (Hons), Delhi, 2003, 2009)

Solution**Flexible Budget**

<i>Particulars</i>	<i>At 50% of Capacity</i> ₹	<i>At 80% Capacity</i> ₹
Direct cost	8,00,000	12,60,800
Factory overheads		
Variable	2,00,000	3,20,000
Fixed	2,00,000	2,00,000
Factory cost	12,00,000	17,80,800
Office overheads	2,00,000	3,39,587
Cost of production	14,00,000	21,20,387
Selling overheads	3,00,000	4,65,600
Cost of sales	17,00,000	25,85,987
Profit	3,00,000	5,18,013
Sales	20,00,000	31,04,000

Working Notes:

(i) At 50% capacity direct material is 25% of direct cost that is $8,00,000 \times \frac{25}{100} = ₹2,00,000$
 At 80% capacity = $\frac{2,00,000}{50} \times 80 = ₹3,20,000$

Less 2% decrease with every 10%

Remaining direct cost at 50% capacity

$$₹8,00,000 - ₹2,00,000 = ₹6,00,000$$

$$\text{Increase in capacity} = \frac{3,20,000 \times 6}{100} = \frac{19,200}{3,00,800}$$

$$\text{At 80% capacity} = \frac{6,00,000 \times 80}{50} = \frac{9,60,000}{12,60,800}$$

(ii) Factory overhead = ₹2,00,000 (Fixed)

$$\text{Variable at 80% capacity} = \frac{2,00,000 \times 80}{50} = ₹3,20,000$$

(iii) Office overheads

$$\text{At 50% capacity} = ₹2,00,000$$

$$\text{At 60% capacity} = \frac{2,00,000}{50} \times 60 = ₹2,40,000$$

Add: 2% increase

$$\frac{4800}{2,44,800}$$

$$\text{At } 70\% \text{ capacity} = \frac{2,44,800}{60} \times 70 \quad ₹2,85,600$$

$$\text{Add: 2% increase} \quad \frac{5,712}{2,91,312}$$

$$\text{At } 80\% \text{ capacity} = \frac{2,91,312}{70} \times 80 \quad ₹3,32,928$$

$$\text{Add: 2% increase} \quad 6,659$$

(iv) Selling overhead: proportionate to sale value

$$\frac{₹ 3,00,000}{20,00,000} \times 31,04,000 = ₹4,65,600$$

(v) Sales at 80%

$$\frac{20,00,000}{50} \times 80 \quad ₹32,00,000$$

$$\text{Less: 1% decrease with every 10\% increase in sale that is, 3\% of ₹32,00,000} \quad \frac{96,000}{₹31,04,000}$$

Example 20.10

G. Ltd. is currently operating at 75% of its capacity. In the past two years the level of operations were 55% and 65% respectively. Presently, the production is 75000 units. The company is planning for 85% capacity level during 2000–2001.

The cost details are as follow:

Particulars	55%	65%	75%
	₹	₹	₹
Direct materials	11,00,000	13,00,000	15,00,000
Direct labour	5,50,000	6,50,000	7,50,000
Factory overheads	3,10,000	3,30,000	3,50,000
Selling overheads	3,20,000	3,60,000	4,00,000
Administrative overheads	1,60,000	1,60,000	1,60,000
	24,40,000	28,00,000	31,60,000

Profit is estimated @ 20% on sales. The following increases in costs are expected during the year:

	In percentage
Direct materials	8
Direct labour	5
Variable factory overheads	5
Variable selling overheads	8
Fixed factory overheads	10
Fixed selling overheads	15
Administrative overheads	10

Prepare a flexible budget for the period 2000–2001 at 85% level of capacity and ascertain the profit on sales.
 (B.Com. (Hons), Delhi, 2002, CA Inter May 1999)

Solution

Statement showing the flexible budget at 85% capacity level during 2000–2001.

	Working Notes	85% capacity level
Sales	1	₹ 47,31,500
Variable Costs:		
Direct material	2	18,36,000
Direct labour	3	8,92,500
Variable factory	4	1,78,500
Variable selling overhead	5	3,67,200
Total Variable cost		<u>32,74,200</u>
Contribution		14,57,300
Fixed Cost:		
Factory overhead	6	2,20,000
Selling overhead	7	1,15,000
Administrative overhead	8	1,76,000
Total Fixed Cost		<u>5,11,000</u>
Total cost of sales		<u>37,85,200</u>
Profit (I – IV)		<u>9,46,300</u>

Working Notes:

- It is given that budgeted profit is 20% of sales is equal to 25% of cost of sales. Total cost of sales at 85% capacity level is as follows:

$$\text{Sales} = ₹37,85,200 \times \frac{125}{100} = ₹47,31,500.$$

- Raw material is variable in nature. The raw material cost at 75% level

$$\begin{aligned} \text{At 65% level} &= 15,00,000 \\ \text{At 10% level} &= 13,00,000 \\ \text{At 85% level material cost} &= ₹15,00,000 + ₹2,00,000 = ₹17,00,000 \text{ with 8% increase, the} \\ \text{budgeted raw material cost will be:} &= 2,00,000 \end{aligned}$$

$$₹ \frac{17,00,000 \times 108}{100} = ₹18,36,000$$

- Direct wages is also variable in nature

$$\begin{aligned} \text{Direct labour at 75% level} &= 7,50,000 \\ \text{Direct labour at 65% level} &= 6,50,000 \\ \text{Direct labour at 10% level} &= 1,00,000 \end{aligned}$$

Direct labour at 85% level = ₹7,50,000 + ₹1,00,000 = ₹8,50,000

With 5% increase = ₹ $\frac{8,50,000 \times 105}{100}$ = ₹8,92,500

4. Factory Overhead is semi-variable in nature. Therefore, the same has to be segregated into variable portion and fixed portion.

$$= \frac{\text{₹}3,50,000 - \text{₹}3,30,000}{75 - 65} = \frac{20,000}{10} = \text{₹}2,000$$

Variable factory overhead at 85% = ₹2,000 \times 85 = ₹1,70,000.

$$\text{With 5% increase} = \frac{\text{₹}1,70,000 \times 105}{100} = \text{₹}1,78,500$$

5. Variable selling overhead

$$\begin{aligned} &= \frac{\text{₹}4,00,000 - \text{₹}3,60,000}{75 - 65} \\ &= \frac{40,000}{10} = \text{₹}4,000 \end{aligned}$$

At 85% level ₹4,000 \times 85 = 3,40,000

$$\text{With 8% increase} = \frac{\text{₹}3,40,000 \times 108}{100} = \text{₹}3,67,200$$

6. Total factory overhead (55% level) = 3,10,000

$$\text{Less: Variable portion } \text{₹}2,00,000 \times \frac{55}{10} = 1,10,000$$

$$\text{Fixed portion} = 2,00,000$$

$$\text{With 10% increase} = \text{₹}20,000 \times \frac{110}{100} = 2,20,000$$

7. Total selling overhead (55% level) = 3,20,000

$$\text{Less: Variable portion} = 40,000 \times \frac{55}{10} = 2,20,000$$

$$\text{Fixed portion} = 1,00,000$$

$$\text{With 15% increase} = \frac{\text{₹}1,00,000 \times 115}{100} = \text{₹}1,15,000$$

8. Administration overhead.

$$= \text{₹}1,60,000 \times \frac{110}{100} = \text{₹}1,76,000$$

Example 20.11

From the following data, prepare a flexible budget for production of 40000 units and 75000 units, distinctly showing variable cost and fixed cost as well as total cost. Also indicate element-wise cost per unit. Budgeted output is 100,000 units and budgeted cost per unit is as follows:

Direct Material	95
Direct labour	50
Production overhead (variable)	40
Production overhead (fixed)	5
Administration overhead (fixed)	5
Selling overhead (10% fixed)	10
Distribution overhead (20% fixed)	15

(B. Com. (Hons), Delhi 2000)

Solution

Flexible Budget

	100,000 units		40000 units		75000 units	
	Per unit	Total	Per unit	Total	Per unit	Total
<i>Variable cost:</i>	₹	₹	₹	₹	₹	₹
Direct material	95	95,00,000	95	38,00,000	95	71,25,000
Direct labour	50	50,00,000	50	20,00,000	50	37,50,000
Production overhead	40	40,00,000	40	16,00,000	40	30,00,000
Selling overhead = $\frac{10 \times 90}{100}$	9	9,00,000	9	3,60,000	9	6,75,000
Distribution overhead						
= $\frac{15 \times 80}{100}$	12	12,00,000	12	4,80,000	12	9,00,000
Total variable cost	206	20,600,000	206	82,40,000	206	1,54,50,000
<i>Fixed Cost:</i>						
Production overhead	5	5,00,000	12.50	5,00,000	6.67	5,00,000
Administrative overhead	5	5,00,000	12.50	5,00,000	6.67	5,00,000
Selling overhead	1	1,00,000	2.50	10,00,000	1.33	1,00,000
Distribution overhead	3	3,00,000	7.50	30,00,000	3.00	3,00,000
Total fixed cost	14	14,00,000	35.00	14,00,000	17.67	14,00,000
Total Cost	260	2,20,00,000	231.00	96,40,000	223.67	1,68,50,000

Example 20.12

Brilliant Ltd. is engaged in production of certain products, 100% capacity being 10000 units per month. Given below are the information for the just concluded previous two months:

	Month 1	Month 2
Unit produced	6000	9000
Costs (other than direct material and labour)	₹	₹
Salaries	30,000	30,000
Power	30,000	39,000
Consumable stores	30,000	45,000
Repair	40,000	46,000
Indirect shop labour	15,000	22,500
Depreciation	25,000	25,000
Inspection	10,000	13,000

Rate of production per hour is 10 units. Direct material costs are ₹20 per unit and direct labour hour costs per hour are ₹80. You are required to compute cost of production segregating fixed, semi-variable and variable costs separately at 100%, 80% and 50% capacity utilisation levels respectively. Also work out the overhead absorption rate per hour at 100% capacity utilisation level. (Show your workings as part of the answer). *(ICWA, Stage 2, Dec. 2005)*

Solution

Workings

As a first step the semi-variable expenses to be identified by seeing which of the expenses do not vary directly in proportion to the activity levels.

