Semester II – CMA I
Labour Costing

Dr. Mahasweta Bhattacharya

Theoritical Discussion

Labour: Labour is a human resources and effort to convert materials into finished goods. Labour can be divided as direct labour and indirect labour.

Direct Labour: Direct labour is that labour which is directly engaged in the production of goods or services and which can be conveniently allocated to the job, process or unit. According to ICMA, "Direct Labour cost is that cost which can be identified with and allocated to cost centres or cost units." For example, labour engaged in making the bricks, carpenter for making furniture etc.

Feature of direct labour:

1. Direct labour is a part of prime cost;
2. It can be attributed to finished goods;
3. Its cost can be identified with total cost of production;
4. It varies with change in output;
5. It can be controlled.

Indirect Labour: Indirect labour is that labour which is not directly engaged in the production of goods and services but which indirectly helps the direct labour engaged in production. ICMA defines indirect labour cost as "cost other than direct wages cost. For example, mechanics, supervisors, chowkidars, watchmen, sweepers, foremen etc.

Features of indirect labour:

1. It is as importance as direct labour;
2. Its cost cannot be allocated but can only be apportioned;
3. It cannot be identified with the finished product;
4. It does not vary with the change in production;
5. It cannot be controlled;

Its cost is treated as overheads.

Differences between direct labour and indirect labour:

Labour Cost:

Labour cost is a second major element of cost. Research has shown that in majority cases labour cost constitute about 40% to 50% of total cost of production. It includes monetary benefits like basic wage, DA; deferred monetary benefits like pension, gratuity; non-monetary benefits (fringe benefits) like canteen, housing; etc.

Components/ elements of Labour Cost:

Labour costs represent the various items of expenditure incurred on workers by the employer and would include the following:

Control of Labour costs:

Control of labour cost is not as easy as that materials cost. The human element in labour makes difficult the control of labour. Labour Laws in India are such that one can't dispense with the labour even if not need it for some reason. Moreover, it is a perishable commodity and can't be store like materials. Labour, once lost, cannot be recouped and is bound to increase the cost of production.

The main aim of the control over cost is to keep labour cost per unit of out as low as possible. Labour costs can be controlled by proper employment and there afterwards efficient utilization of labour force. Inefficiency of labour is also a cause of excessive materials and overhead costs. There are a number of departments in big industries which influence labour cost. The coordinated efforts of all such departments will be needed to control labour cost. These departments are:

1. Personnel Department,
2. Engineering Department,
3. Time & Motion study Department,
4. Time Keeping Department,
5. Payroll Department &
6. Cost Accounting Department.

1. Personnel Department: Personnel department is concerned with employment, transfer and discharge of employees. The department is headed by a responsible officer called Personnel Manager. The important duties of this department include recruitment, selection, training, placement, fixation of remuneration, performance appraisal. Different departments send their requisitions for placement of workers to personnel department and the department decides on the selection procedure to be followed. The department also keeps records of particulars of employees. The record is kept on a card known as Employee History Card.

Functions of this department are as follows:

(i) Recruitment and selection of workers.
(ii) Training and development of workers.
(iii) Orientation and placement of workers.
(iv) Maintenance of personnel records.

Time Study: It may be defined as the observing time required to do a particular. It relates to fixing the standard time for doing a job under given condition. It is a means to achieve economy in time.

Motion Study: It is the study of the movement of an operator or a machine. It aims at eliminating unnecessary, ill-directed and inefficient motions of an employee or machine.

Distinction between Time Study and Motion Study :

Basis	Time Study	Motion Study
1. Meaning	It is a technique which is used to measure the time taken by a worker to perform a job.	It is the technique which involved close observation of the movement of the body and limbs to perform a job.
2. Purpose	Its purpose is to determine time normally required to perform a job and a fair day's work.	Its purpose is to eliminate wasteful motions and determine the best way of doing a job.
3. Tools of study	It is conducted with the help of stopwatch.	It is conducted with the help of a movie camera.
4. Introducer	It was introduced by F.W. Taylor.	It was introduced by F.B. Gilberth.

Labour Turnover:

The change in the labour force is known as labour turnover. Thus, labour turnover refers to mobility of employees from factory to factory for getting better opportunities in terms of earning and position. It denoted the percentage changes in the labour force of an organisation.

