

# 3

## Labour

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### Question 1

ZED Limited is working by employing 50 skilled workers. It is considered the introduction of incentive scheme-either Halsey scheme (with 50% bonus) or Rowan scheme of wage payment for increasing the labour productivity to cope up the increasing demand for the product by 40%. It is believed that proposed incentive scheme could bring about an average 20% increase over the present earnings of the workers; it could act as sufficient incentive for them to produce more.

Because of assurance, the increase in productivity has been observed as revealed by the figures for the month of April, 2004.

Hourly rate of wages (guaranteed)	₹ 30
Average time for producing one unit by one worker at the previous performance (This may be taken as time allowed)	1.975 hours
Number of working days in the month	24
Number of working hours per day of each worker	8
Actual production during the month	6,120 units

Required:

- (i) Calculate the effective rate of earnings under the Halsey scheme and the Rowan scheme.
- (ii) Calculate the savings to the ZED Limited in terms of direct labour cost per piece.
- (iii) Advise ZED Limited about the selection of the scheme to fulfill their assurance.

(8 Marks, May 2004)

Answer

Working notes:

1. Computation of time saved ( in hours) per month :
  - = (Standard production time of 6,120 units – Actual time taken by the workers)
  - = (6,120 units x 1.975 hours – 24 days x 8 hrs per day x 50 skilled workers)

$$= (12,087 \text{ hours} - 9,600 \text{ hours})$$

$$= 2,487 \text{ hours}$$

2. Computation of bonus for time saved hours under Halsey and Rowan schemes:

Time saved hours	=	2,487 hours
(Refer to working note 1)		
Wage rate per hour	=	₹ 30
Bonus under Halsey Scheme	=	$\frac{1}{2} \times 2,487 \text{ hours} \times ₹ 30$
(with 50% bonus)	=	₹ 37,305
Bonus under Rowan Scheme	=	$\frac{\text{Time Saved}}{\text{Time Allowed}} \times \text{Time taken} \times \text{Rate per hour}$
	=	$\frac{2,487 \text{ hours}}{12,087 \text{ hours}} \times 9,600 \text{ hours} \times ₹ 30$
	=	₹ 59,258.38

(i) Computation of effective rate of earnings under the Halsey and Rowan schemes:

Total earnings (under Halsey scheme)	=	Time wages + Bonus
(Refer to working note 2)		
	=	24 days x 8 hours x 50 skilled workers x ₹ 30 + ₹ 37,305
	=	₹ 2,88,000 + ₹ 37,305 = ₹ 3,25,305

Total earnings (under Rowan scheme)	=	Time wages + Bonus
(Refer to working note 2)		
	=	₹ 2,88,000 + ₹ 59,258.38
	=	₹ 3,47,258.38

Effective rate of earnings per hour (under Halsey Plan	₹ 33.89
(₹ 3,25,305 ÷ 9,600 hrs.)	
Effective rate of earnings per hour (under Rowan Plan	₹ 36.17
(₹ 3,47,258.38 ÷ 9,600 hrs)	

(ii) Savings to the ZED Ltd. in terms of direct labour cost per piece:

	₹
Direct labour cost (per unit) under time wages system	59.25
(1.975 times per unit × ₹ 30)	
Direct labour cost (per unit) under Halsey Plan	53.15

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(₹ 3,25,305 ÷ 6,120 units)

Direct labour cost (per unit) under Rowan Plan 56.74

(₹ 3,47,258.38 ÷ 6,120 units)

Savings of direct labour cost under:

▪ Halsey Plan ₹ 6.10

(₹ 59.25 – 53.15)

▪ Rowan Plan ₹ 2.51

(₹ 59.25 – 56.74)

(iii) Advise to ZED Ltd : (about the selection of the scheme to fulfill assurance)

Halsey scheme brings more savings to the management of ZED Ltd, over the present earnings of ₹ 2,88,000 but the other scheme viz Rowan fulfils the promise of 20% increase over the present earnings of ₹ 2,88,000 by paying 20.58% in the form of bonus. Hence Rowan Plan may be adopted.

