4. OVERHEADS - ABSORPTION COSTING METHOD

ASSIGNMENT SOLUTIONS

PROBLEM NO: 01

Primary distribution summary:-

Particulars	Basis of operation	Total	Production Dept		Service Dept		
			P1	P2	S1	S2	S3
Indirect Material	Given		1,000	1,500	2,000	3,000	1,000
Indirect Wages	Given		2,500	3,000	2,000	1,000	2,000
Power & Light	KWH (5.4:3:3:4)	10,000	2,631	2,105	1,579	1,580	2,105
Rates and Taxes	Area (3:2:5:2:1)	500	115	77	192	77	38
Insurance	Capital Value of asset $\left(\frac{5,000}{11,000}x100\right)$ = 45%	5,000	450	900	1,350	450	1,800
Depreciation	Capital Value of asset 1% p.m.		10	20	30	10	40
			6,706	**7,602**	**7,151**	**6,117**	**6,983**

Power = $10,000x\frac{5,4,3,3,4}{19}$ = 2,631; 2,105; 1,579; 1,579; 2,105

Rates = $500x\frac{3,2,5,2,1}{13}$ = 115, 77, 192, 77, 38

Secondary distribution summary:-

MASTER MINDS

Particulars	Basis	Production Dept		Service Dept		
		P1	P2	S1	S2	S3
Overheads as per primary		6,706	7,602	7,151	6,117	6,983
Apportionment of S1, OH	DLH (1:1)	3,576	3,575	(7,151)		
Apportionment of S2, OH	DLH (1:1)	3,058	3,059	-	(6,117)	
Apportionment of S2, OH		3,492	3,491	-		(6,983)
Total overhead (a)		16,832	17,727	Nil	Nil	Nil
Hours (b)		8,000	1,000			
Overhead recovery rate(a/b)		2.104	17.727			

PROBLEM NO: 02

Secondary overheads distribution statement (step down method)

Particulars	Basis	Production Dept			Service Dept			
		X	Y	Z	P	Q	R	S
Over heads as per primary destructions method	Given	2,00,000	1,50,000	50,000	25,000	50,000	75,000	50,000
Apportion of service dept "P" to others	No of Employees	10,000	5,000	1,000	(25,000)	2,000	5,000	2,000
Apportion of service dept "Q"	No of labour hours	12,552	16,138	14,345	-	(52,000)	1,793	7,172
Apportion of service dept "R"	Area	9,088	18,176	9,088	-	-	(81,793)	45,441

Apportion of service dept "S"	Labour hours	30,572	39,230	34,871	-	-	-	1,04,613
Estimated OH (a)		2,62,152	2,28,544	1,18,304	Nil	Nil	Nil	Nil
Estimated hours (b)		7,000	9,000	8,000				
OHRR (a/b)		37.45	25.40	14.788				

PROBLEM NO: 03

Primary OH distribution statement.

Particulars	Basis	Total	Production Dept			Service Dept	
			M	N	O	P	Q
Rent	30,000	Floor space	6,000	7,200	9,600	2,400	4,800
Power	3,00,000	W. No: 1	90,291	1,39,806	69,903	-	-
Supervisor salary	5,000	No of hours production capacity	1,535	1,980	1,485	-	-
Electricity	10,000	Light point	3,077	3,846	769	1,538	769
Depreciation on Machinery	20,000	Value of machines	5,218	4,348	6,087	1,739	2,608
Depreciation on building	7,000	Floor space	1,400	1,680	2,240	560	1,120
Pay roll expenses	30,000	No of Employees	9,375	1,875	3,750	5,625	9,375
Canteen expenses	50,000	No of Employees	15,625	3,125	6,250	9,375	15,625
FST / PF Contribution	70,000	Direct wages	20,812	20,041	18,427	4,336	6,383
			1,53,332	**1,83,901**	**1,18,511**	**25,573**	**40,680**

W.No: 1

	M	N	O
a) Horse power / Machine	150	180	120
b) No of working hours	1,240	1,600	1,200
(aXb) Total horse power used	1,86,000	2,88,000	1,44,000 = 6,18,000
Power	90,291	1,39,806	69,903 = 3,00,000

MASTER MINDS

Secondary OH distribution statement:

