
UNIT 6 LABOUR

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6.0 OBJECTIVES

After studying this unit you should be able to:

- explain the **meaning** of direct **and** indirect labour
- explain the concepts of time keeping and time booking
- **describe** the system of payroll accounting
- explain the concepts of idle time and overtime and describe their treatment in cost accounts
- discuss the implications of **labour turnover**
- **describe** the **methods** of wage payment
- explain **various** incentive plans used to reward labour efficiency.

6.1 INTRODUCTION

Labour is an essential factor of **production**. They make contribution to the organisation **through** their time and energy. **This needs** adequate compensation to labour by way of wages for the work done **by** them which constitutes another important element of cost. In this unit you **will** learn **about** the concepts of direct and

indirect labour, the **method** of their time keeping and time booking, the **methods** of wage payment and payroll accounting, and the treatment of idle time and overtime in cost accounts. You will also learn about a few important incentive plans that are commonly used by industrial establishments.

6.2 DIRECT AND INDIRECT LABOUR

Labour is an essential factor of production. It is a **human** resource and participates in the process of production. The **remuneration** paid to labour is a significant item of cost. For costing purposes, **labour** may be classified into two broad categories (i) direct labour, and (ii) indirect labour.

6.2.1 Direct Labour

Direct labour refers to labour engaged directly in the manufacture of a product or in a particular job. Some examples of direct labour are:

- a) Labour engaged in converting raw materials into manufactured articles
- b) Labour employed on a construction job
- c) Helper attending a machine-operator
- d) Compositors working in a printing press

The main features of direct labour are as follows:

- 1) It can be easily identified and allocated to cost units.
- 2) It varies directly with the volume of output.
- 3) It can be easily ascertained and controlled because of its close proximity to the output.

Wages paid to direct labour are termed as 'direct labour cost' and forms part of prime cost.

6.2.2 Indirect Labour

There are a number of workers who are not engaged directly in the manufacture of a product or in a particular job. They may be employed as supervisors, repair workmen, inspectors, security men, foreman, cleaners, messengers, timekeepers, etc. or engaged in purchasing, stores, factory office or maintenance job. Wages and salaries paid to such staff are treated as 'indirect labour cost' which is included in overheads.

The importance of distinction between direct labour and indirect labour lies in the fact that whereas direct labour can be identified with, and charged directly to, the product or a job, the indirect labour is not so identifiable and is, therefore, included in overheads which may be allocated to different products on some suitable basis.

6.3 TIME KEEPING

Time Keeping is a system of recording the time of arrival and departure of workers. This provides a record of total time spent by the workers in the factory. **It is on the basis of this record that their total entitlement for work under time rate system is determined.**

The process of time keeping is to maintain an accurate record of time of every worker when he is in and out of the factory i.e., a record of when he reports for duty and when he leaves his duty. This also provides a basis for distinction between regular time and overtime.

6.3.1 Forms of Time Keeping

Normally, two sets of time records are maintained in a factory:

- i) **Attendance** Time showing the total number of hours spent by each worker in the factory. This record is used for determining the amount of wages payable to the workers.
- ii) Job Time showing the number of hours spent on the jobs. This record helps in computing the labour cost for each job, product or process.

6.3.2 Purpose of Time Keeping

The purpose of time keeping is to provide information for

- 1) Preparation of pay rolls;
- 2) Calculation of labour cost per unit of operation, production or service;
- 3) Allocation of overhead cost based on wages or labour hours;
- 4) Attendance record of workers to meet statutory requirements;
- 5) Control of labour cost;
- 6) Determination of productivity of labour in the factory; and
- 7) Promotion of punctuality and discipline among the workers.

6.3.3 Methods of Time Keeping

Attendance of workers in a factory on the basis of the time of their arrival and departure may be recorded through either, or a combination, of the following three methods:

Method of Time Keeping	Main Features
1 HANDWRITTEN METHOD	<ol style="list-style-type: none"> a) Names of the workers are entered in an attendance register maintained for the purpose of time keeping. b) They are required to sign the register at the time of their arrival for duties in the factory and at the time they leave. c) Some time after the actual time scheduled for reporting for duties, workers are marked 'late' or 'absent' as the case may be. d) Though this is a simple and common method, the possibilities of fake attendance or fraudulent marking of attendance may not be ruled out under this method.
2 CHECK, TOKEN OR DISC METHOD	<ol style="list-style-type: none"> a) Each worker is allotted an identification or token number. b) At the time of arrival, the worker collects his token from the board and drops it in a box kept for the purpose at the factory gate. c) After 10 or 15 minutes of the normal arrival time, the box is removed by the Time Keeper or it is substituted by another box. d) The late comers are required to report directly to the Time Keeper. e) On the basis of the tokens dropped in the box, necessary entries regarding attendance of the workers are made in the Time Book which is passed on to the Wages Section for payroll accounting. f) The method needs proper supervision to ensure that a worker does not put in the box more than one token.
3 MECHANICAL OR CLOCK METHOD	<ol style="list-style-type: none"> a) Each worker is given a Clock Card which is placed in racks at the factory gate. b) The time of arrival and departure of a worker is recorded with the help of dock recorders. c) When workers report for duties, they take out their cards from rack one, get them punched by the Time Recording Clock maintained at the factory gate, and place them in rack two. d) When they leave, they again get their cards punched with the time of departure and put them back in rack one. e) It is a quick, safe, scientific, reliable and accurate method of time keeping.

6.3.4 Importance of Time Keeping

Time keeping is a significant aspect of labour accounting. The process of time keeping

- 1) Ensures punctuality of workers and identifies late-comers;
- 2) Improve discipline among workers;
- 3) Boosts morale of personnel;
- 4) Promotes a productive environment in the organisation;
- 5) Checks idle time and increases output by adherence to production schedules;
- 6) Helps recording of time for statistical purposes;
- 7) Maintains a record of work performed by the people; and
- 8) Assists computation of labour cost per unit or per process of production.

Check Your Progress A

1) What is Direct Labour?

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2) What is Indirect Labour?

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3) What are the objects of Time Keeping?

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4) State whether each of the following statements is True or False.

