COST ACCOUNTING
CHAPTER 2- LABOUR

SUM1

Average employee= 150+200/2= 175

Separation method = No of employees resign + no of employees discharged / average no of workers x 100

25/175 × 100= 14.29%

=14.3%

SUM2

a) separation Method: 50÷2000 ×100 = 2.5%

Avg. No. of employee
= 2010+1990÷2 = 2000

b) Replacement method: No of employees replaced during a period of time / average number of employees x 100
30÷2000 x 100 = 1.5%

(C) Flux Method: No of employees left + No of employees recruited during a period / average number of employees x 100
50+30÷2000 x 100 = 4 %

SUM3

Average no-of workers=200+240/2 =220

(a) Separation method= 20+5/220 x 100 = 11.36%

(b) Replacement method = 18/220 x100 = 8.18%

(c) flux method = 25+18/220 x 100 = 19.55%

SUM 4

a) Flux Method: 40+140 ÷1000 x 100 = 18%

Avg employ= 950+1050/2

b) Replacement Method: 20/1000 ×100=2%

(C) Separation Method: 10+30÷1000×10 =4%

SUM 5

Average. no. of emp =500+600/2= 1100/2

= 550

a) Flux method

 = 5+20+75/550 x 100 = 18.18%

B) Replacement method

= 10/550 x100 = 1.82%

c) separation method = 25 /550 x 100

 = 4.55%

SUM NO 6

a) Replacement Method

No.of Rep/ Avg. No.of employees

5% = 30/x

x = 30/0.05 = 600

Separation method = No. of sep/ Avg employ

3% = x/600

x= 600 * 3 %

=18 workers

flux method = No. of sep + No.of Add/ Avg. emp

10% = (18 + x)/600

60 - 18 = x

x = 42 workers

SUM 7

Days	Total hrs	Normal Hours	Nor Wages	OT Hrs	OT Wages
Mon	8	8	16	0	
Tue	10	8	16	2	8
Wed	9	8	16	1	4
Thurs	11	8	16	3	12
Fri	9	8	16	1	4
Sat	4	4 (half)	8	0	

Labour cost= 88(44×2)

Overtime wages= 28(7×4)

SUM 8

Days	Total hrs	Normal Hours (×0.5)	Nor Wages	OT Hrs	OT Wages
Mon	8	8	4	0	
Tue	10	8	4	2	1.5

Wed	9	8	4	1	0.5
Thurs	11	8	4	3	2.5
Fri	9	8	4	1	0.5
Sat	4	4 (half)	2	0	

Total wages= 22+5= Rs.27.

Base rate upto 48 hours. = 48×0.5=24

Above 48 hours

Total hours= 51

(-) Normal hours= 48 = 3hrs @ Rs 1 = Rs.3 and Rs. 27

SUM 9

Particulars	Amount	Amount
Gross wages		400000
-ESI Contribution	6000	
Provident fund	10000	
Rent reduced	5000	
Festinable advance recovered	24000	(45000)
Cash required for payment of wages		355000

SUM 10

Particulars	Amount	Amount
Wages HW	205000	
Wages OT	22000	
Leaves wages	17000	244000
-ESI contribution	5000	
Provident fund	16000	
HR	3000	(24000)
Total		220000

SUM 11

Particulars	Amount	Amount
Normal time salaries		65000
+Dearness allowance	13000	
Leave wages	3900	16900
-ESI contribution	2340	
Provident fund	3900	
Deduction for insurance premium	5000	
Income tax deducted	4000	
Festival advances	6000	(21240)

Cash required for wage payment   60660

SUM 12

Particulars	Amount
Basic salary	120(3000/25)
Leave salary	7.2
Employer's contribution	7.632
Cost per man day	134.84

Working note:

200/8 = 25 working days

SUM 14

No of hrs per day = 8 hrs

No of hrs per month = 200 hrs

Computation of labour cost per day:

Basic salary   =12(300*8/200)

Leave salary   =0.72(12*6%)

Employee contribution P.F = 0.7632(12.72*6%)

Pro rata on amenities   = 1(25*8/200)

Cost per man day of 8 hrs   = 14.4832

SUM 15

Number of hours in a day – 8

Number of hours in a month [25*8] = 200

Particulars	Amount
BASIC SALARY	2
DA[0.25*600]	6
LEAVE SALARY[8*10%]	0.8
EMPLOYER'S CONTRIBUTION TO PF[8.8*8%]	0.704
EMPLOYER'S CONTRIBUTION TO ESI [8.8*2.5%]	0.22
AMENITIES [20\25]	0.8
LABOUR COST PER MAN DAY	**10.524**
LABOUR COST PER MONTH[10.52*25]	**263**