Normal labour turnover is advantageous as it allows injection of fresh blood into the firm. But excessive turnover is not desirable because it increases cost of labour. This is because efficient and experienced workers leave the factory and new employees come and occupy their places. Naturally, the ability of such new workers is less as compared to that of the experienced workers. The desirable percentage of labour turnover is placed between 3 percent and 5 percent.

Methods of measurement of Labour turnover:

Sometimes, flux rate can be calculated in the following way, when there is recruitment for expansion:

$$\text{Flux rate} = \frac{\text{No. of separation + No. of accession}}{\text{Average no. of employees during the year}} \times 100$$

Where,

No. of Accession = No. of replacement + No. of new employment for expansion.

SPECIAL ITEMS IN LABOUR COST CONTROL:

1. IDLE TIME:

Idle time is that time for which payment made but no direct production/ benefit is obtained by the employer. Hence, there is no production during idle time. The question of the idle time arises only when the payment is made on time basis. The difference between time booked and factory gate time is known as idle time. Therefore is calculated in the following way:

Idle Time= Time keeping as per Time Card – Time booking as per Job Card.

Idle time is of two types:

(a) Normal Idle Time: Normal idle time is that time the wastage of which cannot be avoided; therefore the employer will have to bear the labour cost for this time. Reasons for normal idle time:

(i) Time taken by the workers from the factory gate to reach the spot of production.
(ii) Time leg between two consecutive works. (for finishing one & starting the next.)
(iii) Breaks allowed during the working hours. Such as tea, lunch break.
(iv) Interruption of machineries.
(v) Waiting for job, work etc,

(b) Abnormal Idle Time: It is that time the wastage of which can be avoided by taking proper precautions. Reasons:

(i) Break down of machineries,
(ii) Power failure,
(iii) Shortage of materials,
(iv) Unnecessary waiting for instruction, materials, tools etc.
(v) Strikes & lock outs.

Causes of Idle Time:

(a) Production causes:
(v) Machine break down,
(vi) Power failures,
(vii) Waiting for work,
(viii) Waiting for tools,
(ix) Waiting for materials,
(x) Waiting for instruction.

(b) Administrative causes: (due administrative decision):
(i) No reduction in labour force during depression,
(ii) Under utilization of capacity of plants.

(c) Economic causes:

(i) Seasonality of products,
(ii) Non-availability of materials,
(iii) Lack of demand,
(iv) Period of depression.

Accounting treatment of Idle Time Cost in Cost Accounts:

1. Cost of normal idle time which is uncontrollable is treated as Direct Labour Cost for each job.
2. Cost of normal idle time which can be controlled is treated as Production Overheads.
3. Cost of abnormal idle time is not treated as part of cost and hence charged to Costing Profit and Loss Account.

Control of Idle Time Cost:

To exercise as effective control over idle time , the following steps are suggested:

1. Step: Fix the standards for normal idle time such as tea break, lunch break,
2. Step: Prepare Periodic Idle Time Report by showing reasons and cost to the management.
3. Step: Compare the actual idle time with standard idle time to find out the variance.
4. Step: Investigate the variance.
5. Step: Take the necessary corrective action promptly.

2. OVERTIME:

Overtime is an extra time over and above the normal working hours. According to the Factories Act, 1949, a worker is entitled to overtime wages when he works for more than 9 hours on a day and more than 48 hours in a week. In India, overtime is to be paid at double the normal rate of wages. The additional amount paid on account of overtime is known as overtime premium.

Overtime premium = Overtime Hours x Overtime Wage Rate.

Effects of Overtime premium on productivity:

There are adverse effects of overtime on the productivity of the worker and on the cost of the production due to the following reasons:

(i) Overtime is paid at a higher/double rate;
(ii) Efficiency of the workers reduced in overtime work comparing to normal time;
(iii) Worker will adopt the habit of postponing the work to be done in overtime just to earn more wages, hence, fall in output during normal time;
(iv) Regular overtime working has an adverse effect on the health of workers;
(v) Expenses like lighting, cost of supervision, wear and tear on machinery etc. will increase disproportionately;

(vi) It may lead to discontent (dissatisfaction) among workers if overtime is not distributed properly.