- i) A fast worker is more profitable than a quality conscious worker.
- ii) A good system of wage payment is one which ensures maximum possible payment to workers.
- iii) Commission to salesmen is a direct labour cost.
- iv) Labour cost control must be such which can ensure efficiency and satisfaction.
- v) There is no need for keeping a record of time for those who get monthly salary.

6.4 TIME BOOKING

Under time keeping methods we simply record the time spent by a worker in the factory. Such record does not show how that time was utilized by him i.e., how much time he spent on the jobs entrusted to him and for how much time he remained idle. Hence, in addition to recording his time of arrival and departure, it is also necessary to record the time he spent on each job, order or process. The system of maintaining such record is termed as 'time booking'. In other words, time booking is a method of recording time devoted by a worker on a job, order or process.

6.4.1 Purpose of Time Booking

The major purposes of time booking are:

- 1) To assist in ascertaining the cost of a job, order or process performed;

- 2) To check wastage of time by the worker after he enters the factory;
- 3) To assess the cost of idle time; and
- 4) To ensure that the time spent by the worker in the factory has been properly utilised.

6.4.2 Methods of Time Booking

The system of time booking may be maintained either manually or mechanically. In relatively bigger organisations, where a large number of labourers work, or where there is a wide variety of jobs being performed every day, Time Recording Clocks may be used to enter the time of starting and finishing each job separately on the Job Cards.

The other methods of booking the time taken on separate jobs are:

- 1) **Daily Time Sheets:** This is a record for each worker separately in respect of time spent by him on each job during the day. Daily Time Sheets" (also known as time cards) include details relating to:
 - a) Name of the worker,
 - b) Work Order Number,
 - c) Description of Work,
 - d) Quantity Produced,
 - e) Time of starting and finishing the job,
 - f) Total hours consumed on the job,
 - g) Rate of Wages per hour, and
 - h) Amount of wages.
- 2) **Weekly Time Sheets:** It contains similar details of the record of time for all jobs done by the workers during a complete week.
- 3) **Job Cards:** It is prepared for each operation to be carried out on every order. This helps in computing the exact time taken by a worker on a particular job, operation or service. A job card authorises a worker to carry out the specified assignment. It also assists in having a correct allocation of wages to jobs, operations or processes.

As a matter of fact, time card (daily time sheet) and job card are similar in nature and content. Both help in ascertaining how each worker utilised his time while he was in the factory and enable the organisation to reconcile the time spent by the worker on each job with the time paid as per the attendance record. **Another advantage of these cards is that they provide complete record as to the labour content of each job so that the computation of labour cost is greatly facilitated.** The difference between these two types of cards lies only in the form in which the analysis of worker's time is recorded. In time card the analysis of time is made with reference to each worker whereas in job card, the analysis of time is made with reference to each job. Figures 6.1 and 6.2 should help you to understand this difference.

Figure 6.1 Daily Time Sheet

DAVAR CO. LTD. Daily Time Sheet								
Name of worker						No.		
Token No. of worker						Date		
Department								
Job or work order No.	Work done	Description of work done	Time		Total Hours		Cost	
			On	Off	Ordinary	Overtime	Rate	Amount
Total hours						Worker		
Total cost						Foreman		

DAVAR CO. LTD. Job Card for Each Job									
Job order No.		Completed on at							
Job description		Started on at							
Day	Token No. of worker	Name of worker	Deptt.	Work done	Time		Total Time	Wage Rate	Amt.
					On	Off			
Checked and verified			Total time for the job			Total Amount for the job			
Deptt. Foremen									

6.5 PAYROLL ACCOUNTING

Each organisation has to maintain a system of payroll accounting for the purpose of computing wages payable to workers. This involves (i) the calculation of gross wages and net amount payable to the employees after making all deductions, and (ii) the preparation of wages sheet (also known as payroll) according to the specified method of wage payment.

6.5.1 Computation of Wages

The **gross wages** payable to each worker are computed with the help of Time Sheets, Job Cards, or Piece Work Cards. Under the time wage system, the amount of gross wages is calculated by taking into account the total number of hours worked multiplied by the hourly rate of wage payment, plus overtime premium. Under the piece wage system, the amount of gross wages is calculated by taking into account the number of units produced multiplied by the rate per unit.

For calculating the **net wages** payable to each worker, following deductions are usually made from the gross wages:

- i) Fines and deductions for absence from duty
- ii) Damages or loss of goods or money
- iii) House rent and cost of other amenities or services
- iv) Recovery of loans or advances
- v) Income tax
- vi) Provident fund
- vii) Welfare fund
- viii) Co-operative society dues
- ix) Life insurance premium
- x) Contribution to employees' state insurance
- xi) Deductions on the basis of court order or the directive of some other authority.

6.5.2 Preparation of wages Sheet

The wages sheet (payroll) is a consolidated statement showing the gross wages, deductions and net wages payable to workers. It is prepared at periodical intervals according to the time of wage payment. Large concerns, these days make use of computers for preparing the wages sheets.

A wages sheet should generally contain the following information:

- 1) Name of the Department
- 2) Period—Month/Week
- 3) Worker's Number
- 4) Name of the Worker
- 5) Number of Hours worked
- 6) Normal Hours of Duty
- 7) Overtime Hours
- 8) Bonus Earned
- 9) Rate of Payment
- 10) Gross Wages plus Allowances
- 11) Deductions
- 12) Net Wages Payable

Normally, payrolls or wages sheets are prepared separately for each department. But they must be checked properly to minimise the possibilities of wrong payments either deliberately or inadvertently. Detection and prevention of both errors and frauds, including the checking for dummy workers in wages sheets, need attention to ensure accuracy in wage payments.

6.5.3 Purposes of Payroll Accounting

Payroll Accounting system helps the organisation in

- 1) Providing relevant data for cost control;
- 2) Determining the net amount of wages payable to each employee individually;
- 3) Knowing the total amount of wages payable by the organisation weekly, fortnightly or monthly for the different departments of the unit;
- 4) Minimising the possibilities of errors and frauds in wage payments; and
- 5) Issuing pay slips to every worker showing in detail the amount of gross wages and the deductions made therefrom for ascertaining the net amount payable for the period.

6.6 IDLE TIME

When workers are paid on the basis of time, there may be some difference between the time paid for and the time actually spent on production. This difference is known as 'idle time'. In other words, idle time is a period or duration for which workers have been paid but they have not worked towards production in the factory. This is a wastage which needs some effective control so that payment of wages without actual work may be minimised.