SUM 16

PARTICULARS	AMOUNT
BASIC SALARY	5
DA[0.20*700]	5.6
LEAVE SALARY[10.6*5%]	0.53

EMPLOYER'S CONTRIBUTION TO PF[10.6*8%]	0.848
LABOUR COST PER MAN DAY	**11.98**

SUM 17

PARTICULARS	AMOUNT
BASIC WAGE[2000*8/200]	80
DA[20%*80]	16
LEAVE PAY[10%*80]	8
LABOUR COST PER MAN DAY	**108**

COST PER HOUR

SUM 18

Working hours per year[320*8]   2560 hours

Less: leave for 60 days   480 hours

Less: idle time =   80 hours

                2000 hours

Computation of labour cost of Mr. k

PARTICULARS	PER YEAR	PER HOUR (2000 hrs)
WAGES	2400	1.2
ANNUAL BONUS[2400*25%]	600	0.3
EMPLOYER'S CONTRIBUTION TO PF[2400*10%]	240	0.12
EMPLOYER'S CONTRIBUTION TO ESI[2400*3%]	72	0.036
AMENITIES [8000*1\200]	40	0.02
TOTAL LABOUR COST	**3352**	**1.676**

SUM 20

PARTICULARS	PER MONTH	PER DAY[8\200]	PER HOUR
SALARY [BASIC+DA]	200	8	1
LEAVE SALARY 5%	10	0.4	0.05
EMPLOYER'S CONTRIBUTION TO PF 8%	16.8	0.672	0.084
EMPLOYER'S CONTRIBUTION TO ESI [2.5% * 210]	5.25	0.21	0.02625
AMENITIES	17.95	0.718	0.08975
LABOUR COST	**250**	**10**	**1.25**

SUM 25

Time wages = no of hours worked x rate per hour

Piece wages = no of piece x rate per piece

Straight piece rate = rate per hour / output per hour

   a) Time wages = 8 hours x 1.5 = Rs 12
   b) Piece wages = 157 x 1.8 / 20 = Rs 14.13

SUM 26

 time wages = 40 hours x 5 = Rs 200

Piece wages = 60 units x 2 = Rs 120

SUM 27

 time wages = 40 hours x (10+5) = Rs 600

Piece wages = (50 x 10) + (40 x 5) = Rs 700

SUM 28

GOPU

Time wages = 44 x 2.5 = Rs 110

Piece wages = 100 x 1 = Rs 100

Therefore time basis is more beneficial for Gopu

SOMU

Time wages = 44 x 2.5 = Rs 110

Piece wages = 140 x 1 = Rs 140

Therefore piece basis is more beneficial for Somu

SUM 29

RAMAN

Time wages = 8 hours x 15 = Rs 120

Piece wages = 35 x 3 = Rs 105

Therefore time wages is more beneficial for Raman

KRISHNAN

Time wages = 8 hours x 15 = Rs 120

Piece wages = 50 x 3 = Rs 150

Therefore piece basis is more beneficial for Krishnan

SUM 30

Unit per hour – 60/15= 4 units

Standard unit = 8*4= 32

Piece rate= ₹ 2

Per hour 4*2= ₹8

Straight piece rate.= Rate per hour/output per hour

=8/4=₹ 2

low piece rate= straight piece rate *lower differential

=2×80% =₹1.6

high piece rate= straight piece rate x higher differential

=2×120% =₹ 2.4

X= No.of units x units produced in low piece rate

=28×1.6= ₹44.8

Y= No-of units x units produced in high piece rate

=35 × 24=₹ 84

SUM 31

No of units produced per hour.=3 units

Units produced in 8 hours= 24 units

Piece rate= 6/3= ₹ 2

X = 30 x (2 * 120%)

= ₹ 72

Y= 20 x (2 * 80%)

= ₹32

SUM 32

Units per hour =10units

No. of units produced in 8 hours= 8x10= 80 units

Straight piece rate= 10/10 = ₹1

X =75 x (1x90%)

   = 75×0.9=₹ 67.50

Y=85 x (1x125%)

 = 85×1.25=₹ 106.25

Mr X:

 30units x [2 * 120 %]

=30*2.4=₹72/day

Mr Y:

20 units x [2*80%]

=20*1.6=₹32/day

SUM 33

Standard time = 10 units/hr

Wages = 1/hr = 10 units

         ? = 1 unit

      =Rs. 0.1/unit

Piece Rate

A = No.of units prod x Rate/ut

  =60units * 0.1= ₹6

B = 100 * 0.1 =₹10/day

Taylor's diff piece rate:

>10 uts=125% of ₹0.1

=₹0.125

< 10 uts= 75% of ₹0.1

=₹0.075

A=60 uts*0.075

=₹4.5

B=100 uts*0.125

=₹12.5

SUM 34

straight Piece rate= 1/10

= ₹0.1

A = 75 x 0.1 = Rs 7.5

B = 100 x 0.1 = Rs 10

No.of units produced in 8 hrs= 80 units

A=75*(0.1 * 80 %)