#### Question 2

*Discuss the Gantt task and bonus system as a system of wage payment and incentives.*

*(3 Marks, November 2004)*

#### Answer

##### Gantt Task and Bonus System

This system is a combination of time and piecework system. According to this system a high standard or task is set and payment is made at time rate to a worker for production below the set standard.

Wages payable to workers under the plan are calculated as under:

Output	Payment
(i) Output below standard	Guaranteed time rate
(ii) Output at standard	Time rate plus bonus of 20% (usually) of time rate
(iii) Output over standard	High piece rate on worker's output .(It is so fixed ,so as to include a bonus of 20% of time rate)

#### Question 3

*Discuss the three methods of calculating labour turnover.*

*(3 Marks, November 2004) (4 Marks, November 2010)*

**Answer**

- (i) Replacement method =  $\frac{\text{No of employees replaced} \times 100}{\text{Av no of employees on roll}}$
- (ii) Separation method =  $\frac{\text{No of employees separated during the year} \times 100}{\text{Av no of employees on the roll during the year}}$
- (iii) Flux method =  $\frac{(\text{No of employees separated} + \text{No of employees replaced}) \times 100}{\text{Av no of employees on rolls during the period}}$

**Question 4**

*The existing Incentive system of Alpha Limited is as under:*

<i>Normal working week</i>	<i>5 days of 8 hours each plus 3 late shifts of 3 hours each</i>
<i>Rate of Payment</i>	<i>Day work: ₹ 160 per hour Late shift: ₹ 225 per hour</i>
<i>Average output per operator for 49-hours week i.e. including 3 late shifts</i>	<i>120 articles</i>

*In order to increase output and eliminate overtime, it was decided to switch on to a system of payment by results. The following information is obtained:*

<i>Time-rate (as usual)</i>	<i>: ₹ 160 per hour</i>
<i>Basic time allowed for 15 articles</i>	<i>: 5 hours</i>
<i>Piece-work rate</i>	<i>: Add 20% to basic piece-rate</i>
<i>Premium Bonus</i>	<i>: Add 50% to time.</i>

**Required:**

*Prepare a Statement showing hours worked, weekly earnings, number of articles produced and labour cost per article for one operator under the following systems:*

- Existing time-rate*
- Straight piece-work*
- Rowan system*
- Halsey premium system*

*Assume that 135 articles are produced in a 40-hour week under straight piece work, Rowan Premium system, and Halsey premium system above and worker earns half the time saved under Halsey premium system.*

**(8 Marks, November, 2005)**

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Answer

Table showing Labour Cost per Article

Method of Payment	Hours worked	Weekly earnings	Number of articles produced	of labour cost per article
Existing time rate	49	₹ 8,425.00	120	₹ 70.21
Straight piece rate system	40	₹ 8,640.00	135	₹ 64.00
Rowan Premium System	40	₹ 9,007.41	135	₹ 66.72
Halsey Premium System	40	₹ 8,600.00	135	₹ 63.70

Working Notes:

#### Existing time rate

Weekly wages	40 hrs @ ₹ 160/hr	= ₹ 6,400
	9 hrs @ ₹ 225/hr	= ₹ 2,025
		<u>₹ 8,425</u>

#### Piece Rate System

Basic time:	5 hour for 15 articles.	
	Cost of 15 articles at hourly rate of ₹ 160/hr	= ₹ 800
	Add 20%	= ₹ 160
		<u>₹ 960</u>

∴ Rate per article = ₹ 960 / 15 = ₹ 64

Earnings for the week

$$= 135 \text{ articles} \times ₹ 64 = ₹ 8,640.$$

#### Rowan Premium System

Basic Time	:	5 hours for 15 articles
Add	:	50% to time
		7.5 hours for 15 articles
	Or	30 minutes per article

∴ Time allowed for 135 articles = 67.5 hours

Actual time taken for 135 articles = 40 hours

$$\text{Earnings} = (\text{HW} \times \text{RH}) + \left[ \frac{\text{TA} - \text{HW}}{\text{TA}} \times \text{HW} \times \text{RH} \right]$$

$$= (40 \text{ hrs} \times ₹ 160) + \left( \frac{67.5 - 40}{67.5} \times 40 \times ₹ 160 \right) = ₹ 9,007.41$$