Idle time may be of two categories: (i) normal idle time due to unavoidable factors in the factory, and (ii) abnormal idle time caused by avoidable factors.

6.6.1 Causes of Idle Time

The reasons for idle time may be multiple. Some of the examples of situations which cause idle time are presented as follows.

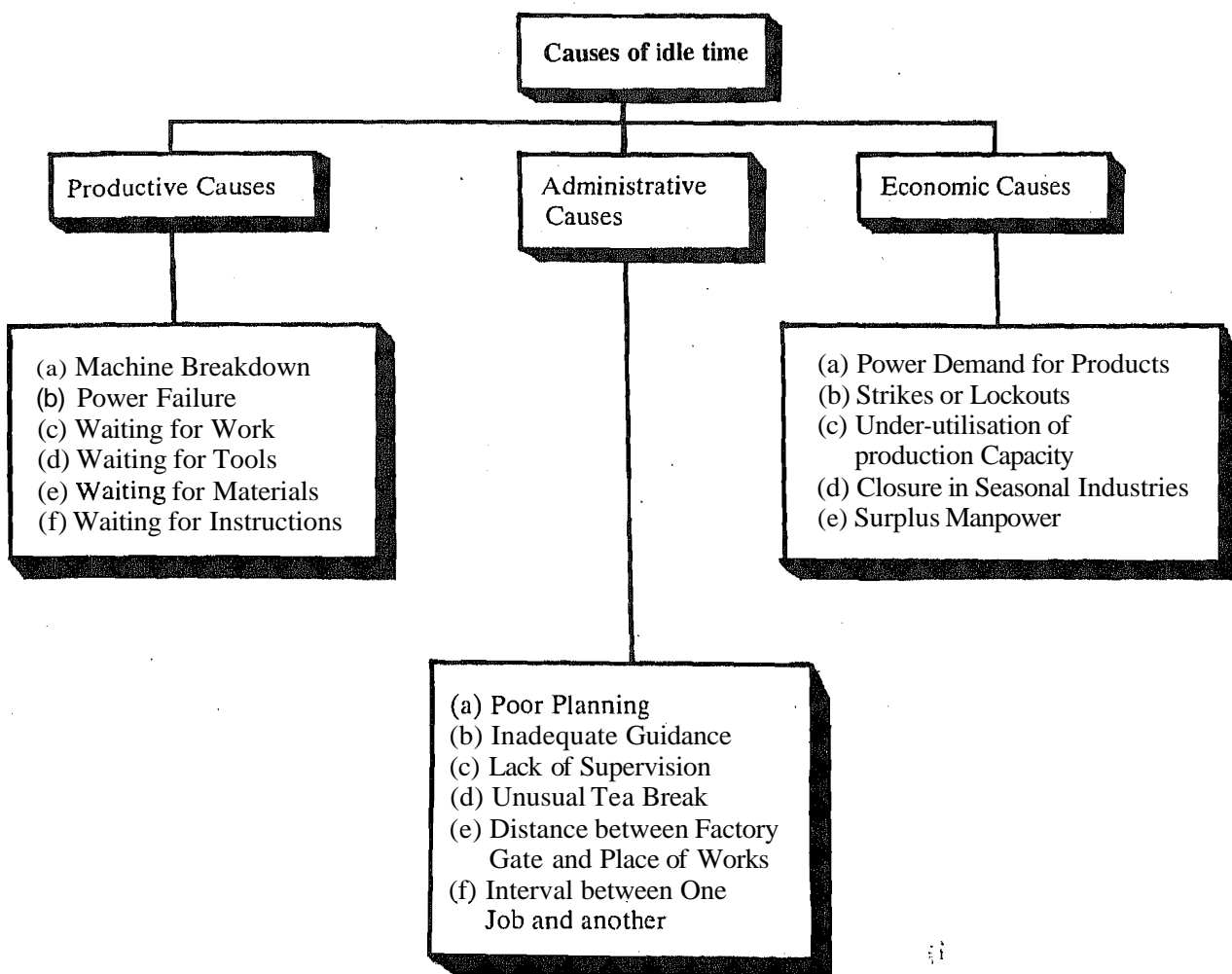


Figure 6.3 Causes of Idle Time

6.6.2 Control of Idle Time

In order to reduce losses owing to idle time, the following measures may be adopted:

- 1) Fix responsibilities for various activities associated with production and for the control of idle time occurring at different stages in the organisation.
- 2) Introduce a preventive maintenance system for machines with periodical check-ups.
- 3) Maintain adequate stock of raw materials and a proper system of stores control to ensure continuity of production.
- 4) Use planning, give clear instructions in advance, define job participation by workers and apply proper supervision at every stage of performance.
- 5) Obtain periodical reports on idle time, identify the-causes of time loss and exercise quick corrective action.

6.6.3 Treatment of Idle Time Cost

Cost of idle time should be treated in the following manner:

Item	Charged to
1) Cost of Normal and Controllable Idle Time	FACTORY OVERHEAD
2) Cost of Normal but Uncontrollable Idle Time	JOBS (by inflating the rates of wages)
3) Cost of Abnormal and Uncontrollable or Unavoidable Idle Time	COSTING PROFIT AND LOSS ACCOUNT

Check Your Progress B

1) State the purpose of Time Booking.

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2) What do you mean by Payroll Accounting?

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3) Give four examples of items determining the wages payable to a worker.

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4) Distinguish between Active Time and Idle Time.

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5) Give five major causes of Idle Time.

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6) State whether each of the following statements is True or False.

- i) Wages Sheet containing dummy names on the payroll, but fully passed for payment, form part of labour cost.
- ii) Idle time is a deliberate wastage of time.
- iii) One of the techniques of minimising idle time is to keep the tools and materials ready for use..
- iv) The difference between gross wages and net wages represents deductions.
- v) Job Cards can be used for the purpose of time booking.

6.7 OVERTIME

When workers have to work beyond their normal duty hours, the additional period is treated as 'Overtime'. Overtime is an extra time over and above the scheduled hours of work or beyond the usual working hours. When workers are detained for overtime, they are normally paid at double the usual rate for extra hours.