=₹6

B=100*(0.1*120%)

=₹12

SUM 35

No. of units produced in one minute=3 units

No.of units produced in one hour= 180 units

No.of units produced in 8 hour=1440 units

Piece rate= 1.8/180=₹0.001

Taylor:

A = 1300 x (0.01 * 80%)

   =₹10.4

B =1500 x (0.01 * 120%)

   =₹18

Piece rate:

A = 1300 x 0.01

   =₹13

B = 1500 * 0.01

   =₹15

SUM 36

A= Level of performance = 90 ×100/120

                    =75%

A's wages = 90 x 0.10 =₹9

B's level of performance= 100 x 100/120

                    =83.33%

B's wages =100 x (110% of 0.10)

         =100 x 0.11=₹11

C's level of performance= 130 x 100/120

                    =108%

C's wages= 130 x (120% of 0.10)

=130×0.12 =₹15.6

SUM 37

Unit per hour= 60/1=60minuntes

Working hours per day=8

Standard unit=unit per hour* no.of working in a day

=60*8

=480

Straight piece rate=rate per hour/output per hour

=1.8/60= 0.03

LEVEL OF PERFORMANCE=ACTUAL OUTPUT/STANDARD OUTPUT*100

A=384/480* 100

= 80%

B= 450/480* 100

= 93.75%

C=552/480* 100

=115%

WAGES=UNIT PRODUCED * PIECE RATE

A=384*0.03

=Rs11.52

B= 450*0.03*110/100

=Rs14.85

C=552*0.03*120/100

 =Rs 19.87

SUM 38

Standard production per hour= 12 units

Working hours per day=8

Standard unit=unit per hour* no.of working in a day

      =12*8

      =96

Straight piece rate=rate per hour/output per hour

      =0.6/12 =Rs 0.05

LEVEL OF PERFORMANCE=ACTUAL OUTPUT/STANDARD OUTPUT*100

A=64/96* 100

  = 66.6%

B= 96/96* 100

 = 100%

C=84/96* 100

=87.5%

D=100/96*100

 =104.16%

WAGES=UNIT PRODUCED * PIECE RATE

A=64*0.05

  =Rs3.2

B= 96*0.05*110/100

  =Rs5.28

C=84*0.05*110/100

 =Rs 4.62

D=100*0.05*120/100

  Rs=6

GANTT"S TASK BONUS PLAN:

 SUM 39

Standard production per hour= 10 units

Working hours per day=8

Standard unit=unit per hour* no.of working in a day

            =10*8

            =80

LEVEL OF PERFORMANCE=ACTUAL OUTPUT/STANDARD OUTPUT*100

A=70/80* 100

   = 87.5%

B= 80/80* 100

  = 100%

C=90/80* 100

=112.5%

    A: **Below 100= hours worked*rate per hour**

            = 8*1 =Rs8

    B: **Equal to 100= hours worked*rate per hour+20% of wages**

= 8*1+20% of 8

=8 +20/100*8

=Rs9.6

C: **Above 100= unit produced*high piece rate**

= 90*0.20 =Rs18

SUM 40

High task per day=80 units

LEVEL OF PERFORMANCE=ACTUAL OUTPUT/STANDARD OUTPUT*100

X=70/80* 100

= 87.5%

Y= 80/80* 100

= 100%

Z=90/80* 100

=112.5%

X**: Below 100= hours worked*rate per hour**

= 8*15 =Rs120

Y: **Equal to 100= hours worked*rate per hour+20% of wages**

= 8*15+20% of 120

=120+20/100*120

=Rs144

C: **Above 100= unit produced*high piece rate**

= 90*2 =Rs180

SUM 41

A: Below 100 i.e. 2 hours extra; actual hours =10 ,so 10+2=12

Wages=0.50*12 =6

Effective hourly rate =6/12

$\qquad$ =Rs0.5

B: Equal to 100

Wages =0.50*10 =5

$\qquad$ 5+10% of 5 =5.5

Effective hourly rate =5.5/10

$\qquad$ =Rs0.55

C: Straight piece rate =0.50*10=5

Wages=5+ 20% of 5

$\qquad$ =5+1=6

Effective hourly rate= 6/9

$\qquad$ =Rs0.67

SUM 43

HALSEY PLAN:

$\qquad$ **Halsey plan=T*R+50/100(S-T)*R**

WORKER A:

$\quad$ A) =10*8+50/100(12-10)*8

=80+50/100(2)*8

=Rs88

B) =8*8+50/100(4*8)

=64+16

=Rs80

C) =6*8+50/100(6*8)
=48+24
=Rs72

WORKER B:

=40*10+50/100(50-40)*10

=400+50

=Rs450

WORKER C:

=44*5+50/100(50-44)*5

=220+15 =Rs 235.

