5

Budget & Budgetary Control

5.1 INTRODUCTION

In your studies related to the previous stage of examinations, you were introduced to the concept of Budgeting and Budgetary Control. Having read that chapter you should be able to understand the following;

- The meaning of budgeting and budgetary control
- The objectives, advantages and disadvantages of budgeting and budgetary control
- The concept of functional budgets and their various types
- The difference between a fixed and a functional budget.

In this chapter you shall further increase your understanding of the above mentioned and learn more about concepts related to identifying and using limiting factors for preparation of budgets, the relationship between strategic, operational and budgetary planning, the actual making of functional budgets from given data and other important budgetary tools like zero based budgeting and performance budgeting.

5.2 STRATEGIC PLANNING, BUDGETARY PLANNING AND OPERATIONAL PLANNING

Planning is perhaps one of the most important tools in the hands of management to decide upon future course of action. It will be useful at this stage to distinguish in broad terms between three different types of planning:

- Strategic Planning;
- Budgetary Planning;
- Operational Planning.

These three forms of planning are interrelated. The main distinction between them relates to their time span which may be short term, medium term or long-term.

5.2.1 Strategic Planning: Strategic planning is concerned with preparing long-term action plans to attain the organization's objectives by considering the changes at horizon.

5.2.2 Budgetary Planning: Budgetary planning is mainly concerned with preparing the short to medium term plan of the organisation. It will be carried out within the framework of the

strategic plan as already set. An organization's annual budget is considered as an intermediary step towards achieving the strategic plan.

5.2.3 Operational Planning: It concerns with the short-term or day-to-day planning process. It plans the utilisation of resources and will be carried out within the framework of the budget. Each step in the operational planning process is an interim step towards achieving the budget.

5.3 THE PREPARATION OF BUDGETS

The process of preparing and using budgets will differ from organisation to organisation. However, there are a number of key requirements in the design of a budgetary planning and control process.

5.3.1 Co-ordination: The budget committee:

Budgets provide a **means of co-ordination** of the business as a whole. In the process of establishing budgets, the various factors like production capacity, sales possibilities, and procurement of material, labour, etc. are balanced and co-ordinates so that all the activities proceed according to the objective. For this purpose a budget committee is formed which includes all the departmental heads together to solve a common problem.

The need for co-ordination in the planning process is immense. The interrelationship between the functional budgets (e.g. sales production, purchasing) means that one budget cannot be completed without reference to several to several others.

5.3.2 Participative budgeting:

CIMA defines participative budgeting as:

A budgeting system in which all budget committee members are given the opportunity to apply their own budgets in practice.

This is known as 'bottom-up budgeting'. It contrasts with imposed or top-down budgets where the ultimate budget holder does not have the opportunity to participating in the budgeting process.

The advantages of participative budgeting are as follows:

- **Improved quality of forecasts to use as the basis for the budget:** Managers who are doing a job on a day-to-day basis are likely to have a better idea of what is achievable, what is likely to happen in the forthcoming period, local trading conditions, etc.
- **Improved motivation:** Budget holders are more likely to want to work to achieve a budget that they have been involved in setting themselves, rather than one that has been imposed on them from above.
- **Better results:** being the executor of the budget the applicant can control the costs better than any other manager.

5.3.3 The Budget Manual:

Effective budgetary planning relies on the provision of adequate information to the individuals involved in the planning process.

Many of these information needs are contained in the budget manual. A budget manual is a collection of documents that contains key information for those involved in the planning process. Typical contents could include the following:

a) An introductory explanation of the budgetary planning and control process, including a statement of the budgetary objective and desired results.

b) A form of organisation chart to show who is responsible for the preparation of each functional budget and the way in which the budgets are interrelated.

c) A timetable for the preparation of each budget. This will prevent the formation of a 'bottleneck' with the late preparation of one budget holding up the preparation of all others.

d) Copies of all forms to be completed by those responsible for preparing budgets, with explanations concerning their completion.

e) A list of the organization's account codes, with full explanations of how to use them.

f) Information concerning key assumptions to be made by managers in their budgets, for example the rate of inflation, key exchange rates, etc.

5.3.4 Identification of the principal budget factor:

The principal budget factor is the factor that limits the activities of functional budgets of the organisation.

The early identification of this factor is important in the budgetary planning process because it indicates which budget should be prepared first.

In general sales volume is the principal budget factor. So sales budget must be prepared first, based on the available sales forecasts. All other budgets should then be linked to this.

Alternatively, machine capacity may be limited for the forthcoming period and therefore machine capacity is the principal budget factor. In this case the production budget must be prepared first and all other budgets follows it.

Failure to identify the principal budget factor at an early stage could lead to delays later on when managers realize that the targets they have been working with are not feasible.

In case of one limiting factor, we shall need to apply the concept of Marginal costing. In this we initially allot the limiting resource on the basis of highest contribution per limiting factor.

5.3.5 How to identify the principle budget factor

1. in case of single product organisation
2. in case of multi product organisation

5.3.5.1 *In case of single product organisation*

Steps to follow

(i) Identify the capacity of the production departments. Generally normal capacity is consider for budget / estimation (Ref Cost Accounting Standards 2, 3)

(ii) Maximum production in adept. = normal capacity ÷ time p.u.

(iii) Select the minimum production volume among the above results. The dept. producing that result is known as bottleneck among the production department.

(iv) Identify the sale or demand of the product.

(v) Now by comparing the above 2 steps we can identify the principle budget factor.

Explanation of Step-1:

Capacity of a department is defined as facility available for work & generally expressed in terms of labour hour, machine hour or unit.

There are 4 different expression of capacity.

1. Maximum capacity (Theoretical capacity)
2. Practical capacity
3. Normal capacity
4. Actual capacity

Calculation

1. Maximum capacity = Maximum no. of days in a period ´ No. of workers ´ hrs/days.
2. Practical capacity = maximum capacity – Sunday & statutory holidays & normal maintenance & idle time.
3. Normal capacity- it is the average of the last 3-year of normal performance if there is any abnormal is any abnormal data don't consider in the computing the average.
4. actual capacity : it can be determined only at the end of the period. So it has no importance for preparation of budget.

Illustration

In a year, 15 workers are working in a dept. on a single shift basis. Statutory holidays in that year are 18. Normal maintenance requires 250 hrs./ p.m. The capacity utilization during last 5 years.

2000	30,000	Labour hour (LHR)
2001	38,000	" "
2002	31,000	" "

2003	30,900	"	"
2004	26,000	"	"

Calculate capacity of the organisation.

Solution

Maximum capacity = 365 days × 15 workers × 8 hrs p.day = 43,800 LHR

Practical capacity = { 365- (52+18) days } × 15 workers × 8 hrs. p. day - 250 hrs p.m. ×12

= 32,400 LHR

The capacity utilization during last 5 years.

Years	2000	30,000	LHR	
	2001	38,000	"	(to high)
	2002	31,000	"	
	2003	30,900	"	
	2004	26,000	"	(to low)

∴ Normal capacity of 2005 = (30,000 + 31,000 + 30,900) ÷ 3 = 30,633 LHR

While preparing the budget we consider the normal capacity as budgeted production level

∴ 100% of budgeted capacity always implies the normal capacity.

Explanation of Step- 2, 3 & 4.

Illustration .

There are 3 departments with different normal capacity & time required p.u. is given:

		Machine	Assembly	Finishing
(a)	Capacity	1,2000 MHR.	8,000 LHR.	9,000 LHR
(b)	Time required/unit	4 MHR.	5 LHR.	3 LHR
(c)	Maximum production in a department (a÷ b)	3,000	1,600	3,000

∴ Feasible production =1,600 units

∴ Assembly department is considered as bottleneck to the above production line.

Illustration

Solo products Ltd. manufactures and sells a single product and has estimated sales revenue of Rs.126 lakhs this year based on a 20 per cent profit on selling price.

Each unit of the product requires 3 lbs of material P and 1½ lbs of material Q for manufacture as well as a processing time of 7 hours in the Machine shop and 2½ hours in the Assembly Section. Overheads are absorbed at a blanket rate of 33.3333% of Direct Labour.

The factory works 5 days of 8 hours a week in a normal 52 weeks a year. On an average statutory holidays, leave and absenteeism and idle time amount to 96 hours, 80 hours and 64 hours respectively, in a year. The past performance (in Hours) of factory in last 3 yrs is as follows-

	Machine Shop	Assembly shop
In 2003	11,00,000	3,45,000
In 2004	10.30.000	3,20,000
In 2005	10,80,000	3,40,000

The other details are as under :

		Rs.
Purchase price	Material P	6 per lb
	Material Q	4 per lb
Comprehensive Labour Rate	Machine Shop	4 per hour
	Assembly	3.20 per hour
No. of Employees	Machine Shop	600
	Assembly	180

	Finished Goods	Material P	Material Q
Opening Stock	20,000 units	54,000 lbs	33,000 lbs
Closing Stock (Estimated)	?	30,000 lbs	66,000 lbs

You are required to calculate the closing stock of finished goods:

Solution

(a) Working note-1 Computation of sale volume

Cost Sheet

		Rs. p.u.	Rs. p.u.
Material	P: 3 lb@ 6	18	
	Q: 1 ½ lb @ 4	6	24
Labour	7 hrs. @ Rs. 4	28	

Assembly 2.5 hrs. @ Rs. 3.2	8	36
Overhead 33 ½ of DL		12
Cost of production		72
Add: Mark up (25%)		18
(a) Sales		90
(b)Sales value Rs		126 lakhs
No. of units sold (b□a)		1,40,000

Computation of principal budgeted factor

(1)	Sales/Demand	1,40,000
(2)	Feasible production = Normal capacity ÷ time p.u.	
	Machine dept: 10, 70,000÷7	1, 52,857
	Assembly dept.: 3.35,000÷2.5	1, 34,000

∴ Feasible production during this period 1, 34,000 units as Assembly department is the bottleneck.