Overtime may be considered useful under the following circumstances:

- 1) When the urgency of work demands an immediate completion of the job for the customer;
- 2) When the organisation desires to make up any shortfall in production;
- 3) When the company needs extra production to meet additional market demand or seasonal rush; or
- 4) When the number of workers is less than the requirement.

Since overtime involves an extra cost, it needs proper authorisation and control. One has to ensure that the system is not put to misuse. This will expect a careful scrutiny of (i) the justification for overtime; and (ii) the workers who are required to be retained for this purpose.

Treatment of Overtime Cost: Additional payment for overtime should be charged as follows:

Nature of Overtime	Charged to
1) Due to customers' request to complete a job within a specified period	JOB directly
2) Due to general pressure of work	GENERAL OVERHEAD
3) Due to delayed schedule	DEPARTMENT
4) Due to loss of time for unavoidable reasons	COSTING PROFIT AND LOSS ACCOUNT
5) Due to seasonal rush and peak load	PRIME COST

6.8 LABOUR TURNOVER

Workers often change their jobs for better prospects and better environment. In any organisation, **therefore**, there is a continuous flow of labour—some old ones are leaving and new ones are joining. Though it is a normal process, the frequent changes in the composition of labour affect the continuity as well as the productivity of the organisation. This, in turn, affects the labour cost. Hence, every effort is made to reduce the labour turnover, which is **defined as the rate of change in the labour force of an organisation during a particular period**. It can be measured by the following two methods:

$$\frac{\text{Number of Workers Left}}{\text{Average Number of workers on Roll}} \quad \text{Separation Method}$$

OR

$$\frac{\text{Number of Workers Replaced}}{\text{Average Number of workers on Roll}} \quad \text{Replacement Method}$$

6.8.1 Causes of Labour Turnover

Factors which cause labour turnover can be grouped into two categories: (i) avoidable causes, and (ii) unavoidable causes.

Examples of **avoidable causes** of labour turnover are as follows:

- 1) Workers and jobs not matching with each other
- 2) **Low** wages
- 3) Bad **working** conditions
- 4) Poor treatment by employers
- 5) Lack of job satisfaction
- 6) Absence of **planning** and foresight in management
- 7) Psychological **reasons** Like nature, behaviour, habit of change, jumping preferences, militant attitude, etc.
- 8) Poor relationship with fellow workers
- 9) Unfavourable or odd hours of work
- 10) Bad relationship with supervisors
- 11) Poor promotion policy
- 12) Inadequate protection against accidents
- 13) Discrimination between one worker and another
- 14) Lack of proper incentives
- 15) Absence of a sound recruitment and training policy
- 16) Lack of recreational and **medical facilities**

Among the **unavoidable causes** of labour turnover are the following:

- 1) Opportunities of better prospects
- 2) Sickness
- 3) Accident or disability
- 4) Change of place of stay
- 5) Marriage
- 6) Death
- 7) Retirement
- 8) Problems of accommodation and transport
- 9) Resignation
- 10) Retrenchment
- 11) Domestic problems and family responsibilities
- 12) Seasonal nature of the business
- 13) Shortage of raw materials, power supply, market demand, etc.

6.8.2 Effects of Labour Turnover

A high rate of labour turnover means that workers often leave and do not stay for long. Old workers generally possess more experience than new workers. Replacement of workers, therefore, declines the overall efficiency. Moreover, the engagement of new workers needs recruitment and training which involves additional cost. This gap between the old and the new labour often brings down both the quality and quantity of output. **Undue labour turnover, thus, involves an additional cost to the organisation** owing to:

- 1) Cost of recruitment of substitute workers;
- 2) Cost of training new workers;
- 3) Cost of decline in production due to reduced efficiency and disturbed schedule;
- 4) Loss on Account of defective work and increased wastage in production;

- 5) Breakage of tools and equipment due to mishandling by new workers; and
- 6) Wastage of materials in handling by new workers.

The overall effect of labour turnover, therefore, is a higher cost of production and lower profitability.

6.8.3 Control of Labour Turnover

Since labour turnover is a loss to the organisation, every effort is required to minimise its frequency. Some of the measures to minimise labour turnover are:

- 1) Institute proper machinery to attend promptly to the grievances of workers;
- 2) Create congenial working conditions in the factory;
- 3) Provide adequate welfare facilities to the workers;
- 4) Improve employees' morale;
- 5) Give opportunities for workers' participation in management;
- 6) Follow a suitable policy of promotion and transfers; and
- 7) Develop a sound system of recruitment and training.

Control of labour turnover, therefore, needs proper job satisfaction to workers so that they continue to serve the organisation in stead of taking a decision to change.

Check Your Progress C

1) What is Overtime?

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2) Why do we need to control overtime?

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3) What do you mean by Labour Turnover?

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4) Judge whether the following are GOOD or BAD as a trend in a manufacturing enterprise:

- i) Rising Wages with stable output
- ii) High labour turnover
- iii) Declining market prices but without any change in labour cost
- iv) Workers' decision to work extra for compensating the loss due to strike
- v) Workers work independently without any supervision
- vi) Substantial bonus is declared by the company to the workers

6.9 METHODS OF WAGE PAYMENT

One of the basic incentives to job satisfaction and labour efficiency is adequate wages. Unless people get proper remuneration for their services, they are not

encouraged to participate actively in discharging their duties or in completing their assignment effectively.

There are various methods of remunerating labour. Each **method** has its merits and demerits, However, a good method of wage payment should

- 1) Guarantee a minimum wage for the time devoted by the worker,
- 2) Easy to understand and simple to operate,
- 3) Balance the interests of both the employers and the employee,
- 4) Allow proper supervision and control over the quality of output,
- 5) Maintain a reasonable distinction between efficient workers and inefficient workers in terms of their wages,
- 6) Reward efficiency by additional payment for time saved or target exceeded,
- 7) Avoid disparity of pay in similar nature and level of operations, and
- 8) Incorporate flexibility to adjust with the changing circumstances of the business

It is to incorporate all such considerations that two main methods of wage payment have been developed. These are:

- 1 Time Wage System
- 2 Piece Wage System

Let us now discuss the characteristics, merits and demerits of these two systems -separately.

6.9.1 Time Wage System

This is the most popular method of payment to workers. Under this system, wages are based on the amount of time spent by a worker inside the factory. He is paid at a specified rate per unit of time (for example, per hour, per day, per week or per month) for his services rendered to the organisation.