### Halsey Premium System

$$\begin{aligned} \text{Earnings} &= \text{HW} \times \text{RH} + \frac{50}{100} (\text{TA} - \text{HW}) \times \text{RH} \\ &= 40 \times ₹ 160 + \frac{1}{2} (67.5 - 40) \times ₹ 160 = ₹ 8,600. \end{aligned}$$

### Question 5

*Discuss the treatment of Idle time and Overtime premium in Cost Accounting.*

*(4 Marks, May 2006)*

### Answer

#### Treatment of Idle time and Overtime Premium in Cost Accounting

- Normal idle time is treated as a part of the cost of production. Thus, in the case of direct workers, an allowance for normal idle time is built into labour cost rates. In case of indirect workers, normal idle time is spread over all the products or jobs through the process of absorption of factory overheads.
- Abnormal idle time cost is not included as a part of production cost and is shown as a separate item in costing Profit and Loss Account.
- Management should aim at eliminating controllable idle time and on a long-term basis reduce even the normal idle time.
- If overtime is resorted to at the desire of the customer, then overtime premium may be charged to the job directly.
- If overtime is required to cope with general production programme or for meeting urgent orders, the overtime premium should be treated as overhead cost of the particular department/cost centre.

### Question 6

*Using Taylor's differential piece rate system, find the earning of A from the following particulars:*

<i>Standard time per piece</i>	<i>12 minutes</i>
<i>Normal rate per hour (in a 8 hours day)</i>	<i>₹ 20</i>
<i>A produced</i>	<i>37 Units</i>

*(2 Marks, May 2007)*

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#### Answer

$$\text{Standard output per day} \left( \frac{8 \times 60}{12} \right) = 40 \text{ units}$$

$$\text{Actual output} = 37 \text{ units}$$

$$\text{Efficiency percentage} \frac{37}{40} \times 100 = 92.5\%$$

Under this method lower rate is 83% of the normal piece rate and is applicable if efficiency of worker is below 100%.

$$\text{Earning rate per unit} = 83\% \text{ of } \frac{20}{5^*} \text{ or } 3.32 \text{ per unit}$$

$$\text{Earning} = 37 \times 3.32 = ₹122.84$$

$$* \text{ In one hour, production will be} = \frac{60 \text{ minutes}}{\text{standard time per peice, i.e. 12 minutes}} = 5 \text{ units}$$

#### Question 7

*Enumerate the various methods of Time booking.*

*(2 Marks, May 2007)*

#### Answer

The various methods of time booking are:

- (a) Job ticket.
- (b) Combined time and job ticket.
- (c) Daily time sheet.
- (d) Piece work card.
- (e) Clock card.

#### Question 8

*Enumerate the remedial steps to be taken to minimize the labour turnover.*

*(3 Marks, Nov 2007)*

#### Answer

The following steps are useful for minimizing labour turnover:

- (a) Exit interview: An interview be arranged with each outgoing employee to ascertain the reasons of his leaving the organization.
- (b) Job analysis and evaluation: to ascertain the requirement of each job.

- (c) Organisation should make use of a scientific system of recruitment, placement and promotion for employees.
- (d) Organisation should create healthy atmosphere, providing education, medical and housing facilities for workers.
- (e) Committee for settling workers grievances.

**Question 9**

*Standard output in 10 hours is 240 units; actual output in 10 hours is 264 units. Wages rate is ₹10 per hour. Calculate the amount of bonus and total wages under Emerson Plan.*

*(2 Marks, May 2008)*

**Answer**

$$\text{Efficiency percentage} = \frac{264}{240} \times 100 = 110\%$$

As per Emerson plan, in case of above 100% efficiency bonus of 20% of basic wages plus 1% for each 1% increase in efficiency is admissible.

$$\text{So, new bonus percentage} = 20 + (110 - 100) = 30$$

$$\text{Total Bonus} = \frac{30}{100} (\text{hours worked} \times \text{rate per hour})$$

$$= \frac{30}{100} \times 10 \times 10 = ₹ 30$$

$$\text{Total wages} = ₹(10 \times 10) + 30 = ₹130.$$

**Question 10**

*Distinguish between Job evaluation and Merit rating.*

*(3 Marks, May 2008)*

**Answer****Job Evaluation and Merit Rating:**

- ◆ Job evaluation is the assessment of the relative worth of jobs within a company and merits rating are the assessment of the relative worth of the man behind the job.
- ◆ Job evaluation and its accomplishment are means to set up a rational wage and salary structure where as merits rating provides a scientific basis for determining fair wages for each worker based on his ability and performance.
- ◆ Job evaluation simplifies wage administration by bringing an uniformity in wage rates where as merits rating is used to determine fair rate of pay for different workers.