	Diff. in capacity	Diff. in overhead	Variable	Fixed	Total
		₹	₹	₹	₹
Power	30%	9,000			
	1%	300			
at capacity level	60%	18,000	18,000	12,000	30,000
	90%	27,000	27,000	12,000	39,000
	100%	30,000	30,000	12,000	42,000
	80%	24,000	24,000	12,000	36,000
	50%	15,000	15,000	12,000	27,000

Similarly repairs and inspection costs are to be calculated.

Capacity	Brilliant Ltd.		
	Cost of production at various capacity levels		
Units	100%	80%	50%
Production hours	1000	800	500

(Contd.)

	₹	₹	₹
Element of cost:			
Direct material	2,00,000	1,60,000	1,00,000
Direct labour	80,000	64,000	40,000
Prime cost	<u>2,80,000</u>	<u>2,24,000</u>	<u>1,40,000</u>
Factory Overheads:			
Variable:			
Consumables	50,000	40,000	25,000
Ind. shop labour	25,000	20,000	11,500
Semi variable:			
Power	42,000	36,000	27,000
Repairs	48,000	44,000	38,000
Inspection	14,000	12,000	9,000
Fixed:			
Salaries	30,000	30,000	30,000
Depreciation	<u>25,000</u>	<u>25,000</u>	<u>25,000</u>
	<u>2,34,000</u>	<u>2,07,000</u>	<u>1,65,500</u>
Total cost of production	5,14,000	4,31,000	3,05,500

Overhead absorption rate at 100% capacity = ₹2,34,000/1000 = ₹234

Example 20.13

The cost of an article at a capacity level of 5000 units is given in the Table below under column A. For a variation of 25% in capacity above or below this level, the individual expenses vary, as indicated in column B.

	A	B
	(₹)	(₹)
Material cost	25,000	100% variable
Labour cost	15,000	100% variable
Power	1,250	80% semi-variable
Repairs and maintenance	2,000	75% semi-variable
Stores	1,000	100% variable
Inspection	500	20% semi-variable
Administrative overheads	5,000	25% semi-variable
Selling overheads	3,000	50% semi-variable
Depreciation	10,000	100% fixed
Total	62,750	
Cost per unit	12.55	

You are required to prepare the production cost budget (flexible) at 4000 units and 6000 units.
(ICWA Inter, Stage II, Dec. 2004)

Solution**Production Cost (flexible) Budget**

(Figures are in ₹)

	4000 units	6000 units
Material cost (variable)	20,000	30,000
Labour cost (variable)	12,000	18,000
Stores (variable)	800	1,200
Power (semi-variable)	1,050	1,450
Repairs and maintenance (semi-variable)	1,700	2,300
Inspection (semi-variable)	480	520
Administrative overheads (semi-variable)	4,750	5,250
Selling overhead (semi-variable)	2,700	3,300
Depreciation (fixed)	10,000	10,000
Total	53,480	72,020
	13.37	12.00

Example 20.14

A newly established manufactured company has an installed capacity to produce 100,000 units of a consumer product annually. However its practical capacity is only 90%. The actual capacity utilisation may be substantially lower, as the firm is new to the market and demand is uncertain. The following budget has been prepared for 90% capacity utilisation:

	Cost per unit	₹
Direct materials	12	
Direct labour	8	
Direct expense	5	
Production overheads	10	(40% variable)
Administration overheads	5	(100% fixed)
Selling and distribution	6	(50% variable)

You are required to prepare budgets at 60%, 70% and 80% levels of capacity utilisation giving clearly the unit variable cost, the unit fixed cost and the total costs under various heads at all the above levels.

(ICWA Inter, Stage 1, Dec. 2003)

Solution**Notes:**

1. Variable Overheads:

Production overhead: 40% of ₹10 = ₹4.00

Selling and Distribution overhead: 50% of ₹6 = ₹3.00

2. Fixed Overheads:

Practical capacity is 90% that is, of 100,000 = 90,000 units

Production overhead: (60% of ₹10 = ₹6) = 90,000 × ₹6 = ₹5,40,000

Administration overhead: $9,00,000 \times 5 = ₹4,50,000$

Selling and Distribution overhead (50% of ₹6 = 3): $90,000 \times 3 = ₹2,70,000$

Flexible Budget of a Consumer Product

Capacity production (units)	60%		70%		80%	
	60000		70000		80000	
	Total Cost (₹ in lakhs)	Cost per unit (₹)	Total Cost (₹ in lakhs)	Cost per unit (₹)	Total Cost (₹ in lakhs)	Cost per unit (₹)
Direct Costs:						
Direct materials	7.20	12.00	8.40	12.00	9.60	12.00
Direct labour	4.80	8.00	5.60	8.00	6.40	8.00
Direct expenses	3.00	5.00	3.50	5.00	4.00	5.00
Variable Overheads:						
Production overhead	2.40	4.00	2.80	4.00	3.20	4.00
Selling and Distribution Overhead: (Ref. W.N.1)	1.80	3.00	2.10	3.00	2.40	3.00
Total variable cost (A)	19.20	32.00	22.40	32.00	25.60	32.00
Fixed overheads:						
Production overhead	5.40	9.00	5.40	7.71	5.40	6.75
Administration overhead	4.50	7.50	4.50	6.43	4.50	5.62
Selling and Distribution Overhead: (Ref. W.N.2)	2.70	4.50	2.70	3.86	2.70	3.38
Total fixed cost (B)	12.60	21.00	12.60	18.00	12.60	15.75
Total Cost (A + B)	31.80		35.00		38.20	
Cost per unit (₹)		53.00		50.00		47.75

TYPES OF BUDGETS

Budgets are the end product of the budgeting process. The numbers and types of budgets in a business enterprise depend on the size and nature of the business. However, in a manufacturing concern, the following budgets are generally prepared:

(A) Operating and functional budgets:

1. Sales budget
2. Production budget

3. Production cost budget
 - (i) Direct materials budget
 - (ii) Direct labour budget
 - (iii) Factory overhead budget
4. Ending inventories budget
5. Cost of goods sold budget
6. Selling expense budget
7. Administrative expense budget
8. Budgeted income statement

(B) Financial budgets:

1. Capital expenditure budget
2. Research and development budget
3. Cash budget
4. Budgeted balance sheet
5. Budgeted statement of changes in financial position.

Sales Budget

The most important budget, which all other budgets are contingent upon, is the sales budget. All budgets, such as production budget, selling and distribution budget and others are all affected by the sales budget and are dependent upon the revenue derived from sales.

A specimen of sales budget is given in Fig. 20.1.

ABC Company Ltd.
Sales Budget for the year Ending December 31, 2012

Products	Budgeted sales units	Budgeted sales price (₹)	Total
A	70,000	80,000	56,00,000
B	80,000	1,20,000	96,00,000
Total	1,50,000		1,52,00,000

Fig. 20.1 Sales Budget

Forecasting Sales

Developing a sales budget requires forecasting future sales levels. The three main factors that should be considered by management in forecasting sales are: (a) information concerning past performance, (b) information about present conditions within the individual company and in each sales territory, and (c) data concerning the industry and general business conditions.

The information about past performance is the starting point for sales forecasting. The sales record for past years, and particularly for the year just ending should be available to management in minute detail.

The second essential step in forecasting sales is the accumulation of data regarding conditions within the company and in each sales territory. The management can obtain a good picture of sales prospects through information sent to the head office by salesmen, dealers, and sales officers of different territories.

Information about general business conditions are known as "business barometers" and they should be considered in preparing a sales forecast. The following are important business indicators:

1. Gross national product, which is the total market value of output of goods and services produced in the entire economy.
2. Personal income and purchasing power of the population.
3. Unemployment conditions.
4. Government crop reports.
5. Steel, coal and oil production.
6. Wholesale price indices.
7. Business failures.
8. Industrial production index.
9. Governmental policies.
10. Cyclical phases of the country's economy.

Sales Analysis

After collecting all relevant information for a sales forecast, a sales analysis or budget is prepared. The sales budget is usually prepared on the lines of (i) product, (ii) territory, and (iii) customer.