Calculation of wages under this method of remuneration takes into account: (i) the time for which the workers are engaged on the job and, (ii) the rate per unit of time fixed for payment. For example, if a worker gets Rs.5 per hour, he works for 8 hours per day and has been present for duties on 25 days during the month, his wage for the month on the basis of Time Rate will be: $Rs\ 5 \times 8 \times 25 = Rs.\ 1,000$.

The main **advantages** of Time Rate method of wage payment are:

- 1) It offers a fixed minimum wage to the worker for a defined period of time.
- 2) It simplifies calculation of the payable amount of wages.
- 3) It makes a stable and secure return to the workers.
- 4) It encourages the workers to do their jobs with utmost quality, care and efficiency and in the best possible manner.
- 5) It promotes a sense of equality and unity among the workers.
- 6) It is an economical system to the organisation in respect of wage administration, material use, plant operation and quality control.

The major **disadvantages** or limitations of Time method of wage payment are:

- 1) It ignores the individual quality and quantity of output.
- 2) It reduces personal initiative to work faster.
- 3) It treats both efficient and inefficient workers at par.
- 4) It increases the cost of labour per unit because of the tendency to consume more time in finishing a job.
- 5) It needs a close supervision to ensure continuity of operations.

6.9.2 Piece Wage System

When workers are paid on the basis of their **output**, irrespective of the time **consumed** in **completing** the work, it is termed as Piece Wage. The rate of payment under this method is related to the quantity of work done i.e. per unit of output, per article, per job or per **commodity**. Under this system, the total units produced or **manufactured** by the worker during a given period form the basis of computation of his **wages** for the period. For example, if the rate of labour per chair is **Rs.50** and the worker has completed 10 chairs during a week, his wages for the week on the basis of piece rate will **be**:

$$\text{Rs. } 50 \times 10 = \text{Rs. } 500$$

The major **advantages** of Piece Wages system are that it

- 1) places greater reliance on the merit and efficiency of workers;
- 2) induces **workers** to be efficient, produce **more** and earn higher wages;
- 3) **facilitates** prompt computation of cost for quotations; and
- 4) maintains plant and equipment properly so as to avoid disruption in work.

The main demerits or **disadvantages** of the piece wage system of wage payment are that it:

- 1) ignores quality of products in an effort to **maximise** output;
- 2) kills a long-term interest and continuity of engagement in the organisation of the workers;
- 3) treats workers as **insecure** and uncertain in terms of wages payable during different periods;
- 4) creates dissatisfaction **among** workers owing to disparity in wages;
- 5) needs a continuous supervision over the **quality** of operations;
- 6) enhances wastage of materials, wear and tear of machines and absenteeism of workers; and
- 7) declines the level of labour discipline.

6.9.3 Balance of Debt System

In order to retain the merits of both Time Wage and Piece Wage systems, as also to **minimise** their demerits, a balanced system of wage payment is recommended in developing units. This is known as 'Balance of Debt system' which is a compromise between the Time Wage and Piece Wage.

The two **main features** of Balance of Debt system are:

- i) **Minimum Payment:** The worker is paid on the basis of a piece rate per unit of output. In case, due to some unavoidable factors, the earnings of a worker at piece rate are less than his earnings at time rate, he is paid on time basis.
- ii) **Recoupment:** The difference between the time rate and piece wage paid to the worker is treated as an extra payment to be recouped from his subsequent earnings when his piece rate wages are more than time rate wages. This grants protection to workers to earn a minimum wage on the basis of time rate even if he completes a job in longer hours due to some unavoidable reasons. The recovery of extra payment too may not be felt inconvenient by the worker when his piece wage earnings exceed the time rate wages.

Under the Balance of Debt System, therefore, a worker gets **fixed** wages for the time he works, plus extra payment for his performance beyond a certain prescribed limit of output.

4.10 INCENTIVE PLANS

You have learnt that wages are paid to labour on time rate or piece rate basis. But **individual performance** must also receive attention in a structure of wages so that an

appreciable difference is maintained between a good worker, an average worker and a bad worker. Not only that, efficiency of labour usually saves time and cost. Hence, it would be justified that a portion of the benefit which goes to the organisation through labour efficiency is also shared by those who generate this benefit. **Incentive plans are used to compensate the efficiency of labour for his extra efforts used in minimising the time or cost.** It may be in the form of a bonus or premium. Incentive plans are devised to compensate the worker through an additional payment over and above their guaranteed wages. The plans also aim at keeping efficient workers satisfied with their employment. The **standard time** and standard performance are determined in advance so as to judge individual contribution. In case there is a gain on time saved, it is distributed between the employers and workers.

The **main features** of most incentive plans are:

- 1) The standard time and standard performance are determined in advance.
- 2) **Time** wages are guaranteed to all workers.
- 3) Efficient workers are given incentive by **way of bonus** for the time saved.
- 4) Wages per hour increase but not in the same proportion as the output.
- 5) Labour cost per unit of output decreases. The employer also shares the benefit of efficiency which induces him to improve the methods and equipment.

Some of the prominent plans are discussed here in detail.

6.10.1 Halsey Premium Plan

The main features of Halsey Premium Plan as a method of incentive to efficient workers are as follows:

- 1) Standard time and standard work are prescribed in advance.
- 2) Workers are paid for the actual time they take to complete the job as per the time rate.
- 3) If a worker completes the job in less than the pre-determined standard time, he is given a bonus for the time saved. This is in addition to his wages for the actual time spent on the job.
- 4) A bonus equal to 50 per cent of the wages of time saved is paid to the worker as a reward to his good work.
- 5) Workers who fail to reach the prescribed standard get the time wage.

The rate of bonus under the Halsey Premium Plan may vary according to the policies of the organisation. In some cases, it may be $\frac{1}{3}$ of the wages of time saved,

It is a simple system to operate. It guarantees the hourly wages to workers for the actual time. But fixation of standard time is a difficult process. Workers however, feel that they do not get the full benefit for the time saved under this system.