Particulars	Basis	Production Dept			Service Dept	
		M	N	O	P	Q
Pre Primary in direction		1,53,332	1,83,901	1,18,511	25,573	40,680
Apportionment of service Dept 'P' to other	30:30:25:15	7,672	7,672	6,393	(25,573)	40,080
Apportionment of service Dept 'Q' to other	40:20:20:20	8,903	8,903	8.903	8,902	3,833
Apportionment of service Dept 'P' to other	30:30:25:15	2,671	2,671	2,225	(8,902)	(44,513)
Apportionment of service Dept 'Q'	40:20:20:20	534	267	267	267	1,335
Apportionment of service Dept 'P'	30:30:25:15	80	80	66	(267)	40
Apportionment of service Dept 'Q'	40:20:20:20	24	8	8	Nil	(40)
Over Heads (a)		1,82,118	2,03,502	1,36,373	Nil	Nil
No of hours (b)		1,240	1,600	1,200	-	-
Over heads recovery rates:		146.87	127.12	113.64	-	-

PROBLEM NO: 4

Overheads Distribution Statement

Particulars	Production Departments		Service Departments	
	Machine Shops (Rs.)	Packing (Rs.)	General Plant (Rs.)	Stores (Rs.)
Allocated Overheads:				
Indirect labour	8,000	6,000	4,000	11,000
Maintenance Material	3,400	1,600	2,100	2,800

Misc. supplies	1,500	2,900	900	600
Supervisor's salary	--	--	16,000	--
Cost & payroll salary	--	--	80,000	--
Total allocated overheads	12,900	10,500	1,03,000	14,400
Add: Apportioned Overheads (As per Schedule below)	1,84,350	70,125	22,775	73,150
	1,97,250	80,625	1,25,775	87,550

Shedule of Apportionment of Overheads

Item of Cost	Basis	Production Departments		Service Departments	
		Machine Shops	Packing	General Plant	Stores
Power	HP hours (7 : 1 : - : 2)	54,600	7,800	--	15,600
Rent	Floor space (5 : 2 : 1 : 4)	30,000	12,000	6,000	24,000
Fuel & Heat	Radiator sec. (3 : 6 : 2 : 4)	12,000	24,000	8,000	16,000
Insurance	Investment (10 : 3 : 1 : 2)	7,500	2,250	750	1,500
Taxes	Investment (10 : 3 : 1 : 2)	5,250	1,575	525	1,050
Depreciation	Investment (10 : 3 : 1 : 2)	75,000	22,500	7,500	15,000
		1,84,350	**70,125**	**22,775**	**73,150**

Re-distribution of Overheads of Service Departments to Production Departments:

Let, the total overheads of General Plant = 'a' and the total overheads of Stores = 'b'

a = 1,25,775 + 0.3b .....(i)

b = 87,550 + 0.2a .....(ii)

Putting the value of 'b' in equation no. (i)

a = 1,25,775 + 0.3 (87,550 + 0.2a)

Or a = 1,25,775 + 26,265 + 0.06a

Or 0.94 a = 1,52,040 Or a = 1,61,745 (approx.)

Putting the value of a = 1,61,745 in equation no. (ii) to get the value of 'b'

b = 87,550 + 0.2 × 1,61,745 = 1,19,899

Secondary Distribution Summary

Particulars	Total (Rs.)	Machine Shops (Rs.)	Packing (Rs.)
Allocated and Apportioned overheads as per Primary distribution	2,77,875	1,97,250.00	80,625.00
- General Plant	1,61,745(5 : 3 : 2)	80,872.50	48,523.50
- Stores	1,19,899	59,949.50 (1,19,899 × 50%)	23,979.80 (1,19,899 × 20%)
		3,38,072.00	1,53,128.30

PROBLEM NO: 5

Simultaneous Equitation method:

Let 'x' be the total overhead's of service Dept S_1

Let 'y' be the total overhead's of service dept S_2

Total overhead's = Own Cost + Share of cost from

X = 2,00,000+5% of y

Y = 1,00,000+20% of x

X = 2,00,000+5% (1,00,000+20% of x)

X = 2,00,000+5,000+0.01x

X – 0.01x = 2,05,000

0.99x = 2,05,000

X = 2,07,070

Y = 1,00,000+20% (2,07,070)

Y = 1,00,000+41,414 = 1,41,414

Secondary Overhead's Distribution statement

Particulars	Basis	Production Dept			
		P_1	P_2	S_1	S_2
Over Heads as per primary distribution	Given	5,00,000	7,00,000	2,00,000	1,00,000
Apportionment of S_1	30:50:20	62,121	1,03,535	(2,07,070)	41,414
Apportionment of S_2	50:45:5	7,707	63,637	7,070	(1,41,414)
(a) Estimated overhead's		6,32,828	8,67,172	Nil	Nil
(b) No of hours		5,840	5,840		
Overheads Recovery Rate		108.36	148.4		

Statement showing total cost per unit of product – 2.