Production Budget

After preparing the sales budget, the production budget is prepared. A production budget is stated in physical units. It specifies the number of units of each product that must be produced to satisfy the sales forecasts and to achieve the desired level of closing finished goods inventory. Essentially, the production budget is the sales budget adjusted for inventory changes as follows:

$$\text{Units to produce} = \text{Budgeted sales} + \text{Desired closing inventory of finished goods} \\ - \text{Beginning inventory of finished goods}$$

A specimen production budget is given in Fig. 20.2.

ABC Company
Total Production Budget for the Month of December, 2012

	<i>Products</i>	
	<i>A</i>	<i>B</i>
Budgeted sales (units)	70,000	80,000
Add: Desired closing finished goods inventory	20,000	30,000
	90,000	1,10,000
Less: Beginning finished goods inventory	40,000	50,000
Units to be produced	50,000	60,000

Fig. 20.2 Production Budget

The production budget, like other budgets, is detailed by months or quarters along with a tentative annual budget. Further, budgets are prepared for every production centre for comparison with actual production.

Production Cost Budget

A production cost budget summarises the materials budget, labour budget, the factory overhead budget, and may be expressed and analysed by departments and or products. A production cost budget, also known as a manufacturing budget is made up of three budgets: (i) materials, (ii) labour, and (iii) factory overhead.

Direct Materials Budget

This budget specifies the cost of direct materials used and the cost of the direct materials purchased. Figure 20.3 explains the calculation of the direct materials budget. The usage part of the direct materials budget determines the cost of purchases of direct materials.

ABC Company
Direct Materials Budget for the Year Ending December 2012

A. Usage Budget

	<i>Products</i>		<i>Total</i>
	<i>A</i>	<i>B</i>	
Budgeted production in units	50000	60000	
Direct materials requirements			
Product A 5 kg per unit	× 5		
Product B 8 kg per unit		× 8	
Direct materials usage (kg)	2,50,000	4,80,000	
Cost per kg	₹1.00	₹1.50	
Cost of direct materials used	₹2,50,000	₹7,20,000	₹9,70,000

B. Purchase Budget

	<i>Direct material (in kg)</i>		
	<i>A</i>	<i>B</i>	<i>Total</i>
Direct materials usage	2,50,000	4,80,000	
Budgeted closing direct materials inventory	+ 50,000	+ 75,000	
Total requirements	3,00,000	5,55,000	
Beginning direct materials inventory	70,000	1,00,000	
Purchase of direct materials	2,30,000	4,55,000	
Cost per kg	× ₹1.00	× ₹1.50	
Cost of purchase	₹2,30,000	₹6,82,500	₹9,12,500

Fig. 20.3 Direct Materials Budget

The direct materials budget is useful in the following ways:

1. It helps the purchasing department to prepare a schedule to ensure delivery of materials when needed.
2. It helps in fixing minimum and maximum levels of inventories in the stores department.
3. It helps the finance manager to determine the financial requirements to meet production targets.

The materials budget usually deals with direct materials only. Supplies and indirect materials are generally included in the factory overhead budget.

Direct Labour Budget

The labour budget estimates the labour, adequate in number and grades, to enable the production budget to be achieved. It is generally preferable to prepare a separate direct labour budget and to include indirect labour in the factory overhead budget. The labour budget prepared must disclose the following information: (i) the number of each type or grade of worker required in each period to achieve the budgeted output; (ii) budgeted cost of such labour in each period; and (iii) period of training necessary for different types of workers.

Figure 20.4 illustrates the preparation of a direct labour budget.

ABC Company
Direct Labour Budget for the Year Ending December 2012

	<i>Products</i>		<i>Total</i>
	<i>A</i>	<i>B</i>	
Budgeted production requirements	50,000	60,000	
Direct labour hours per unit	3	2	
Total direct labour hours	1,50,000	1,20,000	2,70,000
Direct labour cost per hour	₹5.00	₹5.00	₹5.00
Total direct labour cost (₹)	₹7,50,000	₹6,00,000	₹13,50,000

Fig. 20.4 Direct Labour Budget

Factory Overhead Budget

The factory overhead budget is prepared on the basis of the chart of accounts which reflects different expense accounts and which properly classifies expenses accounts and details the cost centres or departments. Although expenses can be classified in different manners such as natural classification, variability, the preparation of the factory overhead budget requires that expenses should be classified by departments since expenses are incurred by various departments. In this way, departmental heads should be held accountable for expenses incurred by their departments.

Figure 20.5 depicts the factory overhead budget where in overhead costs have been classified into fixed and variable components.

ABC Company
Factory Overhead Budget for the Year Ending December 2012
(Based on budgeted capacity of 2,70,000 direct labour hours)

Items	Direct labour	Rate per direct hour ₹	Total cost ₹
A. Variable factory overhead:			
(i) Supplies	2,70,000	1.00	2,70,000
(ii) Repairs	2,70,000	0.50	1,35,000
(iii) Indirect labour	2,70,000	1.00	2,70,000
(iv) Others	2,70,000	0.40	1,08,000
Total variable factory overhead cost			7,83,000
B. Fixed factory overhead cost:			₹4,00,000
(i) Supervision			5,50,000
(ii) Depreciation			2,50,000
(iii) Property tax			1,77,000
(iv) Others			13,77,000
Total fixed factory overhead cost			21,60,000
Total factory overheads cost			
Predetermined overhead rate	= ₹ $\frac{21,60,000}{2,70,000}$ hours		
	= ₹8.00 per direct labour hour		

Fig. 20.5 Factory Overhead Budget**Ending Inventories Budget**

An inventory budget can be prepared to find out the values of direct materials and finished goods inventory as shown in Fig. 20.6.

ABC Company
Ending Inventory Budget for the Year Ending December 2012

Direct materials inventory	₹
Product A 5,000 kg × ₹1.00 per kg	50,000
Product B 75,000 kg × ₹1.50 per kg	1,12,500
	1,62,500
Finished goods inventory	
Product A 20,000 units × ₹25.00	5,00,000
Product B 30,000 units × ₹30.00	9,00,000
	14,00,000

Fig. 20.6 Ending Inventories Budget**Cost of Goods Sold Budget**

After preparing direct materials, direct labour, factory overhead, and ending inventory budgets, the cost of goods sold budget can be prepared. The cost of goods sold budget summarises all the above budgets as shown in Fig. 20.7.

ABC Company
Cost of Goods Sold Budget for the Year Ending Dec. 31, 2012

<i>Direct materials:</i>	₹	₹
Beginning inventory	2,00,000	
Purchases	9,12,500	
	<u>11,12,500</u>	
Less: Closing inventory	1,62,500	
Cost of direct materials used		9,50,000
Direct labour		13,50,000
Factory overhead		<u>21,60,000</u>
Total factory cost		44,60,000
Beginning finished goods inventory		25,00,000
Total goods available for sale		69,60,000
Closing finished goods inventory		14,00,000
Cost of goods sold		<u>55,60,000</u>

Fig. 20.7 Cost of Goods Sold Budget

Selling Expenses Budget

Closely related with the sales budget is the selling and distribution cost budget which shows the budgeted costs of promoting sales for the budget period. It is also known as the marketing expense budget. The selling cost budget is made up of a number of cost items, some of which are fixed and some variable. The principal fixed expenses are salaries and depreciation; the principal variable expenses are commissions, travel advertising and bad debts.

Figure 20.8 exhibits an annual selling expenses budget classified according to fixed and variable expenses. Separate budgets for each of these expenses may be prepared especially in the case of a large company.

ABC Company
Selling Expense Budget for the Year Ending December 31, 2012

<i>Items</i>	<i>Costs (₹)</i>	<i>Total costs ₹</i>
(A) Variable selling expenses:		
(i) Sales commission	35,000	
(ii) Salary and wages	40,000	
(iii) Advertising	15,000	
(iv) Travelling	<u>22,000</u>	<u>1,12,000</u>
(B) Fixed selling expenses:		
(i) Warehousing	60,000	
(ii) Advertising	30,000	
(iii) Marketing manager's salary	60,000	
(iv) Depreciation	<u>27,000</u>	<u>1,77,000</u>
Total selling expenses		2,89,000

Fig. 20.8 Selling Expenses Budget

Administrative Expenses Budget

The administrative expenses budget covers the administrative costs for non-manufacturing business activities. The administrative expense budget contains expenses like directors' remuneration, legal charges, audit fees, salaries, rent, office expenses, interest, property taxes, postage, telephone, telegraph, etc. These expenses should be properly classified under different headings to determine the responsibility of cost incurrence and control. For example, these expenses can be classified into different categories such as company administration, general accounting, general office, etc. Figure 20.9 presents an administrative expense budget.

ABC Company Administrative Expenses Budget for the Year Ending December 31, 20012		
Items	Amount ₹	Amount ₹
(A) Variable administrative expenses:		
(i) Supplies	35,000	
(ii) Clerical wages	60,000	
Total variable administrative expenses		95,000
Fixed administrative expenses:		
(i) Director's remuneration	1,20,000	
(ii) Legal charges	20,000	
(iii) Depreciation	25,000	
(iv) Salaries	30,000	
(v) Rent	60,000	
(vi) Postage, telephone, etc.	32,000	
Total fixed administrative expenses		2,87,000
Total administrative expenses		3,82,000

Fig. 20.9 Administrative Expense Budget

Budgeted Income Statement

A budgeted income statement summarises all the individual budgets, that is, sales budget, cost of goods sold budget, selling budget, and administrative expense budget. No new estimates are made; figures are taken from budgets previously prepared. This budget determines income before taxes. If the tax rate is available, net income after taxes can also be computed. Figure 20.10 exhibits a budgeted or projected income statement.