**Question 11**

*Describe briefly, how wages may be calculated under the following systems:*

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- (i) *Gantt task and bonus system*
- (ii) *Emerson's efficiency system*
- (iii) *Rowan system*
- (iv) *Halsey system*
- (v) *Barth system.*

(8 Marks, November, 2008)

#### Answer

(i) **Gantt task and bonus system:** As per this system a higher standard is set and payment is made at time rate to a worker for production below the standard. If the standards are achieved or exceeded, the payment is made at a higher piece rate. The piece rate fixed also includes an element of bonus to the extent of 20%. Bonus is calculated over the time rate.

(ii) **Emerson's Efficiency System:** Under this system wages may be calculated as below:

Performance		Wages
Below 66 $\frac{2}{3}$ % efficiency	–	Time rate without any bonus
66 $\frac{2}{3}$ % - 100% efficiency	–	Bonus varies between 1% to 20%*
Above 100% efficiency	–	Bonus of 20% of basic wages plus 1% for every 1% increase in efficiency.

\*At 100% efficiency the bonus percentage will be 20%.

(iii) **Rowan System:** As per this system standard time allowance is fixed for the performance of a job and bonus is paid if time is saved.

Wages under Rowan System =

$$(\text{Time taken} \times \text{Rate per unit of time}) + \frac{\text{Time saved}}{\text{Time allowed}} \times \text{Time taken} \times \text{Rate per unit of time}$$

(iv) **Halsey System:** Under this system a standard time is fixed for each job. If there is no saving on this standard time allowance, the worker is paid only his day rate.

$$\text{Wages under Halsey System} = \text{Time taken} \times \text{Time rate} + (50\% \text{ of time saved} \times \text{time rate})$$

(v) **Barth System:**

$$\text{Earnings under Barth System} = \text{Hourly rate} \times \sqrt{\text{Standard hours} \times \text{Hours worked}}$$

This is particularly suitable for trainees and beginners and also for unskilled workers.

#### Question 12

*Two workmen, A and B, produce the same product using the same material. A is paid bonus according to Halsey plan, while B is paid bonus according to Rowan plan. The time allowed to*

manufacture the product is 100 hours. A has taken 60 hours and B has taken 80 hours to complete the product. The normal hourly rate of wages of workman A is ₹ 24 per hour. The total earnings of both the workers are same. Calculate normal hourly rate of wages of workman B. (2 Marks, May 2009)

**Answer**

	A	B
Time Allowed (Hrs.)	100	100
Time Taken (Hrs.)	<u>60</u>	<u>80</u>
Time Saved (Hrs.)	<u>40</u>	<u>20</u>
Let the rate of wages of the worker B is ₹ x per hour		
Normal Wages (Time taken × Hourly rate of wages)	1440 (60×24)	80x
Bonus	480	16x
	<u>(1/2 × 40 × 24)</u>	<u><math>\left(\frac{20}{100}\right) \times (80 \times x)</math></u>
	<u>1,920</u>	<u>96x</u>

According to the problem,

$$\begin{aligned} \text{Total earnings of A} &= \text{Total earnings of B} \\ 1,920 &= 96x \\ x &= \frac{1,920}{96} = ₹ 20 \end{aligned}$$

∴ Hourly rate of wages of the worker is ₹ 20 per hour.

**Alternative Solution:**

In case of worker B, in place of x, it can be written as '80x hourly rate'.