SUM 44

Standard time= 10

Wage rate = 5

Time taken = 8

Halsey plan = 8*5 +50/100 (10-8)+ (6*8)

40+5+48

= Rs 93

For standard time total cost

=(10*5)+ (10*6)

= Rs 110

Savings = 110 -93

=₹ 17

HALSEY AND HALSEY WEIR PLANS

SUM 46

(a) Halsey = (12*3) + 50 /100 (4*3)

= 36+6

= 42

(b) Halsey weir = (40*3) + 30/100 (8*3)

= 120+7.2

= 127.2

HALSEY AND BARTH SCHEMES

SUM 47

Halsey = (60*1) +50/100 (12*1)

=60+6

= Rs 66

Rate per hour = 66/60

= Rs 1.1

Barth scheme = Rate per hour

= 1*

= 4320

=₹ 66

cRate per hour = 66/60

$$= \text{Rs } 1.1$$

ROWAN PLAN

SUM 48

X=hours worked =9

    Rate per hour = 0.50

    Saved= 3

    Standard= 12

Earnings = (9*0.50) + 3/12 *(9*0.50)

       = 4.5 + 1.125

       = Rs 5.625

Y = worked = 8

    Saved   = 4

Earnings = (8 * 0.50) + 4/12 (8* 0.50)

       = 4 + 1.3

       = Rs 5.33

SUM 49

(S-T) * R * 50/100 =Bonus

    (20-T) * 0.5 * 50/100 =2

    20-T * 0.25 = 2

    20 – T = 8

Time = 12 hours

Rowan plan = 12* 0.50 + 2.4

$$= 2.4 + 6$$

$$= Rs\ 8.4$$

$$= 20\text{-}12\ /\ 20\ *12*0.5$$

$$= 0.4*12*0.5$$

$$= 2.4$$

SUM 50

Time saved = S -T

Bonus = 0.5 * (S-T) *R

$$2 = 0.5\ *\ (\ 10\ \text{-}\ T)\ *\ 1 = 2$$

Rowan premium plan =

Bonus = (time saved / S) * T *R

$$= S\text{-}T$$

$$= 10\text{-}6$$

$$= 4\ Hours$$

Bonus = (4/10) *6*1

$$= 2.4$$

Total wages = wages for actual time taken + bonus

Wages for actual time taken = T*R

$$= 6\ *\ 1$$

$$= RS\ 6$$

Total wages = Rs 6 + Rs 2.4

= Rs 8.40

SUM 51

Given:

Normal wages= Rs. 4

Completed units of production= 6000 units

Time allowed (per 100 units) = 0.8 hours

Actual time taken = 42 hours

If it takes 0.8 hours to produce 100 units then for 6000 units it will take = 6000× 0.8/100= 48 hours (standard time)

Actual time= 42 hours

Rowan plan= 42× 4 +(48-42/ 48) 42× 4

$\qquad$ = 168+ 0.125× 168

$\qquad$ = 168+ 21 = Rs. 189

SUM 52

Job A = (T*R)+(S-T/S)*R*T

$\quad$ =(20*10)+(25-20/25)*10*20

$\quad$ =Rs. 240

Job B = (24*10)+(30-24/30)*10*24

$\quad$ = Rs. 288

Total wages $\qquad$ = 528

Dearness allowance $\qquad$ = 200

Waiting time wages   = 40

Total wages payable   = Rs 768

SUM 53

Hasley:

      = (30*10)+50/100*6*10

      = 300+30

      = Rs. 330

Rowan:

      =(30*10)+6/36*(30*10)

      = 300+50

      = Rs. 350

SUM 54

Halsey:

  A= (9*1)+50/100*(1*1)

    = 9+0.5

    = Rs. 9.5

  B=(8*1)+50/100(2*1)

    =8+1

    =Rs. 9

Rowan:

  A=(9*1)+1/10*(9*1)

    = 9+9/10

= Rs.9.9

B=(8*1)+2/10*(8*1)

= 8+1.6

=Rs. 9.6

SUM 55

Standard =3*20 =60

Halsey:

=(48*10)+40/100*(12*10)

=480+48

=Rs. 528

Rowan:

=(48*10)+12/60*(48*10)

=480+96

=Rs. 576

SUM 56

In one hour = 5 units [60/(10+20%)]

Standard   = 300/5 = 60 hours

Halsey:

=(48*4)+50/100*(12*4)

=192+24

=Rs. 216

Rowan:

=(48*4)+12/60*(48*4)

=192+38.4

=Rs. 230.4

SUM 58

(a) HALSEY PLAN:

Given:

Rate per hour (r) = **Rs. 0.50**

Standard time one dozen article (s) = **3 hours**, then standard time of 20 dozen article = 20*3 = **60 hours**