Therefore, overtime work should be avoided because jobs done in overtime cost more compared to the job done during normal hours. However, overtime cannot be totally eliminated because there are some genuine reasons when there is no other alternative but to do overtime work.

Circumstances under which overtime may arise/ Causes of overtime:
And,
Accounting treatment of overtime premium:

Circumstances/ Causes	Treatment of overtime premium
1. When it is desired at customer's request to complete the work within specified time.	*It should be charged directly to the job as Direct Labour Cost.*
2. When it is required to increase the output as per general production programme.	*It should be treated as Production Overheads.*
3. When it is required to meet seasonal demand.	*It should be treated as Production Overheads.*
4. When it is required to increase the output to meet the additional market demand	*It should be treated as Production Overheads.*
5. When it is required to make up any short fall in production due to additional conditions such as flood, earthquake, breakdown of machinery etc.	*It should not be treated as part of cost and hence charged to Costing Profit and Loss Account.*

Control over Overtime Work:

Keeping in view the disadvantages of overtime work, it is necessary that proper control should be exercised in order to keep it minimum possible level. The following steps are to be taken in this regard:

1. A proper control should be exercised during normal hours to ensured that overtime is not allowed when normal output is not achieved during normal working hours.
2. A statement of overtime should be prepared by showing why, where and how much overtime is required.
3. Fix an upper limit of overtime for each category of workers.
4. Do not allow any overtime without prior sanction from competent authorities.
5. Compare the actual rate of output produced during the overtime period with the normal rate of output.
6. Periodical report on overtime along with wagesheet should submit to the top management.

3. LEAVE WITH PAY:

Leave days with pay constitute unproductive working days. According to the Factories Act, workers are entitled to annual leave with full pay for specified number of days in a year. This may include casual leave, medical leave, special leave, etc. The cost of paid leave cannot be charged to any work order or cot unit, since no work is done during this period. It is, therefore, treated as indirect labour cost and charged to overheads.

Alternatively, leave wages may be treated as direct labour cost when the wage rate is inflated (overstated). This is done by estimating in advance the amount of leave wages and spreading it over the actual number of working hours to give it an inflated hourly rate.

4. ABSENTEEISM:

METHODS OF WAGES PAYMENTS:

The two principal methods of wages payments are as follows:
1. Time Rate Wage System, and
2. Piece Rate Wage System.

1. Time Rate Wage System: Under this system wages are paid on the basis of time worked by the workers. There are different type of time rate wage system, few of them are:
(i) Flat time rate: It is the oldest methods of wage payment. Under this system, workers are paid at a flat rate on the basis of time they are worked.

Earning/ wages = Actual time worked x Time rate

(ii) High day rate: Higher rate is given to attract the efficient workers who can easily be motivated to achieve predetermined standards of efficiency which is relatively high.
(iii) Graduated time rate: Under this method wages are based on cost of living index of the workers.

Advantages of Time Rate Wage System:

1. It is easy to understand and simple to operate.
2. It provides guaranteed time wages to workers.
3. Worker can concentrate on the quality rather than the quantity.
4. There is less damage and wages of materials and tools.

Disadvantages of Time Rate Wage System:

1. It does not act as an incentive to workers.
2. It tends to increase overheads and labour cost due low production.
3. There develops a tendency to go slow during normal working hours in the hope of getting more wages by overtime.
4. High degree of supervision is required.

2. Piece Rate Wage System: Under this system wages are paid on the basis of the number of articles produced by the workers. Piece rate system can be of the following types:
(i) Straight piece rate: Under this system, each unit produced is taken as a piece. A piece rate is fixed for a unit of product produced. It can be calculated in the following way:

Earning = No. of piece produced x Piece rate.

(ii) Piece rate with guaranteed wages: Piece rate with guaranteed wages is applicable for the new and in efficient workers. They earn meagre salary instead of paying normal piece rate and this encourages the workers to improve their efficiency gradually and there afterwards reach the standard of other workers.

(iii) Differential piece rate system: Under this system, the wages of workers vary at different stages, within a certain range of output. The two system which work under this principle are:

(a) Taylor's differential piece rate system, and
(b) Merrick's differential piece rate system.