Computation of expected closing stock of finished goods

Opening stock (units)	20,000
Add: estimated production (units)	1,34,000
Qty (units)	1,54,000
Less: demand (units)	1,40,000
∴ Closing stock (units)	14,000

5.3.5.2 *In case of multi product organisation*

1. Sale / demand is the principle budget factor
2. Capacity is in short supply or limiting factor i.e. capacity requirement according to demand is more than its supply
   a. Only one limiting factor
   b. More than one limiting factor

1. *Sale / Demand is the principle budget factor*

Require sale mix = required contribution ÷ average contribution

Average contribution = total contribution from all products ÷ total units

Illustration

P. H. Ltd. has specialised in the manufacture of three kinds of sub-assemblies required by the manufacturers of certain equipments. The current pattern of sales of sub-assemblies is in the ratio (in units) of 1 : 2 : 4 for sub-assemblies P, Q and R respectively.

The sub-assemblies consist of the following components:

Sub-assembly	Selling price	Requirement of components			
	Rs.	Frame	Part X	Part Y	Part Z
P	430	1	10	2	8
Q	500	1	2	14	10
R	600	1	6	10	2
Purchase Price (Rs.)		40	16	10	6

The direct labour hours required for the manufacture of each of the sub-assemblies are:

Sub-assembly	Skilled Hours	Un-Skilled Hours
P	4	4
Q	3	4
R	3	6
Wage rate per hour (Rs.)	6	5

The labourers work for 8 hours a day for 25 days a month. Variable overheads per sub-assembly are P Rs. 10, Q Rs. 8 R Rs. 7.

Fixed overheads budget per month is an under:

	Rs.
Production	15,80,000
Selling & Distribution	7,28,000
Administration	6,76,000

All fixed overheads are incurred evenly throughout the year. The target of profit for the current year is Rs. 120 lakhs before tax. The company has to plan to reduce the closing stock of sub-assemblies and components by 10 % as compared to the opening stock.

Find the Sales in quantities

Solution

Computation of variable cost per unit of 3 products

Items	P	Q	R
Frame @ Rs. 40	40	40	40
Part- X	160	32	96
	(10×16)	(2×16)	(6×16)
Y	20	140	100
	(2×10)	(14×10)	(10×10)
Z	48	60	12
	8×6	10×6	2×6
Wages –Skilled @ Rs. 6	24	18	18
Unskilled @ Rs. 5	20	20	30
Overhead	10	8	7
Variable cost	322	318	303

Note 2 Computation of Average Contribution

Product	SP	VC	Contribution	SP mix	Total contribution
	A	b	p/u (a-b)		
P	430	302	108	1	108
Q	500	318	182	2	364
R	600	303	297	4	1,188
				7	1,660

Average contribution = Rs 237.14

Required profit p.m. Rs. 10, 00,000

Required fixed cost Rs. 29, 84,000

Required contribution Rs. 39, 84,000

Required sales = 39,84□000□(1,660/7) = 16,800 units

Sales P 16,800×1/7 = 2,400

Q 16,800×2/7 = 4,800

R 16,800×4/7 = 9,600

Capacity is in short supply or limiting factor i.e. capacity requirement according to demand is more than its supply : Only one limiting factor

Illustration

The sales, cost, selling price and processing time of three different herbal drinks produced by a company for the year just concluded are given below:

Product	Strong	Normal	Mild
Annual sales (no. of packs 250 gm)	6,000	5,000	1,000
Selling price (Rs./pack)	50	40	30
Unit cost (Rs../pack)	42	36	21
Processing time/ per pack (hrs)	1.5	1	2

The total processing hours available to the company is fully utilised for this sale. Fixed manufacturing overheads are fully absorbed in unit cost at rate of 200% of variable cost. For the coming year the demand for the three products has been estimated as under:

Strong- 6,000 packs Normal- 6,000 packs Mild – 2,000 packs

Considering that the selling prices are fixed and the processing time can be switched from one product line to another, calculate the best production programme for next operating year indicating the increase in net profit that will result.

Solution

	Products			
	Strong	Normal	Mild	Total
(a) Production & sales	6,000	5,000	1,000	
	Rs./unit			
Sales	50	40	30	
Less: Variable cost (TC×1/3)	14	12	7	
(b) Contribution	36	28	23	
(c) Total contribution (Rs.) (a xb)	2,16,000	1,40,000	23,000	3,79,000
(d) Fixed cost p.u. (TC×2/3) (Rs.)	28	24	14	
(e) Total fixed cost (a×d) (Rs.)	1,68,000	1,20,000	14,000	3,02,000
Profit				77,000
(f) MRs./unit	1.5	1.0	2.0	
(g) Total processing time (a×f)	9,000	5,000	2,000	16,000 hr.

Capacity requirement or process time required in next year.

Product	Demand (a)	Hr./ut (b)	Total hours. (a×b)
Strong	6,000	1.5	9,000
Normal	6,000	1.0	6,000
Mild	2,000	2.0	4,000
			19,000
	Less: Average		16,000
	Shortage		3,000

Statement of Rank

Product	Contribution/unit (a)	Hr./unit (b)	Contribution/hr. (a÷b)	rank
Strong	36	1.5	24	II
Normal	28	1.0	28	I
Mild	23	2.0	11.5	III

Statement of Profit

	Hrs.	units (a)	Contribution (b) (from Note-1)	Total
Process time available	16,000			
Less: R-1 Normal (n-2)	6,000	6,000	28	1,68,000
	10,000			
Less: for R-II -Strong (n-2)	9,000	6,000	36	2,16,000
	1,000			
Less: for R-II –Mild		1,000 hr.÷2/hr. = 500	23	11,500
				3,95,500
Less: Fixed cost (N-1)				30,2,000
Profit in next year				93,500
Less: Current year profit				77,000
∴ Increase in profit				16,500

Capacity is in short supply or limiting factor i.e. capacity requirement according to demand is more than its supply: More than one limiting factor

In cases where there is more than one limiting factor, the technique of linear programming is applied.

We can also apply the concept of Throughput Accounting & Theory of Constraints for this purpose.

5.4 THE INTERRELATIONSHIP OF BUDGETS

The critical importance of the principal budget factor stems from the factor that all budgets are interrelated. For example, if sales are the principal budget factor this is the first budget to be prepared. This will then provide the basis for the preparation of several others budgets, including the selling expenses budget and the production budget.

However, the production budget cannot be prepared directly from the sales budget without a consideration of stockholding policy. For example, management may plan to increase finished goods stock in anticipation of a sales drive. Production quantities would then have to be higher than the budgeted sales level. Similarly, if a decision is taken to reduce the level of material stocks held, it would not be necessary to purchase all of the materials required for production.

5.5 USING SPREADSHEETS IN BUDGET PREPARATION

It is clear from just this simple example that exchange in one budget can have a knock-on effect on several others budgets. For this reason spreadsheets are particularly useful in budget preparation. Budgetary planning is an iterative process. Once the first set of budgets has been prepared they will be considered by senior managers. They may require amendments to be made or they may wish to see the effect of changes in key decision variables.

A well-designed spreadsheet model can take account of all of the budget interrelationships. This means that it will not be an onerous task to alter decision variables and produce revised budgets for management's consideration.

5.6 PREPARATION OF FIXED AND FLEXIBLE BUDGETS

You have been introduced to the basic concepts of preparing a fixed and flexible budgets in the earlier stages. Here we shall use some illusrations to further our understanding of the same.

Illustration

The budgeted level of activity of a production department of a manufacturing company is 5,000 hours in a period. But a technical study assumes overhead behaviour mentioned below:-

	Rs('00) Per hr.	Total in Rs('000).
Indirect wages, variable cost,	0.40	
Rent and Tax, fixed cost		320
Consumable supplies, variable	0.24	
Repairs : up to 2,000 hours		100
additional each extra 500 hrs up to 4,000 hrs.		35

additional 4,001 to 5,000 hrs		60
additional, above 5,000 hrs		70
Supervision up to 2,500 hrs		400
additional each extra 600 hrs up to 4,900 hrs		100
additional, above 4,900 hrs		150
Power variable up to 3,600 hrs	0.25	
for hrs above 3,600 additional cost,	0.20	
Depreciation up to 5,000 hrs		650
above 5,000 hrs.		820
Clearing up to 4,000 hrs		60
above 4,000 hrs		80
Lighting 2,100 to 3,500 hrs		120
3,501 hrs to 5,000 hrs		150
above 5,000 hrs		175

(a) Prepare fixed budget and a flexible budget at 70%, 85% and 110% of budgeted level of activity in one statement.