ABC Company Budgeted Income Statement for the Year Ending December, 2012	
	₹
Sales	1,52,00,000
Cost of goods sold	55,60,000
Gross margin	96,40,000

(Contd.)

	₹
Selling expenses	2,89,000
Administrative expenses	<u>3,82,000</u>
Income before taxes	89,69,000
Income taxes (assuming 50%)	<u>44,84,500</u>
Net Income	44,84,500

Fig. 20.10 Budgeted Income Statement

Capital Expenditure Budget

The budgeting of capital expenditure is one of the most important areas of managerial decisions. Capital expenditures represent long-term commitments. Also, the benefits of capital expenditure spread over a long period of time. Capital expenditure budgets are prepared for both short and long-range projects depending on the requirements of the business firm. Short-range projects are implemented during the current accounting period. Long-range projects are not executed in the current period, they are expressed only in general terms. They become budget commitments only when the time for their implementation approaches.

Research and Development Budget

The research and development budget is the most important tool for planning and controlling research and development costs. It compels management to think in advance about the fairness of these expenses both in total amounts and in each field of a research programme. It helps in coordination with the company's other plans and projects. Since the research and development programmes compete with other desirable activities in allocation of funds, coordination is needed to balance financially immediate and long-term company plans. Also, this budget guides the research and development department to plan correctly the staff and equipment requirements and special facilities needed for the work.

Cash Budget

A cash budget contains detailed estimates of cash receipts (cash inflows) and disbursements (cash outflows) for the budget period or some other specific period. The preparation of a cash budget has the following objectives:

1. It indicates the effect on the cash position of seasonal requirements, large inventories, unusual receipts, and slowness in collecting receivables.
2. It indicates the cash requirements needed for a plant or equipment expansion programme.
3. It points up to the need for additional funds from sources such as bank loans or sales of securities and the time factors involved.
4. It indicates the availability of cash for taking advantage of discounts.
5. It assists in planning the financial requirements of bond redemption, income tax instalments, and payments to pensions and retirement funds.
6. It shows the availability of excess funds for short-term investments.

Period of Cash Budget

The period of time covered by a cash budget depends on the type of business, management planning needs, and cash position. A cash budget may generally be related to the following time periods:

1. *Operational cash planning* Cash budgets may be prepared monthly, weekly or even daily to meet informational requirements of management.
2. *Short-range* Short-range cash budgeting is prepared annually and is in correspondence with the annual profit plan. It indicates cash inflows and outflows as generated by the annual profit plan.
3. *Long-range* Long-range budgeting does not disclose detailed estimates of revenue and expenses. The effects of business expansion and long-term trends are incorporated in long-range cash budgeting. Long-range cash projection is in accord with (i) the timing of the capital expenditure projects, and (ii) the timing of the long-range profit plan (usually five years).

Preparation of a Cash Budget

A cash budget may be prepared by following either of the three generally accepted procedures:

1. The receipts and disbursements method.
2. The adjusted profit and loss or adjusted net income method.
3. Balance sheet method.

In the first method, all anticipated cash receipts are carefully forecasted such as cash sales, cash collections from debtors, dividends, interest on investments, proceeds from sale of assets, royalties, bank loans, etc. Likewise, cash disbursements for materials purchases, supplies, salaries, repayment of loans, dividends, taxes, expenses, purchases of plant or equipment are also determined. This method is useful for short-range cash projection but is not appropriate for long-term cash budgeting. This method is in accordance with the annual profit plan.

The second approach is the profit and loss or adjusted net income method. The starting point in this approach is budgeted profit reflected in the income statement. Basically, projected profit is converted from an accrual basis to a cash basis. That is, the budgeted profit of a period is adjusted for non-cash transactions and expected cash-oriented changes in asset and liability accounts not affected by profit calculations. Using the budgeted profit for a period as a starting point, various non-cash transactions are added back to net profit for the period. Non-cash items are depreciation, bad and doubtful accounts, expired insurance premiums, and income tax accruals. After this, anticipated decreases in assets or increase in liabilities are further added and anticipated increases in assets or decreases in liabilities are deducted. The budgeted cash at the end of a period is the cash balance at the beginning of the period plus the net cash increase (or minus the net cash decrease) as indicated in the analysis of the adjusted profit method.

The third approach is the balance sheet method. In this approach closing balances of all (budgeted) balance sheet items except cash and bank balances are found and put in a budgeted balance sheet. If the total of liabilities side items is more than the total of asset side items, the balancing figure will be cash/bank balance. On the contrary if the total of assets side items is more than the total of liabilities side items, the balancing figure will be bank overdraft or shortage in cash. Budgeted figures of closing balance sheet items can be found after adjusting the opening balance sheet items with the transactions anticipated for the year.

Budgeted or Projected Balance Sheet

A projected balance sheet represents the expected financial position at a particular date. The projected balance sheet is prepared from the budgeted balance sheet at the beginning of the budget period and the expected changes in the account balances reflected in the operating budgets, capital expenditure budgets, and cash budget. The projected balance sheet also automatically determines the arithmetical accuracy of other budgets since they are used in preparing the forecasted balance sheet.

Budgeted Statement of Changes in Financial Position

The projected statement of changes in financial position is usually prepared from data in the budgeted income statement and changes between the projected balance sheet at the beginning of the budget period and projected balance sheet at the end of the budget period. This projected statement is very useful to management in the financial planning process.

Master Budget

A master budget sometimes called a comprehensive budget, is the summary or total budget package for a business firm. It is the end product of the budget-making process. It shows the budgeted profit and loss account for the budget period and the budgeted balance sheet at the end of the period. It reveals the top management's goals of revenues, expenses, net income, cash flows, and financial position. The other budgets prepared by a business firm are specific, that is, they deal with separate distinct activities of the organisation such as sales, production, selling and distribution and administrative activities. They incorporate plans and budgetary goals for a small segment of a business enterprise. However, to achieve business objectives, it is necessary to have coordination among different budgets reflecting diverse activities of a business firm. For example, there should be coordination between sales and production departments and the goals of the production department should match the goals of the sales department. In the absence of coordination among the budgets, a business firm may have problems, such as surplus inventory, shortage of stock, non-availability of raw materials and other resources, employees dissatisfaction, etc. A master budget takes the macro (aggregate) view of the business enterprise and coordinates sales with production; raw materials, manpower, machinery and other resources with production targets, and the like. The master budget is an integrative tool that cuts across divisional boundaries in order to coordinate the firms' diverse activities. While master budgets provide plans for an entire system, operating budgets provide plans for the organisation's sub-system, that is, operating budgets constitute the building blocks used to complete the master budget.

REVISION OF BUDGETS

As stated earlier in the chapter, successful budgets should have adequate flexibility to meet changing business conditions. Since budgets are used for planning, operation, coordination and control, they should be revised if changes occur in the environment. Revision of budgets may be necessary due to the following factors some of which might have been considered earlier in the development of budgets:

1. Errors committed in preparing the budgets which may subsequently be known.

2. Emergence of unforeseen and unanticipated situations which may cause the budget to be revised.
3. Changes in internal factors, for example, production, forecast, capacity utilisation, etc.
4. Changes in external factors, for example, market trends, nature of the economy, prices of inputs and resources, consumers' tastes and fashions.

Changes in the above factors do not affect a firm's budgets if they are of minor significance. Some changes, however, considerably affect budgets and in this situation management is faced with two problems:

1. Whether only individual budgets should be changed; and
2. Whether the master budget be changed.

Regarding the first question, most business firms are in agreement and suggest that specific individual budgets should be changed. For instance, if there is likely to be a significant change in expected sales (increase or decrease), production and purchasing departments should be informed about this to avoid over-stocking or under-stocking.

A revision of the master budget is debatable and sometimes is opposed mainly on two counts: (i) the master budget process is highly complex and expensive; (ii) the evaluation process may take care of these changes if the changes take place. The second argument is more or less on middle ground. While it argues for revision when changes do occur, it focuses on actual effects rather than projected changes. It is felt that this avoids making small changes in the plan that are of little consequence. Those who support the revision of the master budget argue that the revised budget is a better and more effective basis for performance evaluation and control. By revising budget, all members of the organisation come to know of the expectations and standards for which they will be accountable.