Particulars	**Amount**
Direct Material	500
Direct Wage	350
Direct Expenses	Nil
Prime cost	850
(+) Overhead's	
P1 (2hrs x 108.36) =	216.72
P2 (3hrs x 148.49) =	445.47
Cost Per Unit	1,512.19

MASTER MINDS

PROBLEM NO: 6

Working notes:

1. Computation of total cost of jobs

Total cost of Job 1102 when 8% is the profit on Cost = $\left(\frac{1,07,325}{108}\times 100\right)$ = Rs.99,375

Total cost of job 1108 when 12% is the profit on cost = $\left(\frac{1,57,920}{112}\times 100\right)$ = Rs.1,41,000

2. Factory overheads = F% of direct wages

Selling & Administrative overheads = A% of factory cost

(i) Computation of rates of factory overheads and selling and administration overheads to be charged.

Jobs Cost Sheet

Particulars	Job 1102(Rs.)	Job 1108 (Rs.)
Direct materials	37,500	54,000
Direct wages	30,000	42,000

Prime cost	67,500	96,000
Add: Factory overheads	30,000F	42,000F
Factory cost (Refer to Working Note 2)	(67,500 + 30,000 F)	(96,000 + 42,000 F)
Add: Selling and Administration Overheads (Refer to Working Note 2)	(67,500 + 30,000 F) A	(96,000 + 42,000 F) A
Total Cost	(67,500 + 30,000 F) (1+A)	(96,000 + 42,000 F) (1+A)

Since the total cost of jobs 1102 and 1108 are equal to Rs.99,375 and Rs.1,41,000 respectively, therefore we have the following equations (Refer to Working Note 1)

(67,500 + 30,000 F) (1 + A) = 99,375……(i)

(96,000 + 42,000 F) (1 + A) = 1,41,000……(ii)

Or, 67,500 + 30,000 F + 67,500 A + 30,000 FA = 99,375

Or, 96,000 + 42,000 F + 96,000 A + 42,000 FA = 1,41,000

Or, 30,000 F + 67,500 A + 30,000 FA = 31,875……(iii)

42,000 F + 96,000 A + 42,000 FA = 45,000……(iv)

On solving (iii) and (iv) we get : A = 0.25 and F = 0.40

Hence, A = 25% and F = 40%

(ii) Selling price of the new order:

Particulars	Amount (Rs.)
Direct materials	64,000
Direct wages	50,000
Prime cost	1,14,000
Factory overheads (40% × Rs.50,000)	20,000
Factory cost	1,34,000
Selling & Administration overheads (25% × Rs.1,34,000)	33,500
Total cost	1,67,500

If selling price of new order is Rs.100 then Profit is Rs.20 and Cost is Rs.80

Hence selling price of the new order = $\left(\frac{1,67,500}{80} \times 100\right)$ = Rs.2,09,375

MASTER MINDS

PROBLEM NO: 7

When details are available for each department, then it advised to use DRR then BRR.

Departmental recovery rate = $\frac{\text{Estimated overhead}}{\text{Estimated Base}}$

Dept A:- $\frac{10,000}{20,000} x100 = 50\%$

Dept B:- $\frac{1,60,000}{80,000} x100 = 200\%$

Dept C:- $\frac{30,000}{30,000} x100 = 100\%$

Statement showing cost for the job:

Particulars	Amt.
Direct material	1,200
Direct wages (200+500+700)	1,400
Direct expenses	Nil
Prime cost	2,600
(+) Over heads: (Actual base x OHRR)	
Dept A:- (200x50%) =100	
Dept B:- (500x200%) =1000	

