CLASS XII (COSTING)

TYPES OF REMUNERATION

BONUS PREMUM PLAN

HALSEY PREMIUM PLAN

ROWAN PREMIUM PLAN

TIME SAVED = TIME ALLOWED/STANDARD TIME – TIME TAKEN

10 HOURS – 8 HOURS

2 HOURS (BONUS HOURS)

HALSEY = T X R + 50% (S-T X R)

HERE

S STANDS FOR STANDARD TIME OR TIME ALLOWED

T STANDS FOR TIME TAKEN

R STANDS FOR RATE PER HOUR

TIME ALLOWED = 8 HOURS

TIME TAKEN = 6 HOURS

RATE PER HOUR = ₹5

TS = S-T = 8 HOURS – 6 HOURS = 2 HOURS(BONUS HOURS)

EARNINGS UNDER HALSEY = T X R + 50%(TS x R)

= 6 HOURS x ₹5 + 50% (2 HOURS x ₹5)

= ₹30 + ₹5 = ₹35

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Q16

STANDARD TIME = 40 HOURS

RATE PER HOUR = ₹15

TIME TAKEN = 32 HOURS

TIME SAVED = S- T = 40 HOURS – 32 HOURS = 8 HOURS

WAGES AS HALSEY = T X R + 50%(TS X R)

= 32 HOURS x ₹15 + 50% (8 HOURS x ₹15)

= ₹480 + 60

= ₹540

PRIME COST = MATERIAL COST + LABOUR COST

= ₹1000 + ₹540 = ₹1540

WORKCOST = PRIME COST + FACTORY OVERHEAD

= 1540 + (32 HOURS x ₹10)

= 1540 + 320

= ₹1860.

17

S= 12 HOURS

T = 8 HOURS

TS = 12 HOURS – 8 HOURS = 4 HOURS

RATE PER HOUR = ₹40

WAGES UNDER HALSEY = T X R + 50 % (TS X R)

= 8 X 40 + 50% (4 x 40)

= 320 + 80

= 400.

18.

ORDINARY WAGES RECIEVED = ₹160

WORKING HOURS = 8 HOURS

SO RATE PER HOUR = 160/8 = ₹20

The standard output per hour is 80 units.

So standard output in 8 hours = 80 x 8 = 640 units

The worker produces = 800 units

To produce 800 units time required = 800/80 = 10 hours

S = 10 hours

T = 8 hours

Ts = 10 – 8 = 2 hours

Wages under halsey = T X R + 50% (TS x R)

= 8 x 20 + 50%(2 x 20)

= 160 + 20

= ₹180

Wages for working for 1 hours = 160/8= ₹20

Bonus amount for 1 hours = 20/8 = 2.5

Wages for 100 units per hour = 20+2.5 = ₹22.5

Rowan Premium Plan

T X R + (S – T/ S x T x R) OR T X R +(TS/S X T X R)

T STANDS FOR TIME TAKEN

S STANDS FOR STANDARD TIME

TS STANDS TIME SAVED

R STANDS RATE PER HOUR

Standard time = 25 hours

Wages rate per hour =₹5

Time taken = 17 hours.

S= 25 HOURS

T = 17 HOURS

R =₹ 5

TS = S – T = 25 HOURS – 17 HOURS = 8 HOURS

WAGES AS PER ROWAN = T X R + (TS/S X T X R)

= 17 X 5 + (8/25 X 17 x 5)

=85 + 27.2

=₹112.20

TWO WORKERS	Ram	Rahim
Time Taken	12	18
Time Saved	8	12
Rate of wages	3	5

Calculate the wages of Ram and Rahim in Halsey as well as Rowan.