Example 20.15

You are producing an alloy. Production of one ton of alloy requires 1.5 tons Iron and 0.5 ton of zinc. The producer plans to sell 50000 tons of alloy during the year 2005. Prepare Materials Procurement Budget for the year 2005 from the following:

Balances as on Jan. 1, 2005:

Stock of alloy	6,000 tonnes
Stock of iron ore	12,000 tonnes
Stock of zinc	4,000 tonnes
Iron ore on order	5,000 tonnes
Zinc on order	3,000 tonnes

Balances as desired on Dec. 31, 2005:

Stock of alloy	5,000 tonnes
Stock of iron ore	8,000 tonnes
Stock of zinc	3,000 tonnes
Iron ore on order	7,000 tonnes
Zinc on order	2000 tonnes

(B.Com. (Hons), Delhi, 2005)

Solution

Computation of quantity of production of alloy:

$$\begin{aligned} &= \text{Sales} + \text{closing stock} - \text{opening stock} \\ &= 50,000 + 5000 - 6,000 = 49,000 \text{ tonnes.} \end{aligned}$$

Procurement Budget for the Year 2005

<i>Particulars</i>	<i>Iron</i>	<i>Zinc</i>
(1) Quantity of product of alloy (tonnes)	49,000	49,000
(2) Quantity of R.M. required for 1 tonne of alloy (tonnes)	1.5	0.5
(3) Raw material consumption (1) \times (2)	73,500	24,500
<i>Add: Closing stock (tonnes)</i>	<u>15,000</u>	<u>5,000</u>
Total requirements (tonnes)	88,500	29,500
<i>less: Outstanding (tonnes)</i>	<u>17,000</u>	<u>7,000</u>
Procurement of RM (tonnes)	71,500	22,500

Example 20.16

The following are the details of the budgeted and the actual cost of *X* Production Ltd. for six months from January to June, 2011. From the figures given below, you are required to prepare the production cost budget from January to June, 2012.

January — June 2011

	<i>Budget</i>	<i>Actual</i>
Material cost	₹40,00,000	₹39,90,000
	(2000 MT @ ₹2,000)	(@ ₹2,100)
Labour Cost	₹8,00,000	₹7,99,920
	(₹20 per hour)	(@ ₹22 per hour)
Variable overheads	₹2,40,000	₹2,16,000
Fixed overheads	₹4,00,000	₹4,20,000

The budgeted production for first half of 2011 was 20,000 units, whereas the company produced only 18,000 units during the period. In first half of 2012, production is budgeted for 25,000 units, Material cost per tonne will increase from last year's actual by ₹100 but it is proposed to maintain the consumption efficiency of 2011 as budgeted. Labour efficiency will be lower by another 1% and labour rates will be ₹22 per hour. Variable and fixed overheads will go up by 20% over 2011 actual.

(B.Com. (Hons), Delhi 2012)

Solution**Production Cost Budget for the Six Months Ending 30th June, 2012**

	25,000 units	Unit cost
	<i>Total cost</i>	<i>Unit cost</i>
Material cost (see note 1)	₹55,00,000	₹220.00
Labour cost (see note 2)	11,22,000	44.88
Variable overheads (see note 3)	3,60,000	14.40
Fixed overheads (see note 4)	5,04,000	20.16
Total	74,86,000	299.44

Working Notes:

1. Materials cost:

$$\text{Consumption per unit} = \frac{2,000}{20,000} = 0.10 \text{ unit}$$

Consumption for 25,000 units = 2,500 mt.

Cost of 2,500 mt @ ₹2.200 per mt = 55,00,000

2. Labour cost

2011: Total budgeted labour hours	$\frac{8,00,000}{20}$	Hr.
		40,000

Labour hour budget for each unit	$\frac{40,000}{20,000}$	2

Actual time paid for	$\frac{7,99,920}{22}$	36,360 hrs

Less: Standard labour hours for 18,000 units		36,000 hrs

Extra time taken (i.e., 1% extra) in 2011	$\left(\frac{360}{36,000} \times 100 \right)$	360 hrs

For 2012:

Time required for 25,000 units		50,000

Add: 2% for lower efficiency		1,000

[In 2012, labour efficiency will be lower by another 1%. That is, total efficiency will be lower by 2% (1% lower of 2011 and 1% of 2012 as given in the question).]

51,000 hr at ₹22 per hour		51,000

₹11,22,000

3. Variable overheads:

$$\text{Rate per unit in 2011} = \frac{2,40,000}{20,000} = ₹12$$

Cost for 25,000 @ 2011 rates

Add: 20%		3,00,000

60,000

3,60,000

4. Fixed overheads:

Actual in 2011

Add: 20%		4,20,000

84,000

5,04,000

Example 20.17

The following data pertains to Mr. Y for the month budget for November 2000:

	₹
Direct materials used	847
Beginning finished goods inventory	?
Ending finished goods inventory	94
Direct manufacturing labour	389
Manufacturing overhead	?
Cost of goods manufactured	1,878
Cost of goods sold	?
Cost of goods available for sale	1,949

Prepare the cost of goods sold budget for the month of Nov. 2000 by filling the missing figures.
(B. Com. (Hons), Delhi 2001)

Solution

	₹
Direct material used	847
Beginning finished goods inventory	71
Ending finished goods inventory	94
Direct manufacturing labour	389
Manufacturing overhead	642
Cost of goods manufactured	1,878
Cost of goods sold	1,855
Cost of goods available for sale	1,949

As, we know that cost of goods manufactured is the aggregate of Direct material, Direct manufacturing labour and Manufacturing overhead.

$$\therefore ₹1,878 = ₹847 + 389 + \text{Manufacturing overhead}$$

$$\therefore ₹1,878 - 847 - 389 = \text{Manufacturing overhead}$$

$$\therefore ₹642 = \text{Manufacturing overhead}$$

Cost of goods available for sale = Cost of goods manufactured + Opening balance of finished goods.

$$₹1,949 = ₹1,878 + \text{Opening balance of finished goods}$$

$$₹1,949 - ₹1,878 = \text{Opening balance of finished goods}$$

$$₹71 = \text{Opening balance of finished goods.}$$

Cost of goods sold = Cost of goods manufactured + Opening balance of finished goods - Closing balance of finished goods

$$\text{Cost of goods sold} + ₹1,878 + ₹71 - ₹94$$

$$\text{Cost of goods sold} = ₹1,855$$

Cost of Goods Sold Budget for the Month of November, 2000

	₹
Direct material used	847
Direct manufacturing labour	389
Manufacturing overhead	642
Cost of goods manufactured	<u>1,878</u>
<i>Add:</i> Opening balance of finished goods	71
Cost of goods available for sale	<u>1,949</u>
<i>Less:</i> Closing stock of finished goods	94
Cost of goods sold	<u>1,855</u>

Example 20.18

Nestley Ltd. has prepared the following sales budget for the first five months of 1998:

Sales Budget (Units)

January	10800
February	15600
March	12200
April	10400
May	9800

Inventory of finished goods at the end of every month is to be equal to 25% of sales estimate for the next month. On 1st Jan., 1998, there were 2700 units of product on hand. There is no work-in-progress at the end of any month.

Every unit of product requires two types of materials in the following quantities:

Material A—4 kg

Material B—5 kg.

Materials equal to one half of the requirement of next month's production are to be in hand at the end of every month. This requirement was met on 1st Jan., 1998.

Prepare the following budgets for the quarter ending 31st March, 1998:

(a) Production Budget (Quantitative)

(b) Material Purchase Budget (Quantitative).

(B. Com. (Hons), Delhi 1999)

Solution

Nestley Ltd.
Production Budget (in Units)
For quarter ending 31st March, 1998

Particulars	Jan.	Feb.	March
Sales	10800	15600	12200
<i>Add:</i> Closing Stock	3900	3050	2600
	14700	18650	14800
<i>Less:</i> Opening Stock	2700	3900	3050
	12000	14750	11750

Materials Requirement Budget
For the quarter ending 31st March, 1998

Particulars	Jan.	Feb.	March
Production (units)	12000	14750	11750
	kg	kg	kg
Material A	48000	59000	47000
Required for Production	28500	23500	20500
Add: Desired Closing Stock	76500	82500	67500
Less: Opening stock	24000	28500	23500
	52500	54000	44000
Material B			
Required for production	60000	73750	58750
Add: Desired closing stock	36875	29375	25625
	96875	103,125	84375
Less: Opening stock	30000	36875	29375
	66875	66250	55000

Working Notes:

1. Production for April in Units

Sales	10400	1001	Desired
Add: Closing Stock	2450	0051	Excess
	12850	0051	Excess
Less: Opening Stock	2600	0081	Excess
	10250	0081	Excess

2. Material required for production in April

$$A \ 10250 \times 4 = 41000 \text{ kg}$$

$$B \ 10250 \times 5 = 51250 \text{ kg}$$

Example 20.19

A company manufactures two products X and Y. A forecast of unit to be sold in the first 4 months of the year is given below:

Months	Product X	Product Y
January	1000	2800
February	1200	2800
March	1600	2400
April	2000	2000
May	2400	1600

Other information are as follows:

Cost per unit (₹)	Product X	Product Y
Direct material	12.50	19.00
Direct labour	4.50	7.00
Factory overhead/unit	3.00	4.00

There will be no opening and closing work-in-progress (WIP) at the end of any month and finished product (in units) is equal to half of the budgeted sale of the next month should be in stock at the end of each month (including previous year-December).

You are required to prepare:

- (i) Production Budget for the period January to April, and
- (ii) Summarised Production Cost Budget. (ICWA, Inter, Stage II, Dec. 2004, Dec. 2006)

Solution

Production budget of X and Y for the period January to April.

Budgeted production = Budgeted sales + Desired Closing inventory – Opening inventory.