(a) **Taylor's differential piece rate system:** This system was designed by F.W. Taylor in 1880. The features of this system of wage payment are as follows:
   (i) There is no guaranteed wages.
   (ii) Standard time is fixed for each work.
   (iii) Two differential piece rates are fixed: **'Lower piece rate'** i.e. 80% of the normal piece rate for the workers produce below the standard out. **'Higher piece rate'** i.e. 120% of the normal piece rate for the workers produce standard output or more than standard output. (Some authors use 83% and 125% for lower and higher piece rate respectively.)

(b) Merrick's differential piece rate system: This method is also known as 'Multiple piece arte system'. Under this method, three grade piece rates are used instead of two as in the case of Taylor's. The features are as follows:
   (i) There is no guaranteed wages.
   (ii) Standard time is fixed for each work.
   (iii) Slabs are:
   Upto 83 1/3 % of the standard output-
   100% of ordinary piece rate.
   Above 83 1/3 % and upto 100% of the standard output -110% of ordinary piece rate.
   Above 100% of the standard output- 120% of ordinary piece rate.

Advantages of piece rate wage system:

1. It is easy to understand and simple to operate.
2. It acts as an incentive to workers to produce more to earn more.
3. It tends to reduce overhead cost and labour cost per unit.
4. It eliminates the tendency of workers to go slow as remuneration is directly linked with performance.
5. Low degree of supervision is required.

Disadvantages of piece rate wage system:

1. It does not guarantee time wage to workers and hence workers feel insecure.
2. Workers tend to increase the quantity ignoring the quality of the products.
3. There may excessive wastage and damage of materials and machine, tools.
4. The calculation of piece rate is more difficult than time rate .
5. It is usually opposed by trade union and workers.

Distinction between Time arte wage system and Piece rate wage system:

Time rate wage system	Piece rate wage system
1. Basis of payment: Workers are paid at a fixed rate per hour, per day or per month for the time devoted by them.	Workers are paid at a fixed rate per unit produced or job completed.
2.**Performance and reward:** There is no linkage between performance and reward.	The linkage between performance and reward motivates the workers to produce more.
3.**Quality:** Quality of work tends to be high.	Quality of work tends to be low.
4.**Wastage & Damage:** There are less chances of wastage materials and damage of and machinery , tools, equipments etc.	There are more chances of wastage materials and damage of and machinery , tools, equipments etc.
5.**Supervision**: Close supervision is required.	Close supervision is not required.
6.**Maintenance:** Cost of maintenance is low.	Cost of maintenance is high.
7.**Attitude of Trade Union:** Trade Unions prefer it.	Trade Unions oppose it.

7. It should provide for **prompt payment of incentives** at short intervals of time.
8. It should have **approval** of workers and trade union.
9. It should **discourage the workers** to increase spoiled work.
10. It should be **flexible** enough so as to introduce the necessary changes, if any required.

IMPORTANT TYPES OF INCENTIVE SYSTEM:

1. Halsey Premium Plan: This system was introduced by F.A. Halsey, an engineer of America in 1891. The main features of this system are as follows:
(i) Standard time is fixed for each work.
(ii) It guarantees the hourly wages to workers for the actual time taken.
(iii) Bonus is paid if the time is saved.
(iv) Bonus is equal to 50% of the time wages of time saved.

2. Rowan Plan: This incentive system was introduced by James Rowan of Scotland. Under this system bonus is also paid on the time saved.

Practical Sums

Problem No.1

Calculate the earnings of a worker from the following information:
a) Time Rate Method, b) Piece Rate Method c) Halsey Plan and d) Rowan Plan
Information given:
Standard Time – 30 hours
Time taken - 20 hours
Hourly rate of wages is Re.1 per hour plus a dearness allowance @ 50 paise per hour worked.

Solution :

a) Earnings under Time Rate Method

Wages for 20hous (time taken) @ Re.1 per hour	Rs.20
Dearness allowance for 20 hours @ 50 paise per hour	Rs.10

	Rs.30
	=====

b) Earnings under Piece Rate Method

Wages for 30hous (time allowed) @ Re.1 per hour	Rs.30
Dearness allowance for 20 hours (i.e., actual hours worked)	Rs.10

	Rs.40
	=====

c) Earnings under Halsey Plan

Wages for 20hous (i.e., actual hours worked)	
@ Re.1 per hour	Rs.20
Bonus for the half of the time saved[1/2x(S-T)xR]	Rs. 5
Dearness allowance for 20 hours (i.e., actual hours worked)	Rs.10