TWO WORKERS	BIMAL	RAHIM
TIME TAKEN	60	50
TIME SAVED	30	20
RATE PER HOUR	18	15
INCENTIVE SCHEME	ROWAN	HALSEY

Bimal

Time taken = 60 hours

Time saved = 30 hours

Standard time = 60 hours + 30 hours = 90 hours

Rate per hour = ₹18

Earnings under Rowan = T X R + (TS/S X T X R)

= 60 X 18 + (30/90 X 60 X 18)

= 1080 + 360

= ₹1440

₹

Rahim

Time taken 50 hours

Time Saved = 20 hours

Standard time = 50 + 20 = 70 hours

Rate per hour = 15

Earnings under halsey = T X R + 50%(TS X R)

= 50 x 15 + 50%(20 x 15)

= 750 + 150

= ₹900

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Q 19

STANDARD TIME = 150 HOURS

TIme TAKEN = 120 HOURS

RATE PER HOUR = ₹15

TS = 150 HOURS – 120 HOURS = 30 HOURS

WAGES = T X R + (TS/S X T X R)

= 120 x 15 + (30/150 X 120 X 15)

= 1800 + 360

= ₹2160

Total no of hours worked = 120 hours

Hours worked in 1 day = 8 hours

No of days worked = 120/8 = 15 days

Dearness allowance @ ₹48 per day
Total DA = 48 x 15 = ₹720

Total earnings = ₹2160+₹720= ₹2880

Standard time to complete a job = 500 minutes

Amar = 400 min

Akbar = 300 min

Anthony = 500 min

Anant = 600 min

Rate per hour = ₹12.

Rate per minute = rate per hour / min

12/60 = ₹0.20

20.

Time Taken = 30 hours

Rate per hour = ₹20

Factory cost = ₹5200

Raw material = ₹4000

Works overhead = ₹15 per hour worked

Raw material + Wages = prime cost

Prime cost + works overhead = Work cost / Factory cost

Wages = Hours worked X rate per hour

= 30 X 20 = ₹600

Prime cost = Material + Wages

= 4000 + 600 = 4600

Works overhead = 30 X 15 = ₹450

Work cost /factory cost = Prime Cost + Works overhead

= 4600 +450 =₹ 5050

But Works cost given = ₹5200

So difference = 5200 -5050 = ₹150 (Bonus)

Bonus under rowan = (S-T/S X T X R)

150 = (S – 30/S X 30 X 20)

150 = S-30/S X 600

150 S= 600S - 18000

150S = 600S – 18000

150S – 600S = -18000

- **450 S = - 18000**
- **S= 18000/450 = 40 HOURS.**

21

M

Prime cost = 4500

Material cost = 3000

Wages = prime cost – material

= 4500 -3000

= 1500

Paid wages according to rowan

Wages = TX R + (S-T/S X T X R)

1500 = T X 20 + (80-T)/80 X T X 20

1500 = 20T +(80-T/80) X 20T

1500 = 20T (1 + (80-T)/80)

75 = T (160-T /80)

T^2 – 160T+ 6000 = 0

T = 100

T = 60

23

ST = 8 Hours

TT = 6 Hours

R/Hr= ₹2.50

Earnings as per halsey weir :-

T X R + 30% OF (S-T X R)

2.50 x 6 + 30% OF (8 – 6 X 2.50)

15 + 1.5 = ₹16.5

DA = ₹ 1.00 per hour worked = 6 hours X ₹1 = ₹6

Total earnings = 16.5 +6 =₹ 22.5

Total hourly rate = Total earnings /no of hours worked = 22.5/6 = ₹3.75

Earnings as per Rowan

T X R + (S-T/S X T X R)

2.50 X 6 + (8-6/8 X 2.50 X 6)

15 + 3.75= ₹18.75

DA = ₹ 1.00 per hour worked = ₹6.00

Total earnings = 18.75 +6 =₹ 24.75

Difference if paid under Rowan = ₹24.75 – ₹22.5= ₹2.25.

24.

Units produced by the worker = 200 units

Guaranteed weekly wage for 45 hours = ₹81

Expected time to produce on unit= 15 min + 20% increase = 18 min

So wage rate per hour = **Total wages / no of hours worked** = ₹81/45 hours = ₹1.80

Time allowed for actual weekly production = 200 units X 18 min / 60 min = 60 hrs.