(b) Calculate a departmental hourly rate of overhead absorption.

Solution

Particulars	Flexible budget			Fixed budget
a. Capacity	70%	85%	110%	100%
b. Hours	3,500	4,250	5,500	5,000
	Rs. '000	Rs. '000	Rs. '000	Rs. '000
Indirect wages @ Rs. 40/hr.	140	170	220	200
Rates & taxes	320	320	320	320
Consumable supplies				
@ Rs. 24/hr.	84	402	132	120
Repair	205	300	370	300
	(100+35×3)	(100+35×4+60)	(100+35×4+60+70)	(100+35×4+60)
Supervision	600	700	950	950
	(3,500×25)	(3,600×25+650×20)	(3,600×25+1,900×20)	
			(3,600×25+1,400×20)	

Power	87.5	103	128	118
Depreciation.	650	650	820	650
Clearing	60	80	80	80
Lighting	120	150	175	150
Total cost	2,266.5	2,575	3,195	2,788
Absolute terms	647.57	605.88	580.91	517.6
Rate/month	0.647	0.605	0.58091	0.5776

Illustration

The following are the details of the Budgeted and the actual cost in a factory for six months from January to June, 2005.From the figures given below you are required to prepare the production cost budget for the period from January to June, 2006.

	January - June, 2005	
	Budget	Actual
Production (units)	20,000	18,000
	Rs.	Rs.
Material cost	40,00,000	39,90,000
	(2,000 MT @ Rs. 2,000)	(1,900 MT @ Rs. 2,100)
Labour cost	(8,00,000(@Rs.20 per hour)	(7,99,920 (@ Rs.22 per hour)
Variable overheads	2,40,000	2,16,000
Fixed overheads	4,00,000	4,20,000

In the first half of 2006, production is budgeted for 25,000 units. Material cost per ton will increase from last year's actuals by Rs.100 but it is proposed to maintain the consumption efficiency of 2005 as budgeted. Labour efficiency will be lower by another 1% and labour rates will be Rs. 22 per hour. Variable and Fixed overheads will go up by 20% over 2005 actuals.

You are required to prepare the production cost budget for the period January-June, 2006 giving all the workings. Also prepare a performance report for last year.

Solution

Production cost budget for the period from January to June '06.

	Budgeted
Units	25,000
Material (2,500×2,200)	55,00,000

Labour cost {(50,000□0.98)×22}	11,22,440
	Or (51,020 @ Rs. 22 per hr.)
Variable overhead {2,16,000×(25,000/18,000)×1.2}	3,60,000
Fixed overhead	5,04,000
Total cost	62,85,640

Working note:

Labour efficiency = (Budgeted time for AO □Actual time) ×100

	Budgeted	Actual
Units	20,000	18,000
Hr.	40,000	36,360

Budgeted time for Actual output = (40,000□20,000)×18,000 = 36,000

Labour efficiency = {(36,000□36,360)×100} = 99.01%

Labour efficiency = 98% = 50,000 ×100□Actual time

Illustration

From the information given below prepare a flexible budget of M/s Piston Bearings Ltd. for a production capacity of 15,000, 20,000, 25,000 and 30,000 tonnes.

(a) The production capacity of the plant is 30,000 tonnes.

(b) The sales for the year just concluded have been 25,000 tonnes at a unit realization of Rs. 400 per tonne ex-works. This rate is likely to be maintained in the coming year as well.

(c) The sales manager feels that with a little more effort on the part of the sales staff, he can achieve a sales programme of 30,000 tonnes.

(d) Raw material consumption is twice the quantum of finished products and the price of raw material is Rs. 40 per tonne.

(e) The other major material used is furnace oil which is available at Rs. 300 per tonne and the consumption ratio of oil to the finished products is 30%.

(f) Power is bought outside from the State Electricity Board and a per present tariffs, the cost of power would be as under:

Kwh purchased per Annum (in lakhs)	Rent per unit (applicable to entire purchase-in paise)
25 to 30	15
31 to 35	14
36 to 40	13
41 to 45	12
over 45	10

Power requirements of the plant are normally 200 kwh per tonne of product at a production level of 20,000 tonnes and are estimated to come down to 173 kwh per tonne at a production level of 25,000 tonnes per annum and 150 kwh per tonne at 30,000 tonnes per annum. Similarly, the consumption is expected to be 220 kwh per tonne at a production level lower than 20,000 tonne p.a.

(g) Labour is employed on a daily rate basis of Rs. 10 per day on an employment of 300 days p.a. There are at present 350 men employed and though lower production would result in some 20% of them being rendered surplus, because of an agreement with the labour union, there cannot be any retrenchment.

(h) Consumption of stores during the last four years had been as under:

Year	Production level	Stores consumed
1984	25,000 tonnes	Rs. 5,20 lakhs
1983	20,000 tonnes	3.84 lakhs
1982	22,500 tonnes	3.95 lakhs
1981	25,000 tonnes	4.00 lakhs

Prices over the base year 1981 have been increasing at the rate of 10% p.a. in the current year, the increases is expected to be maintained at the same rate over the prices of 1984.

(i) Selling and distribution overheads are expected to be maintained at Rs. 15 per tonne.

(j) Administrative expenses of the organization in 1981 were Rs. 7.50 lakhs and have been increasing at the rate of 5% p.a. over the immediately preceding year's level. No additional staff is expected to be employed for achieving addition production.

Your working should form part of the answer.

Solution

M/s Piston Bearings Ltd.

Flexible Budget For 1985

Production (tonnes)	15,000	20,000	25,000	30,000
	Rs.	Rs.	Rs.	Rs.
Raw Materials	12,00,000	16,00,000	20,00,000	24,00,000
Furnace oil (see note 1)	13,50,000	18,00,000	22,50,000	27,00,000
Power (see note 2)	4,62,000	5,20,000	5,25,000	5,40,000
Labour	10,50,000	10,50,000	10,50,000	10,50,000
Stores (see note 3)	3,43,200	4,57,600	5,72,000	6,86,400
Factory cost	44,05,000	54,27,600	63,97,000	73,76,400

Administrative overhead (see note 4)	9,11,630	9,11,630	9,11,630	9,11,630
Selling & Distribution overheads	2,25,000	3,00,000	3,75,000	4,50,000
Cost of sales	55,41,830	66,39,230	76,83,230	87,38,030
Net profit	4,58,170	13,60,770	23,16,370	32,61,970
Sales	60,00,000	80,00,000	1,00,00,000	1,20,00,000

Working Notes:

1. Furnace oil is 30% of the finished product. For example, for the production of 15,00,000 tonnes; 4,500 tonnes, of furnace oil will be re required. The cost is Rs. 300 per tonne.
2. Power requirements are:

(i)	Capacity (in tonnes)	15,000	20,000	25,000	30,000
(ii)	Total requirements per tonne	220	200	170	150
(iii)	Total require				
(iv)	Rate per kwh (paise)	14	13	12	12
(v)	Total power cost	Rs. 4,62,000	5,20,000	5,25,000	5,40,000

3. Consumption of stores:

Cost per tonne in 1984 = $\frac{Rs.5,20,000}{25,000}$ = Rs. 20.8 per tonne

Price has increased by 10% over 1984

Price for 1985 is Rs. 20.8+2.08 = Rs. 22.88 per tonne

Cost of stores at various levels of capacity:

Levels of capacity (tonnes)	15,000	20,000	25,000	30,000
Cost per tonne (Rs.)	22.88	22.88	22.88	22.88
Total cost (Rs.)	3,43,200	4,57,000	5,72,000	6,86,400

4. Administration expenses for 1981: Rs. 7,50,400

Increase in 1982 at 5% over preceding year Rs. 37,500

Expenses for 1982	7,87,500
Increase in 1983 at 5%	39,375
Expenses for 1983	8,26,875
Increase in 1984 at 5%	41,344
Expenses for 1984	8,68,219
Increase in 1985 at 5%	43,411
Estimated expenses	9,11,630

Illustration

The direct labour requirements of three of the products manufactured in a factory, each involving more than one labour operation, are estimated as follows :-

Direct Labour hours per unit (in minutes)

		Product 1	2	3
Operation	1	18	42	30
	2	—	12	24
	3	9	6	—

The factory works 8 hours per day, 6 days in a week. The budget quarter is taken as 13 weeks and during a quarter lost hours due to leave & holiday is estimated to be 124 hours.

The budgeted hourly rates for the workers manning the operations 1,2 and 3 are Rs. 2.00, Rs. 2.50 and Rs. 3.00 respectively.

The budgeted sales of the products during the quarter are:

Product	1	9,000 units
	2	15,000 units
	3	12,000 units

There is a carry over of 5,000 units of product 2 and 4,000 units of product 3 and it is proposed to build up a stock at the end of the budget quarter as follows:

Product	1	1,000 units
	3	2,000 units

Prepare a man-power budget for the quarter showing for each operation, (i) direct labour hours, (ii) direct labour cost and (iii) the number of workers.