Month	Projected Sales (units)		Planned Inventory level (units)				Budgeted Production (units)			
			Closing		Opening		X	Y	X	Y
	X	Y	X	Y	X	Y	X	Y	X	Y
January	1000	2800	600	1400	500	1400	1100	2800		
February	1200	2800	800	1200	600	1400	1400	2600		
March	1600	2400	1000	1000	800	1200	1800	2200		
April	2000	2000	1200	800	1000	1000	2200	1800		
Total Budgeted production in units							6500	9400		

Production Cost Budget of X and Y for the period January to April

	Product X			Product Y			Total Cost X and Y (₹)
	Cost/unit	Budgeted	Total cost	Cost/unit	Budgeted	Total	
	(₹)	Production	(₹)	(₹)	Production	Cost (₹)	
Direct material	12.50	6500	81,250	19.00	9400	1,78,600	2,59,850
Direct labour	4.50		29,250	7.00		65,800	95,050
Factory O/H	3.00		19,500	4.00		37,600	57,100
Total	20.00		1,30,000	30.00		2,82,000	4,12,000

Example 20.20

The following information relating to the third and last quarter of 2003–04 are furnished by a company which manufactures and sells a single product:

	Third quarter (Actual)	Last quarter (Estimate)
Sales	₹6,24,000	₹6,60,000
Inventory of raw material and finished goods:		
Raw material A (kg)	Opening balance	Closing balance
Raw material B (kg)	25000	23500
Finished goods (units)	12650	13400
Unit cost data:	670	700

Raw material A : 10 kg @ ₹3 = ₹30

Raw material B : 5 kg @ ₹2 = ₹10

Direct labour (Machine time 5 hrs @ ₹4): Machine shop = ₹20

Assembly 2 hrs. @ ₹5 (labour time) = ₹10

Production overheads:

Machine shop @ ₹12 per machine hr.

Assembly @ ₹10 per labour hr.

Selling and Administration O.H. : 20% of production cost

Profit margin : 10% on selling price

Production and sales occur evenly during the budget period. You are required to prepare for the last quarter of the year.

- Production budget (in units)
- Purchase budget (quantity and value)
- Production cost budget.

Solution

(ICWA, Inter, Stage 1, June 2004)

Cost of Production and Selling Price per Unit.

	₹
Direct material.	
A = 10 kg @ ₹3	30.00
B = 5 kg @ ₹2	10.00
	<u>40.00</u>
Direct labour:	
Machine shop = 5 hrs. @ ₹4	20.00
Assembly = 2 hrs. @ ₹5	10.00
	<u>30.00</u>
Production overheads:	
Machine shop = 5 hrs @ ₹12	60.00
Assembly = 2 hrs. @ ₹10	20.00
	<u>80.00</u>
Production cost	
Selling and Administration overheads @ 20%	150.00
Cost of sales	30.00
Profit margin 10% on S.P. (or 10/90 on cost)	80.00
Selling price	20.00
	<u>200.00</u>

(a) Production Budget for last Quarter of 2003-04

	Units
Sales in last quarter (4th quarter) 660,000/200	3300
Add: Closing balance at end of 1st qtr.	1000
Less: Opening balance	<u>(700)</u>
Production for last quarter	<u>3600</u>

(b) Purchase Budget for last Quarter of 2003-04

	Material A	Material B	Total		
	Qty. (kg)	Amt. (₹)	Qty. (Kg)	Amt. (₹)	Value (₹)
Consumption	36000		18000		
(Prodn. × Qty./unit)					
A = 3600 × 10 kg					
B = 3600 × 5 kg					
Add: Closing balance	25000		15000		
Less: Opening balance	(23500)		(13400)		
Purchase to be made	37500		19600		
Price per kg.		3		2	
Total value		1,12,500		39,200	1,51,700

(c) Production cost Budget for last Quarter of 2003-04

Particulars	Cost (₹)	Total (₹)
Direct material:		
A: 36,000 @ ₹3	1,08,000	
B: 18,000 @ ₹2	<u>36,000</u>	1,44,000
Direct labour:		
Machine shop: 18000 hrs. @ ₹4	72,000	
Assembly: 7200 hrs. @ ₹5	<u>36,000</u>	1,08,000
Production overheads:		
Machine shop: 18000 @ ₹12	2,16,000	
Assembly shop: 7200 @ ₹10	<u>72,000</u>	2,88,000
Total		5,40,000

Example 20.21 (Sales Overhead Budget)

You are requested to prepare a sales overhead budget from the estimates given below:

Advertisement	₹2,500
Sales of the sales department	5,000
Expenses of sales department	1,500
Counter salesmen's salaries and dearness allowance	6,000
Commission to counter salesmen at 1% on their sales	

Travelling salesmen's commission at 10% on their sales and expenses at 5% on their sales.
The sales during the period were estimated as follows:

Counter sales	Travelling salesmen
₹80,000	₹10,000
1,20,000	15,000
1,40,000	20,000

(B. Com. (Hons), Delhi)

Solution

Sales Overhead Budget for the Period Ending

	Estimated Sales		
	₹90,000	₹1,35,000	₹1,60,000
Fixed overheads:			
Advertisement	2,500	2,500	2,500
Salaries of sales department	5,000	5,000	2,500
Expenses of sales department	1,500	1,500	1,500
Counter salesmen's salaries and DA	6,000	6,000	6,000
	15,000	15,000	15,000
Variable overheads:			
Counter salesmen's commission @ 1% on sales	800	1,200	1,400
Travelling salesmen's commission @ 10%	1,000	1,500	2,000
Expenses @ 5%	500	750	1,000
	2,300	3,450	4,400
Total sales overheads	17,300	18,450	19,400

Example 20.22 (Cash Receipts Budget)

A company normally collects cash from credit customers as follows: 50 per cent in the month of sale, 30 per cent in the first month after sale, 18 per cent in the second month after sale, and 2 per cent are never collected. Sales, all on credit, are expected to be as follows:

	₹
January	5,00,000
February	6,00,000
March	4,00,000
April	5,00,000

- (a) Calculate the amount of cash expected to be received from customers during March.
 (b) Calculate the amount of cash expected to be received from customers during April.

Solution

	₹
(a) Budgeted cash collection in March:	
From January sales ($.18 \times 500,000$)	90,000
From February sales ($.30 \times 600,000$)	1,80,000
From March sales ($.50 \times 400,000$)	2,00,000
Total budgeted collections in March	<u>4,70,000</u>
(b) Budgeted cash collections in April:	
From February sales ($.18 \times 600,000$)	1,08,000
From March sales ($.30 \times 400,000$)	1,20,000
From April sales ($.50 \times 500,000$)	2,50,000
Total budgeted collections in April	<u>4,78,000</u>

Example 20.23

From the following forecast of income and expenditure prepare a Cash Budget for the three months ending on June, 2008:

Month	Sales ₹	Purchase ₹	Wages ₹	Misc. ₹
2008, February	1,20,000	84,000	10,000	7,000
March	1,30,000	1,00,000	12,000	8,000
April	80,000	1,04,000	8,000	6,000
May	1,16,000	1,06,000	10,000	12,000
June	88,000	80,000	8,000	6,000

Additional Information:

- (i) Sales : 20% realised in the month of sales, discount allowed 2%, balance realised equally in two subsequent months.
- (ii) Purchases: These are paid in the month following the month of supply.
- (iii) Wages : 25% paid in arrears following month.
- (iv) Misc. Expenses : Paid a month in arrears.
- (v) Rent : ₹1,000 per month paid quarterly in advance due, in April.
- (vi) Income Tax : First instalment of advance tax ₹25,000 due on or before 15th June to be paid within the month.
- (vii) Income from Investment : ₹5,000 received quarterly in April, July etc.
- (viii) Cash in hand ₹5,000 in April 1, 2008.

(I.C.W.A, Inter, Dec. 2010)

Solution**Cash Budget for the month of April, May and June 2008**

	<i>April</i> ₹	<i>May</i> ₹	<i>June</i> ₹
Opening Balance	5,000	5,680	(-) 7,084
Cash Receipt:			
Collection for debtors	1,15,680	1,06,736	95,648
Income from investment	5,000	—	—
	1,25,680	1,12,416	88,564
Cash Payment:			
Payment to supplier	1,00,000	1,04,000	1,06,000
Wages	9,000	9,500	8,500
Rent	3,000	—	—
Misc. expenses	8,000	6,000	12,000
Advance Income Tax	—	—	25,000
	1,20,000	1,19,500	1,51,500
Closing Balance (minus balance indicate bank overdraft)	5,680	(-) 7,084	(-) 62,936
	1,25,680	1,12,416	88,564

Working Notes**1. Collection for Debtors**

	<i>April</i> ₹	<i>May</i> ₹	<i>June</i> ₹
Collection in the month of sale (20% of total less 2% discount)	15,680	22,736	17,248
Collection in the next month (50% of 80% of total sales in the previous month)	52,000	32,000	46,400
Collection after two months (50% of 80% of total sales in the month preceding two months of sale)	48,000	52,000	32,000
	1,15,680	1,06,736	95,648

2. Payments of Wages

	<i>April</i> ₹	<i>May</i> ₹	<i>June</i> ₹
75% of current months wages	6,000	7,500	6,000
25% of wages of the previous month	3,000	2,000	2,500
	9,000	9,500	8,500

Example 20.24 (Cash Budget)

The January 1 cash balance of the Jay Company is ₹5,000. Sales for the first four months of the year are expected to be as follows: January, ₹65,000; February, ₹54,000; March, ₹66,000; and April, ₹63,000. On January 1, uncollected amounts for November and December of the previous year are ₹13,500 and ₹39,150, respectively. Collections from customers follow this pattern: 55% in the month of sale, 30% in the month following the sale, 13% in the second month following the sale, and 2% uncollectable.