Hence final equation will be

$$96x \text{ hourly rate} = 1,920$$

$$\text{Hourly rate of B} = \frac{1,920}{96} = ₹ 20$$

**Question 13**

Discuss accounting treatment of idle capacity costs in cost accounting. (3 Marks, May 2009)

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#### Answer

#### Treatment of Idle Capacity Cost

- (a) If idle capacity is due to unavoidable reasons such as repairs & maintenance, changeover of job etc., a supplementary overhead rate may be used to recover the idle capacity cost. In this case, the costs are charged to production capacity utilized.
- (b) If idle capacity cost is due to avoidable reasons such as faulty planning, power failure etc, the cost should be charged to P/L A/c.
- (c) If idle capacity is due to seasonal factors, then the cost should be charged to cost of production by inflating overhead rates.

#### Question 14

*Standard Time for a job is 90 hours. The hourly rate of guaranteed wages is ₹ 50. Because of the saving in time a worker gets an effective hourly rate of wages of ₹ 60 under Rowan premium bonus system. For the same saving in time, calculate the hourly rate of wages a worker B will get under Halsey premium bonus system assuring 40% to worker. (3 Marks, November 2009)*

#### Answer

Increase in Hourly Rate of Wages (Rowan Plan) is (₹ 60 – ₹ 50) = ₹ 10

This is Equal to

$$\frac{\text{Time Saved}}{\text{Standard Time}} \times \text{Hourly rate}$$

$$\text{Or } 10 = \frac{\text{Time Saved}}{\text{Standard Time}} \times 50$$

$$\text{Or } \frac{\text{Time Saved}}{90} \times 50 = 10$$

$$\text{Time Saved} = \frac{900}{50} = 18 \text{ Hours}$$

$$\text{Time Taken} = (90 - 18) = 72 \text{ Hours}$$

Effective Hourly Rate under Halsey System

$$\text{Time Saved} = 18 \text{ Hours}$$

$$\text{Bonus @ 40\%} = 18 \times 40\% \times 50 = ₹ 360$$

$$\text{Total Wages} = (50 \times 72 + 360) = 3,960$$

Effective Hourly Rate

$$= 3,960 \div 72 \text{ Hours} = ₹ 55$$

**Question 15**

Which is better plan out of Halsey 50 percent bonus scheme and Rowan bonus scheme for an efficient worker? In which situation the worker get same bonus in both schemes?

(3 Marks, May 2010)

**Answer**

Rowan Bonus Scheme pays more bonus if the time saved is below the 50 per cent of time allowed and if the time saved is more than 50 percent of time allowed then Halsey bonus scheme pays more bonus. Generally, time saved by a worker is not more than 50 per cent of time allowed. So, the Rowan bonus scheme is better for an efficient worker. When the time saved is equal to 50 per cent of time allowed then both plans pays same bonus to a worker.

**Question 16**

You are given the following information of a worker:

- |                                    |   |                           |
|------------------------------------|---|---------------------------|
| (i) Name of worker                 | : | 'X'                       |
| (ii) Ticket No.                    | : | 002                       |
| (iii) Work started                 | : | 1-4-11 at 8 a.m.          |
| (iv) Work finished                 | : | 5-4-11 at 12 noon         |
| (v) Work allotted                  | : | Production of 2,160 units |
| (vi) Work done and approved        | : | 2000 units                |
| (vii) Time and units allowed       | : | 40 units per hour         |
| (viii) Wage rate                   | : | ₹ 25 per hour             |
| (ix) Bonus                         | : | 40% of time saved         |
| (x) Worker X worked 9 hours a day. |   |                           |

You are required to calculate the remuneration of the worker on the following basis:

- (i) Halsey plan and  
(ii) Rowan plan

(5 Marks, May 2011)

**Answer**

No. of units produced and approved = 2,000

Standard time = 40 units per hour

Hourly Wage Rate = ₹ 25

Time allowed = 40 units per hour

Time allowed for 2,000 units  $\frac{2,000}{40} = 50$  hours

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(i) Calculation of Remuneration under Halsey Plan:

Standard time allowed for 2,000 units :	50 hours
Actual time taken for 2,000 units :	<u>40 hours</u>
Time saved	<u>10 hours</u>
Basic wages for time taken 40 hours @ ₹ 25	= ₹ 1,000
Bonus: 40% of time saved $\frac{40}{100} \times 10 \times 25$	= <u>₹ 100</u>
Total	<u>₹ 1,100</u>

(ii) Calculation of Remuneration Under Rowan Plan:

Wages for time taken 40 hours @ ₹ 25	= ₹ 1,000
Bonus = $\frac{\text{Time saved}}{\text{Time allowed}} \times (\text{Time Taken} \times \text{Hourly Rate})$	
	= $\frac{40 \times 10 \times 25}{50}$
	= <u>₹ 200</u>
Total	<u>₹ 1,200</u>

#### Question 17

*Enumerate the causes of labour turnover.*

*(4 Marks, May 2011)*

#### Answer

**Causes of Labour Turnover :** The main causes of labour turnover in an organisation/ industry can be broadly classified under the following three heads :

- Personal Causes;
- Unavoidable Causes; and
- Avoidable Causes.

Personal causes are those which induce or compel workers to leave their jobs; such causes include the following:

- Change of jobs for betterment.
- Premature retirement due to ill health or old age.
- Domestic problems and family responsibilities.
- Discontent over the jobs and working environment.

Unavoidable causes are those under which it becomes obligatory on the part of management to ask one or more of their employees to leave the organisation; such causes are summed up as listed below:

- (i) Seasonal nature of the business;
- (ii) Shortage of raw material, power, slack market for the product etc.;
- (iii) Change in the plant location;
- (iv) Disability, making a worker unfit for work;
- (v) Disciplinary measures;
- (vi) Marriage (generally in the case of women).

Avoidable causes are those which require the attention of management on a continuous basis so as to keep the labour turnover ratio as low as possible. The main causes under this case are indicated below:

- (i) Dissatisfaction with job, remuneration, hours of work, working conditions, etc.,
- (ii) Strained relationship with management, supervisors or fellow workers;
- (iii) Lack of training facilities and promotional avenues;
- (iv) Lack of recreational and medical facilities;
- (v) Low wages and allowances.

#### Question 18

*X executes a piece of work in 120 hours as against 150 hours allowed to him. His hourly rate is ₹10 and he gets a dearness allowance @ ₹ 30 per day of 8 hours worked in addition to his wages. You are required to calculate total wages received by X under the following incentive schemes:*

- (i) Rowan Premium Plan, and
- (ii) Emerson's Efficiency Plan

*(5 Marks, November 2011)*

#### Answer

(i) Rowan Premium Plan	₹
Normal wages (10 x 120)	1,200
D.A. for 15 days (30 x 15 )	450
Bonus :	
Bonus hours	= $\frac{120 \times 30}{150} = 24$ Hours
Bonus (24 x 10)	240
Total Wages	= 1,890
(ii) Emerson's Efficiency Plan	
Normal Wages	1,200

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D.A. (15 x 30)		450	
Bonus :	=		$\frac{\text{Time Allowed}}{\text{Time Taken}} \times 100$
Efficiency %	=		$\frac{150}{120} \times 100 = 125\%$
Rate of Bonus up to 100%	=		20%
From 101% to 125%	=		25%
			45%
Bonus being 45% normal wages			$\left( \frac{45}{100} \times 1200 \right)$
	=		540
Total Wages	=		2,190

#### Question 19

The management of a company wants to formulate an incentive plan for the workers with a view to increase productivity. The following particulars have been extracted from the books of company:

Piece Wage rate ₹ 10

Weekly working hours 40

Hourly wages rate ₹ 40 (guaranteed)

Standard/normal time per unit 15 minutes.

Actual output for a week:

Worker A	176 pieces
Worker B	140 pieces

Differential piece rate: 80% of piece rate when output below normal and 120% of piece rate when output above normal.

Under Halsey scheme, worker gets a bonus equal to 50% of Wages of time saved.