Dept C:- (700x100%) =700	1800
	4,400

PROBLEM NO: 8

Computation of unabsorbed overheads

particulars	Amt.
Man-days worked	1,50,000 days
Overhead actually incurred	41,50,000
Less: Overhead absorbed @ Rs. 25 per man-day (Rs. 25 × 1,50,000)	37,50,000
Unabsorbed overheads	4,00,000
planning (i.e. 60% of Rs 4,00,000)	2,40,000
Balance of unabsorbed overhead	1,60,000

Treatment of unabsorbed overheads in Cost Accounts

(i) The unabsorbed overheads of Rs.2,40,000 due to defective planning to be treated as abnormal and therefore be charged to Costing Profit and Loss Account.

(ii) The balance unabsorbed overheads of Rs. 1,60,000 be charged to production i.e., 40,000 units at the supplementary overhead absorption rate i.e., Rs. 4 per unit (Refer to Working Note)

particulars	Amt.
Charge to Costing Profit and Loss Account as part of the cost of unit sold (30,000 units @ Rs. 4 p.u.)	1,20,000
Add: To closing stock of finished goods (10,000 units @ Rs. 4 p.u.)	40,000
Total	1,60,000

Working Note:

$$\text{Supplementary overhead absorption rate} = \frac{\text{Rs.1,60,000}}{\text{40,000 units}} = \text{Rs.4 p.u}$$

MASTERMINDS

PROBLEM NO: 9

Particulars	Amount (Rs.)
Total factory overheads incurred	51,00,000
Less: Absorbed factory overheads (Rs.30 × 1,50,000)	(45,00,000)
Under-absorption of Overheads	6,00,000

60% of Rs.6,00,000 i.e. Rs.3,60,000 would be transferred to Costing P/L Account

40% of Rs.6,00,000 i.e. Rs.2,40,000 would be apportioned over Sales unit and Stock by using supplementary overheads rate.

$$\text{Supplementary overheads Rate} = \frac{\text{Rs.2,40,000}}{50,000 + 5,000 + 5,000} = \text{Rs.4}$$

Particulars	Amount (Rs.)
On Sales (50,000 units × Rs.4)	2,00,000
On Finished Goods (5,000 units × Rs.4)	20,000
On Work in Progress (10000 × 50% × Rs.4)	20,000
	2,40,000

PROBLEM NO: 10

Rated Capacity = 72 tonnes

Practical Capacity = 60 tonnes

Normal Capacity. = 30 tonnes

Actual Capacity. = 27 tonnes

PROBLEM NO: 11

Effective machine hours = 200 hours × 75% = 150 hours

Computation of Comprehensive Machine Hour Rate

Particulars	Per month (Rs.)	Per hour (Rs.)
Fixed cost		
Supervision charges	18,000.00	
Electricity and lighting	9,500.00	
Insurance of Plant and building (Rs.18,250 ÷12)	1,520.83	
Other General Expenses (Rs.17,500÷12)	1,458.33	
Depreciation (Rs.64,800÷12)	5,400.00	
	35,879.16	239.19
Direct Cost		
Repairs and maintenance	17,500.00	116.67
Power	65,000.00	433.33
Wages of machine man		139.27
Wages of Helper		109.41
Machine Hour rate (Comprehensive)		1,037.87

Wages per machine hour:

Particulars	Machine man	Helper
Wages for 200 hours		
Machine-man (Rs.400 × 25)	Rs.10,000.00	-
Helper (Rs.275 × 25)	-	Rs.6,875.00
Dearness Allowance (DA)	Rs.4,575.00	Rs.4,575.00
	Rs.14,575.00	Rs.11,450.00
Production bonus (1/3 of Basic and DA)	4,858.33	3,816.67
Leave wages (10% of Basic and DA)	1,457.50	1,145.00
Effective wage rate per machine hour	20,890.83	16,411.67
	Rs.139.27	Rs.109.41

MASTER MINDS

PROBLEM NO: 12

Statement showing comprehensive machine hour rate:

Particulars	Amt.
Power $\left(8{,}000x\frac{12}{6}\right)$ =	16,000
Indirect Labour =	10,000
Lighting and electricity	4,000
Repairs and maintenance (10,00,000 x 5%)	50,000
Insurance	80,000
Depreciation (10,00,000 x 5%)	50,000
Other Sundry expenses	10,000
General manager at expenses	70,000
Wages to operator $(210-10)x\frac{32}{8}x7x12$	67200
a) Total Cost	3,57,200
b) No of machine hour (210-10-10-5)x12x7	15,540h
c) Machine hour rate(a/b)	Rs.42.18