Materials purchases for December were ₹10,000. Forecast purchases for the coming year are: ₹12,500; February, ₹16,500; March, ₹13,000; and April, ₹14,000. Purchases are usually paid by the 10th of the month following the month of purchase. Other cash expenditures of ₹41,000 are forecasted for each month.

Calculate:

- Expected cash collection during February
- Expected cash balance, February 1
- Expected cash balance, February 29.

Solution**Cash Budget of Jay Company for Months of January and February**

	January (₹)	February (₹)
Opening Balance	5,000	27,550
Receipts—From customers (A)	<u>73,550</u>	<u>60,510</u>
 Payments:		
For Purchases	10,000	12,500
Other expenditures	<u>41,000</u>	<u>41,000</u>
Total Payments (B)	<u>51,000</u>	<u>53,500</u>
 Closing Balance (A) – (B)	37,550	34,560

Thus

- Expected cash collections during February = ₹60,510
- Expected cash balance—February 1 = ₹27,550
- Expected cash balance—February 29 = ₹34,560

Working Note:

Collections on account of sales

January

$$\text{For November arrears } 13,500 \times 13/15 = 11,700$$

$$\text{For December arrears } \frac{39,150}{45} \times 30 = 26,100$$

$$\text{For January sales } 65,000 \times 55/100 = 35,750$$

$$\underline{73,550}$$

February

For December arrears	$\frac{39,150}{45} \times 13$	=	₹11,310
For January sales	$65,000 \times 30/100$	=	₹19,500
For February sales	$54,000 \times 55/100$	=	29,700
			<u>60,510</u>

Example 20.25

Based on the following information, prepare a Cash Budget for ABC Ltd:

	1 st Quarter (₹)	2 nd Quarter (₹)	3 rd Quarter (₹)	4 th Quarter (₹)
Opening cash balance	10,000	—	—	—
Collection from customers	1,25,000	1,50,000	1,60,000	2,21,000
<i>Payments:</i>				
Purchase of material	20,000	35,000	35,000	17,000
Other expenses	25,000	20,000	20,000	17,000
Salary and wages	90,000	95,000	95,000	1,09,200
Income tax	5,000	—	—	—
Purchase for machinery	—	—	—	20,000

The company desires to maintain a cash balance of ₹15,000 at the end of each quarter. Cash can be borrowed or repaid in multiple of ₹500 at an interest of 10% per annum. Management does not want to borrow cash more than what is necessary and wants to repay as early as possible. In any event, loans cannot be extended beyond four quarters. Interest is computed and paid when the principal is repaid. Assume that borrowings take place at the beginning and repayments are made at the end of the quarters.

(ICWA Stage 2, June 2006)

Solution

Cash Budget for ABC Ltd.

Particulars	1 st Quarter (₹)	2 nd Quarter (₹)	3 rd Quarter (₹)	4 th Quarter (₹)
Opening Cash Balance	10,000	15,000	15,000	15,325
Add: Collection from customers	1,25,000	1,50,000	1,60,000	2,21,000
(A) Total cash available	1,35,000	1,65,000	1,75,000	2,36,325
<i>Payments:</i>				
Purchase of materials	20,000	35,000	35,000	17,000
Other expenses	25,000	20,000	20,000	17,000
Salary and wages	90,000	95,000	95,000	1,09,200

(Contd.)

Particulars	1st Quarter (₹)	2nd Quarter (₹)	3rd Quarter (₹)	4th Quarter (₹)
Income tax	5,000	—	—	20,000
Purchase of machinery	—	—	—	1,63,200
(B) Total cash payment	1,40,000	1,50,000	1,50,000	15,000
Minimum cash balance reqd.	15,000	15,000	15,000	15,000
(C) Total cash required	1,55,000	1,65,000	1,65,000	1,78,200
Excess (Deficit) A-C	(20,000)	—	10,000	58125
<i>Financing:</i>				
Borrowing	20,000	—	—	(11000)
Repayment	—	—	(675)*	(1,100)*
Interest Payment	—	—	(9,675)	(12,100)
(D) Total effect of financing	20,000	—	—	—
Cash balance at the end of quarters (A + D - B)	15,000	15,000	15,325	61025

* $9,000 \times 0.10 \times 9/12 = ₹675$. Similarly interest has been calculated for one year @ 10% per annum on ₹11,000.

ZERO BASE BUDGETING (ZBB)

Zero base budgeting (ZBB) is a method of budgeting whereby all activities are revaluated each time budget is formulated and every item of expenditure in the budget is fully justified. That is, ZBB involves starting from scratch or zero.

In traditional budgeting, departmental managers need justify only increases over the prior year's budget known as incremental budgeting. This implies that what is already being spent is automatically sanctioned. Under the ZBB concept, each department's functions are reviewed completely and all expenditures, rather than only the increases, must be approved.

Also in some departments ascertainment of budgeted costs is easier than other departments. For example, in production departments, it is easier to determine costs of inputs to achieve a level of budgeted output. But, in other departments such as accounts, personnel, research and development, it is difficult to even identify the output, and therefore equally greater difficult to determine the cost of input to sustain (unidentifiable) output. Consequently, the budgets of previous year tend to be subjectively increased as the next year budgeted expenditure. However, the previous year's budgets may be inefficient and adjusting merely new year's budgets to the previous year's budget may result in wastage. ZBB overcomes this problem, to a certain extent, ZBB rejects the traditional view of annual budgeting as an incremental process which takes into account current expenditure plus an estimate of next year's expenditure to arrive at the next budget. Instead the projected expenditure for existing programmes should start from base zero with each year's budgets being compiled as if the programmes were being launched for the first time.

Application of ZBB

ZBB involves the following stages (steps):

- (1) Each separate activity of the organisation is identified and called a decision package. A decision package is a document that identifies and describes a specific activity in such a manner that management can (i) evaluate it and rank it against other activities competing for limited resources and (ii) decide whether to approve or disapprove it.
- (2) Each decision package must be justified, that is it should be enquired into whether a decision package promotes the goals of an enterprise.
- (3) If justified, then the cost of minimum efforts needed to sustain each decision package is determined.
- (4) Alternatives for each decision package are considered in order to select better and cheaper options for the package.
- (5) Incremental decision packages are also justified and costed in the above manner. These incremental packages describe the costs and benefits of additional work that would be done above that required by the base package for the minimum amount of work needed to carry out the activity.
- (6) Managers rank their decision packages in order of priority for resource allocation.
- (7) Resources are allocated to the packages.

Advantages of ZBB

- (1) It represents a move towards allocation of resources by need and benefit and thus results in more efficient allocation of resources.
- (2) It identifies and eliminates wastage and obsolete operations.
- (3) It ensures that the best possible methods of performing jobs are used and that new ideas emerge.
- (4) It creates a questioning attitude rather than one which accepts that current practices represent value for money.
- (5) It leads to increased staff involvement which may lead to improved motivation and greater interest in the job.
- (6) It increases communication and coordination within the organisation.
- (7) Managers become more aware of the costs of inputs which helps them to identify priorities.
- (8) The documentation of decision packages provides management with a deep, coordinated knowledge of all the organisation's activities.
- (9) It is useful especially for service departments where it can be difficult to identify output.

Disadvantages of ZBB

- (1) The costs involved in preparing a vast number of decision packages in a large firm are very high.
- (2) It is very time-consuming and a large amount of additional paper work is involved.
- (3) Managers develop fear and feel threatened by ZBB and therefore may oppose new ideas and changes.
- (4) The ranking of decision packages and allocation of resources is subjective to a certain degree, which can result in departmental conflict.

- (5) Administration and communication of ZBB process may become critical problems because more managers become involved in this process than in most budgeting and planning procedures and these problems are further compounded in large organisations.

PLANNING, PROGRAMMING AND BUDGETING SYSTEM (PPBS)

Planning, Programming and Budgeting System (PPBS) is used in non-profit or non-commercial organisations to enable them to make more informed decisions about resources allocation. PPBS differs from traditional non-profit and non-manufacturing budgets in the sense that the latter are prepared as line item budgets whereas the former (PPBS) are prepared on the basis of programmes, that is, planned activities that have specified objectives. In PPBS, budgets for line/functional items for whole department are not presented. Instead, the expenses associated with specific programmes are detailed. For instance, a railway authority may have the programmes of total computerisation of its booking system, a municipal authority may have programmes of providing drinking water or providing health facilities in the city. Such programmes require greater coordination among several departments to make a specific programme successful.

PPBS is taken by extending the planning period beyond the one-year budget period. PPBS is the counterpart of the long term planning process which is operated in profit oriented organisations. PPBS is based on a rational model of decision making and involves the following stages:

- (1) Identify and define the objectives of programme.
- (2) Select performance or output measures to assess the effectiveness of the programme.
- (3) Identify and evaluate alternative methods of achieving the objectives laid down for each specific programme. For this, costs and benefits associated with each alternative course of action should be detailed.
- (4) Select the appropriate programmes on the basis of cost benefit analysis as done in (3).
- (5) Implement the selected alternative and monitor its performance to ensure that the objectives of the programmes are achieved given the resources allocated to those programmes.