Solution

Man power Budget for the quarter

(i) Direct labour hour

Operation 1

		Products		
		1	2	3
(a)	Labour hrs. /unit (minutes)	18	42	30
(b)	Production	10,000	10,000	10,000
(c)	Direct labour hour.	1,80,000	4,20,000	3,00,000

(d)	Direct labour hour (c□60)	3,000	7,000	5,000
(e)	Rate/hr.	2	2	2
(ii)	Labour cost (d×c)	6,000	14,000	10,000
(iii)	The no. of workers (Labour hours)			
	Capacity /worker	500	500	500
	No. of workers	6	14	10
	Department			
	1	10,000 {(18+42+30)/60}	= 15,000	
	2	10,000 {(12+24)/60}	= 6,000	
	3	10,000 {(9+6)/60}	= 2,500	

Working note-1:

Product	1	2	3
Sales	9,000	15,000	12,000
Add: Closing stock	1,000	—	2,000
Less: opening stock	—	5,000	4,000
	10,000	10,000	10,000

Working note-2:

Practical capacity per worker. (8 hrs.×6 days ×13 weeks) –124 hours = 500 hrs.

Illustration

X Manufacturing company takes over sales from the Selling Agents. In the first month of operation of direct sales, the following costs have been incurred. Prepare the actual percentage of selling cost on total sales, compare with the standard selling cost.

Compute the variances and offer your comments about the standards, which are based on actual for the previous year, and performance of the Zonal offices.

Zonal offices Sales Budgets (units)		Standard selling expenses
Eastern India	20,000	Rs. 16,000
Western India	12,000	12,000
Northern India	6,000	8,000
Southern India	15,000	12,000
Central India	10,000	10,000
Northern Western India	5,000	8,000

Selling price per unit – Rs. 25

Actual:	E.I.	W.I.	N.I.	S.I.	C.I.	N.W.I
Units sold ('000 units)	19	10	5.9	17.5	9.5	5
Salesmen's salaries (Rs.'000)	8	7	5	7	6	5
Sales travelling (Rs.'000)	4	5	3.6	2.7	2.7	1.8
Halting charges & Bhatta (Rs.)	850	800	500	500	700	500
Salesmen's commission On selling prices @	1%	1.25%	1%	0.9%	1%	1%

Answer

COMPARATIVE COST STATEMENT OF SELLING EXPENSES

		E.I.	W.I.	N.I.	S.I.	C.I.	N.W.I.
Standard							
1.	Selling exp. (Rs.)	16,000	12,000	8,000	12,000	10,000	8,000
2.	Budgeted sales (units)	20,000	12,000	6,000	15,000	10,000	5,000
3.	Selling cost p.u. Rs. (1)¸(2)	0.80	1.00	1.33	0.80	1.00	1.60
4.	Actual sales (units)	19,000	10,000	5,900	17,500	9,500	5,000
5.	Standard selling cost for actual sales (Rs.) (3)×(4)	15,200	10,000	7,897	14,000	9,500	8,000
Actual selling costs:							
	Salesmen's salaries (Rs.)	8,000	7,000	5,000	7,000	6,000	5,000
	Sales travelling	4,000	5,000	3,600	2,700	2,700	1,800
	Halting charges etc.	850	800	500	500	700	500
	Salesmen's commission	4,750	3,125	1,475	3,937	2,375	1,250
6.	Total actual selling costs	17,600	15,925	10,575	14,137	11,775	8,550
7.	Selling costs variance Rs. (5) – (6)	- 2,400	- 5,900	- 2,708	- 137	- 2,275	- 550

8.	Budgeted sales (Budgeted qty.× budgeted price) (Rs.)	5,00,000	3,00,000	1,50,000	3,75,000	2,50,000	1,25,000
9.	Budgeted selling expenses as a % of Budgeted sales (1)(8)×100	3.2	4.0	5.3	3.2	4.0	6.5
10.	Actual sales (Rs.)	4,75,000	2,50,000	1,47,500	4,37,500	2,37,000	1,25,000
11.	Actual selling expenses as a % of actual sales	3.7	6.4	3.2	7.2	4.9	6.8

Comments : The above table shows that except for southern India and North – western India Zonal offices, actual sales expenses widely differ from budgeted selling expenses. However, the following points have to be noted:

(i) The standards are based on the actual expenses for the last year. Truly speaking they are not standards and, therefore, they cannot provide realistic guidance for exercising control over the selling expenses. Variances may be there because current year's conditions might have completely changed or circumstances which were applicable last year may have ceased to become applicable now.

(ii) The causes of the variances cannot be correctly spelt out in the absence of details about the "Standard selling expenses." The details of actual selling expenses have been given but the details of standard selling expenses have not been given. Salesmen's salaries is a fixed charge, variance may be there on account of increase in their salaries. Sales travelling expenses are of a semi-variable nature. Less volume of sales might have resulted in less recovery of fixed sales travelling expenses such as railway freight, hotel charges.

Illustration

Prepare cash budget for July - December from the following information :

(I) The estimated sales, expenses etc. are as follows :

(Rs. in lacks)

	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Sales	34	40	40	50	50	60	65
Purchase	24	16	17	20	20	25	28
Wages and Salaries	12	14	14	18	18	20	22
Miscellaneous	5	6	6	6	7	7	7
Interest Received	2	—	—	2	—	—	2
Sales of Shares	—	—	20	—	—	—	—

(ii) 20% of the sales are on cash with 3% cash discount and the balance on credit.

(iii) 1% of the credit sales are returned by the customers. 2% of the net receivable constituted bad debt losses. 50% of the good accounts receivable are collected in the month following the sales with 1% cash discount, 30% of the good accounts receivable are collected in the 2nd month following the sales and the rest in the 3rd month following sales.

(iv) The time lag in the payment of misc. expenses and purchases is one month. Wages and salaries are paid fortnightly with a time lag of 15 days.

(i) The company keeps a minimum cash balance of Rs. 25.00 lakhs. Cash in excess of Rs. 27 lakhs is invested in 9% Govt. securities in the multiple of Rs. 1 lakh. Interest is receivable on monthly basis . Shortfalls in the minimum cash balance are made good by borrowings from banks in multiple of Rs.2 lakhs & also repaid by same amount. The rate of interest is 12% p.a. (compound interest)

(ii) The opening cash balance is Rs.26 lacks.

(iii) Sales in the month April & May was Rs. 44 & 40 lacks. Respectively.

Solution

Working note-1:

Lets Sales	100	
Less: cash sales	20	20×97% = 19.4% of S (monthly)
Debtors	80	
Less: Return 1%	0.08	
	79.2	
Net receivable		
Less: Bad debt (2%)	1.584	

Good Debtors 77.616×50%×99% = 38.42% of Previous month sales.

Months following sales

2nd month following sales = 77.616´30% = 23.28% of 2nd PMS

3rd Month following sales = 77.616´20% = 15.52% of 3rd PMS

Cash Budget

	July	Aug.	Sept.	Oct.	Nov.	Dec.
Opening balance	26	26.96	27.10	27.87	27.43	27.27
Collection from sales:						
Cash sales 19.4% of B/s	7.76	7.76	9.7	9.7	11.64	12.61
Collection: 38.42% of Pms	13.06	15.37	15.37	19.21	19.21	23.05
23.28% of 2nd Pms	9.312	7.92	9.31	9.31	11.64	11.64
15.52% of 3rd PMs	6.83	6.21	5.28	6.21	6.21	7.76
int-Business	—	—	2	—	—	2
Govt. Bond	—	—	0.11	0.13	0.14	0.16
Sales	—	20	—	—	—	—
(a) Total	62.96	84.22	68.87	72.43	76.27	84.49
Payments-Pm (1 m lag)	24	16	7	20	20	25
- Mis exps (1 m lag)	5	6	6	6	7	7
-wages & salary (1/2 m lag)	7	7	9	9	10	113
½ of PM	6	7	7	9	9	10
(b) Total	42	36	39	44	46	53
(c) Gross balance	20.96	44.22	29.87	28.43	30.27	31.49
(d) Borrowing	6	—	—	—	—	—
(e) Refund of borrowing with interest	—	6.12	—	—	—	—
(f) Inv. in govt. bond	—	15	2	1	3	4
(g) Net cash balance	26.96	27.10	27.87	27.43	27.27	27.49

Note-2:

For July minimum balance	25,00,000
Less: Present balance	20,96,000
	4,04,000

 Borrowing should be arranged in the multiple of 2 lakhs = 6 lakhs. The borrowing should be arranged should be arranged from the day 1 of the month.

For Assessment year 48.22

Less: Borrowing	6
Int. 6 $(1.1)^2$ (approx)	0.12
@ 1% p.m. –6,000	
Int. [A $(1+i)^n$-A]	_____
	42.10
Less: Minimum for investment	27
Fund for investment	15.10

investment in Govt. bonds 15,00,000

The loans/borrowing at the 1st salary of the month of short falls & will be repaid in the last date of the subsequent month when the closing balance of cash is among hence a minimum interest period is 2 months.

Illustration

The 1st January cash balance of the Jay Company is Rs. 5,000 . Sales for the first four months of the year are expected to be as follows: January, Rs. 65,000; February, Rs. 54,000; March, Rs. 66,000; and April, Rs. 63,000.

On January1, uncollected amounts for November and December of the previous year, are Rs. 13,500 and Rs. 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% un-collectible.