Actual time taken to produce 20 dozen article (t) = **48 hours**

> **Halsey Plan= t* r + 50/100 (s-t) * r**

Halsey Plan = 48 * 0.50 + 50/100 (60-48) * 0.50

=24 + 3

= Rs. 27

(b) ROWAN PLAN:

> **Rowan Plan = t * r + (s-t)/ s * t * r**

Rowan Plan = 48 * 0.50 + (60-48) / 60 * 48 * 0.50

= 24+ 0.2 * 24

= 24+ 4.8

$$= \text{Rs. } 28.8$$

ANSWER: (a) Rs. 27   (b) Rs. 28.8

EARNINGS AND RATE PER HOUR:

SUM 59

Given:

Time rate (r) = Rs. 3 per hour

Standard time (s) = 15 hours

Actual time of Ram (t) = 16 hours

Actual time of Shyam (t) = 12 hours

RAM:

As Ram takes more time than the standard time given to complete the work, he is not eligible for bonus.

(a)   Total earnings = 16 * 3 = Rs. 48

                Labour cost per hour= 48/16 = Rs. 3

(b)   Total earnings = 16 * 3 = Rs. 48

                Labour cost per hour = 48/16 = Rs. 3

SHYAM:

As Shyam took less time than the standard time given to complete the work, he is eligible for bonus.

(a) **HALSEY PLAN:**

Halsey Plan = t * r + 50/ 100 (s-t) * r

$$\text{Halsey Plan} = 12 * 3 + 50/100 * (15 - 12) * 3$$

$$= 36 + 4.5$$

$$= \text{Rs. } 40.5$$

Labour per hour = 40.5/ 12 = Rs. 3.375

(b) ROWAN PLAN:

Rowan Plan = t *r + (s-t) / s * t *r

$$\text{Rowan Plan} = 12 * 3 + (15-12) / 15 * 12 * 3$$

$$= 36 + 0.2 * 36$$

$$= 36 + 7.2$$

$$= \text{Rs. } 43.2$$

Labour cost per hour = 43.2 / 12 = Rs. 3.6

ANSWER: (a) Total earnings of Ram = Rs. 48 ; Shyam = Rs. 40.5

   Labour cost per hour of Ram = Rs. 3 ; Shyam = Rs. 3.375

(b) Total earnings of Ram = Rs. 48 ; Shyam = Rs. 43.2

   Labour cost per hour of Ram = Rs. 3 ; Shyam = Rs. 3.6

SUM 60

   Given:

   Standard time (s) = 20 hours

   Rate per hour (r) = Rs. 4

Actual time taken by (t)

$$A = 16 \text{ hours}$$

$$B = 10 \text{ hour}$$

$$C = 8 \text{ hours}$$

(a) HALSEY PLAN:

Worker A:

> **Halsey Plan = t * r + 50/100 (s-t) * r**

$$\text{Halsey Plan} = 16 * 4 + 50/100 (20-16) * 4$$

$$= 64 + 8$$

$$= \text{Rs. } 72$$

Hourly earning = 72/16 = Rs. 4.5

Worker B:

$$\text{Halsey Plan} = 10 * 4 + 50/100 (20-10) * 4$$

$$= 40 + 20$$

$$= \text{Rs. } 60$$

Hourly earnings = 60/10 = Rs. 6

Worker C:

$$\text{Halsey Plan} = 8 * 4 + 50/100 (20-8) * 4$$

$$= 32 + 24$$

$$= \text{Rs. } 56$$

Hourly earnings = 56/8 = Rs. 7

(b) ROWAN PLAN:

Worker A:

$$\boxed{\text{Rowan Plan} = t * r + (s-t)/s * t *r}$$

$$\text{Rowan Plan} = 16* 4 + (20-16)/ 20 * 16 * 4$$

$$= 64 + 0.2 * 64$$

$$= 64 + 12.8$$

$$= \text{Rs. } 76.8$$

Hourly earnings = 76.8/ 16 = Rs. 4.8

Worker B:

$$\text{Rowan Plan} = 10 * 4 + (20-10) / 20 * 10 * 4$$

$$= 40 + 0.5 * 40$$

$$= 40 + 20$$

$$= \text{Rs. } 60$$

Hourly earnings = 60/ 10 = Rs. 6

Worker C:

$$\text{Rowan Plan} = 8 * 4 + (20-8) / 20 * 8 * 4$$

$$= 32 + 0.6 * 32$$

$$= 32 + 19.2$$

$$= \text{Rs. } 51.2$$

Hourly earnings = 51.2/ 8 = Rs. 6.4

ANSWER: **a) HALSEY PLAN:**

WORKER A -earnings = Rs. 72 ; hourly earnings = Rs. 4.50

WORKER B - earnings = Rs. 60 ; hourly earnings = Rs. 6

WORKER C - earnings = Rs. 56 ; hourly earnings = Rs. 7

b) ROWAN PLAN:

WORKER A -earnings = Rs. 76.8 ; hourly earnings = Rs. 4.80

WORKER B - earnings = Rs. 60 ; hourly earnings = Rs. 6

WORKER C - earnings = Rs. 51.2 ; hourly earnings = Rs. 6.40

SUM 61

Given:

Standard time (s) = 12 hours

Hourly rate (r) = Rs. 10

Actual time taken (t)

A = 8 hours

B = 6 hours

C = 4 hours

(a) HALSEY PLAN:

Worker A:

$$\boxed{\textbf{Halsey Plan = t * r + 50/100 (s-t) * r}}$$

Halsey Plan = 8 * 10 + 50/100 (12-8) * 10

$$= 80 + 20$$

$$= Rs. 100$$

Rate per hour = 100/8 = Rs. 12.5

Worker B:

$$\text{Halsey Plan} = 6 * 10 + 50/100 (12-6) *10$$

$$= 60 + 30$$

$$= Rs. 90$$

Rate per hour = 90/ 6 = Rs. 15

Worker C:

$$\text{Halsey Plan} = 4 * 10 + 50/100 (12-4) * 10$$

$$= 40 + 40$$

$$= Rs. 80$$

Rate per hour = 80/4 = Rs. 20

(b) ROWAN PLAN:

Worker A:

> **Rowan Plan = t* r + (s-t)/ s * t* r**

$$\text{Rowan plan} = 8 * 10 + (12-8) / 12 * 8 * 10$$

$$= 80 + 0.333 * 80$$

$$= 80 + 26.64$$

$$= Rs.106.64$$

Rate per hour = 106.64 / 8 = Rs.13.33

Worker B:

$$\text{Rowan Plan} = 6 * 10 + (12-6) / 12 * 6 * 10$$

$$= 60 + 0.5 * 60$$

$$= 60 + 30$$

$$= Rs. 90$$

Rate per hour = 90/ 6 = Rs. 15

Worker C:

$$\text{Rowan Plan} = 4 * 10 + (12-4) / 12 * 4 * 10$$

$$= 40 + 0.667 * 40$$

$$= 40 + 26.68$$

$$= Rs. 66.68$$

Rate per hour = 66.68 / 4 = Rs. 16.67

ANSWER: **a) HALSEY PLAN:**

WORKER A -earnings = Rs. 100 ; hourly earnings = Rs. 12.5

WORKER B - earnings = Rs. 90 ; hourly earnings = Rs. 15

WORKER C - earnings = Rs. 80 ; hourly earnings = Rs. 20

b) ROWAN PLAN:

WORKER A -earnings = Rs. 106.64 ; hourly earnings = Rs. 13.33

WORKER B - earnings = Rs. 90 ; hourly earnings = Rs. 15

$$\boxed{\textbf{Halsey Plan} = \textbf{t} * \textbf{r} + \textbf{50/100 (s-t)*r}}$$

WORKER C - earnings = Rs. 66.68 ; hourly earnings = Rs. 16.67

EARNINGS–WITH DEARNESS ALLOWANCE:

SUM 62

Given:

Standard time (s) = 30 hours

Actual time (t) = 20 hours

Hourly rate of wages (r)= Rs. 1

Dearness allowance = 50 paise = Rs. 0.5

(a) HALSEY PLAN:

$$\text{Halsey Plan} = 20 * 1 + 50/100\ (30\text{-}20) * 1$$

With dearness allowance:

$$\text{Halsey Plan} = 20 * 1 + 50/100\ (30\text{-}20) * 1 + 20 * 0.5$$

$$= 20 + 5 + 10$$

$$= \text{Rs. } 35$$

(b) ROWAN PLAN:

$$\boxed{\textbf{Rowan Plan} = \textbf{t} * \textbf{r} + \textbf{(s-t) /s *t * r}}$$

$$\text{Rowan Plan} = 20 * 1 + (30\text{-}20) / 30 * 20 * 1$$

With dearness allowance:

$$\text{Rowan Plan} = 20 * 1 + (30\text{-}20) / 30 * 20 * 1 + 20*$$
0.5

$$= 20 + 6.66 + 10$$

$$= \text{Rs. } 36.66$$

ANSWER: **a) HALSEY PLAN:**

$$\text{Earnings} = \text{Rs. } 35$$

b) ROWAN PLAN:

$$\text{Earnings} = \text{Rs. } 36.66$$

SUM 63

a) Halsey plan:

$$= 13 \times 5 + 50/100 \, (20\text{-}13) \, 5$$

$$= 65 + 17.5 \text{ Total wages} = \text{Rs.} 82.5$$

Overhead:

$$= 20 \times 5 \times 80\%$$

$$= \text{Rs. } 80$$

(b) Rowan plan:

$$= 13 \times 5 + (20\text{-}13/20) \, 13 \times 5$$

$$= 65 + 0.35(65)$$

$$= 65+22.75$$

$$= \text{Rs. } 87.75$$

Overhead:

$$= 20{\times}5{\times}80\%$$

$$= \text{Rs. } 80$$

SUM 64

(A) Halsey plan

Wages = 6 x 8 + 50% x 3 x 8 = 48 + 12 = 60

Overheads = 150% of 60 = 90

Material = 40

Factory cost = wages + overheads + material

$$60 + 90 + 40 = \text{Rs } 190$$

(B) Rowan plan
   Wages = 6 x 8 + 3/9 x 6 x 8 = 48 + 16 = 64
   Overheads = 150% of 64 = 96
   Material = 40
   Factory cost = wages + overheads + material
                64 + 96 + 40 = Rs 200