PPBS has certain advantages compared to traditional department/functional budgets:

- (1) PPBS leads to a more effective allocation of resources by cutting across departmental barriers, providing to managers specific information related to the activities and by coordinating scarce resources and skilled personnel located in different departments on a particular programme or project.
- (2) PPBS compels management to identify and evaluate the activities, functions or programmes which are carried out in terms of their objectives, efficiency and effectiveness.
- (3) Programme budgeting provides adequate information which will enable management to assess the effectiveness of its plans and to focus on the organisation's outputs (the objectives to be achieved).
- (4) PPBS enables management to have long term perspective and commitments in certain programmes while preparing the annual budget. For instance, an education programme may involve capital expenditure for a ten-year period. In this situation, the decision makers will have to keep in mind future commitments and resources availability while constructing the annual programme budget. In this way, the annual budget is placed in the long term context and becomes a part of long term programme.

PERFORMANCE BUDGETING

The concept of performance budgeting is used extensively in the Government and Public sector undertakings. A performance budget is essentially a projection of the Government activities and expenditure thereon for the budget period. It shows budgeted expenses classified by functions and activities and wherever practical, units cost also. In comparison to other budget forms, the objectives of performance budgeting are to provide a closer linkage between planning and action and to provide a more common basis for review, control and reporting.

The basic issues involved in the preparation of performance budgets are that of developing work programmes and performance expectations by assigning responsibilities necessary for the attainment of the goals of objectives of the enterprise. It also involves establishment of well defined centres of responsibility, establishment of targets for each responsibility centre in terms of physical units so that actual performance can be measured against the same, forecasting the amount of expenditure required to meet physical plan laid down and evaluation of actual performance with both physical targets and monetary targets performance.

Theory Questions

- Define "budget" and "budgetary control". Give a description of two important budgets. (B. Com. (Hons), Delhi)
- (a) Define budgetary control and explain its objectives.
(b) Define how functional budgets are built up, taking any one specific example. (CA Inter)
- Explain the meaning of a business budget. How does it serve as an instrument of control? (B. Com. (Hons))
- Discuss the mode of operation of systems of budgets and budgetary control. (B. Com. (Hons), Delhi)
- What do you understand by budgetary control? Explain the mechanism that would lead to effective control. (ICWA Inter)
- What are the advantages arising out of the budgetary control system? What do you think are the essentials of an effective budgetary control system? (ICWA, Final)
- Discuss the objectives and limitations of budgetary control. (B. Com. (Hons), Delhi)
- Define budgetary control and discuss the objectives of introducing a budgetary control system in an organisation. (ICWA, Inter, State I, Dec. 2006)
- Discuss the cardinal features and objectives of budgetary control.
- Explain the difference between a forecast and a budget. Give examples to illustrate the differences between:
 - Fixed budget,
 - Flexible budget, and
 - Functional budget.
- What are functional budgets. Which functional budgets are most commonly used by management? (CA Inter)
- Define budgetary control and distinguish it from standard costing. Discuss the inter-relationship between budgetary control and the standard costing system. (CA Inter)
- Discuss briefly the procedure for the preparation of a sales budget. (ICWA Inter)
- What do you understand by a "flexible budget"? (B. Com. (Hons), Delhi)
- What is a sales budget? How is it prepared? (B. Com. (Hons), Delhi)
- Describe briefly the fundamental functions of business budgets. (B. Com. (Hons), Delhi)

17. Explain the concept of a flexible budget. How is it prepared? (B. Com. (Hons), Delhi)
18. What is flexible budget? How does the sales forecast differ from the sales budget? (B. Com., Delhi)
19. What do you understand by 'Flexible Budget'? How is it prepared? Distinguish between fixed budgeting and flexible budgeting. ((ICWA, Inter, Stage I, Dec. 2006, B. Com. (Hons), Delhi))
20. Explain the following: (B. Com (Hons) Delhi 1999)
- (a) Zero Base Budgeting (b) Master Budget
21. List the important functional budgets prepared by a business. (B. Com (Hons), Delhi 2000)
22. Distinguish between budget and forecast. What is a cash budget? What are its uses? (B. Com. (Hons), Delhi, 2000)
23. Explain three control ratios used for performance evaluation. (B. Com. (Hons), Delhi, 2001)
24. State the important features of zero base Budgeting. (B. Com. (Hons), Delhi, 2001)
25. Distinguish between fixed and flexible budget. (B. Com. (Hons), Delhi, 2001)
26. Write short notes on the following: (B. Com. (Hons), Delhi, 2001)
- (a) Flexible budget
 - (b) Principal budget factor
27. Discuss the necessary steps for the success of budgetary control system in an organisation. (B. Com. (Hons), Delhi, 2002)
28. What purpose is served by instituting a budgetary control system in an organisation having both manufacturing and selling activities. (B. Com. (Hons), Delhi, 2003)
29. Distinguish between the following: (B. Com. (Hons), Delhi, 2003)
- (i) Zero base budget and conventional budget
 - (ii) Cost control and cost reduction
30. "Budget is an aid to management, not a substitute for management." Comment. (B. Com. (Hons), Delhi, 2004)
31. "Standard costing and budgeting control are interrelated but not interdependent". Comment. (B. Com. (Hons), Delhi, 2004)
32. Distinguish between standard costing and budgetary control. (B. Com. (Hons), Delhi, 2005)
33. What are the main objectives of a system of budgetary control? Do you think budgetary control is subject to certain limitations? (B. Com. (Hons), Delhi 2005)
34. Define flexible budget and explain its importance as a budgeting technique and tool of control. ((ICWA Inter, Stage I, Dec. 2003, June 2006))
35. Distinguish between 'standard costing' and 'budgeting control'. What are the essential requirements for installing an efficient system of budgetary control? (B. Com. (Hons), Delhi, 2007)
36. Distinguish between conventional budgeting and zero base budgeting. (B. Com. (Hons), Delhi, 2007)
37. Briefly explain the essentials of an effective budgetary control system. (B. Com. (Hons), Delhi, 2007)
38. "Flexible budgets are more realistic and useful than fixed budgets". Do you agree? Explain. (B. Com. (Hons), Delhi, 2007)
39. Explain zero base budget. (B. Com. (Hons), Delhi, 2007)
40. Distinguish between budgetary control and standard costing. (B. Com. (Hons), Delhi 2007)
41. Write notes on zero base budgeting. (B. Com. (Hons), Delhi 2008, 2010)
42. Define the term budget and budgetary control. List down objectives of budgetary control. (B. Com., Delhi, 2011)
43. What do you mean by fixed budget and flexible budget? Is flexible budget useful to the management? (B. Com., Delhi, 2011)
44. (a) What is budgeting? Explain its advantages and limitations.
 (b) Distinguish between fixed and flexible budgets. (B. Com. (Hons), Delhi, 2010, 2011)

45. Distinguish between budgeting control and standard costing as measures of cost control.
46. Write short notes on:
- Zero base budgeting;
 - Master budget.
 - Flexible budget.
47. Explain the meaning and uses of cash budget.
48. What is a budgetary control system? State the advantages of budgetary control system in an organization.
49. Discuss the limitation of budgetary control.
50. Briefly describe any five objectives of budgetary control.
51. Define budgetary control and state its advantages and disadvantages.
52. What is meant by zero based budgeting? What are the essentials of introducing a system of zero based budgeting? Explain in brief the drawbacks of this system.

(B.Com. (Hons), Delhi, 2009)

(B.Com. (Hons), Delhi, 2009)

(B.Com. (Hons), Delhi, 2010)

(B.Com. (Hons), Delhi, 2010)

(B.Com. (Hons), Delhi, 2011)

(B.Com. (Hons), Delhi, 2011)

(B.Com. (Hons), Delhi, 2012)

(B.Com. (Hons), Delhi, 2012)

Self-Evaluation Questions

Choose the correct answer for the following multiple choice questions:

- Information to prepare a flexible budget includes
 - Total fixed costs, total variable cost
 - Total fixed costs, total variable costs and capacity base
 - Unit fixed costs and unit variable costs
 - Total fixed costs, variable costs per unit, several levels of activity
- The scarce factor of production is known as
 - Key factor
 - Limiting factor
 - Critical factor
 - All of the above
- Which of the following is a budget designated to furnish budgeted costs for any level of activity actually attained.
 - Fixed budget
 - Flexible budget
 - Master budget
 - Production budget
- Flexible budgets are useful for
 - Planning purposes only
 - Planning, performance evaluation and feedback control
 - Control of performance only
 - Nothing at all

Problems

1. The budgeted cost of a factory specialising in the production of a single product at the optimum capacity of 6400 units per annum amounts ₹1,76,048 as detailed below:	₹20,688
Fixed cost	
Variable costs:	
Power	₹1,440
Repairs etc.	1,700
Miscellaneous	540
Direct material	49,280
Direct labour	<u>1,02,400</u>
	1,55,360
	<u>1,76,048</u>