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

Calculate :

(i) Expected cash collections during February

(ii) Expected cash balance, February1

(iii) Expected cash balance, February 28.

Solution

Working note-1

Sales	100	
Less: Cash sales	55	1st month
Debtors	45	

Collection 30% in next month	30	2nd month following sales
	15	
Less: in 2 months	13	3rd month following sales
Bad debt	2	

Cash budget

	Jan	Feb	March	April
Opening cash balance	5,000	27,550	—	—
Collection:				
Cash sales @ 55%	35,750	29,700	36,300	34,650
Collection pm @ 30% of sales	26,100	19,500	16,200	19,800
Coll. of 2nd Pm @ 13% of sales	11,700	11,310	8,450	7,020
Total (a)	78,550	88,060		
Payments:				
-purchase of material 1 months	10,000	12,500	16,500	13,000
-Mix expense	41,000	41,000		
Total B	51,000	53,500		
Net cash Balance (A-B)	27,550	34,560		

Illustration

The following is the Sales Budget of a company engaged in manufacturing and marketing certain consumer products (in 3 lines), their markets being Eastern and Western Zones.

Rs. in lakhs

Product	Eastern		Western		Total	
	Units	Rs.	Units	Rs.	Units	Rs.
A	30,000	15.00	16,000	8.00	46,000	23.00
B	10,000	6.00	15,000	9.00	25,000	15.00
C	4,000	3.20	6,000	4.80	10,000	8.00
		24.20	21.80	46.00		

NO changes are expected in the inventory levels. The following are the unit standard cost details for the 3 products :–

	A	B	C
	Rs.	Rs.	Rs.
Direct Materials			
Material X @ Rs. 6 per kg.	12	24	18
Material Y @ Rs. 4 per kg	8	—	4
Direct Labour:			
Rs. 4 per hour	12	16	20
Factory Overheads:			
Variable @ Re. 1.00 per Std. Hr.	3	4	5
Fixed @ Rs. 2.00 per Std. Hr.	6	8	10

Variable Overheads comprise Indirect Material, Indirect Labour and Indirect Expenses in the ratio of 50 : 25 : 25.

Fixed Factory overheads stated above are based on the following Product Mix:–

Product A	20,000 units
Product B	15,000 units
Product C	10,000 units

The mix of fixed factory overheads consists of Indirect material, Indirect Labour and Indirect Expenses in the ratio of 30 : 30 : 40.

Price of Material X is expected to increase by Re. 0.20 per kg. in the budget period. There will be 2% inefficiency (i.e. 2% wastage allowance) in case of Direct Materials. A 3% increase in productivity of direct labour is expected. No other variances in direct costs are expected. Therese variances and any other variances in indirect items have to be built into the Budgets.

The selling and Distribution cost budget for the two zones are as follows :–

	Eastern	Western
Zonal Manager's Control		
Commission	10% on Std. gross Profit	10% Std. gross Profit
	Rs.	Rs.
Travelling	40,000	35,000

Advertising	15,000	12,000
Office Fixed expenses:		
Salaries	20,000	20,000
Perquisites	2,000	2,000
Depreciation	5,000	4,000
Insurance	1,000	1,000

The head office selling and distribution expenses are: Advertising and Sales Promotion Rs. 70,000; Salaries Rs. 42,000; Stationary Postage etc. Rs. 5,000; Depreciation Rs. 5,000; insurance Rs. 1,000. Head Office Administrative expenses are Rs. 2,00,000 and this should be met out of gross profit. The average rate of Tax is 40%.

You are required to prepare the Budgeted Income Statement for the Company.

Solution

Budgeted Income Statement for the period …

Product	Rs.		Rs.
Sales: A	23,00,000		
B	15,00,000		
C	8,00,000	(A)	46,00,000
Less: Cost of Goods Sold :			
Direct Materials : X	14,03,928		
(see note 1)	4,16,160		18,20,088
Direct Labour :			
(see note 2)			11,17,440
Factory Overhead :			
Variable : Indirect Material	1,44,400		
(see note 3)			
Indirect Labour	72,000		
Indirect Expenses	72,000		2,88,000
Fixed : Indirect Material			
(see note 4)	1,02,000		
Indirect Labour	1,02,000		
Indirect Expenses	1,36,000		3,40,000

Total Factory Cost of Sales			(B)	35,65,528
Gross Profit (A–B)			(C)	10,34,472
Less : Head Office Expenses :				
Administration	2,00,000			
Selling & Distribution	1,23,000			3,23,000
Selling, Distribution and other Fixed Expense of the Two Zones :				
Commission (Note 5)	84,400			
Travelling Expenses	75,000			
Advertising	27,000			
Office Expenses	18,000			
Salaries & Perks	44,000			
Depreciation	9,000			
Insurance	2,000			2,59,400
Total Adm. & Selling Expenses			(D)	5,82,400
Net Profit (C–D)			(E)	4,50,072
Less Tax @ 40%				1,80,829
Profit After Tax				2,71,243

Working Notes :

(1) Calculation of Direct Material Cost :

Product		Material X		Material Y
		Kgs.		Kgs.
A	46,000 × 2	92,000	46,000 × 2	92,000
B	25,000 × 4	1,00,000		—
C	10,000 × 3	30,000	10,000 × 1	10,000
Total material required as per standard		2,22,000		1,02,000
Add 2% wastage allowance (assumed to be based on output)		4,440		2,040
Total Material Requirement		2,26,440		1,04,040
Material Cost Price per kg.Rs.		6.20	Rs.	4
Total material Cost Rs.		14,03,928		4,16,160

(2) Calculation of Direct Labour Cost :

Product		Hrs.
A	46,000 × 3 hrs.	1,38,000
B	25,000 × 4 hrs.	1,00,000
C	10,000 × 5 hrs.	50,000
		2,88,000
Less : Saving of 3% due to efficiency		8,640
Hours to be paid for		2,79,360
Total Direct Labour Cost (2,79,360 @ Rs. 4/- per hour)		Rs.11,17,440

(3) Calculation of Variable Factory Overheads :

Product	Rs.
A 46,000 units @ Rs. 3 per unit	1,38,000
B 25,000 units @ Rs. 4 per unit	1,00,000
C 10,000 units @ Rs. 5 per unit	50,000
	2,88,000

(Indirect Material Cost Rs. 1,44,000 :
Indirect Labour Cost Rs. 72,000; and
Indirect Expenses Rs. 72,000—
in the ratio of 50 : 25 : 25 respectively)

(4) Calculation of Fixed Factory Overheads:

Product	
A 20,000 units @ Rs. 6 per unit	1,20,000
B 15,000 units @ Rs. 8 per unit-	1,20,000
C 10,000 units @ Rs. 10 per unit	1,00,000
	3,40,000

(Indirect Material Cost Rs. 1,02,000;
Indirect Labour Cost Rs. 1,02,000; and
Indirect Expenses Rs. 1,36,000—
in the ratio of 30 : 30 : 40 respectively)

(5) Calculation of Commission of the 2 Zones:

Standard Gross Profit per unit:

				Eastern	Western
				Rs.	Rs.
(Selling price – Std. cost price)	A 50 – 41	=	9	50 – 41	9
	B 60 – 52	=	8	60 – 51	8
	C 80 – 57	=	23	80 – 57	23
Std. Gross Profit for Zones:	A 30,000 × 9	=	2,70,000	16,000 × 9	=1,44,000
	B 10,000 × 8	=	80,000	15,000 × 8	=1,20,000
	C 4,000 × 23	=	92,000	6,000 × 23	= 1,38,000
Total Gross Profit			4,42,000		4,02,000
10% of the above			44,200		40,200

Total Rs. 84,400

Illustration

S. G. Ltd. manufactures two products A and B. The summarised Balance Sheet of the company as at 30th September, 1988 is as under :–

	Rs.	Rs.
Share Capital	12,00,000	
Retained Income	96,000	12,96,000
Represented by:–		
Fixed Assets	1?,00,000	
Provision for Depreciation	3,00,000	9,00,000
Inventories:–		
Raw materials	1,14,000	
Finished goods	2,40,000	
		3,54,000
Debtors		90,000
Bank/cash		60,000
		14,04,000
Less: Creditors	48,000	
Provision for taxation	60,000	
		1,08,000
		12,96,000

The following information has been furnished to you for the preparation of the budget for the year ending 30th September, 1989 :–

(i) Sales forecast :–

Product A 24,000 units at Rs. 30 per unit.

Product B 15,000 units at Rs. 40 per unit.

(ii) Raw materials :–

	Products	
	A	B
Material X @ Rs. 3 per kg.	2 kgs.	4 kgs.
Material Y @ Re. 1 per kg.	1 kg.	2 kgs.

(iii) Direct Labour :–

Dep. P : 2 Hrs. @ Re. 1 per hour for A.

1 Hr. @ Rs. 2 per hour for B.

Dep. Q: 1 Hr. @ Rs. 3 per hour for A

1 Hr. @ Rs. 3 per hour for B.

(iv) Overheads :–

	Dept. P	Dept. Q
	Rs.	Rs.
Fixed overheads per annum :–		
Depreciation	48,000	12,000
Others	96,000	30,000
Variable overheads per hour	0.50	1.50

(v) Inventories :–

(a) Raw materials :

Opening stock

X	36,000 kgs.
Y	6,000 kgs.