SUM 65

PARTICULAR	WAGES (RS.)	BONUS(RS.)	TOTAL EARNINGS (RS.)	EARNINGS PER HOUR (RS.)	SAVINGS IN WAGES(RS)
Halsey plan	13*5=65	50%*7*5=17.5	82.50	82.5/13=6.35	100-82.50 =17.50 (50*2=100)
Rowan plan	13*5=65	22.75	87.75	6.75	100-87.75 =12.50

SAVINGS IN O.Hs(RS.)	TOTAL SAVINGS(RS.)
100*80 % - (20-13)*5*80%=28	45.50
28	40.25

SUM 66

Given,

wages per hour = 0.75per hour

Time taken to produce 1 article is 30 minutes.

therefore, time taken to produce 100 articles = 100*30 / 60 = 50

S.T is increased by 20%

Thus, S.T = 60 (as 20% of 50 = 10 and 50+10= 60)

Time taken = 44 hours

Time saved = 16 hours

(A)   Time Rate :

Wages = 44*0.75 = Rs. 33

(B)   Rowan system :

Bonus = Time saved/ S.T*time taken * wage rate

= 16/60*44*0.75 = 8.8 Rs.

Therefore,

Normal wages=44*0.75+8.8 =Rs.41.8

(C)   Halsey plan :

Normal wages = time taken * wage rate per hour + bonus

Bonus = 50% of time saved* wage rate per hour

= 50% * 16* 0.75 = Rs.6

Therefore,

Normal wages=44*0.75+6=Rs.39

SUM 67

Given:

Standard time (s) = 50 hours

Rate per hour (r) = Rs. 2

Actual time taken (t) = 40 hours

(A) Piece Basis :

Total wages = Actual time taken × Hourly rate

Total wages = 50hours × Rs 2/hour

Total wages = Rs 100

(B) Halsey plan :
      i.   Time saved = 50 hours - 40 hours = 10 hours
                (i.e., S.T – A.T)

  ii. Bonus = 50% × 10 hours × Rs 2/hour

Bonus = 5 hours × Rs 2/hour

Bonus = Rs 10

  iii. Total wages = 40 hours × Rs 2/hour + Rs 10

Total wages = Rs 80 + Rs 10

Total wages = Rs 90

(C) Rowan's Plan :
      i.   Time saved = 50 hours - 40 hours = 10 hours
      ii.   Bonus = (Time saved / Standard time) × Actual time × Hourly rate

Bonus = (10 hrs / 50 hrs) × 40 hrs × Rs 2/hr

Bonus = 0.2 × 40 hours × Rs 2/hour

Bonus = 8 hours × Rs 2/hour

Bonus = Rs 16

      iii.   Total wages = 40 hours × Rs 2/hour + Rs 16

Total wages = Rs 80 + Rs 16

Total wages = Rs 96

SUM 68

Halsey Weir Premium Bonus System (30% to worker)

-Standard time = 60 hours

- Actual time = 48 hours

- Time saved = Standard time - Actual time = 60 hours - 48 hours = 12 hours

(A) Bonus = Time saved x Hourly rate x 0.3 (30% of time saved) =48 hours x Rs. 0.75 +0.2 x 36 = Rs. 43.

(B) Earnings = Actual time x Hourly rate + Bonus = 48 hours x Rs. 0.75 + Rs. 2.70 = Rs. 36 + Rs. 2.70 = Rs. 38.70

SUM 69

Given:

  Standard time = 30 hour

  Time taken = 20hour

  Hourly rate of wages = Rs.1/hour + dearness allowance @50 paise/ hour

 (A)Earnings under Time Rate Method :

 Wages for 20hrs(time taken)@ Rs.1/hour = Rs.20

 Dearness allowance - 20 hours @ 50 paise/hour = Rs.10

    Earnings = Rs.20 + Rs.10 = Rs.30

(B) Earnings under Piece Rate Method :

  Earnings = Rs.30 + 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

Earnings = Rs.20 + Rs.5 + Rs.10 = Rs.35

(D) Earnings under Rowan Plan :

Wages for 20hours (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

Earnings = Rs.20 + Rs.6.67+ Rs.10 = Rs.36.67

SUM 70

(A) Straight piece rate system :

Earnings = Rate per piece * No. Of pieces produced

= Rs. 1.50*150 = Rs. 225.