Method of Computation

Total Earnings of the worker = (Time Rate \times Time Taken) +
 $\frac{1}{2} \times$ Time Saved \times Time Rate

or, $(T \times R) + \frac{1}{2} \times (S - T) \times R$

Where S = Standard Time

T = Actual Time Taken

R = Rate of Wages per Hour

Now, if the Standard Time for a Job = 8 hours

Actual Time = 6 hours

Rate per hour = Rs. 7

Then, Total Earnings of the worker are

$$= (6 \times 7) + \frac{1}{2} \times 2 \times 7$$

$$= \text{Rs. 49}$$

This includes time wages of Rs.42 and Rs.7 as bonus for time saved. It is to be noted here that the worker gets Rs. 49 for 6 hours, which comes to Rs. 8.16 per hour.

6.10.2 Rowan Premium Plan

Rowan Premium Plan is similar to Halsey Plan. The main features of Rowan Plan are:

- 1) Workers are paid for the actual time taken by them in completing the job on the basis of **time** rate.
- 2) They are paid a bonus for the time saved i.e., for the difference between the standard time and actual time.
- 3) Bonus under this method is calculated as a proportion of the time wages as time saved bears to the standard time.

Method of Computation

$$\text{Bonus} = T \times R \times \frac{\text{Time saved}}{S}$$

$$\text{Total Earnings} = (T \times R) + (T \times R \times \frac{S - T}{S})$$

$$\text{In the above example, it will be} = (6 \times 7) + (6 \times 7) \times \frac{8 - 6}{8} \\ = \text{Rs. } 52.50$$

This includes time wages of Rs. 42 and Rs. 10.50 as bonus for time saved. Since the worker gets Rs. 52.50 for 6 hours, it amounts to Rs.8.75 per hour.

The merits and demerits of Rowan Plan are similar to those of Halsey Plan. An additional advantage under Rowan Plan is that the worker is not induced to rush through the work because if time saved is more than 50 per cent of the standard time, the bonus will decrease. However, the calculation of bonus is complicated.

Look at Illustration 1 and study how total wages of a worker are calculated under different plans.

Illustration 1

The standard time allowed to complete a job is 100 hours and the hourly rate of wage payment is Rs. 5. The actual time taken by the worker to complete the job is 80 hours.

Calculate the total wages of the worker on the basis of

- i) Time Rate
- ii) Piece Rate
- iii) Halsey Plan
- iv) Rowan Plan

Also compare the effective earnings per hour under the above methods.

Solution

i) **Time Rate**

$$\text{Total Wages} = 80 \times 5 = \text{Rs. } 400$$

ii) **Piece Wage**

$$\text{Total Wages} = 100 \times 5 = \text{Rs. } 500$$

iii) **Halsey Plan**

$$\text{Basic Wages for 80 hours at Rs. 5 per hour} = \text{Rs. } 400$$

$$\text{Bonus } (\frac{1}{2} \text{ of Basic Wages for Time Saved}) = 20 \times 5 \times \frac{1}{2} = \text{Rs. } 50$$

$$\text{Total Wages} = \text{Rs. } 450$$

iv) **Rowan Plan**

$$\text{Basic Wages for 80 hours at Rs. 5 per hour} = \text{Rs. } 400$$

$$\text{Bonus for Time Saved} = \frac{20}{100} \times 80 \times 5 = \text{Rs. } 80$$

$$\text{Total Wages} = \text{Rs. } 480$$

Comparative Earnings per Hour

Time Rate = Rs. 400 ÷ 80 = Rs. 5

Piece Wage = Rs. 500 ÷ 80 = Rs. 6.25

Halsey Plan = Rs 450 ÷ 80 = Rs. 5.62

Rowan Plan = Rs 480 ÷ 80 = Rs. 6

6.10.3 Differential Piece Rate System

Besides Halsey and Rowan Premium Plans; there is yet another line of thought in respect of incentive methods. This system believes in payment of wages to labour on the basis of piece rates varying with the level of efficiency of workers.

Some of the exponents of differential piece rate system are:

- i) Taylor
- ii) Gantt
- iii) Emerson
- iv) Merrick

Let us now study the main features of their suggestions regarding the exact basis on which the rates of payment should be distinguished between one worker and another.

Taylor System

The main features of this system are:

- a) It offers a higher piece rate to workers beyond a defined level of output;
- b) It distinguishes between workers through two types of piece rates: (i) a lower rate for sub-standard performance (e.g. 80% of piece rate), and (ii) a higher rate for standard and above standard performance, which is much more than time wages (e.g. 120% of piece rate)
- c) It acts as an additional incentive to expert workers towards maximisation of production; and
- d) It ignores any form of guaranteed day wages.

Illustration 2

Standard Time allowed	10 units per hour
Normal Piece Rate	Rs. 5

Differential Piece Rate:

80% of Piece Rate for Output below standard

120% of Piece Rate for output at or above standard

A produces 75 units in a day of 8 hours

B produces 100 units in a day of 8 hours

Compute wages of A and B under Taylor Differential Piece Rate System.

Solution

Piece Rate will be $5 \div 10 = \text{Re. } 0.50$ per unit

Standard Output in 8 hours is $8 \times 10 = 80$ units

So A's performance is below standard and B's above standard

Earnings of A = $75 \times 0.50 \times \frac{80}{100} = \text{Rs. } 30$

Earnings of B = $100 \times 0.50 \times \frac{120}{100} = \text{Rs. } 60$

Labour Cost per unit—

A = $30 \div 75 = 0.40$ per unit

B = $60 \div 100 = 0.60$ per unit

Gantt Task Bonus Plan

This system combines the (a) Time Wage, (b) Piece Wage, and (c) Bonus Plan. It mainly follows a differential piece rate basis of remuneration with the following method of computation:

- a) Output below standard to be paid at guaranteed Time Rate

- b) Output at standard to be paid with 20 per cent of Time Rate as Bonus
- c) Output above standard to be paid at high piece rate on the entire output of the worker.

Gantt System, therefore, offers an incentive to efficient workers for increased production. It means lesser the time consumed in completing the job, higher the earnings per hour. The standard output within a specified period is **pre-determined**. Bonus is paid at the rate of 20% for 100% efficiency. Those workers who complete their job in the standard time are treated as 100 per cent efficient. They get wages for time taken plus bonus at a fixed percentage of wages. If a worker completes his job in less than the standard time, he gets wages for standard time plus bonus at a fixed percentage of wages earned (which is usually 20%). Slow workers, however, still get the **guaranteed** wage for the day.