PROBLEM NO: 13

Statement showing machine hour rate:

Particulars	When set up time is productive (2200)	When set up time is Unproductive (2292)
Maintainance $\left[\frac{25000}{2200}\right]$	11.36	10.94 $\left[\frac{25000}{2292}\right]$
Special chemical solution cost	9.82 $\left[\frac{400}{6DAYS} X324 X \frac{1H}{2200}\right]$	9.42 $\left[\frac{400}{6DAYS} X324 X \frac{1H}{2292}\right]$
Wages to operators	5.93 $\left[\frac{400+15\%}{6DAYS} X324 X \frac{1H}{2200}\right]$	5.69 $\left[\frac{400+15\%}{6DAYS} X324 X \frac{1H}{2292}\right]$
Power	48 (16X3)	48 (16X3)
General overheads	3.13 $\left[\frac{500,00+10\%}{8MACHINE} X \frac{1H}{2200}\right]$	3 $\left[\frac{5000+10\%}{8\ MACHINE} X \frac{1H}{2292}\right]$
Depreciation	45.45 $\left[\frac{12,70,000-70,000}{12} X \frac{1H}{2200}\right]$	43.63 $\left[\frac{12,70,000-70,000}{12} X \frac{1H}{2292}\right]$
	123.69	120.65

PROBLEM NO: 14

Sree Ajeet Ltd.

Statement showing comprehensive machine hour rate of Machine B

MASTER MINDS

Particulars	Amount (Rs.)
Standing Charges:	
Factory rent {(Rs. 1,80,000/1,00,000 sq. ft.) × 5,000 Sq. ft.}	9,000
Heat and Gas (Rs. 60,000/15 machines)	4,000
Supervision (Rs. 1,50,000/ 15 machines)	10,000
Depreciation [(Rs. 1,80,000 – Rs. 10,000)/ 10 years]	17,000
Annual expenses on special equipment	12,000
	52,000
Fixed cost per hour (Rs. 52,000/ 4,000 hrs.)	13/-

	Set up rate Per hour (Rs.)	Operational rate Per hour (Rs.)
Fixed cost	13.00	13.00
Power	--	5.00
Wages	25.00	12.50
Comprehensive machine hour rate per hr.	38.00	30.50

Statement of 'B' machine costs to be absorbed on the two work orders

	Work order-1			Work order-2		
	Hours	Rate	Amount	Hours	Rate	Amount
		Rs	Rs		Rs	Rs
Set up time cost	15	38	570	30	38	1,140
Operation time cost	100	30.5	3,050	190	30.5	5,795
Total cost			3,620			6,935

PROBLEM NO: 15

Particulars	Amt.
Standing charges 1 hour	
Supervisor Salary $\frac{10,000}{3} \times \frac{1}{222}$	15.02
Rent $\left(\frac{70,000}{6} \times \frac{1}{12} \times \frac{1}{222}\right)/2$	01.88
General lighting $\left(10,000 \times \frac{1}{222}\right)$	45.05
	61.95
Machine running charges	
Depreciation $\left(\frac{2,00,000 - 20,000}{10} \times \frac{1}{12} \times \frac{1}{222}\right)$	06.76
Wages $\left(2,500 \times \frac{1}{222}\right)$	= 11.26
Repairs and maintenance $\left(30,000 \times \frac{1}{12} \times \frac{1}{192}\right)$	13.02
Consumable scorer $\left(20,000 \times \frac{1}{12} \times \frac{1}{192}\right)$	08.68
Power (25x2)	50.00 =
Machine hour rate	89.72

Statement showing two tier machine hour rate:-

	Setup rate p/h	Running Time date / hour
Standing charges	61.95	61.95
Machine expenses:-		
Depreciation	6.76	6.76
Wages	11.26	11.26
Repairs and maintenance	-	13.02
Consumable stores	-	8.68
Power	-	50.00
	79.97	151.67

MASTER MINDS

Copyrights Reserved
To ***MASTER MINDS***, Guntur

THE END