Closing stock

X	48,000 kgs.
Y	12,000 kgs.

(b) Finished goods :

Opening stock	
A	600 units
B	6,000 units
Closing stock	
A	6,600 units
B	3,000 units

(vi) Selling, Distribution and Administration expenses are estimated at Rs. 1,80,900 per annum.

(vii) The cost of raw material purchases, direct wages, factory overheads, selling, distribution and administration overheads of the year will be met in full in cash during the year. The estimated position of debtors and creditors as on 30th September, 1989 is Rs. 1,50,000 and Rs. 48,000 respectively. Income tax provision standing at the beginning of the year will be paid during the year. Rate of income tax is 50%. An equipment purchased at Rs. 1,20,000 will be paid during the year.

You are required to prepare for the year ending 30th September, 1989:–

a) Cost of goods sold budget

b) Cash budget

c) Projected Balance Sheet as at 30th September, 1989 in the same format as given in the question.

The detailed working for each of the above should be shown.

Solution

Working Notes:

1. Production Budget (Units)

	A	B	Total
Sales	24,000	15,000	
Add : Closing Stock	6,600	3,000	
Total	30,600	18,000	
Less : Opening Stock	600	6,000	
Production	30,000	12,000	

2.	**Direct Material Cost**	A	B	Total
		Rs.	Rs.	Rs.
	Material X @ Rs. 3 per kg.	2 kgs 6	4 kgs. 12	
	Material Y @ Rs. 1 per kg	1 kg 1	2 kgs. 2	
	Material cost per unit	7	14	
	Production (units)	30,000	12,000	
	Direct Material Cost (Rs.)	2,10,000	1,68,000	3,78,000

3.	**Direct Labour Cost**	A	B	Total
		Rs.	Rs.	Rs.
	Dept. P : 2 hrs. @ Re. 1 per hr. for A	2		
	1 hr. @ Rs. 2 per hr. for B		2	
	Dept. Q : 1 hr. @ Rs. 3 per hr. for A	3		
	1 hr. @ Rs. 3 per hr. for B	3	Total	5.00
	Production (units)	30,000	12,000	
	Direct labour Cost (Rs.)	1,50,000	60,000	2,10,000

4.	**Direct Labour Hours**	**Dept. P**	**Dept. Q**
	A: P 30,000 × 2 hrs. Q 30,000 × 1 hr.	60,000	30,000
	B: P 12,000 × 1 hrs. Q 12,000 × 1 hr.	12,000	12,000
		72,000	42,000

5.	**Overhead Recovery Rate**	**Dept. P**	**Dept. Q**
	Fixed Overheads:	Rs.	Rs.
	Depreciation	48,000	12,000
	Others	96,000	30,000
	Total	1,44,000	42,000
	Direct Labour Hours	72,000	42,000
	Fixed Overhead rate per hr.	2.00	1.00
	Variable Overhead rate per hr.	0.50	1.50
	Total Overhead rate per hr.	2.50	2.50

6.	**Overhead Expenses**	**Dept P**	**Dept Q**	**Total**
		Rs.	Rs.	Rs.
	Fixed Other than Depreciation	96,000	30,000	
	Variable 72,000 × Re. 0.50	36,000		
	42,000 × Rs. 1.50		63,000	
	Total	1,32,000	93,000	225,000
	Depreciation	48,000	12,000	60,000
	Total Overheads	1,80,000	1,05,000	285,000

7.	**Cost Sheet**	**Products**	
		A	B
		Rs.	Rs.
	Direct material per unit	7.00	14.00
	Direct wages per unit	5.00	5.00
	Overhead P per unit	5.00	2.50
	Q per unit 2.50	2.50	
	Total cost per unit	19.50	24.00
	Production 30,000	12,000	
	Total cost	5,85,000	2,88,000

8.	**Sales**		Rs.
	A	24,000 × Rs. 30	7,20,000
	B	15,000 × Rs. 40	6,00,000
		Total	13,20,000

9.	**Debtors**	Rs.
	Opening Balance	90,000
	Sales	13,20,000
	Total	14,10,000
	Closing Balance	1,50,000
	Cash Receipts	12,60,000

10. Raw Material

Products	Material X Kg.	Material Y Kg.	X (kgs.)	Y (kgs.)	Total Rs.
A 30,000 units	2	1	60,000	30,000	
B 12,000 units	4	2	48,000	24,000	
			1,08,000	54,000	
Closing Stock			48,000	12,000	
Total			1,56,000	66,000	
Opening Stock			36,000	6,000	
Material to be purchased			1,20,000	60,000	
Purchase price per ???			Rs. 3	Rs. 1	
Purchase value (Rs.)			3,60,000	60,000	4,20,000

11.

Creditors	Rs.
Opening Balance	48,000
Purchases	4,20,000
Total	4,68,000
Closing Balance	48,000
Paid	4,20,000

12. Inventories as on 30-9,1989

Raw material :X 48,000 × Rs. 3 = 1,44,000

Y 12,000 × Re. 1 = 12,000 — 1,56,000

Finished Goods : A 6,600 × Rs. 19.50 = 1,28,700

B 3,000 × Rs. 24.00 = 72,000 — 2,00,700

(a) Cost of Goods Sold Budget

	Rs.
Direct Materials (Note 2)	3,78,000
Direct Wages (Note 3)	2,10,000
Overheads (Note 6)	2,85,000
Total	8,73,000
Add : Op. Stock (Balance Sheet)	2,40,000

	Total	11,13,000
	Less: Closing Stock (Note 12)	2,00,700
	Cost of Goods sold	9,12,300

(b) Cash Budget

	Rs.
Opening Balance (Balance Sheet)	60,000
Receipts (Note 9)	12,60,000
Total receipts (A)	13,20,000
Payments :	
Creditors (Note 11)	4,20,000
Direct Wages (Note 3)	2,10,000
Overheads (Note 6)	2,25,000
Selling, Distribution and Administration Expenses,	1,80,900
Income Tax	60,000
Capital Expenditure	1,20,000
Total Payments (B)	12,15,900
Closing Balance (A – B)	1,04,100

(c) Projected Balance Sheet as at 30th September, 1989:

	Rs.	Rs.
Share Capital	12,00,000	
Retained Income*	2,09,400	14,09,4000
Represented by :–		
Fixed Assets	12,00,000	
Additions	1,20,000	
	13,20,000	
Provision for Depreciation	3,60,000	9,60,000
Inventories :–		
Raw Materials	1,56,000	
Finished Goods	2,00,700	3,56,700
Debtors		1,50,000

Bank/Cash		1,04,100
		15,70,800
Less : Creditors	48,000	
Provision for taxation	1,13,4000	1,61,400
		14,09,400

*** Retained Income:**	**Rs.**
Sales (Note 8)	13,20,000
Less: Cost of Goods Sold	9,12,300
Gross Profit	4,07,700
Less : Selling Dist. & Admn. Expenses	1,80,900
Profit before tax	2,26,800
Less Provisions for tax (50%)	1,13,400
Profit after tax	1,13,400
Add : Opening balance	96,000
Total retained income	2,09,400

5.7 ZERO BASE BUDGETING

ZBB is defined as 'a method of budgeting which requires each cost element to be specifically justified, as though the activities to which the budget relates were being undertaken for the first time. Without approval, the budget allowance is zero'.

Zero – base budgeting is so called because it requires each budget to be prepared and justified from zero, instead of simple using last year's budget as a base. Incremental level of expenditure on each activity are evaluated according to the resulting incremental benefits. Available resources are then allocated where they can be used most effectively.

Zero based budgeting is a decision oriented approach .In Zero Based budgeting no reference is made to previous level expenditure. Zero based budgeting is completely indifferent to whether total budget is increasing or decreasing. CIMA has defined it *"as a method of budgeting whereby all activities are revaluated each time a budget is set.*

5.7.1 Characteristics of Zero-base budgeting:

1. Manager of a decision unit has to completely justify why there should be at all any budget allotment for his decision unit. This justification is to be made a fresh without making reference to previous level of spending in his department.

2 Activities are identified in decision packages.

3 Decision packages are ranked in order of priority.

4 Packages are evaluated by systematic analysis.

5 under this approach there exist a frank relationship between superior and subordinates. Management agrees to fund for a specified service and manager decision of the decision unit clearly accepts to deliver the service.

6 Decision packages are linked with corporate objectives, which are clearly laid down.

7 Available resources are directed towards alternatives in order of priority to ensure optimum results.

5.7.2 Traditional Budgeting vs Zero- based budgeting. Following are the points of difference between traditional budgeting and zero based budgeting:

1. Traditional budgeting is accounting oriented. Main stress happens to be on previous level of expenditure. Zero-based budgeting makes a decision oriented approach. It is very rational in nature and requires all programmes, old and new, to compete for scarce resources.

2. In traditional budgeting, first reference is made to past level of spending and then demand for inflation and new programmes. In zero based budgeting a decision unit is broken into understandable decision packages, which are ranked according to importance to enable to top management to focus attention to only on decision packages, which enjoy priority to others.