	Rs.35
	=====

d) Earnings under Rawan Plan

Wages for 20hous (i.e., actual hours worked)	
@ Re.1 per hour	Rs.20.00
Bonus [(S-T)/SxTxR]	Rs. 6.67
Dearness allowance for 20 hours (i.e., actual hours worked)	Rs.10.00

	Rs.36.67
	======

Where S = Standard Time Allowed; T= Actual Time taken; R = Rate per hour

Problem No.2

Calculate the normal and overtime wages payable to a workman from the following data:

Days	Hours worked		Rate
Monday	8 hours	Normal working hours	8 hours per day
Tuesday	10 "		
Wednesday	11 "	Normal Rate	Rs. 5.00 per hour
Thursday	12 "	Overtime Rate	Up to 9 hours in a day
Friday	8 "		at single rate and
Saturday	4 "		beyond 9 hours in a
	53 hours		day at double rate.

Solution

				Overtime	
Day	*Normal working hours*	*Total*	*At Normal rate*	*Single rate*	*Double rate*
Monday	8	8	8	–	–
Tuesday	8	10	8	1	1
Wednesday	8	11	8	1	2
Thursday	8	12	8	1	3
Friday	8	8	8	–	–
Saturday	8	4	4	–	–
	48	53	44	3	6

Normal wage on time rate		=	44 hours × 5	=	Rs. 220.00
Overtime wages –	Single rate	=	3 hours × Rs. 5	=	Rs. 15.00
	Double rate	=	6 hours × Rs. 10	=	Rs. 60.00
	Total wages			=	Rs. 295.00

Problem No.3

From the following particulars calculate the wages of 3 workers Amar, Akbar and Anthony under Merrick's Differential Piece Rate. Piece Rate is 40 paise per unit, standard output 30 units per day of 8 hours. Outputs: Amar – 24 units, Akbar – 27 units and Anthony – 36 units.

Solution:

Efficiency of each worker as a percentage of standards:

Amar = $\frac{24}{30} \times 100 = 80\%$ = below 83%

Akbar = $\frac{27}{30} \times 100 = 90\%$ = above 83% but below 100%

Anthony = $\frac{36}{30} \times 100 = 120\%$ = above 100%

Calculation of Wages

1. Amar= 24 × 0.40 = Rs. 9.60
2. Akbar = 110% of normal wage rate

   i.e. $\frac{110}{100}$ × Re. 0.40 × 27 units = Rs. 11.88

3. Anthony = 120% of normal piece rate = $\frac{120}{100} \times 0.40 \times 36$ = Rs. 17.28.

Problem No. 4:
R Limited operates in one of its departments a group incentive scheme. A minimum hourly rate is guaranteed to each of the six employees in the group if actual output for the week is less than the standard output. If actual output 0.50 greater than the standard output, the hourly rate of each employee is increased by 4% for each additional 600 units of output produced.

The standard output for the group is 12,000 units for a 40 hour week.

During the week ended December 31, 2019 each employee in the group worked 40 hours ; actual output and minimum hourly rates were as follows :

Employee	*Actual output (in units)*	*Minimum hourly rate*
Lal	2,500	0.60
Hari	2,700	1.00
Mohan	2,400	0.60
Shyam	2,500	0.80
Hanuman	2,460	0.60
Krishna	2,440	0.40

You are required to:
(i) Calculate the earnings of each employee.

(ii) Appraise the effectiveness to the company of this group incentive scheme.

Solution:

Statement showing the earning of each employee in the group during the week ending 31st December, 2019:

Employee	*Minimum*	*Hourly premium*	*Total*	*Total wages for the week*
	Re.	Re.	Re.	Rs.
Lal	0.60	0.12	0.72 × 40 =	28.80
Hari	1.00	0.20	1.20 × 40 =	48.00
Mohan	0.60	0.12	0.72 × 40 =	28.80
Shyam	0.80	0.16	0.96 × 40 =	38.40
Hanuman	0.60	0.12	0.72 × 40 =	28.80
Krishna	0.40	0.08	0.48 × 40 =	19.20
				192.00

Working Notes :

1. Calculation of percentage increase in the hourly wage rate due to higher efficiency :

	Output (40 hrs. week)
Standard	12,000 units
Actual	15,000 units
Additional production	3,000 units

Increase in wage rate is 4% for each additional 600 units.