S= 60 hours

T = 45 hours

Wage rate = ₹1.80

Earnings under halsey = T X R + 50 % OF (S-T X R)

= 45 X 1.80 + 50% OF (60-45 x 1.80)

= 81 + 13.50 = ₹94.50

Effective hourly earnings = total wages /hours worked = ₹94.50/45 hrs = ₹2.10 /hr.

Earnings under Rowan = T X R + (S-T/S X T X R)

= 45 X 1.80 + (60-45/60 X 45 X 1.80)

= 81 + 20.25 = ₹101.25

Effective hourly earnings = total wages /hours worked = ₹101.25/ 45hrs = ₹2.25

25.

Standard Time of 1 dozen = 3 hours

So standard time for 20 dozens = 20 X 3 = 60 hours

Time Taken= 48 Hours

Earnings under Halsey:

T X R + 50% OF (S-T X R)

48 X 5 + 50% OF (60-48 X 5)

240 + 30 = ₹270

Earnings under Rowan

T X R + (S-T/S X T X R)

48 X 5 + (60-48/60 X 48 X 5)

240 + 48 = ₹288

26.

In 2 hours no of articles produced = 100

So in 1 hour = 100/2 = 50 articles

P Produced 600 articles

So standard time to produce 600 articles = 600/50 = 12 hours

Time taken = 8 hours

Rate per hour = ₹12

Earnings under Halsey:

T X R + 50% OF (S-T X R)

8 X 12 + 50% OF (12-8 X 12)

96+ 24 = ₹120

Earnings under Rowan

T X R + (S-T/S X T X R)

8 X 12 + (12-8/12 X 8 X 12)

96 + 32 = ₹128

Q Produced 500 articles

So standard time to produce 500 articles = 500/50 = 10 hours

Time taken = 8 hours

Rate per hour = ₹12

Earnings under Halsey:

T X R + 50% OF (S-T X R)

8 X 12 + 50% OF (10-8 X 12)

96+ 12 = ₹108

Earnings under Rowan

T X R + (S-T/S X T X R)

8 X 12 + (10-8 /10X 8 X 12)

96 + 19.2 = ₹115.20

27.

STANDARD TIME TO PRODUCE 1 ARTICLE = 15 MIN

NO OF UNITS PRODUCED IN 1 HOUR = 60 /15 = 4 UNITS

HOURLY RATE = ₹ 5.00

NORMAL PIECE RATE = 5/4 = ₹1.25

UNITS PRODUCED = 240

EARNINGS UNDER PIECE RATE = NO OF UNITS PRODUCED X RATE /PIECE

240 X ₹1.25 =₹ 300

He produced = 240 unit

Standard hours for producing 240 units = 240 /4 = 60 hours

S= 60 hours

T = 48 hours

Rate /hour= 5.00

Rowan

Total earnings =T X R + (S-T/S X T X R)

48 x 5 + (60 -48/60 x 48 x 5)

₹288

Halsey

Total earnings = T X R + 50 % (S-T X R)

48 X 5 + 50% (60-48 X 5)

₹270

28

UNITS PRODUCED = 300

Time Taken =48 hours

Rate / hr= ₹40

1 UNIT IS MANUFACTURED IN 10 MINS

SO 1 HOURS UNITS MANUFACTURED = 60/10 = 6 UNITS

Normal piece rate = 40/6 = 6.7

STRAIGHT Piece rate wages = 300 X 6.7=2010

1. Piece work with guaranteed weekly wages = T X R = 48 hours X ₹40 = ₹1920

Time allowed for 1 unit = 10 min

But for incentive scheme increased by 20% = i.e 20% of 10 min = 2 min

Time allowed under incentive scheme = 10 min + 2 min = 12 min

In 1 hour how many units to be manufactured = 60 min /12 min = 5 units

So to manufacture 300 units time required = 300/5 = 60 hours

S = 60 hours

T = 48 hours

R = ₹40

Halsey = T X R + 50 % (S-T X R)

= 48 X 40 + 50%(60-48 X 40)

= 1920 + 240= 2160

ROWAN = T X R + (S-T/S X T X R)

= 48 X 40 + (60-48/60 X 48 X 40)

= 1920 + 384 = 2304.