Illustration 3

Standard Rate = Rs 5 per hour
 Standard Hours for the Job = 8 hours
 Bonus = 20% of Standard Time
 Worker A completes the work in 10 hours
 Worker B completes the work in 8 hours
 Worker C completes the work in 6 hours

Compute the earnings of A, B and C under Gantt Task Bonus Plan.

Solution

The comparative earnings per hour of the three workers will be computed as follows:

- A: Wages for 10 hours at Rs. 5 per hour = Rs. 50
- B: Wages for 8 hours at Rs. 5 per hour = Rs. 40 + 20% of 8 hours
 = 40 + 8 = Rs. 48
- C: Wages for 6 hours =
 Wages for 8 hours at Rs. 5 per hour = Rs. 40 + 20% of 8 hours = Rs. 48

A's earnings per hour = Rs. 5
 B's earnings per hour = Rs. 6
 C's earnings per hour = Rs. 8

Emerson Efficiency Scheme

The main features of this scheme are:

- a) It combines minimum day wages with the differential rate of bonus related to the level of efficiency of workers.
- b) It rewards efficiency according to the **actual** time taken in completing the job.
- c) The standard output is **pre-determined** i.e., a standard task for a unit of time or standard time for a job is fixed and then the level of efficiency of workers is determined on that basis.
- d) If a job is completed in standard time, it is treated as 100% efficiency. If it takes double time, it is 50% efficiency.
- e) Bonus is paid to workers when their level of efficiency is 66 $\frac{2}{3}$ % or more.
- f) The rate of bonus increases gradually with increase in the output; the scheme contains about 32 differentiating rates at different levels of efficiency.
- g) Those workers who fail to attain 66 $\frac{2}{3}$ % level of efficiency are paid at Time Rate.

Look at the following two tables to understand the level of efficiency and its relationship with the rates of bonus under this scheme..

STANDARD TIME: 20 hours	
Time taken to complete the job	Level of Efficiency
20 hours	100%
16 hours	125%
40 hours	50%
Level of efficiency	Bonus Rate
66 $\frac{2}{3}$ %	Guaranteed Time Rate
90%	10%
100%	20%
Above 100%	Time Wages + 20% of wages earned + wages for Time Saved
125%	Time Wages + 20% Bonus + 25% of Time Saved

Look at Illustration 4 and see how bonus and wages are calculated under the Emersion Efficiency Scheme.

Illustration 4

Standard Output: 2,000 units per day

Worker A produces 1,200 units

Worker B produces 1,600 units

Worker C produces 2,000 units

Worker D produces 2,400 units

Indicate the bonus rate for A, B, C and D under Emersion Efficiency System.

Solution

Worker	Std. Output	Production	Efficiency Level	Payment
A	2,000	1,200	60%	Wages at Time Rate
B	2,000	1,600	80%	Daily wage at Time Rate + 4% Bonus
C	2,000	2,000	100%	Time Rate for hours worked + 20% Bonus
D	2,000	2,400	120%	Day wage + 20% Bonus + 20% for Time Saved

Merrick Differential Piece Rate System

The main features of this system are as follows:

- It is a multiple piece rate system.
- All workers under this scheme are paid only on the basis of their output.
- Time Rate wages are not guaranteed to the workers; they are paid on the basis of their efficiency.
- The rates of payment under this system are:

Level of Efficiency	Payment
up to 83% of the standard	Normal Piece Rate
83% to 100%	110% of Normal Piece Rate.
Above 100%	120% of Normal Piece Rate

Illustration 5

Piece Rate—Rs 20 per unit

Standard Output—24 units per day of 8 hours

Output of A—16 units
Output of B—21 units
Output of C—25 units

Compute wages for A, B and C under Merrick Differential Rate System.

Solution

A : Efficiency = $16 \div 24 \times 100 = 67\%$
As this level is below 83%, wages = $16 \times 20 = \text{Rs.}320$

B : Efficiency = $21 \div 24 \times 100 = 87\frac{1}{2}\%$
Efficiency level is above 83% but below 100%
Wages = $21 \times 22 = \text{Rs.}462$

C : Efficiency = $25 \div 24 \times 100 = 104\%$
Efficiency level is above 100%. Rate per unit will be Rs.24
Wages = **Rs.600** (25×24)

A gets **Rs.20** per unit, B Rs.22 per unit and C Rs.24 per unit.

6.10.4 Group Bonus Scheme

This system rewards a group associated with production rather than the individual workers. The main characteristics of this system are:

- a) Bonus is paid for collective efficiency in production.
- b) Bonus is payable to a group of workers for their joint output over and above the given target.
- c) Distribution of bonus to the individual members of the group is made on some agreed basis or in specified proportions.
- d) Production is considered to be a team effort governing the efficiency of performance.
- e) It is a method of payment by results based on group productivity being shared by the workers either equally or in different specified proportions between workers of different skills.
- f) The aim is to create a team spirit for increased production and lower cost per unit through healthy competition between different groups.

This system gives an opportunity also to foremen and supervisors to share the rewards of efficiency in output and to take adequate initiative in this area.

Check Your Progress D

1) How can you determine wages under the time rate system?

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2) Why do we pay labour on piece wage basis?

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3) State the need for labour incentives through bonus and premium.

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- 4) Which one of the following alternatives should be the most advantageous choice of objective in a company?
- i) Increased production
 - ii) Minimum wages
 - iii) Effective supervision
 - iv) Extended hours of duty
 - v) Uniform rates of payment to all staff
 - vi) Fully mechanised operations
 - vii) Labour satisfaction
 - viii) Industrial peace
 - ix) Optimum efficiency
 - x) Tight control over punctuality of workers.
- 5) State whether each of the following statements in True or False.
- i) A good method of wage payment should guarantee a **minimum** wage to all workers.
 - ii) Time wage system motivates the worker to work faster.
 - iii) Under piece wage system, the worker maintains the plant and equipment properly.
 - iv) Balance debt system is a compromise between time wages and piece wages systems.
 - v) Under incentive plans wages per hour increase in the same proportion as the output.
 - vi) Rowan premium plan is more complicated than the Halsey premium plan.
 - vii) Taylor differential piece rate does not ignore guaranteed day wages.
 - viii) Gantt task bonus plan combines time wage system, piece wage system and bonus plan.