Calculate:

- (i) Earning of workers under Halsey's and Rowan's premium scheme.
  - (ii) Earning of workers under Taylor's differential piece rate system and Emerson's efficiency plan.
- (8 Marks, May 2012)**

**Answer**

**Calculation of earnings for workers under different incentive plans:**

	Worker – A	Worker – B
<b>(i) Halsey’s Premium Plan:</b>		
Actual time taken	40 hours	40 hours
Standard time for actual Production	$\frac{176 \text{ Pcs} \times 15 \text{ Min.}}{60 \text{ Min.}}$ = 44 hours	$\frac{140 \text{ Pcs} \times 15 \text{ Min.}}{60 \text{ Min.}}$ = 35 hours
Minimum Wages	40 hours x ₹ 40 = ₹ 1,600	40 hours x ₹ 40 = ₹ 1,600
Bonus	50% (44-40) x ₹40 = ₹ 80	No bonus
Earning	₹ 1,680	₹ 1,600
<b>Rowan’s Premium Plan:</b>		
Minimum Wages (as above)	₹ 1,600	₹ 1,600
Bonus	$\frac{4}{44} \times 40 \times ₹ 40$ = ₹ 145.45	No bonus
Earning	₹ 1,745.45	₹ 1,600
<b>(ii) Taylor’s differential Piece rate</b>		
Efficiency	$\frac{176}{160} \times 100$ = 110%	$\frac{140}{160} \times 100$ = 87.5%
Earning	₹10x120%x176 Pcs = ₹ 2,112	₹10x80%x140Pcs ₹ 1,120
<b>Emerson’s efficiency Plan</b>		
Time Wages	₹ 40x40 hours = 1,600	₹ 40x40 hours = 1,600
Bonus	(20%+10%) of (40x40) = 480	20% of 1,600 = 320
Earning	₹ 2,080	₹ 1,920

**Question 20**

*Accountant of your company had computed labour turnover rates for the quarter ended 30th September, 2012 as 14%, 8% and 6% under Flux method, Replacement method and*

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Separation method respectively. If the number of workers replaced during 2nd quarter of the financial year 2012-13 is 36, find the following:

- (i) The number of workers recruited and joined; and  
(ii) The number of workers left and discharged. (4 Marks, November 2012)

**Answer**

$$\text{Labour Turnover Rate (Replacement method)} = \frac{\text{No. of workers replaced}}{\text{Average No. of workers}}$$

$$\text{or, } \frac{8}{100} = \frac{36}{\text{Average No. of workers}}$$

$$\text{or, } \text{Average No. of workers} = 450$$

$$\text{Labour Turnover Rate (Separation method)} = \frac{\text{No. of workers separated}}{\text{Average No. of workers}}$$

$$\text{or, } \frac{6}{100} = \frac{\text{No. of workers separated}}{450}$$

$$\text{or, } \text{No. of workers separated} = 27$$

$$\text{Labour Turnover Rate (Flux Method)} = \frac{\text{No. of Separations} + \text{No. of accession (Joinings)}}{\text{Average No. of workers}}$$

$$\text{or, } \frac{14}{100} = \frac{27 + \text{No. of accessions (Joinings)}}{450}$$

$$\text{or, } 100 (27 + \text{No. of Accessions}) = 6,300$$

$$\text{or, } \text{No. of Accessions} = 36$$

(i) The No. of workers recruited and Joined = 36

(ii) The No. of workers left and discharged = 27

#### Question 21

A skilled worker is paid a guaranteed wage rate of ₹ 120 per hour. The standard time allowed for a job is 6 hour. He took 5 hours to complete the job. He is paid wages under Rowan Incentive Plan.

- (i) Calculate his effective hourly rate of earnings under Rowan Incentive Plan.  
(ii) If the worker is placed under Halsey Incentive Scheme (50%) and he wants to maintain the same effective hourly rate of earnings, calculate the time in which he should complete the job. (6 Marks, May 2013)

**Answer**

(i) Effective hourly rate of earnings under Rowan Incentive Plan

Earnings under Rowan Incentive plan =

$$(\text{Actual time taken} \times \text{wage rate}) + \frac{\text{Time Saved}}{\text{Time Allowed}} \times \text{Time taken} \times \text{Wage rate}$$

$$= (5 \text{ hours} \times ₹120) + \left( \frac{1 \text{ hour}}{6 \text{ hours}} \times 5 \text{ hours} \times ₹120 \right)$$

$$= ₹600 + ₹100 = ₹700$$

$$\text{Effective hourly rate} = ₹700/5 \text{ hours} = ₹140/\text{hour}$$

(ii) Let time taken = X

$$\therefore \text{Effective hourly rate} = \frac{\text{Earnings under Halsay Scheme}}{\text{Time Taken}}$$