29.

No of units produced in 1 hours = 25 units

So

Standard time of X = 200/25 = 8 hours

Standard Time for Y = 250/25 = 10 hours

Standard Time for Z = 300/25 = 12 hours

Time Taken = 8 hours

Rate per hour =₹ 8

Earnings under halsey:

X = R X T + 50% OF (S – T X R)

= 8 X 8 + 50 % (8 – 8 x 8) = ₹64

Effective hourly earnings = 64/8 = ₹8

Y = R X T + 50% OF (S – T X R)

= 8 X 8 + 50 % (10 – 8 x 8) = ₹72

Effective hourly earnings = 72/8 = ₹9

Z = R X T + 50% OF (S – T X R)

= 8 X 8 + 50 % (12 – 8 x 8) = ₹80

Effective hourly earnings = 80/8 = ₹10

Earnings under **Rowan**

X = T X R + (S-T/S X T X R)

= 8 X 8 + (8 –8 /8 X 8 X 8) = ₹64

Effective hourly earnings = 64/8 =₹ 8

Y = T X R + (S-T/S X T X R)

= 8 X 8 + (10 –8 /10 X 8 X 8) = ₹76.8

Effective hourly earnings = 76.8/8 =₹ 9.6

Z = T X R + (S-T/S X T X R)

= 8 X 8 + (12 –8 /12 X 8 X 8) = ₹85.3

Effective hourly earnings = 85.3/8 =₹ 10.66

31

S = 9 hours

T = 6 hours

Rate /hr = ₹7.50

Piece wages = Standard hours X Rate per hour

9 HOURS X 7.50 = ₹67.5

Prime cost = direct material + wages = 40 + 67.5 = ₹107.50

Overhead = 150 % of wages = 150% of 67.5 = 101.25

Factory cost = prime cost + overhead = 107.50+101.25 = 208.75

Rowan

T x R + (S-T/s X T XR)

6 X 7.50 + (9-6/9 X 6X7.50)

45 +15

= ₹60

Prime cost = direct material + wages = 40 + 60 = ₹100.00

Overhead = 150 % of wages = 150% of 60 = ₹90

Factory cost = prime cost + overhead = 100+90 = ₹190

HALSEY

T X R + 50 %(S-T X R)

45 + 11.25

56.25

Prime cost = direct material + wages = 40 + 56.25 = ₹96.25

Overhead = 150 % of wages = 150% of 56.25= 84.375

Factory cost = prime cost + overhead = 96.25+84.375 = 180.625

32

S = 20 hours

T = 13 hours

Rate per hour = ₹15.00

Wages under Halsey

T x r + 50%(S-T X R)

13 x 15 + 50%(20-13 X 15)

195 + 50%(105)

195+52.5= 247.50

Wages under Rowan

T X R + (S-T/S X T XR)

13 X 15 + (20-13/20 X 13 X 15).

195 + 68.25= 263.25

FACTORY OVERHEAD = 80 % OF WAGES

HALSEY = 80% OF 247.50= 198

Rowan = 80% of 263.25 = 210.6

33

A

S = 20

T =14

RATE PER HOUR = ₹10

Earnings under Halsey = T x r + 50%(s-t x r)

14 x 10 + 50%(20-14 x 10)

140 +30

A EARNINGS = ₹170

EARNInGS PER HOUR = 170/14 =₹12.14

B earnings = T X R

20 X 10 = ₹200

EARNINGS PER HOUR = 200/20 = ₹10.