6.11 LET US SUM UP

Labour is an important element of cost. For costing purposes, labour may be classified into direct and indirect. Direct labour cost forms part of the **prime** cost while indirect labour is included in overheads.

Recording of time of arrival and departure of Recording the workers is termed as 'time keeping' for which various methods like attendance register, token or disc method, or clocks cards are used. Such record does not show how each worker's time was utilised. For this purpose a system of time booking is **maintained** with the help of time cards or job cards. Job cards help in ascertaining how each worker utilised **his** time while he was in the factory and **also** in computing the labour cost of each job or operation.

Payroll accounting refers to the system of computing net wages payable to each worker and preparing the wages **sheet** according to the specified method of wage payment. It helps in providing relevant data for cost control and **minimising** the possibilities errors and frauds.

Idle time refers to the time during which workers were not engaged on production and for which they have been paid. For costing purposes such time may be classified

into normal idle time and abnormal idle time. Wages paid for normal idle time are charged to jobs by inflating the hourly wage rates. But, the wages paid for abnormal idle time carried by un-controllable factors like machine break-down, power failure, strike etc. are charged to the Costing Profit and Loss Account. Overtime involves an extra cost because the workers are paid higher wages for such time. The additional payment for overtime should be charged to general overheads if it is done due to general pressure of work or to the job directly if it is done for completing a specific job within a specified period.

Labour turnover refers to the rate of change in the labour force during a particular period. It may be caused by some unavoidable factors like retirement, marriage, disability, etc. or by avoidable factors like poor work environment, poor labour policies, low wages, etc. Undue labour turnover involves additional cost and low profitability and should, therefore, be avoided.

There are two basic methods of wage payment viz., time wages, and piece wages. Both have their advantages and limitations. Most organisations, these days, use time wage system and provide for incentive plans to improve the productivity of labour. The prominent plans used are (i) Halsey Premium Plan (ii) Rowan Premium Plan, (iii) Differential piece rate system, and (iv) Group bonus scheme.

6.12 KEY WORDS

Balance of Debt System: A system of wage payment under which a worker is paid on the basis of piece rate subject to a minimum wage based on the time spent by him in the factory. The extra payment is recouped from his subsequent extra earnings.

Clock Card: A card given to each worker on which his time of arrival and departure is recorded with the help of clock records.

Differential Piece Rate System: A system under which piece rate varies according to the efficiency of workers.

Direct Labour: Labour directly engaged in the manufacture of a product or in a particular job.

Idle Time: Wages paid for unproductive time due to circumstances beyond the control of the workers.

Indirect Labour: Labour employed as supervisors, repair workmen, security men, etc.

Job Card: A card maintained for each Job on which the time spent by different workers on that job is recorded.

Labour Turnover: Rate of change in the labour force of an organisation during a particular period.

Overtime: Extra time spent in the factory over and above the scheduled hours of work.

Payroll: Wages sheet recording gross wages and net wages payable to each worker

Payroll Accounting: A system of computing net wages payable to each worker.

Piece wage system: A system under which wages payable to workers are based on their output.

Standard time: Pre-determined time allowed for completing a particular task.

Time Booking: Recording utilisation of worker's time on various jobs, operations etc.

Time Card: A card maintained for each worker on which the time spent by him on different jobs is recorded.

Time Keeping: Recording the time of arrival and departure of workers.

Time Wage system: A system under which wages payable to workers are based on the time spent by workers in the factory.

6.13 ANSWERS TO CHECK YOUR PROGRESS

- A 4 i) False ii) False iii) False iv) True v) False
 B 6 i) False ii) False iii) True iv) True v) True
 C 4 i) Bad ii) **Bad** iii) **Bad** iv) Good v) Bad vi) Good
 D 4 (ix)
 5 i) True ii) **False** iii) True iv) True v) False vi) True vii) False viii) **True**

6.14 TERMINAL QUESTIONS

- 1) Distinguish between Direct Labour and Indirect Labour.
- 2) Bring out the salient features of Time Keeping and Time Booking.
- 3) What do you mean by idle time? How are wages paid for idle time treated in cost accounts?
- 4) 'Overtime is an evil'. Do you agree? Give reasons and explain extra wages paid for overtime treated in cost accounts.
- 5) What is Labour Turnover? State the major causes of Labour turnover.
- 6) Name the various methods of remunerating labour and explain any one of them in detail.
- 7) What are the different methods of incentives? Discuss any one of the systems of bonus or premium which you consider as effective.
- 8) Comment on the relative utility of:
 - a) Halsey Premium Plan
 - b) Rowan Premium Plan
 - c) Differential Piece Rate System
 - d) Group Bonus Scheme.

Note: These questions will help you to understand the Unit better. Try to write answers for them. But do not submit your answers to the University. These are for your practice only.

SOME USEFUL BOOKS

- Arora, M.N. 1988. *A Text Book of Cost Accountancy*, Vikas Publishing House Pvt. Ltd.: New Delhi. (Chapter 3-8).
- Bhar, B.K. 1990. *Cost Accounting: Methods and Problems*, Academic Publishers: Calcutta. (Chapter 5-9).
- Maheshwari, S.N. and S.N. Mittal, 1990. *Cost Accounting: Theory and Problems*, Shree Mahavir Book Depot: Delhi. (Chapter 2-3).
- Nigam, B.M.L. and G.L. Sharma, 1990. *Theory and Techniques of Cost Accounting*, Himalaya Publishing House: Bombay. (Chapter 4-7).
- Owler, L.W.J. and J.L. Brown, 1984. *Wheldon's Cost Accounting*, ELBS: London. (Chapter 3-7).

ECO-10 ELEMENTS OF COSTING
Course Components

BLOCK	UNIT NO.	PRINT MATERIAL
1		Basic Concepts
	1	Nature and Scope
	2	Concept of Cost and its Ascertainment
2		Materials and Labour
	3	Procurement, Storage and Issue of Materials
	4	Inventory Control
	5	Pricing Issue of Materials
	6	Labour
3		Overheads
	7	Classification and Distribution of Overheads
	8	Absorption of Factory Overheads
	9	Treatment of other Overheads
4		Methods of Costing
	10	Unit Costing
	11	Reconciliation of Cost and Financial Accounts
	12	Job and Contract Costing
	13	Process Costing