Therefore, total increase $= \frac{3,000 \times 4}{600} = 20\%$

2. There is a saving of Rs. 8 (Standard Wages Rs. 200–Actual Wage Rs. 192). This saving has been shared both by the employer and employee.

3. Standard wages $= \frac{160 \times 15,000}{12,000} =$ Rs. 200.

Problem No. 5
Calculate total monthly remuneration of workers A, B, C and D on the basis of the following information for the month of January 2007:
(i) Standard Production for each worker = 1,000 units

(ii) Rate of wages = 10 paise per unit

(iii) Bonus = Rs. 5 for each 1% increase over 90% of the standard.

(iv) Dearness Allowance per month = 100% of piece wage.

The units completed by the four workers were as under:

A = 950 units, B = 900 units, C = 960 units, D = 850 units.

Solution:
% of work done by the workers:
A = 950/1,000 × 100 = 95%

B = 900/1,000 × 100 = 90%

C = 960/1,000 × 100 = 96%

D = 850/1,000 × 100 = 85%

Statement showing Calculation of Remuneration
for the month of January 2007

Particulars	*A* *Rs.*	*B* *Rs.*	*C* *Rs.*	*D* *Rs.*
Piece wages [Units produced × Rate per unit]	95	90	96	85
D.A. [100% of piece wages]	95	90	96	85
Bonus [Rs. 5 for each 1% increase over 90% of the standard]	25	—	30	—
Total Earnings	215	180	222	170

Problem No.6

In a factory bonus system, bonus hours are credited to the employee in the production of time taken which time saved bears to time allowed. Jobs carried forward from one week to another. No overtime is worked and payment is made in full for all units worked on, including those subsequently rejected.

From the following, you are required to calculate for each employee:

(a) The bonus hours and amount of bonus earned;

(b) Total wage cost;

(c) The wage cost of each good unit produced.

Name of employees	A	B	C
Basic wage rate per hour	Rs. 5	Rs. 8	Rs. 10
Units issued for production	2,500	2,200	3,600
Time allowed for 100 units	2 hrs	3 hrs	4 hrs
Time Taken	40 hrs	60 hrs	140 hrs
Rejects	100 units	50 units	100 units

Solution:

(*a*) **Statement of Calculation of Bonus**

Name of the Employees	*A*	*B*	*C*
Time taken	40 hrs	60 hrs	140 hrs
Time allowed [Time allowed × Units produced]	50 hrs	66 hrs	144 hrs
Time saved [Time allowed – Time taken]	10 hrs	6 hrs	4 hrs
∴ Bonus $\left[\text{Time saved} \times \frac{\text{Time taken}}{\text{Time allowed}} \times \text{Rate}\right]$	Rs. 40	Rs. 43.64	Rs. 38.89

(*b*) **Statement of Calculation of Units of Goods Produced by A, B and C**

Name of the Employees	*A units*	*B units*	*C units*
Production	2,500	2,200	3,600
Rejection	100	50	100
Production of goods units [Production – Rejection]	2,400	2,150	3,500

(*c*) **Statement of Calculation of Earnings of A, B and C**

Name of the Employees	*A (Rs.)*	*B (Rs.)*	*C (Rs.)*
Basic Wages [Time taken × Rate per hour]	200	480	1,400
Bonus	40	43.64	38.89
Total Earnings [Wages + Bonus]	240	523.64	1,438.89
Wage Rate per unit of goods output $\left[\frac{\text{Time Earnings}}{\text{No. of goods units}}\right]$	0.10	0.24	0.41

Problems no. 7

ABC Ltd. is having 400 workers at the beginning of the year and 500 workers at the end of the year. During the year 20 workers were discharged and 15 workers left the organization. During the year the company has recruited 65 workers. Of these, 18 workers were recruited in the vacancies of those leaving, while the rest were engaged for an expansion scheme. What is the labour turnover rate under separation method ?

Solution:

Average number of workers = (400 + 500)/2 = 450 Separation method = No. of separations during the period x 100 Average number of workers during the period = 20 + 15 x 100 450 = 7.78%

Problem No.8

'Under the Rowan Premium Bonus system, a less efficient worker can obtain same bonus as a highly efficient worker.' Discuss with suitable examples.