3. In tradition budgeting, some managers deliberately inflate their budget request so that after the cuts they still get what they want. In zero-base budgeting, a rationale analysis of budget proposals is attempted. The managers, who unnecessarily try to inflate the budget request, are likely to be caught and exposed. Management accords its approval only to a carefully devised result-oriented package.

4. Traditional budgeting is not as clear and as responsive as zero base budgeting is.

5. In traditional budgeting. Its for top management to decide why a particular amount should be spent on a particular decision unit. In Zero-base budgeting, this responsibility is shifted from top management to the manager of decision unit.

6. Traditional budgeting makes a routine approach. Zero-base budgeting makes a very straightforward approach and immediately spotlights the decision packages enjoying priority over others.

5.7.3 Process of Zero-base Budgeting:

The process of zero-base budgeting involves the following steps:

1. Determination of a set of objectives is one of pre-requisites and essential step in the direction of ZBB technique.

2. Deciding about the extent to which the technique of ZBB is to be applied whether in all areas of organizations' activities or only in a few selected areas on trial basis.

3. Identify those areas where decisions are required to be taken.
4. Developing decision packages and ranking them in order of performance.
5. Preparation of budget that is translating decision packages into practicable units/items and allocating financial/resources.

In real terms the Zero base budgeting is simply an extension of the cost, benefit, analysis method to the area of corporate planning and budgeting. It, however, provides a number of advantages to the organizational efficiency and effectiveness.

5.7.4 Advantages of Zero-base budgeting:

The advantages of zero-base budgeting are as follows:

1. It provides a **systematic approach** for the evaluation of different activities and rank them in order of preference for the allocation of scarce resources.
2. It ensures that the various functions undertaken by the organization are critical for the achievement of its objectives and are being **performed** in the best possible way.
3. It provides an opportunity to the management to allocate resources for various activities only after having a thorough **cost-benefit-analysis**. The chances of arbitrary cuts and enhancement are thus avoided.
4. The areas of wasteful expenditure can be easily **identified and eliminated.**
5. **Departmental budgets** are closely linked with corporation objectives.
6. The technique can also be used for the introduction and implementation of the system of 'management by objective.' Thus, it cannot only be used for fulfillment of the objectives of traditional budgeting but it can also be used for a variety of other purposes.

5.7.5 Zero base budgeting s superior to traditional budgeting

- Zero base budgeting s superior to traditional budgeting in the following manner :
- It provides a systematic approach for evaluation of different activities.
- It ensure that the function undertaken are critical for the achievement of the objectives.
- It provides an opportunity for management to allocate resources to various activities after a through – cost benefit analysis.
- It helps in the identification of wasteful expenditure and then their elimination. If facilitates the close linkage of departmental budgets with corporate objectives
- It helps in the introduction of a system of Management by Objectives.

5.7.6 Disadvantage of ZBB:

1. The work involves in the creation of decision-making and their subsequent ranking has to be made on the basis of new data. This process is very tedious to management.
2. The activity selected for the purpose of ZBB are on the basis of the traditional functional departments. So the consideration scheme may not be implemented properly.

5.8 PERFORMANCE BUDGETING (PB)

Performance Budgeting provide a meaningful relationship between estimated inputs and expected outputs as an integral part of the budgeting system. 'A performance budget is one which presents the purposes and objectives for which funds are required, the costs of the programmes proposed for achieving those objectives, and quantities data measuring the accomplishments and work performed under each programme. Thus PB is a technique of presenting budgets for costs and revenues in terms of functions. Programmes and activities are correlating the physical and financial aspect of the individual items comprising the budget.

5.8.1 Traditional budgeting vs. Performance budgeting

1. The traditional budgeting (TB) gives more emphasis on the financial aspect than the physical aspects or performance. PB aims at establishing a relationship between the inputs and the outputs.
2. Traditional budgets are generally prepared with the main basis towards the objects or items of expenditure i.e. it highlights the items of expenditure, namely, salaries, stores and materials, rates rents and taxes and so on. In the PB latter the emphasis is more on the functions of the organisation, the programmes to discharge these function and the activities which will be involved in undertaking these programmes.

Steps in Performance Budgeting :

According to the Administrative Reforms Commission (ARC) the following steps are the basic ones in PB :

(a) establishing a meaningful functional programme and activity classification of government operations ;

(b) bring the system of accounting and financial management in accord with this classification

(c) evolving suitable norms, yardsticks, work units of performance and units costs, wherever possible under each programme and activity for their reporting and evaluation.

The Report of the ARC use the following terms in an integrated sequence :

Function ⟶ Programme ⟶ Activity ⟶ Project

The team 'function' is used in the sense of 'objective'. For achieving objectives 'programmes' will have to be evolved. In respect of time horizon, it is essentially a replacement of traditional annual fiscal budgeting by a more output-oriented, but still an annual, exercise.

For an enterprise that wants to adopt PB, it is thus imperative that :

(a) the objectives of the enterprise are spelt out in concrete terms.

(b) the objectives are then translated into specific functions, programmes, activities and tasks for different levels of management within the realities of fiscal; constraints ;

(c) realistic and acceptable norms, yardsticks or standards and performance indicators should be evolved and expressed in quantifiable physical units.

(d) a style of management based upon decentralised responsibility structure should be adopted, and

(e) an accounting and reporting system should be developed to facilities monitoring, analysis and review of actual performance in relation to budgets.

Performance Reporting at various levels of management:

Report: A major part of the management account's job consists of preparing reports to provide information for purposes of control and planning:

The important consideration in drawing up of reports and determining their scope are the following:

Significance	:	Are the facts in the reports reliable? Does it either called for action or demonstrate the effect of action? It is material enough.
Timeliness	:	How late can the information be and still be of use? What is the earliest moment at which it could be used if it were available? How frequently is it required.
Accuracy	:	How small should be an inaccuracy which does not alter the significance of he information?
Appropriateness	:	Is the recipient the right person to take any action that is needed? Is there any other information which is required to support the information to anyone else jointly interested?
Discrimination	:	Will anything be lost by omitting the item? Will any of the items gain from the omission ? Is the responsibility for suppressing the item acceptable?
Presentation	:	Is the report clear and unbiased? Is the form of it is suitable to the subject? Is the form of it suitable to the recipient?

The following are certain types of reports which are to be prepared and submitted to management regularly at predetermined time interval:-

1. **Top management:** (Including Board of Directors and financial managers)
   - i) Balance Sheet
   - ii) Profit & Loss Statement
   - iii) Position of stocks
   - iv) Disposition of funds or working capital;
   - v) Capital expenditure & forward commitments together with progress of projects in hands;
   - vi) Cash-flow statements;
   - vii) Sales, production, and other appropriate statistics.

2. Sales Management:
    1. Actual sales compared with budgeted sales to measure performance by:
        a) Products,
        b) Territories
        c) Individual salesmen, and
        d) Customers.
    2. Standard profit and loss by product:
        a) For fixing selling prices, and
        b) To Concentrate on sales of most profitable products.
    3. Selling expenses in relation to budget and sales value analyzed by:
        a) Products,
        b) Territories
        c) Individual salesmen, and
        d) Customers.
    4. Bad debts and accounts which are slow and difficult in collection.
    5. Status reports on new or doubtful customers.

3. Production Management:

i) To Buyer: Price variations on purchases analysed by commodities.

ii) To Foreman:

a) Operational efficiency for individual operators duly summarized as departmental average;

b) Labour utilization report and causes of lost time and controllable time;

c) Indirect shop expenses against the standard allowed; and

d) Scrap report.

iii) To Works Managers:

a) Departmental operating statement;

b) General works operating statements (Expenses relating to all works expenses not directly allocable or controllable by departments);

c) Plant utilization report;

d) Department Scrap report; and

e) Material usage report.

4. Special Reports:

Theses reports may be prepared at the request of general management or at the initiative of the management accountant. The necessity for them may, in some cases, arise on account of the need for more detailed information on matters of interest first revealed; by the routine, reports. These reports may range over a very wide area. Some of the matters in respect of which such reports may be required can be:

i) Taxation legislation and its effect on profits.

ii) Estimates of the earning capacity of a new project.

iii) Break-even analysis

iv) Replacement of capital equipment.

v) Special pricing analysis

vi) Make or buy certain components

vii) Statement of surplus available for payment of bonus under the labour appellate tribunal formula.

5.9 BUDGET RATIO

These ratios provide information about the performance level, i.e., the extent of deviation of actual performance from the budgeted performance and whether the actual performance is favourable or unfavorable. If the ratio is 100% or more, the performance is considered as favourable and if ratios is less than 100% the performance is considered as unfavourable.

The following ratios are usually used by the management to measure development from budget.

Capacity usage ratio: This relationship between the budgeted number of working hours and the maximum possible number of working hours in a budget period.

Standard capacity employed ratio: this ratio indicates the extent to which facilities were actually utilized during the budget period.

Level of activity ratio: This may be defined as the number of standard hours equivalent to work produced expressed as a percentage of the budget of standard hours.

Efficiency ratio: this ratio may be defined as standard hours equivalent of work produced expressed as a percentage of the actual hours spent in producing the work.

Calendar ratio: This ratio may be defined as the relationship between the number of working days in a period and the number of working das in the relative budget period.