A is more benifitED

34

STANDARD TIME TO MANUFACTURE I UNIT= 30 MINS

SO IN 1HOUR = 60/30 = 2 UNITS

RATE PER HOUR = ₹16

PIECE RATE = 16/2 = ₹8

STANDARD OUTPUT IN A DAY = 8 hours X 2 = 16 UNITs

A 's ACTual OUPUT 15 UNITs

EFFICEINCY = AP/SP X 100 = 15/16 X 100 = 93.75%

<=100% APPLICABLE PIECE RATE = 75% OF ₹8 = ₹6

WAGES OF A = 15 X 6 = ₹90

B

AP= 25 UNITS

HOURS REQUIRED TO MANUFACTURE 25 UNITS =25/2 = 12.5 HRS

S= 12.5 HOURS

T = 8 HOURS

RATE = 16

T X R + 50% (S-T X R)

8 X 16 + 50%(12.5 – 8 X 16)

128 + 36

HALSEY = ₹164

AP OC = 16 UNITS

EARNINGS OF C = UNIT PRODUCED X RATE PER PIECE

16 X 8 = 128.00

35

Standard time per unit 1 min

In 1 hour = 60 units

Wage rate = ₹5.40

Piece rate = wage rate/unit produced in a hour = 5.40/60 = 0.09

Production of P = 300 units

Earnings as per straight piece = unit produced X rate per piece

300 x 0.09 =₹ 27

Merrick

Standard production in 8 hours = 60 X 8 = 480

P = actual production = 300

Efficiency = ap/sp X 100 = 300/480 X 100 = 62.5%

< 83.33% normal piece rate

300 x 0.09 = ₹27

36.

S= 10

R = ₹20

BONUS UNDER HALSEY = ₹40

SO.

40 = 50% OF(S-T X R)

40 = 50% OF (10 – T X 20)

40 = 50 % OF (200 – 20 T)

40 = 100 – 1O T

1OT = 100-40

10 T = 60

T = 60/T = 6 HOURS

THEREFORE TIME SAVED = 10 HOURS-6HOURS = 4 HOURS

NOW EARNInGS UNDER ROWAN

T X R + (S-T/S X T X R)

=6 X 20 + (10-6/10 X 6 X 20)

=120 + 48

=₹168

37.

S= 100 HOURS

T = 80 HOURS

R= 6.00/HR.

EARNINGS AS PER TIME RATE

T x R = 80 HOURS x ₹ 6.00 = ₹480

MATERIAL COST = ₹800

FACTORY OVERHEAD = 125 % OF WAGES = 125% OF 480 = 600

Prime cost = 800+480 = 1280

SO WORK COST = 1280+600 = ₹1880

EARNINGS UNDER PIECE RATE

S x R = 100 HOURS X ₹6= ₹600

MATERIAL COST = ₹800

FACTORY OVERHEAD = 125 % OF WAGES = 125% OF 600 = 750

SO WORK COST = 600+800+750 = ₹2150

EARNINGS UNDER HALSEY

T X R + 50 % OF (S- T X R)

80 X 6 + 50 % OF (100 -80 X 6)

480 + 60 =₹ 540

MATERIAL COST = ₹800

FACTORY OVERHEAD = 125 % OF WAGES = 125% OF 540 = 675

SO WORK COST = 540+800+675 = ₹2015

EARNINGS UNDER ROWAN

T X R + (S-T/S X T X R)

80 X 6 + (100-80/100 X 80 X 6)

480 + 96 = ₹576

MATERIAL COST = ₹800

FACTORY OVERHEAD = 125 % OF WAGES = 125% OF 576 = 720

SO WORK COST = 576+800+720 = ₹2096.

38.

S = 80 HOURS

T = 60 HOURS

SO TIME SAVED = S – T = 80 HOURS – 60 HOURS = 20 HOURS.

SO MAXIMUM BONUS HOURS = 20 HOURS.

39.

WORKER ARUN

S= 5 HOURS

T = 4 HOURS

R = ₹15

EARNINGS UNDER HALSEY

T X R + 50%(S-T X R)

4 X 15 + 50% (5 – 4 X 15)

60 + 7.5 = ₹67.5

EFFECTIVE HOURLY RATE = 67.5/4 = ₹16.875

EARNINGS UNDER ROWAN

T X R + (S-T/S X T X R)

4 X 15 + (5 -4/5 X 4 X 15)

60 + 12 = ₹72

EFFECTIVE HOURLY EARNINGS = 72/4 = ₹18.00

WORKER BARIN

S= 5 HOURS

T = 6 HOURS

R = ₹15

EARNINGS UNDER HALSEY

T X R + 50%(S-T X R)

6 X 15 + 50% (5 – 6 X 15)

90 + 0 = ₹90

EFFECTIVE HOURLY RATE = 90/6 = ₹15.00

EARNINGS UNDER ROWAN

T X R + (5-6/5 X T X R)

6 X 15 + (5 -6/5 X 4 X 15)

90 + 0 = ₹90

EFFECTIVE HOURLY EANIGS = 90/6 = ₹15.00

40.