Or, Effective hourly rate under Rowan Incentive plan =

$$\frac{(\text{Time taken} \times \text{Rate}) + 50\% \text{ Rate} \times (\text{Time allowed} - \text{Time taken})}{\text{Time Taken}}$$

$$\text{Or, } ₹140 = \frac{(X \times ₹120) + 50\% ₹120 \times (6 - X)}{X}$$

$$\text{Or, } 140X = 120X + 360 - 60X$$

$$\text{Or, } 80X = 360$$

$$\text{Or, } X = \frac{360}{80} = 4.5 \text{ hours}$$

Therefore, to earn effective hourly rate of ₹140 under Halsey Incentive Scheme worker has to complete the work in 4.5 hours

**Question 22**

The rate of change of labour force in a company during the year ending 31st March, 2013 was calculated as 13%, 8% and 5% respectively under 'Flux Method', 'Replacement method' and 'Separation method'. The number of workers separated during the year is 40.

You are required to calculate:

- (i) Average number of workers on roll.
- (ii) Number of workers replaced during the year.
- (iii) Number of new accessions i.e. new recruitment.
- (iv) Number of workers at the beginning of the year.

(8 Marks, November 2013)

### 3.19 Cost Accounting

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**Answer**

(i) Labour Turnover Rate (Separation method)

$$\begin{aligned} &= \frac{\text{No. of workers separated}}{\text{Average no. of workers on roll}} \\ \text{Or, } \frac{5}{100} &= \frac{40}{\text{Average no. of workers on roll}} \end{aligned}$$

$$\text{Or, Average no. of workers on roll} = 800$$

(ii) Labour Turnover Rate (Replacement method)

$$\begin{aligned} &= \frac{\text{No. of workers replaced}}{\text{Average no. of workers on roll}} \\ \text{Or, } \frac{8}{100} &= \frac{\text{No. of workers replaced}}{800} \end{aligned}$$

$$\text{Or, No. of workers replaced} = 64$$

(iii) Labour Turnover Rate (Flux Method)

$$\begin{aligned} &= \frac{\text{No. of Separations} + \text{No. of accession (new recruitments)}}{\text{Average No. of workers on roll}} \\ \text{Or, } \frac{13}{100} &= \frac{40 + \text{No. of accessions (New recruitments)}}{800} \end{aligned}$$

$$\text{Or, } 100 (40 + \text{No. of Accessions}) = 10,400$$

$$\text{Or, No. of new accessions} = 64$$

(iv) No. of workers at the beginning of the year

Let workers at the beginning of the year were 'X'

$$\begin{aligned} \text{Average no. of workers on roll} &= \frac{\text{Worker s at the begining} + \text{Worker s at the end}}{2} \\ 800 &= \frac{X + (X + \text{New accessions} - \text{Separations})}{2} \\ 800 &= \frac{X + (X + 64 - 40)}{2} \\ 800 &= \frac{X + (X + 24)}{2} \\ 2 X &= 1,600 - 24 \\ X &= 788 \text{ workers} \end{aligned}$$

**Question 23**

Define 'Labour Turnover'. How is it measured? Explain. (4 Marks, November, 2014)

**Answer**

Labour turnover in an organisation is the rate of change in the composition of labour force during a specified period measured against a suitable index. The standard of usual labour turnover in the industry or labour turnover rate for a past period may be taken as the index or norm against which actual turnover rate should be compared.

The methods for measuring labour turnover are:

**Replacement method:** This method takes into consideration actual replacement of labour irrespective of no. of workers leaving.

$$\text{Replacement method} = \frac{\text{Number of employees replaced during the year}}{\text{Average number of employees on roll during the year}} \times 100$$

**Separation method:** In this method labour turnover is measured by dividing the total no. of separations during the period by average no. of workers on payroll during the same period.

$$\text{Separation method} = \frac{\text{Number of employees separated during the year}}{\text{Average number of employees on roll during the year}} \times 100$$

**Flux method:** This method takes into account both the replacements as well as no. of separations during the period.

$$\text{Flux method} = \left[ \frac{\text{No. of employees replaced during the year} + \text{No. of employees separated during the year}}{\text{Average number of employees on roll during the year}} \right] \times 100$$