Solution
Bonus under Rowan system = (Timeallowed/Timetaken)x time saved xrate per hour
For example let time allowed for a job = 4 hours and Labour rate = Rs. 5 per hour.

Case I : Less efficient worker
If time taken = 3 hours
Then time saved = 4 – 3 = 1 hour
Bonus = (3 hours/ 4 hours)x 1hourx Rs.5= Rs.3.75

Case II : Highly efficient worker
If time taken = 1 hour
Then time saved = 4 – 1 = 3 hours
Bonus = (1hour/ 4 hours)x 3 hours x Rs.5= Rs.3.75
So, it can be concluded that under Rowan System, the less efficient worker and highly efficient worker can get the same bonus.

Problem No.8
Discuss the treatment of overtime premium in cost accounts.

Solution
Overtime premium is a part of total wages of overtime period. In cost accounting the treatment of overtime premium will be as follows:
(i) If the overtime is resorted to at the desire of the customer, then the entire amount of overtime including overtime premium should be charged to the job directly.
(ii) If it is due to a general pressure of work to increase the output, the premium as well as overtime wages may be charged to general overheads.
(iii) If it is due to the negligence or delay of workers of a particular department, it may be charged to the concerned department.
(iv) If it is due to circumstances beyond control, it may be charged to Costing Profit & Loss Account.

Problem No.9

In a unit, 10 men work as a group. When the production for the group exceeds the standard output of 200 pieces per hour, each man is paid an incentive for the excess production in addition to his wages at hourly rates. The incentive is at half the percentage, the excess production over

the standard bears to the standard production, Each man is paid an incentive at the rate of this percentage of a wage rate of ` 2 per hour. There is no relation between the individual workman's hourly rate and the bonus rate.
In a week, the hours worked are 500 hours and the total production is 1,20,000 pieces.
(a) Compute the total amount of the bonus for the week.
(b) Calculate the total earnings of two workers A and B of the group:-
A worked 44 hours and his basic rate per hour was Rs. 2.20.
B worked 48 hours and his basic rate per hour was Rs.1.90.

Solution

Actual production during the week	1,20,000 pieces
Standard production during the week of 500 hours, @ 200 pieces per hour	1,00,000 pieces
Excess production over standard	20,000 pieces

Percentage of the excess production over the Standard bears to the standard production
= (20,000 /1,00,000)x 100 = 20%

Incentive is half of 20% i.e. 10%.
The rate of incentive is at 10% over a wage rate of Rs. 2.00 per hour.
Thus the rate of incentive per hour is 0.20P.
(a) Total amount of bonus for the week: 500 hours × Re. 0.20 = Rs. 100.
(b) Total Earnings of two workers A & B of the group.

	Amount Rs.
A's Wages for 44 hours @Rs. 2.20 per hour	96.80
Bonus for 44 hours @ Re. 0.20 per hour	8.80
Total Earning of A	105.60
B's Wages for 48 hours @ Rs. 1.90 per hour	91.20
Bonus for 48 hours @ 0.20 per hour	9.60
Total Earning of B	100.80

Problem No.10

(c) The cost accountant of Y Ltd. has computed labour turnover rates for the quarter ended 31st March, 2019 as 10%, 5% and 3% respectively under Flux method, 'Replacement method' and 'Separation method'. If the number of workers replaced during that quarter is 30, find out the number of (1) workers recruited and joined and (2) workers left and discharged.

Solution
Working Note:
Average number of workers on roll:

Labour turnover rate (under Replacement method)
= (No. of replacements /Average number of workers on roll)×100
Or 5/100 = 30/Average number of workers on roll
Average number of workers on roll = (30x 100)/5 = 600

(1) Number of workers recruited and joined:
Labour turnover rate (Flux method) =
= [No. of separations (S) +No. of accessions (A)]/ Av. number of workers on roll ×100
(Refer to Working Note)
Or 10/100 = (18+ A)/ 600
Or A = [(6000/100) – 18] = 42

No. of workers recruited and joined 42.

(2) Number of workers left and discharged:
Labour turnover rate (Separation method)
= No. of separations(S) / Av. number of workers on roll × 100 (Refer to working note)
Or, 3/100 = S /600
Or, S = 18
Hence, number of workers left and discharged comes to 18.