S = 75 HOURS

R = ₹20

EFFECTIVE HOURLY WAGES UNDER HALSEY = ₹26.70/HR.

ACCORDING TO THE FORMULA

EFFECTIVE HOURLY EARNINGS = TOTAL EARNINGS/HOURS WORKED

SO 26.70 = TOTAL EARNINGS/ T

SO TOTAL EARNINGS = 26.70 x T = 26.70 T

USING HALSEY FORMULA

TOTAL EARNINGS = T X R + 50%(S-T X R)

26.70T = T X 20 + 50% (75 – T X 20)

26.70 T = 2OT + 50% (1500 – 20T)

26.70T = 20T + 750 – 10 T

26.70 T = 750 + 10T

26.70T – 10T = 750

16.70T= 750

T = 750/16.70 = 45 HOURS.

NOW EARNINGS UNDER ROWAN

TE= T X R + (S-T/T X T X R)

TE = 45 X 20 + (75-45/75 X 45 X 20)

TE= 900 + 360

TE= ₹1260

NOW EFFECTIVE EARNINGS = 1260/45= ₹28.

41.

WAGE RATE PER HOUR = ₹30

STANDARD TIME PER UNIT = 4 HOURS

EFFECTIVE HOURLY EARNIGS UNDER ROWAN = ₹37.50

SO TOTAL EARNINGS = 37.50T

ACCORDING TO THE ROWAN

TE = T X R + (S-T/S X T X R)

37.50 T= T X 30 + (4 – T/4 X T X 30)

37.50T = 30T + 4 – T X 7.5 T)

37.50 T= 30T + 30T – 7.5 T^2

37.50T= 60 T – 7.5T^2

37.50T – 60T = - 7.5T^2

$-22.5T = -7.5T^2$ (MINUS MINUS CANCEL)

T = 22.5/7.5 = 3 HOURS.

NOW EARNIGS UNDER HALSEY

TE = T X R +50% (S-T X R)

TE = 3 X 30 + 50%(4-3 X 30)

TE = 90 + 15 = ₹105 EFFECTIVR 105/3 = 35

43.

SHRAMEEK EARNS UNDER HALSEY = ₹270

TIME TAKEN = 8 HOURS

RATE PER HOUR = ₹30

STANDARD TIME = ?

SO ACCORDIING TO THE HALSEY

TE = T X R + 50%(S-T X R)

270 = 30 X 8 + 50%(S-8 X 30)

270 = 240 + 50% (30 S – 240)

270 = 240 + 15 S – 120

270 = 240-120 + 15 S

270 = 120 + 15 S

270 -120 = 15 S

150 = 15 S

S = 150/15 = 10 HOURS

EARNINGS UNDER ROWAN

TE = T X R + (S-T/S X T X R)

= 30 X 8 + (10 – 8 X 30 X 8)

= 240 + 48

= ₹288

45

Basic wage rate of 8 hours work = ₹20

So wage rate per hour = 20/8= ₹2.5/hr.

Job no 2955

S = 25 hours

T = 20 hours

Total earnings under rowan = TX R + (S-T/S X T XR)

= 20 X 2.5 + (25-20/25 X 20 X 2.5)

= 50 + 10 = ₹60

JOB NO 4985

S = 30 hours

T = 20 hours

Total earnings under rowan = TX R + (S-T/S X T XR)

= 20 X 2.5 + (30-20/30 X 20 X 2.5)

= 50 + 16.7= ₹66.7

IDLE TIME = 8 X 2.50 = ₹20

SO TOTAL WAGES = 60 + 66.7+20= 146.70

DA = ₹120

SO GROSS WAGES = 146.70+120 = 266.70.