Budget Ratios :

1. Efficiency Ratio = (Standard hours ÷ Actual hours) × 100

2. Activity Ratio = (Standard hours ÷ Budgeted hours) × 100

3. Calendar Ratio = (Available working days ÷ budgeted working days) × 100
4. Standard Capacity Usage Ratio = (Budgeted hours ÷ Max. possible hours in the budgeted period) × 100
5. Actual Capacity Usage Ratio = (Actual hours worked ÷ Maximum possible working hours in a period) × 100
6. Actual Usage of Budgeted Capacity Ratio = (Actual working hours ÷ Budgeted hours) × 100

Illustration

Following data is available for T.T.D and Co:

Standard working hours	8 hours per day of 5 days per week
Maximum capacity	50 employees
Actual working	40 employees
Actual hours expected to be worked per four week	6,400 hours
Std. hours expected to be earned per four weeks	8,000 hours
Actual hours worked in the four week period	6,000 hours
Standard hours earned in the four week period	7,000 hours.

The related period is of 4 weeks. In this period there was a one special day holiday due to national event. Calculate the following ratios :

(1) Efficiency Ratio, (2) Activity Ratio, (3) Calendar Ratio, (4) Standard Capacity Usage Ratio, (5) Actual Capacity Usage Ratio. (6) Actual Usage of Budgeted Capacity Ratio.

Solution

Maximum capacity in a budget period

= 50 employees × 8 hrs.×5 days×4 weeks

= 8,000 hrs.

Budgeted hours

40 employees ×8 hrs.×5 days×4 weeks

= 6,400 hrs.

Actual hrs. = 6,000 hrs. (from the sum)

Standard hrs. for actual output = 7,000 hrs.

Budget no. of days = 20 days = 20 days (4 weeks ´5 days)

Actual no. of days = 20 – 1 = 19 days

1. Efficiency ratio = $\frac{\text{Standard hrs}}{\text{Actual hrs.}}$ ×100 = {(7,000÷6,000)×100} = 116.67%
2. Activity ratio = {(7,000÷6,400)×100} = 109.375%
3. Calendar Ratio = (Available working days ÷ budgeted working days) × 100
   = {(19÷20)×100} = 95%
4. Standard Capacity Usage Ratio =
   (Budgeted hours ÷ Max. possible hours in the budgeted period) × 100
   = {(6,400÷8,000)×100} = 80%
5. Actual Capacity Usage Ratio =
   (Actual hours worked ÷ Maximum possible working hours in a period) × 100
   = {(6,000÷8,000)×100} = 75%
6. Actual Usage of Budgeted Capacity Ratio =
   (Actual working hours ÷ Budgeted hours) × 100
   = {(6,000÷6,400)×100} = 93.75%

5.10 BUDGET VARIANCE

It is computed on the basis of fixed budgeting system where budget variance = budgeted cost – actual cost here. The items are classified first in respective responsibility category & then the differences are computed individually & totally.

Illustration

Nicefit Manufactures ready made garments by a simple process of cutting the clothes in various shapes and then sewing the corresponding pieces together to form the finished product.

The sewing Department and the cutting department report to the production manager who along with Engineering Manager reports to the Director-Manufacturing. The Sales Manager, Publicity Manager and the Credit Manger report to the Director-Marketing, who along with Direct-Manufacturing reports to the Managing Director of the company.

The Accounts Department reports the following for the last quarter of 1983:

Budgeted Rs.	Actual	Rs.
Bad debt Losses	5,000	3,000
Cloth used	31,000	36,000
Advertising	4,000	4,000
Audit fees	7,500	7,500

Credit reports	1,200	1,050
Sales representative Travelling expenses	9,000	10,200
Sales commission	7,000	7,000
Cutting Labour	6,000	6,600
Thread	500	450
Sewing Labour	17,000	18,400
Credit Deptt. Salaries	8,000	8,000
Cutting utilities	800	700
Sewing utilities	900	950
Director Marketing salaries & Admn. Exp.	20,000	21,400
Production engineering expenses	13,000	12,200
Sales management office expenses	16,000	15,700
Production Manger office expenses	18,000	17,000
Direct Mfg. Salaries & Admn. Expenses	21,000	20,100

Using the above data, prepare responsibility Accounting reports for the director marketing, the Director-manufacturing and the production manager.

Answer

Responsibility Accounting Reports

For the production manager

Cutting Department	Budgeted Rs.	Actual Rs.	Variance Rs.
Cloth	31,000	36,000	5,000 (A)
Cutting Labour	6,000	6,600	600 (A)
Cutting utilises	800	700	100 (A)
Total cutting Deptt. (A)	37,800	43,300	5,700 (A)
Sewing Department:			
Thread	500	450	50 (F)
Sewing Labour	17,000	18,400	1,400 (A)
Sewing utilities	900	950	50(F)
Total Sewing Dept. (B)	18,400	19,800	1,400 (A)
Total (A + B)	56,200	63,100	6,900 (A)

For the director-Manufacturing			
Production Department *	56,200	63,100	6,900 (A)
Production engineering expenses	13,000	12,200	800 (F)
Production manager-office expenses	18,000	17,000	1,000 (F)
Total	87,200	92,300	5,100 (A)
(* As per responsibility accounting report for the production manager)			
for the Direct-Marketing			
Sales representative:			
Travelling expenses	9,000	10,200	1,200 (A)
Sales commission	7,000	7,000	--
Total (A)	16,000	17,200	1,200 (A)
Sales Management:			
Office expenses	16,000	15,700	300 (F)
Advertising	4,000	4,000	—
Total (B)	20,000	19,700	300 (F)
Credit Department:			
Salaries	8,000	8,000	
Credit reports	1,200	1,050	150 (F)
Bad debt Losses	5,000	3,000	2,000 (F)
Total	14,200	12,050	2,150 (F)
Total (A + B + C)	50,200	48,950	1,250 (F)

Note: 'F' denotes favourable variance while 'A' denotes adverse variance.

Illustration

The following data relate to a company which had a profit approved for selling 5000 units per month at an average selling price of Rs. 10 per unit and budgeted variable cost of production was Rs. 4 per unit and fixed costs were budgeted at Rs. 20,000. Planned income being Rs. 10,000 per month. Because of shortage of raw—materials the plant could produce only 4000 units and the cost of production was increased by 0.50 per unit. Consequently Rs. 1.00 raised the selling price per unit. To modify production processes in order to meet materials shortage, the Company incurred an expenditure of Rs. 1,000 in Research and Development. Set out a Performance budget and a summary report there.

Solution

Performance Budget

		Original Plan Rs.	Revised Budgeted Rs.	Actual Result Rs.	Variance Rs.
Revenue (5,000×10)		50,000			
(4,000×10)		40,000			
(4,000×11)				44,000	4,000 (F)
Variable	(5,000×4)	20,000			
Costs (4,000×4)		16,000			
(4,000×4.5)				18,000	2,000 (A)
Contribution	(5,000×4)	30,000			
(4,000×6)		24,000			
(4,000×6.5)			26,000	2,000 (F)	
Fixed costs		20,000	20,000	21,000	1,000 (A)
Net Profit		10,000	4,000	5,000	1,000 (F)

Summary Report on Profit Plan

Planned Income (from Project plan)		Rs. 10,000
Activity variance (lost contribution margin due to shortage of materials)	(6,000)	
Selling price variance (increased Selling price of Re. 1/- per unit)		4,000
Variance cost variance (increased production Costs at 0.50 per unit)	(2,000)	
Fixed cost variance (new research programme to Develop raw materials and processes)	(1,000)	
Actual income (from income statement)		5,000

SUMMARY

- Three types of planning :
  - ✓ Budgetory
  - ✓ Strategic
  - ✓ Operational
- Budget Ratios:
  - ✓ Efficiency Ratio = (Standard hours ÷Actual hours) × 100
  - ✓ Activity Ratio = (Standard hours ÷ Budgeted hours) × 100
  - ✓ Calendar Ratio = (Available working days ÷ budgeted working days) × 100
  - ✓ Standard Capacity Usage Ratio = (Budgeted hours ÷ Max. possible hours in the budgeted period) × 100
  - ✓ Actual Capacity Usage Ratio = (Actual hours worked ÷Maximum possible working hours in a period) × 100
  - ✓ Actual Usage of Budgeted Capacity Ratio = (Actual working hours ÷ Budgeted hours) × 100
- Key requirements in the design of a budgetary planning and control process
  - ✓ Co-ordination
  - ✓ Participative Budgeting
  - ✓ Informtaion
  - ✓ Identification of the principal budget factor
  - ✓ How to identify the principal budget factor
  1. In single product
  2. In multi product
- Zero Based budgeting is defined as *a method of budgeting whereby all activities are revaluated each time a budget is set.*

SELF-EXAMINATION QUESTIONS

1. Difference between strategic, budgetary and operational planning.
2. What do you understand by 'principal budget factor'. How is it identified.
   a. in case of single product organisation.
   b. in case of multi product organisation.

3. What is zero base budgeting. What are its advantages and disadvantages.
4. What do you mean by performance budgeting. How is it different from traditional budgeting. Discuss.
5. What are budget ratios. List six such ratios which you are aware of.