Labor costing example

Problem 1:

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

Halsey plan

- Formula for calculating wages under **HalseySystem**
- =TimeTaken×TimeRate+50%ofTimeSaved×TimeRate.
- **RowanSystem:According to this system a standardtimeallowance is fixed for the performance of a job and bonus is paid on the timesaved. FormulaforcalculatingwagesunderRowansystem is as follows:**
- =Timetaken × Rateperhour+ Time allowed ×Timetaken ×Rateperhour

- **Problem**
- A worker takes 12 hours to complete a work on daily wages and 8 hours on a scheme of payment by results. The worker's day rate is Rs. 6.00 per hour. The cost of material of the product is Rs. 20 and the overheads are recovered at 200% of the total wages.
- **Calculate the factory works cost of the product under:**
- (i) Rowan Plan and
- (ii) Halsey Scheme.
-

Computation of Works Cost	*Rs.*
Material Cost	20.00
Add : Wages	64.00
Add : Overhead @ 200% of wages	128.00
	212.00

(ii) **Halsey Scheme**	*Rs.*
Direct Wages	48.00
Bonus 50% of (Time Saved × Rate per hour)	
i.e. $\frac{50}{100} \times 4 \times 6$	12.00
	60.00

Computation of Works Cost	Rs.
Material Cost	20.00
Add : Wages	60.00
Add : Overhead @ 200% of wages	120.00
	200.00

	Rs.
(*i*) **Rowan Plan :**	
Direct wages	
[Time taken × Rate per hour]	48.00
i.e. 8 × Rs. 6.00	
Bonus = $\frac{\text{Time saved}}{\text{Time Allowed}}$ × Time taken × Rate per hour	
i.e. $\frac{4}{12} \times 8 \times 6$	= 16.00
	64.00

- Standard time fixed 20 hours
- Time Taken 16 hours
- Hourly Rate Rs. 2 per hour
- Calculate the total earnings of the worker under Halsey Plan

Halsey plan

- Minimum wage = Time taken x Hourly rate = 16 x Rs. 2 = Rs. 32
- Amount of Bonus = Time Saved x Rate x 50%
- =(Standard time – Actual time) x Rate x 50%
- = (20 – 16) x 2 x1/2
- = 4
- Total Earnings = Rs. 32 + Rs. 4 = Rs. 36

Taylor's Differential Piece Rate System (Formula and Calculation)!

- Differential Piece Rate System was introduced by Taylor, the father of scientific management. The underlying principle of this system is to penalise a slow worker by paying him a low piece rate for low production and to reward an efficient worker by giving him a higher piece rate for a higher production. Taylor was of the view that an inefficient worker should have no place in the organisation and he should be compelled to leave the organisation by paying him a low piece rate for low production.

- Taylor proceeded on the assumption that through time and motion study it is possible to fix a standard time for doing a particular task. To encourage the workers to complete the work within the standard time, Taylor advocated two piece rates, so that if a worker performs the work within or less than the standard time, he is pad a higher piece rate, and if he does not complete the work within the standard time, he is given a lower piece rate
- .

- Thus, if the standard production has been fixed at 8 units per day of 8 hours (taking normal piece rate as Re 1), the higher piece rate for 8 units or beyond may be Rs 1.20 per unit and the lower rate for an output of less than 8 units per day, may be 80 P. per unit.
- Hence, Taylor decided to give a large reward to those who would complete the work within or less than the standard time and much less wages to those who would not complete the job within the standard time. The system is very harsh to the inefficient workers because they earn much less wages on account of lower output and lower rate.

- Moreover, minimum wages are not guaranteed under this method. Another drawback of the system is that if a worker just fails to complete the work within the standard time earns much less wages than a worker who just completes the job within the standard time. Therefore, the system is now almost out of use.

Taylors example

- **Calculate the earnings of workers A and B under Straight Piece-rate System and Taylor's Differential Piece-rate System from the following particulars:**
- Normal rate per hour = Rs 1.80
- Standard time per unit = 20 seconds
- Differentials to be applied:80% of piece rate below standard
- 120% of piece rate at or above standard.
- Worker A produces 1,300 units per day and worker B produces 1,500 units per day.
-

SOLUTION

Standard production per 20 seconds = 1 unit

Standard production per minute $= \frac{60}{20} = 3$ units

Standard production per hour $= 3 \times 60 = 180$ units.

Standard production per day of 8 hours (assumed) $= 180 \times 8 = 1{,}440$ units

Normal rate per hour = ₹ 1.80

$\therefore$ Normal piece rate $= \frac{₹\ 1.80}{180 \text{ units}} = 1$ paisa

Low piece rate below standard production $\frac{1\text{ P.} \times 80}{100} = 0.8$ paisa

High piece rate at or above standard $\frac{1\text{ P.} \times 120}{100} = 1.2$ paise

Earnings of Worker A :

Under Straight Piece-rate System

$$1{,}300 \text{ units @ } 1\text{ P.} = \frac{1{,}300 \times 1}{100} = ₹\ 13$$

Under Taylor's Differential Piece-rate System

$$1{,}300 \text{ units @ } 0.8\text{ P.} = \frac{1{,}300 \times 8}{10} \times \frac{1}{100} = ₹\ 10.40$$

Low piece-rate has been applied because worker A's daily production of 1,300 units is less than the standard daily production of 1,440 units.

Earnings of Worker B :

Under Straight Piece-rate System

$$1{,}500 \text{ units @ } 1\text{ P.} = \frac{1{,}500 \times 1}{100} = ₹\ 15$$

Under Taylor's Differential Piece-rate System

$$1{,}500 \text{ units @ } 1.2\text{ P.} = \frac{1{,}500 \times 12}{10} \times \frac{1}{100} = ₹\ 18$$

High piece-rate has been applied because worker B's daily production of 1,500 units is more than the standard daily production of 1,440 units.

- **Merrick's Differential Piece Rate System:**
- This is a modification of Taylor's plan. While Taylor prescribed two rates, Merrick's plan lays down three rates. The lowest rate is for the beginners, the middle rate is for the developing workers and the highest rate is for the highly efficient workers. Efficiency of the workers is determined in terms of percentages.

Level of Efficiency	Piece Rate
Upto 83%	Ordinary Piece Rate
83% to 100%	110% of Ordinary Piece Rate
Above 100%	120% of Ordinary Piece Rate

$$\text{Measurement of Efficiency} = \frac{\text{Actual Output}}{\text{Std. Output}} \times 100$$

Example 3

From the under-mentioned facts, calculate the earnings of A, B and C under the Merrick Differential Piece Rate System:

- Normal piece rate (upto 83 per cent of high task output), Rs 10 per unit;
- High task, 40 units per week
- Output for the week: A, 32 units; B, 37 units; C, 42 units.

Solution

Efficiency of	A	= (32 × 100) ÷ 40 = 80 per cent
	B	= (37 × 100) ÷ 40 = 92.5 per cent
	C	= (42 × 100) ÷ 40 = 105 per cent
Wages of	A	= 32 × Rs 10 = Rs 320
	B	= (37 × Rs 10 × 110) ÷ 100 = Rs 407
	C	= (42 × Rs 10 × 120) ÷ 100 = Rs 504

- 100%= 10 RS
- 110%=?
- 110*10/100= 11 RS