46

SACHIN (HALSEY)

MATERIAL COST = 1000

T= 12 HOURS

TIME SAVED = 8HOURS

S= 12HOURS + 8 HOURS = 20 HOURS

RATE PER HOUR = ₹3

FACTORY OVERHEAD = ₹4000

TE= T X R + 50%(TS X 3)

TE= 12 X 3 + 50% (8 X 3)

TE= 36 + 12 = ₹48

EFFECTIVE HOURLY RATE = 48/12 = ₹4

PRIME COST = MC + WAGES = 1000 +48 = 1048

FACTORY COST = PRIME COST + FACTORY OVERHEAD

= 1048 + 4000 = ₹5048

SOURAV (ROWAN)

MATERIAL COST = 1000

T= 18 HOURS

TIME SAVED = 13HOURS

S= 18HOURS + 12 HOURS = 30 HOURS

RATE = ₹12

FACTORY OVERHEAD = ₹3000

TE= T X R + (TS/30 X T X R)

TE= 18 X 12 + (12/30 X 18 X 12)

TE= 216 + 86.4 = ₹302.40

EFFECTIVE HOURLY RATE – 302.40/18=₹16.8

PRIME COST = MC + WAGES = 2000 +302.40 = 2302.40

FACTORY COST = PRIME COST + FACTORY OVERHEAD

= 2302.40 + 3000 = ₹5302.40

47.

DAILY WAGE = ₹60/DAY FOR 8 HOURS

SO FOR 1 HOUR = 60/8 = 7.5/HR.

FACTORY A = PIECE RATE

FACTORY B = HALSEY

S = 10 HOURS

COST OF MATERIAL = ₹50

OVERHEAD = ₹4 PER LABOUR HOUR

FACTORY A

PIECE RATE FOR FACTORY A = ₹9

SO TE = STANDARD HOURS X PIECE RATE = 10 X 9 =₹ 90

EFFECTIVE HOURLY RATE = 90/6 = ₹15

WORK COST = 50 + 90 + (4X6) = ₹164

FACTORY B

TE = T X R + 50% (S-T X R)

TE = 6 X 7.5 + 50%(10-6 X 7.5)

TE= 45 + 15 = ₹60

EFFECTIVE HOURLY RATE = 60/6 = ₹6

WORK COST = 50 + 60 + (4X6) = ₹134.

50

Normal working hours = 5 x 8 + 3 x 3 = 49 hours

Rate of wages = ₹160/hr (normal)

Overtime rate = ₹225/hr (late)

Average output(in 49 hours) = 120 articles

Overcome the late hours

Time rate = 160/hr

Basic time to produce 15 articles = 5 hours

Piece work rate = 20% add to basic rate

Premium Bonus = Add 50% to time

135 articles were produced in 40 hours (piece rate, halsey and rowan)

1. Wages as per time rate = 40 X 160 + 9 x 225

   = 6400 + 2025

   = 8425

Assume 135 article produced in 40 hr in a week

Standard time to produce 15 article = 5 hours

So in 1 hour no of articles produced = 15/5 = 3 articles

Rate per hour = ₹160

Normal piece rate = 160/3 = 53.34

Applicable piece rate = Normal Piece rate + 20% more

= 53.34 + 20% of 53.34

= 53.34 + 10.668

= 64.008

So earnings under piece rate = 135 X 64.008 =8641.08

1 article is produced in 3 hours

So 135 articles will be produced in= 135/3 = 45 hours

For premium bonus 50% to be added to time

So 45 hours + 50% of 45 hours = 45 + 22.5 = 67.5 hours

S= 67.5 hours

T = 40 hours

Ts = 67.5-40 = 27.5 hours

Earnings under halsey = 40 x 160 + 50%(27.5 x 160)

= 6400 + 2200

= 8600

Earnings under Rowan = 40 x 160 + (27.5/67.5 x 40 X160)

= 6400 + 2607.40

= 9007.40