Standard time= 150×20/ 60= 50 hours

(C) Halsey plan= 48× 3.75+ 50/100 (50-48) × 3.75

= 180+ 3.75 = Rs.183.75

(D) Rowan plan = 48× 3.75 + (50-48)/ 50 × 48× 3.75

= 180+ 0.04× 180

= 180+7.2

= Rs.187.2

SUM 71

71) SOLUTION:

(A) Time rate basis :

- Standard time: 100 hours

- Actual time: 80 hours

- Hourly rate: Rs. 4 (wages) + Rs. 5.50 (dearness allowance) = Rs. 9.50 per hour

- Total wages = Actual hours worked x Hourly rate

= 80 hours x Rs. 4 per hour

= Rs. 320

=dearness allowance – 80 x Rs 5.50 =Rs 4=Rs 440

- total wages Rs 320 +440 = Rs 760

B) Halsey Rate Basis (50%) :

- Standard time: 100 hours

- Actual time: 80 hours

- Time saved = Standard time - Actual time = 20 hours

- Bonus = 50% of time saved x Hourly rate

= 50% x 20 hours x Rs 4. per hour

= Rs. 40

- Total wages = Actual hours worked x Hourly rate + Bonus

= Rs. 760 + Rs.40

= Rs. 800

C) Rowan's Bonus System

- Standard time: 100 hours

- Actual time: 80 hours

- Time saved = Standard time - Actual time = 20 hours

= Bonus = 20 hours / 100 hours x 80 x 4 per hour

= Rs. 64

- Total wages = Actual hours worked x Hourly rate + Bonus

= Rs. 760 + Rs. 64

= Rs. 824

SUM 73

a) Factory cost = Labour + Material +overhead

$$= 4+6×1.5+9 = ₹22$$

b) factory cost = materials + labour+overhead

$$= 4+6×1.5+50\%(9-6)1.5+11.25$$

$$= 4+11.25+11.25= ₹26.5$$

SUM 74

Given:

Standard time = 9 hours

Actual time = 6 hours

Rate per hour = Rs. 0.75

(a)(i) Piece work plan:

$$= 6×0.75$$

= Rs. 4.5

(ii)Overheads = 4.5×150%

= Rs.6.75

(iii) Material cost = Rs.4

Adding (i)+(ii)+(iii) = 4.5+6.75+4

Factory cost= Rs. 15.25

(b) (i)Rowan plan:

= 6× 0.75 + (9-6/9) 6× 0.75

= 4.5+ 0.33× 4.5

= 4.5+ 1.485

Total wages= 5.9 or 6

(ii) Overhead = 6× 150%

= Rs.9

(iii) Material cost = Rs. 4

Addition of (i)+ (ii) + (iii) = 6+9+4

Factory cost = Rs. 19

(c) (i) Halsey plan:

= 6× 0.75+ 50/100× 3× 0.75

= 4.5+ 1.125

= Rs.5.63

(ii) Overhead = 5.63× 150%

= Rs. 8.44

(iii) Material cost = Rs. 4

Addition (i)+(ii)+(iii)= 5.63 +8.44 +4

Labour cost = Rs. 18.07

SUM 75

Level of performance= [Actual output ÷ standard output]×100

a) =168÷192×100= 87.5%(if actual output is 168)

b) = 240÷192×100 = 125%(if actual output is 240)

Wages= hours worked ×rate per hour

$\quad$ = 12×0.75 = ₹9

If it's between 66 to 100% = time wage + bonus

$\quad$ = 9 + 8% of 9 = ₹9.72

If above 100% = time wage + 20% of time wage + add bonus in time wage

$\quad$ = 9+ 20% of 9 + 25% of 9

$\quad$ = ₹13.05

SUM 76

level of performance= [actual output÷ standard output]× 100

A= 500÷1000 =50%

B=900÷1000×100=90%

C= 1000÷1000×100=100%

D= 1200÷1000×100=120%

Time wage = hours worked × rate per hour

A= 26×50=₹1040

B = time wage + 10% of time wage (since it is 90%)

   = 1040+104= ₹1144

C = time wage + 20% of time wage(lop is 100%)

   = 1040+208= ₹1248

D= time wage + 20% of time wage + every 1% increase of time wage

   = 1040+20% of 1040 + 20% of 1040

=1040+208+208=₹1456

SUM 77

Earnings = Time taken × rate per hour + (75/100)time saved× hour rate

10 hours -100 units ,10 hours – 120 units

Earnings = 10×20×75/100×120/60×20

      =200+30

      =₹230

SUM 78

Barth's variable sharing plan = rate √standard time × actual time

   = 10√50×40 = ₹447.21